



EUROPEAN CENTRAL BANK  
EUROSYSTEM

# Economic Bulletin

Issue 7 / 2018



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# Update on economic and monetary developments

## Summary

The incoming information that has become available since the Governing Council's monetary policy meeting in September, while somewhat weaker than expected, remains overall consistent with an ongoing broad-based expansion of the euro area economy and gradually rising inflation pressures. The risks surrounding the euro area growth outlook can still be assessed as broadly balanced. At the same time, risks relating to protectionism, vulnerabilities in emerging markets and financial market volatility remain prominent. Yet, the underlying strength of the economy continues to support the Governing Council's confidence that the sustained convergence of inflation to its aim will continue in the period ahead and will be maintained even after a gradual winding-down of the net asset purchases. Nevertheless, significant monetary policy stimulus is still needed to support the further build-up of domestic price pressures and headline inflation developments over the medium term. This support will continue to be provided by the net asset purchases until the end of the year, by the sizeable stock of acquired assets and the associated reinvestments, and by the Governing Council's enhanced forward guidance on the key ECB interest rates. In any event, the Governing Council stands ready to adjust all of its instruments as appropriate to ensure that inflation continues to move towards its aim in a sustained manner.

Survey indicators of global economic growth have weakened recently as the global economic cycle matures. The global trade momentum has moderated amid ongoing actions and threats regarding trade tariff increases by the United States and possible retaliation by affected countries, but the near-term outlook remains steady. Global financial conditions remain supportive for advanced economies, while creating headwinds for emerging market economies.

In the euro area, sovereign bond yields have risen amid an increase in global risk-free rates and rising tensions in the sovereign debt markets of some euro area countries. Euro area equity prices have declined, reflecting a deterioration in risk sentiment. By contrast, yield spreads on corporate bonds have remained broadly unchanged. In foreign exchange markets, the euro has been broadly stable in trade-weighted terms.

Euro area real GDP increased by 0.4%, quarter on quarter, in both the first and the second quarter of 2018. Looking ahead, the incoming information remains overall consistent with the Governing Council's baseline scenario of an ongoing broad-based economic expansion. However, some recent sector-specific developments are having an impact on the near-term growth profile. The ECB's monetary policy measures continue to underpin domestic demand. Private consumption is fostered by ongoing employment growth and rising wages. Business investment is supported by solid domestic demand, favourable financing conditions and corporate profitability. Housing

investment remains robust. In addition, the expansion in global activity is expected to continue supporting euro area exports, though at a slower pace.

Euro area annual HICP inflation increased to 2.1% in September 2018, from 2.0% in August, reflecting mainly higher energy and food price inflation. On the basis of current futures prices for oil, annual rates of headline inflation are likely to hover around the current level over the coming months. While measures of underlying inflation remain generally muted, they have been increasing from earlier lows. Domestic cost pressures are strengthening and broadening amid high levels of capacity utilisation and tightening labour markets. Looking ahead, underlying inflation is expected to pick up towards the end of the year and to increase further over the medium term, supported by the ECB's monetary policy measures, the ongoing economic expansion and rising wage growth.

The monetary analysis shows that broad money (M3) growth stood at 3.5% in September 2018, after 3.4% in August. The growth of loans to the private sector has strengthened further, continuing the upward trend observed since the beginning of 2014. The euro area bank lending survey for the third quarter of 2018 indicates that loan growth continues to be supported by increasing demand across all loan categories and favourable bank lending conditions for loans to enterprises and loans for house purchase.

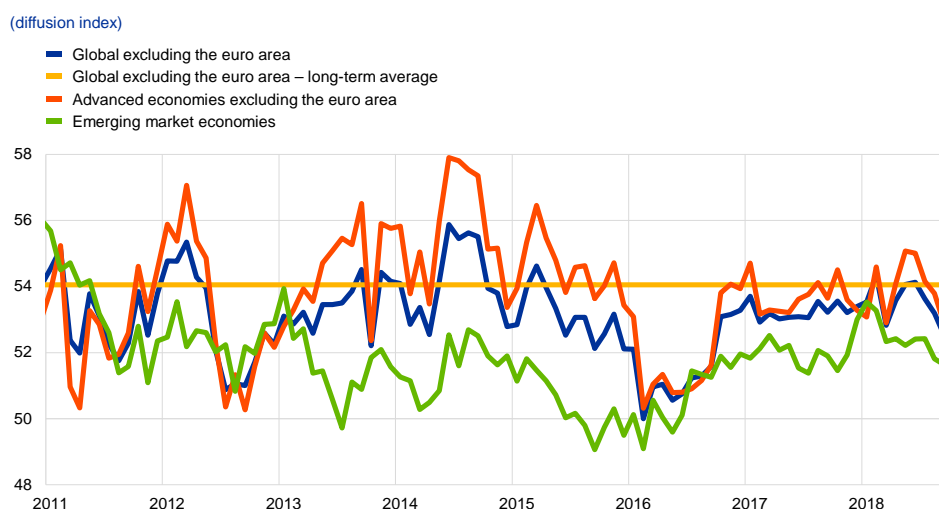
Combining the outcome of the economic analysis with the signals coming from the monetary analysis, the Governing Council concluded that an ample degree of monetary accommodation is still necessary for the continued sustained convergence of inflation to levels that are below, but close to, 2% over the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

On the basis of 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 make net purchases under the asset purchase programme (APP) at the new monthly pace of €15 billion until the end of December 2018. The Governing Council anticipates that, subject to incoming data confirming its medium-term inflation outlook, net purchases will then end. The Governing Council intends to reinvest the principal payments from maturing securities purchased under the APP for an extended period of time after the end of the net asset purchases, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

## 1 External environment

**Global survey indicators of economic growth have weakened recently as the global economic cycle matures.** The global composite output Purchasing Managers' Index (PMI) excluding the euro area declined further below its long-term average in September (see Chart 1), reaching a two-year low. The decline was driven by both the manufacturing and the services components. In quarterly terms, the average PMI for the third quarter of 2018 declined from its level in the previous quarter. The composite output PMI decreased across most advanced economies, including the United States, Japan and the United Kingdom. In emerging market economies, it increased in India but weakened in China, Russia and Brazil, the latter country index remaining below the expansionary threshold.

**Chart 1**  
Global composite output PMI



Sources: Haver Analytics, Markit and ECB calculations.

Notes: The latest observations are for September 2018. "Long-term average" refers to the period from January 1999 to September 2018.

**Risks to the global economy remain to the downside, amid ongoing actions and threats regarding trade tariff increases by the United States and possible retaliation by the affected countries.** The US administration implemented tariffs targeting an additional USD 200 billion of Chinese imports with effect from 24 September 2018, and China retaliated with tariffs targeting an additional USD 60 billion of exports from the United States. Given the size of these latest measures, uncertainty as to their impact has increased, in particular as regards business sentiment and capital spending plans. Policy uncertainty also remains high. While the United States is weighing additional tariffs on Chinese exports and an expansion of protectionist measures in the automotive sector, a new trade agreement between the United States, Mexico and Canada (USMCA) signals an easing of trade tensions. Overall, the risks to global growth from rising protectionism remain significant.

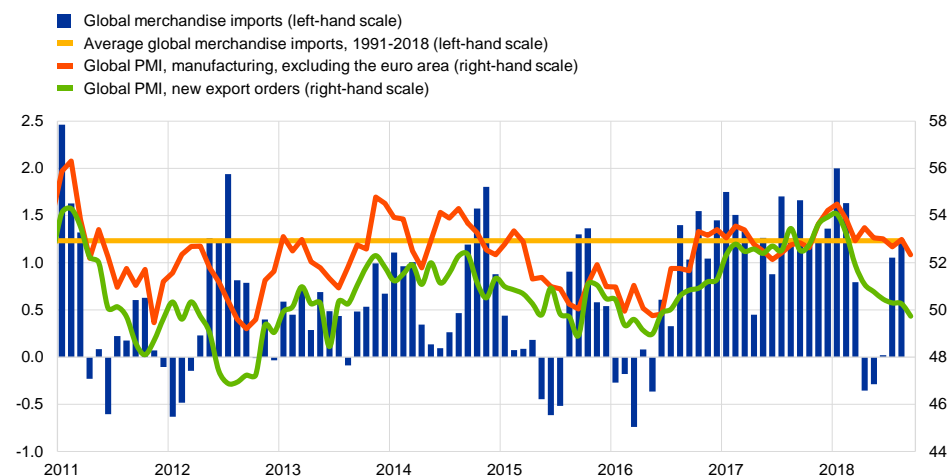
**Global financial conditions remain supportive for advanced economies, while creating headwinds for emerging market economies.** Overall, monetary policy in advanced economies remains accommodative. At the same time, in the United States

the Federal Open Market Committee increased policy rates in September amid solid growth, rising inflation and a tight labour market. Following the decision, the yield on 10-year US government bonds reached its highest level since 2011, while international equity markets fell sharply. In China, financial conditions eased following action by the People's Bank of China responding to a weakening outlook for economic activity amid rising trade tensions. More broadly, however, financial conditions in emerging market economies remain tight and weigh on the outlook for economic activity. Overall, global risk sentiment has not fully recovered over the past few months, and financial investors seem to increasingly discriminate against emerging market economies with significant imbalances, high external financing needs and limited room for policy support. Moreover, additional rate increases in the United States and the stronger dollar could lead to a further tightening of financial conditions across emerging market economies.

**The global trade momentum has moderated, but the near-term outlook remains steady.** Following very weak figures in the second quarter of the year, global merchandise imports further recovered in August on account of stronger imports by emerging market economies (see Chart 2). The global PMI for new export orders decreased to below expansionary territory in September; however, the average for the third quarter of the year remained above the neutral threshold. Other trade indicators give mixed signals. Overall, recent data point to moderate but steady growth in trade in the third quarter.

**Chart 2**  
Global trade in goods and surveys

(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 August 2018 for global merchandise imports and September 2018 for the PMIs.

**Global inflation was stable in August.** Annual consumer price inflation in the countries of the Organisation for Economic Co-operation and Development (OECD) was unchanged at 2.9% in August, while inflation excluding food and energy stood at 2.1%. Looking ahead, global inflationary pressures are expected to remain contained. While upward pressures from oil prices should diminish in the medium term, the gradual decline in spare economic capacity is expected to support underlying inflation.

**Oil markets have been mainly affected by factors related to the US sanctions against Iran.** Brent crude oil prices increased from a low of USD 70 per barrel in the summer to USD 86 per barrel on 3 October as the prospect of the sanctions started to affect Iranian oil exports and OPEC decided not to further increase production. The more recent retreat in oil prices to USD 76 per barrel on October 23 was driven by the announcements by Saudi Arabia and Russia that they could increase output if needed, coupled with a global stock market sell-off and weaker forecasts for oil demand growth. Non-oil commodity prices have decreased by around 2% since end-July. While food prices fell slightly, metal prices increased, mainly on account of iron ore prices.

**In the United States, the outlook for economic activity remains solid.** Real GDP expanded at an annualised rate of 4.2% in the second quarter of 2018, following 2.2% in the previous quarter. This marked acceleration was due in part to strong exports. To the extent that these exports were front-loaded in response to expected future tariffs, the support from trade is not expected to persist. In addition, the further escalation of trade tensions between the United States and China may increasingly affect business sentiment and thus investment spending. Nonetheless, the near-term outlook remains strong, supported by solid macroeconomic fundamentals, as well as a large procyclical fiscal expansion. Meanwhile, the labour market continued to generate jobs at a robust pace in September, and the unemployment rate declined further to 3.7%, the lowest rate since December 1969. Annual headline consumer price index (CPI) inflation slowed to 2.3% in September, while excluding food and energy, inflation remained at 2.2%.

**In Japan, economic activity was robust in the second quarter, but extreme weather conditions have raised uncertainty regarding the outlook.** Following a mild contraction in the first quarter of the year, economic activity rebounded in the second quarter, supported by strong investment activity. However, the outlook continues to be surrounded by growing uncertainty. Following the heavy rains and floods in western Japan in July, the impact of Typhoon Jebi and the Hokkaido earthquake in September are likely to weigh on economic activity. Looking further ahead, the Japanese economy is expected to return to moderate growth, albeit at a gradually slowing pace, as declining spare capacity and diminishing fiscal support may limit growth prospects in spite of accommodative monetary policy. In addition, the political uncertainty regarding trade policies remains significant, especially as regards potential tariffs on Japan's automotive sector. Labour market indicators, meanwhile, point to a further tightening, while upward momentum in prices and wages remains limited. Annual headline CPI inflation stood at 1.2% in September, while CPI inflation excluding food and energy remained close to zero.

**In the United Kingdom, real GDP growth rebounded modestly in the second quarter.** Real GDP grew by 0.4% quarter on quarter in the second quarter, after first quarter growth was revised down to 0.1%. Household consumption slowed, while the investment and trade expenditure components were revised heavily downwards, revealing contractions in both for two consecutive quarters. The latest PMI survey data suggest quarter-on-quarter GDP growth at a similar rate in the third quarter, though short-term indicators for the export-oriented manufacturing sector signal a less

optimistic outlook. This is in line with an environment of moderating global growth, growing trade tensions and the heightened uncertainty surrounding the outcome of the negotiations on the country's withdrawal from membership of the European Union in March 2019. Having picked up slightly over the course of the summer, inflation fell back to 2.4% in September, from 2.7% in August. The volatility seen over the summer months was in large part expected, reflecting earlier developments in oil prices and a slight weakening in the pound around the end of the second quarter of the year.

**In China, GDP growth moderated only slightly in the third quarter of 2018, amid additional policy support.** Real GDP grew at 6.5% in year-on-year terms in the third quarter of 2018, supported by strong consumption, government policy support and a solid export performance. However, in the near term a slowing housing market and the lagged effects of earlier financial tightening may weigh on growth. Also, new tariffs implemented by the US administration targeting an additional USD 200 billion of Chinese exports to the United States are expected to adversely impact economic activity. In order to mitigate the impact, the Chinese authorities have announced a broad set of non-tariff measures to facilitate trade growth and foster domestic investment. In addition, Chinese policymakers are set to lower the average tariff rate on imports from 9.8% in 2017 to 7.5% as of 1 November. Headline CPI inflation increased slightly in September to 2.5%, but core inflation declined to 1.7%.



## 2 Financial developments

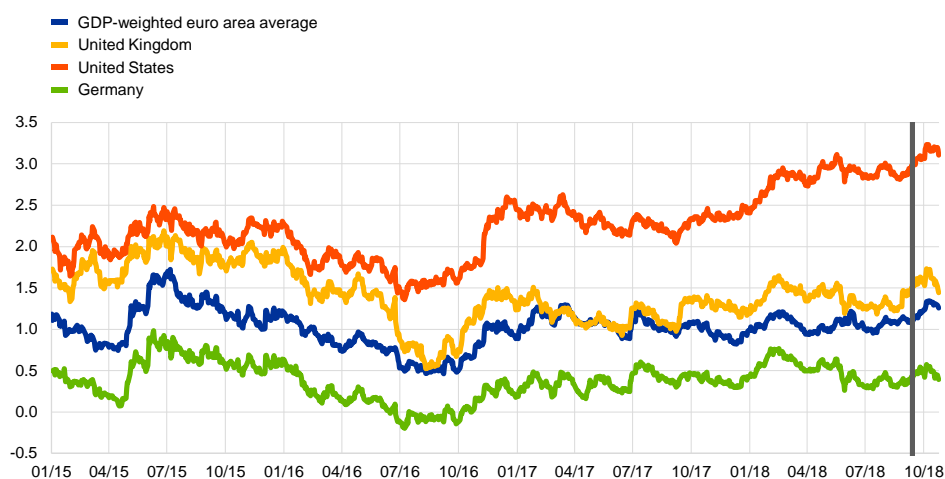
### **Euro area government bond yields have risen since mid-September (see**

**Chart 3).** In the period under review (from 13 September to 24 October 2018), the GDP-weighted euro area ten-year sovereign bond yield rose by 18 basis points to 1.28% amid an increase in global risk-free rates and rising tensions in the sovereign debt markets of some euro area countries. Vis-à-vis the yield on German ten-year government bonds, the spread on ten-year Italian sovereign bonds widened by 86 basis points to 3.22%. The spreads on the equivalent bonds of Spain and Portugal widened to a somewhat lesser extent. Sovereign bond yields increased by 20 basis points to 3.17% in the United States and declined by 3 basis points to 1.48% in the United Kingdom.

### **Chart 3**

#### Ten-year sovereign bond yields

(percentages per annum)



Sources: Thomson Reuters and ECB calculations.

Notes: Daily data. The vertical grey line denotes the start of the review period (i.e. 13 September 2018). The latest observation is for 24 October 2018.

**Broad indices of euro area equity prices declined.** Equity prices of both euro area financials and non-financial corporations (NFCs) decreased by around 7% over the review period on the back of an increase in the discount rate and in risk premia in the light of tensions in euro area sovereign bond markets. However, expectations of robust corporate profits continued to be supportive of euro area equity prices. The equity prices of US NFCs and financial firms also declined over the review period, by 6% and 7.5% respectively. In view of the declines, market expectations of future equity price volatility increased in both the euro area and the United States, where they stood on an annualised basis at 21.5% and 21% respectively. These levels remain comparatively low from a historical perspective.

**Yield spreads on bonds issued by euro area NFCs remained relatively insulated from tensions in sovereign debt and equity markets.** Compared with

mid-September, the spread on investment-grade NFC bonds relative to the risk-free rate fell by 3 basis points to 64 basis points. Spreads on financial sector debt with an investment-grade rating increased by 3 basis points to 93 basis points. Despite yield

increases in the first half of 2018, corporate bond spreads remained significantly (50-60 basis points) below the levels observed in March 2016, prior to the announcement and subsequent launch of the corporate sector purchase programme.

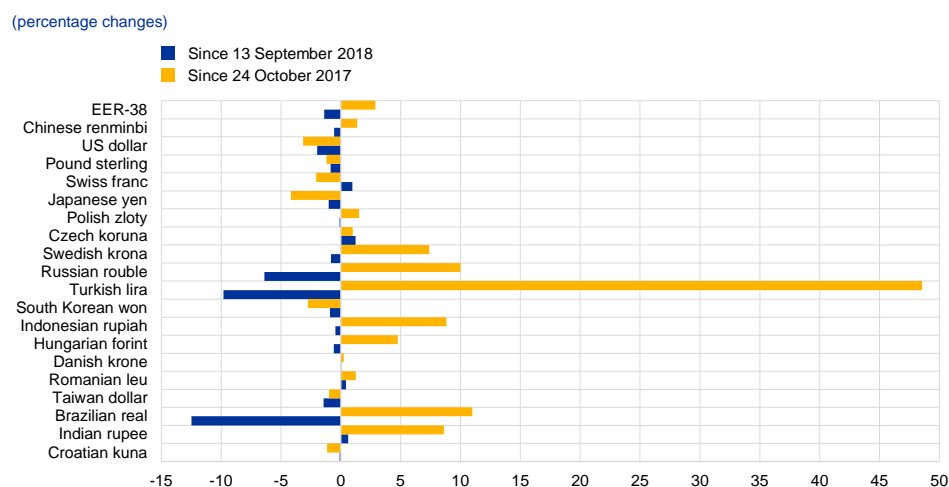
**The euro overnight index average (EONIA) ranged between -35 and -37 basis points over the period under review.** Excess liquidity declined by around €37 billion to about €1,867 billion. This decline was driven by an increase in net autonomous factors, the maturity of the first series of targeted longer-term refinancing operations (TLTRO-I) and some early repayments of funds borrowed under the second series (TLTRO-II). At the same time, ongoing purchases under the Eurosystem’s asset purchase programme partially offset the decline in excess liquidity.

**The EONIA forward curve shifted slightly upwards over the review period. Market participants revised up their interest rate expectations for longer horizons.** The curve remains below zero for horizons prior to October 2020, reflecting market expectations of a prolonged period of negative interest rates.

**In the foreign exchange markets, the euro depreciated in trade-weighted terms (see Chart 4).** Over the period under review, the effective exchange rate of the euro, measured against the currencies of 38 of the euro area’s most important trading partners, weakened by 1.4%. In bilateral terms, the euro depreciated against the currencies of the major advanced economies, in particular the US dollar (by 2.0%), reflecting expectations about the evolution of monetary policy in the United States and the euro area, the Japanese yen (by 1.0%) and the pound sterling (by 0.9%). The euro also depreciated vis-à-vis the currencies of most non-euro area EU Member States, as well as against the Chinese renminbi (by 0.6) and the currencies of other major emerging economies, such as Turkey, Russia and Brazil, which were supported by improving market sentiment following their previous significant depreciation. Over the same period, the euro strengthened vis-à-vis the Swiss franc by 1.0%.

#### 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 24 October 2018.

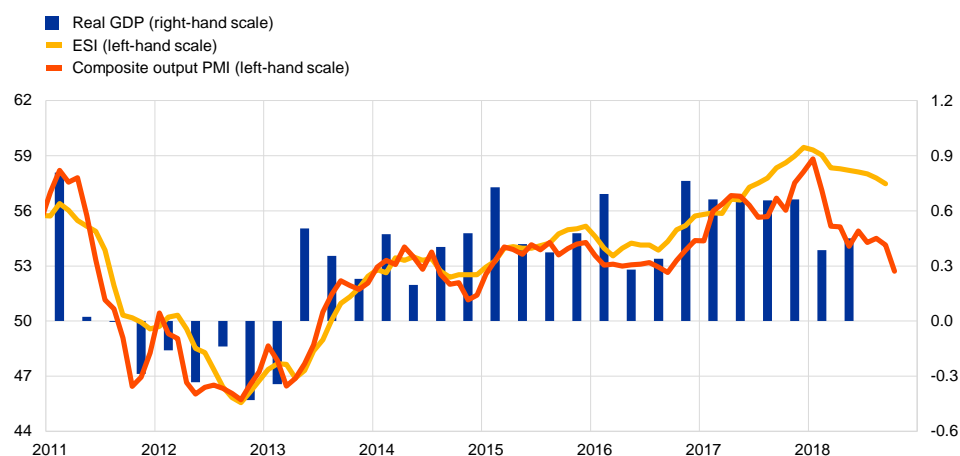
## 3 Economic activity

**Incoming information, while somewhat weaker than expected, remains overall consistent with ongoing broad-based economic expansion.** Real GDP increased by 0.4%, quarter on quarter, in both the first and second quarters of the year, following the exceptionally strong dynamics observed in the previous five quarters (see Chart 5). Domestic demand made a positive contribution to the outcome in the second quarter, whereas net trade and changes in inventories had a neutral impact on GDP growth. Economic indicators, with survey results overall remaining at high levels, point to ongoing growth in the second half of the 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.

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 second quarter of 2018 for real GDP, September 2018 for the ESI and October 2018 for the PMI.

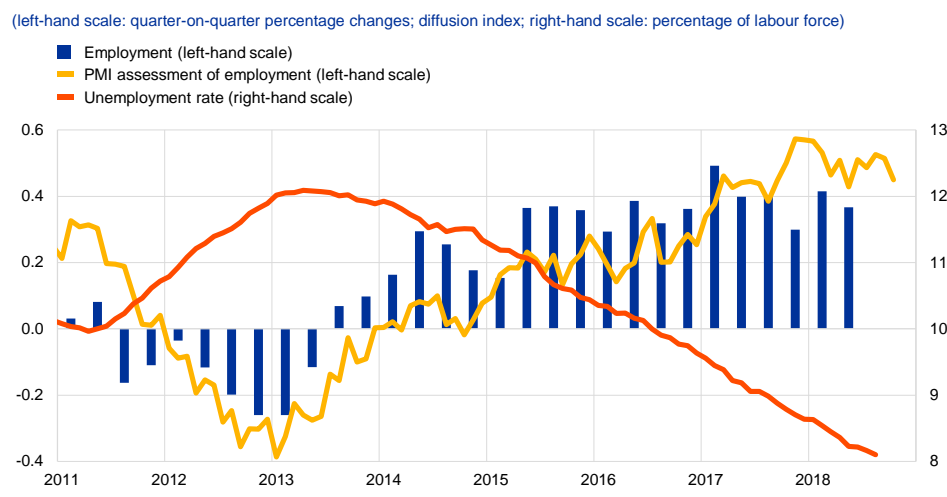
**In the second quarter employment rose further across euro area countries and sectors, increasing by 0.4% quarter on quarter.** The average hours worked increased markedly in the second quarter, recovering from the decline due to the temporary impact of sick leave and strikes in the previous quarter.<sup>1</sup> With the latest increase, employment stands 2.4% above the pre-crisis peak recorded in the first quarter of 2008. Since the trough recorded in the second quarter of 2013, cumulative employment growth in the euro area amounts to 9.2 million persons. The strong growth in employment seen during this period of economic expansion was accompanied by broadly unchanged average hours worked, which primarily reflects the impact of several structural factors (e.g. the large share of part-time workers in total employment).

**Looking ahead, short-term indicators point to continued strength in the labour market in the coming quarters.** The euro area headline unemployment rate declined

<sup>1</sup> See the box entitled "The recent slowdown in euro area output growth reflects both cyclical and temporary factors", *Economic Bulletin*, Issue 4, ECB, 2018.

further to 8.1% in August (see Chart 6) – the lowest level seen since November 2008. Looking further ahead, survey indicators point to continued employment growth in the third quarter of the year.

**Chart 6**  
Euro area employment, PMI assessment of employment and unemployment



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 second quarter of 2018 for employment, October 2018 for the PMI and August 2018 for the unemployment rate.

**Household income continued to support growth in private consumption.** Private consumption rose by 0.2%, quarter on quarter, in the second quarter of 2018, following more dynamic growth in the previous quarter. This slowdown appears to reflect, on the one hand, adverse temporary factors (such as the impact of strikes on transport-related spending in France) and, on the other hand, the unwinding of positive temporary factors in the first quarter (higher energy consumption due to the cold winter). On an annual basis, consumption rose by 1.3% in the second quarter of 2018, which represents a slowdown from the first quarter, when consumption rose by 1.6%. At the same time, annual growth of households' real disposable income increased from 1.7% in the first quarter to 1.9% in the second quarter. Thus, the slowdown in consumption growth was mirrored by a rise in the annual rate of change in savings – from 3.4% in the first quarter to 5.9% in the second quarter. The household saving ratio rose to 12.0% in the second quarter, slightly above the record low of 11.9% in the previous three quarters.

**Private consumption is expected to display resilient growth in the coming quarters.** Recent data on the volume of retail sales and new passenger car registrations point to ongoing growth in consumer spending in the third quarter of this year. However, it should be noted that the link between new passenger car registrations and car purchases, which feed into private consumption, is in all likelihood distorted at the current juncture, as it appears that a large part of the registrations in August were carried out by manufacturers/dealers rather than consumers. Other indicators also support the picture of continued robust consumption dynamics. For instance, households' net worth continued to increase at robust rates in the second quarter, thus lending further support to private consumption. Moreover, the

latest survey results signal further labour market improvements, which should continue to support aggregate income and thus consumer spending. In addition, although consumer confidence has declined in the course of 2018, it still stands at an elevated level and well above its long-term average.

**Following the weak first quarter of 2018, investment growth rebounded in the second quarter.** The quarterly 1.4% rise in investment in the second quarter of this year was brought about by an increase in investment in machinery, equipment and, to a lesser extent, intellectual property products (Box 2 provides an overview of developments in investment in intangible assets in the euro area). At the same time, quarterly growth in construction investment increased to 1.1%. By contrast, investment in transport equipment declined strongly in the same quarter. For the third quarter of 2018, short-term indicators point to continued growth. Monthly data on capital goods production in July and August stood, on average, 0.7% above their second quarter average, when they rose by 0.8% on a quarterly basis. On the other hand, indicators such as capacity utilisation (slightly declining but still high), confidence and orders (both lower) point to some downward risks to the growth momentum in non-construction investment. With regard to construction investment, monthly construction production data up to August point to continued – but moderating – growth in the third quarter of 2018.

**Investment is expected to continue to grow solidly, supported by robust domestic demand and favourable financing conditions.** According to the euro area sectoral accounts for the second quarter of 2018, business margins (measured as the ratio of net operating surplus to net value added) have remained broadly unchanged since the end of 2015 and continue to be close to long-term averages. However, uncertainties surrounding the future implementation of tariff increases may already be proving detrimental to investment decisions. As regards construction investment, households' increasing intentions to buy or renovate, as well as constructors' buoyant price and employment expectations, point to positive momentum in the construction sector over the short-term horizon. However, as financing conditions are expected to become slightly tighter, alternative long-term investment opportunities may gradually emerge.

**Euro area trade growth remained moderate at the beginning of the third quarter of 2018.** Based on information up to August, euro area nominal goods exports increased by 1.1% quarter on quarter, slightly below the figures registered in the second quarter of 2018 (1.3% quarter on quarter). In contrast, extra euro area goods exports rebounded in August (an increase of 2.1%, after a contraction of around 1.1% in July), suggesting some acceleration compared with the second quarter in quarter-on-quarter terms. Euro area nominal imports fell by 0.2%, month on month, in August, after increasing by 0.9% in July. Using information up to August, extra-euro area imports increased by 2.8% in nominal terms in the third quarter, reflecting an acceleration compared with the second quarter of 2018 (2.2% quarter on quarter). Survey indicators with leading properties, such as the Purchasing Managers' Index (PMI) for new manufacturing export orders, and the European Commission's assessment of export order book levels are consistent with a deterioration in export performance, showing a decline in October in the context of a downward trend since

the beginning of the year. Hard data such as new manufacturing orders outside the euro area rebounded in August after some deterioration in June and July.

**Overall, the latest economic indicators suggest ongoing broad-based growth.**

Industrial production (excluding construction) rebounded and recorded a relatively strong increase in August, following the sharp declines of the previous two months. Still, on average, production in July and August stood 0.2% below the level seen in the second quarter of 2018, when it rose by 0.1% on a quarterly basis. This weakness partly relates to temporary bottlenecks in the production of cars triggered by the testing process following the introduction of the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) on 1 September. More timely survey data signal ongoing robust growth at rates similar to, or somewhat lower than, those recorded in the first half of the year. The composite output PMI averaged 54.3 in the third quarter, compared with 54.7 in the second quarter, before declining in October to 52.7. Meanwhile, the European Commission's Economic Sentiment Indicator (ESI) eased to 112.5 in the third quarter, from 114.0 in the second quarter (see Chart 5). Both the PMI and the ESI continue to stand above their respective long-term averages.

**The economic expansion is supported by domestic demand and continued improvements in the labour market.**

However, some recent sector-specific developments are having an impact on the near-term growth profile. The ECB's monetary policy measures continue to underpin domestic demand. Private consumption is fostered by ongoing employment growth and rising wages. At the same time, business investment is supported by solid domestic demand, favourable financing conditions and corporate profitability. Housing investment remains robust. In addition, the expansion in global activity is expected to continue supporting euro area exports, although at a slower pace. The results of the latest round of the [ECB Survey of Professional Forecasters](#), conducted in early October, show that private sector GDP growth forecasts were revised downwards for 2018 and 2019 compared with the previous round conducted in early July. The figure for 2020 remained unchanged.

**The risks surrounding the euro area growth outlook are assessed as broadly balanced.**

At the same time, risks relating to protectionism, vulnerabilities in emerging markets and financial market volatility remain prominent.

## 4 Prices and costs

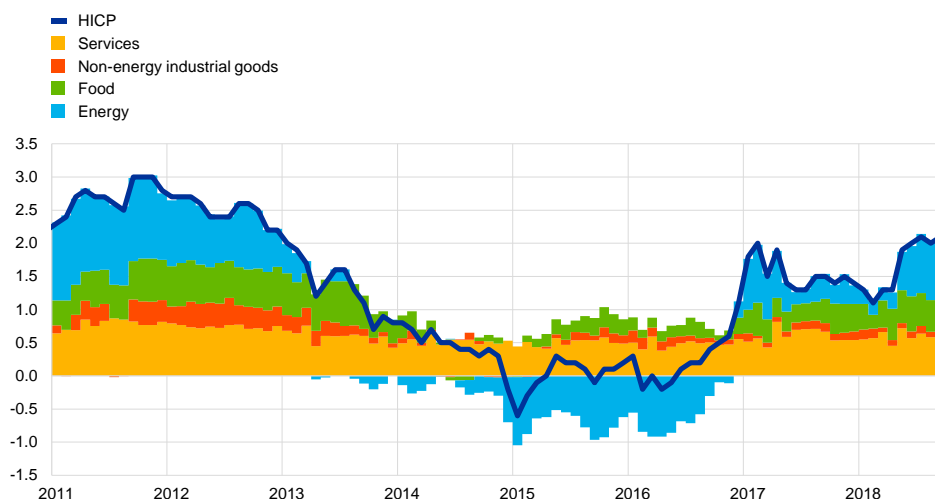
### **Euro area annual HICP inflation was 2.1% in September, up from 2.0% in August (see Chart 7).**

This increase reflected slightly higher contributions from food and energy price inflation, while the contributions of services and non-energy industrial goods price inflation were unchanged. Energy prices made a large contribution to headline inflation over recent months. The contribution varies significantly across euro area countries, due partly to differences in the degree of pass-through of oil prices to consumer energy prices (see the box entitled “The role of energy prices in recent inflation outcomes: a cross-country perspective” 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 September 2018.

**Measures of underlying inflation have remained generally muted but stand above earlier lows.** HICP inflation excluding energy and food was 0.9% in September, the same as in August (revised down from an initial 1.0%). Over the same period, HICP inflation excluding energy, food and highly volatile components, such as travel-related items, clothing and footwear, was stable. Sideways developments over recent months were also highlighted by 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 non-energy industrial goods in the HICP continued to increase.** The annual inflation rate for imported non-food consumer goods increased to -0.4% in July, up from its recent trough of -2.7% in April. Producer price inflation for domestic sales of non-food consumer goods increased from 0.5% in

June to 0.6% in July and August.<sup>2</sup> This was the highest outturn since late 2012, marking a continuation in the pick-up from the low of around 0.0% on average in 2016. Such resilience to downward pressure from the strong appreciation of the euro in 2017 may reflect the offsetting impact of strengthening domestic cost pressures. Price pressures remained strong in earlier stages of the supply chain; producer price inflation for intermediate goods was 3.2% in August, the same rate as in July.

**Wage growth developments point to increasing domestic cost pressures.** All the main sectors and most euro area countries contributed to the increase in annual growth in compensation per employee over recent quarters. This broad-based rise in wage growth, together with information on negotiated wage agreements covering the next one to two years, supports the expectation of a further pick-up. Overall, recent developments in wage growth have followed the direction of improving labour market conditions, as other factors that have weighed on wage growth – including past low inflation and the impact of labour market reforms implemented in some countries during the crisis – continue to fade.

**Both market and survey-based measures of longer-term inflation expectations have remained stable (see Chart 8).** On 24 October the five-year inflation-linked swap rate five years ahead stood at 1.67%. The forward profile of market-based measures of inflation expectations continues to point to a gradual return of inflation to levels below, but close to, 2%. The risk-neutral probability of deflation over the next five years implied by inflation options markets remains negligible. The results of the [ECB Survey of Professional Forecasters \(SPF\) for the fourth quarter of 2018](#) show average headline inflation expectations of 1.7% for each of 2018, 2019 and 2020. This is unchanged from the profile in the previous survey. According to the SPF, average longer-term inflation expectations for the euro area continued to stay at 1.9%.

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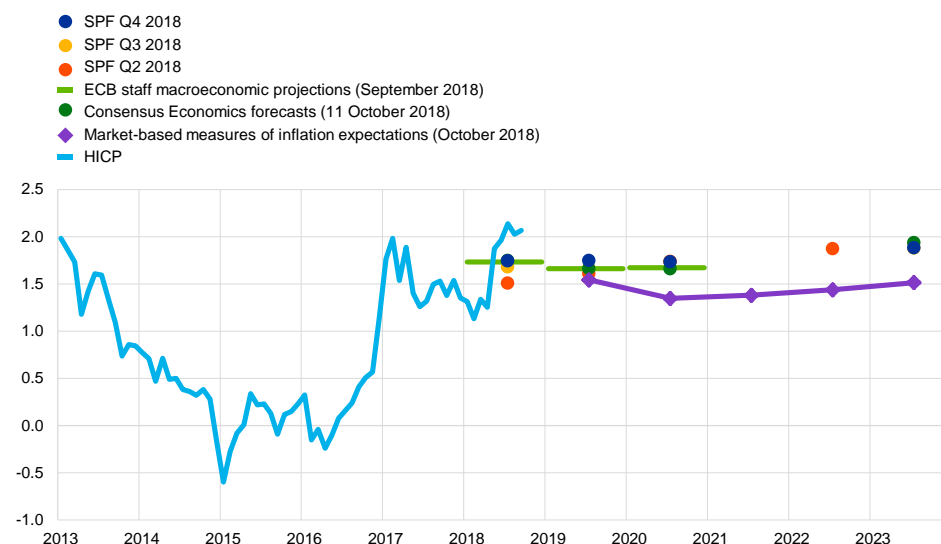
<sup>2</sup> Euro area producer price indices for August 2018 do not include data for Germany, which were only published after the release of euro area indices due to the incorporation of new index weights. The November release of euro area producer price indices for September 2018 will include new and revised data for Germany; euro area indices will be revised accordingly.



## Chart 8

### Market and survey-based measures of inflation expectations

(annual percentage changes)



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

Notes: The SPF for the second quarter of 2018 was conducted between 4 and 10 April 2018. The SPF for the third quarter of 2018 was conducted between 2 and 6 July 2018. The SPF for the fourth quarter of 2018 was conducted between 1 and 5 October 2018. 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 24 October 2018. In the SPF for the second quarter of 2018 the longer-term expectation referred to 2022, whereas in the SPF for the third and fourth quarter of 2018 it referred to 2023.

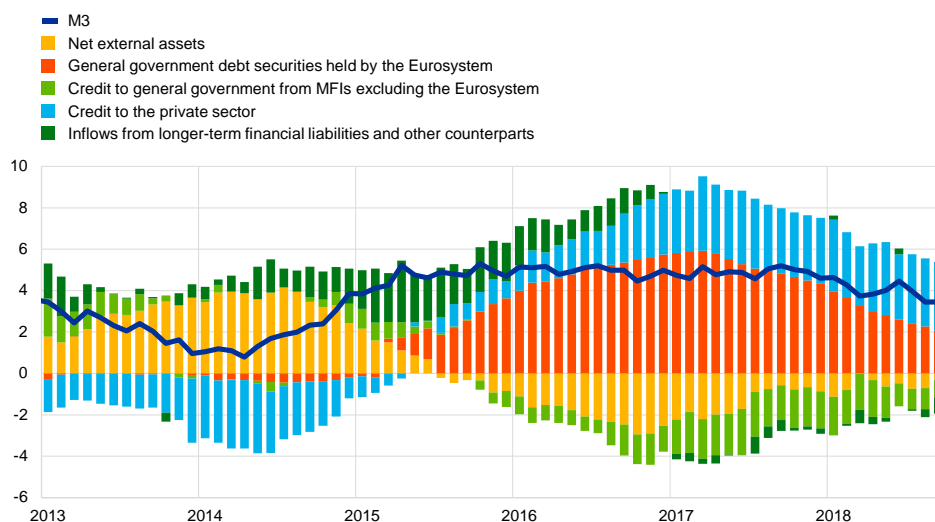
**Residential property prices in the euro area continued to rise in the second quarter of 2018.** According to the ECB's residential property price indicator, prices for houses and flats in the euro area increased by 4.1% year on year in the second quarter of 2018, down from 4.3% in the first quarter of 2018, confirming a further consolidation of the house price cycle.

## 5 Money and credit

**Broad money growth remained broadly stable in September.** The annual growth rate of M3 interrupted the decline from its last peak (5.2%) in September 2017, increasing to 3.5% in September from 3.4% in August (see Chart 9) owing to a significant inflow into overnight deposits. Moreover, the reduction in net asset purchases (from €80 billion to €60 billion in April 2017, and then to €30 billion in January 2018) has meant that the asset purchase programme (APP) is having a smaller positive impact on M3 growth. The annual growth rate of M1, which includes the most liquid components of M3, again made a significant contribution to broad money growth and increased to 6.8% in September (up from 6.4% in August). 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)



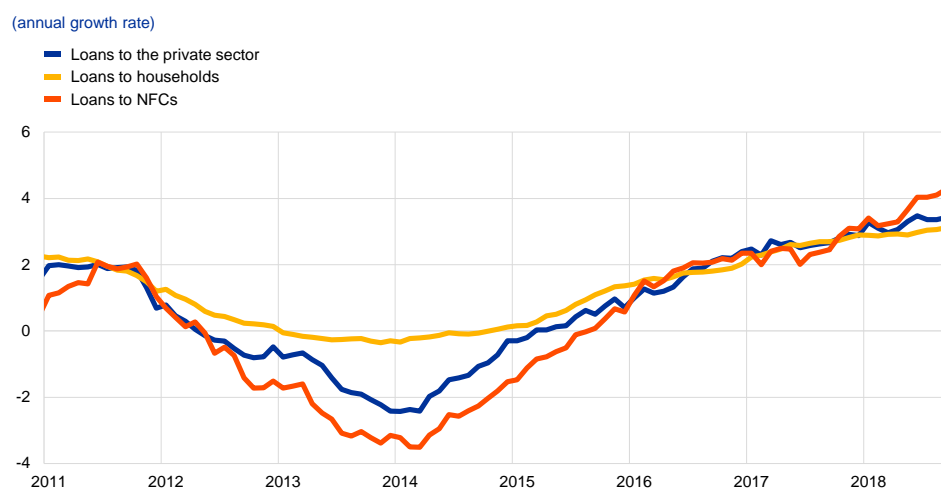
Source: ECB.

Notes: Credit to the private sector includes monetary financial institution (MFI) loans to the private sector and MFI holdings of securities issued by the euro area private non-MFI sector. As such, it also covers the Eurosystem's purchases of non-MFI debt securities under the corporate sector purchase programme. The latest observation is for September 2018.

**Domestic sources of money creation remained the main driver of broad money growth.** From a counterpart perspective, there was a further decline in the positive contribution to M3 growth from general government securities held by the Eurosystem (see the red parts of the bars in Chart 9), in the context of the aforementioned reduction in monthly net purchases under the APP. The decreasing contribution to M3 growth from the Eurosystem's asset purchases has been offset by a moderate increase in the contribution from credit to the private sector since late 2017 (see the blue parts of the bars in Chart 9). By contrast, government bond sales by euro area MFIs excluding the Eurosystem dampened M3 growth (see the light green parts of the bars in Chart 9). Finally, the negative contribution from net external assets, which reflects both global uncertainty and investors' preferences, moderated in September (see the yellow parts of the bars in Chart 9).

**The growth of loans to the private sector strengthened further, continuing the upward trend observed since the beginning of 2014.** The annual growth rate of MFI loans to the private sector (adjusted for loan sales, securitisation and notional cash pooling) was stable in September at 3.4% (see Chart 10). It benefitted from an increase in the annual growth rate of loans to non-financial corporations (NFCs), which reached 4.3% in September, up from 4.1% in August. At the same time, the annual growth rate of loans to households remained stable at 3.1%. 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.<sup>3</sup>

**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 September 2018.

**Loan growth continued to be supported by easing credit standards and increasing demand in the third quarter of 2018.** According to the October 2018 [euro area bank lending survey](#), the net easing of credit standards was driven mainly by competitive pressure and lower risk perceptions. Banks also reported increasing net loan demand across all loan categories, which is largely due to the low general level of interest rates, fixed investment, inventories and working capital, merger and acquisition (M&A) activity, favourable housing market prospects and consumer confidence. With regard to the APP, banks stated that it had improved their liquidity position and market financing conditions, but that it had negatively affected their profitability owing to the squeeze on net interest rate margins. The APP had an easing impact on credit terms and conditions across all loan categories. Moreover, it had a positive impact on banks' lending volumes, but less than in the previous reporting

<sup>3</sup> See also Chapter 3 of the "[Financial Stability Review](#)", ECB, May 2018.

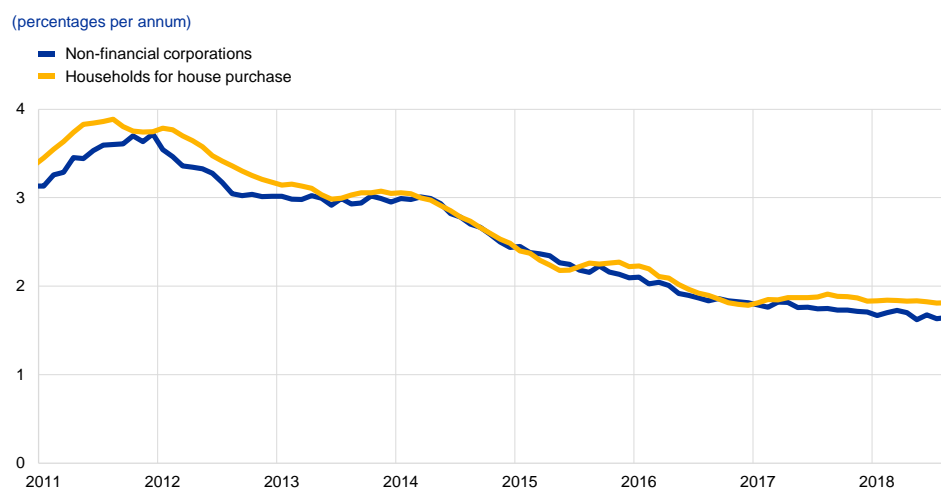
period. Furthermore, the ECB's negative deposit facility rate was said to be having a positive effect on lending volumes, while weighing on banks' net interest income.

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

In August 2018 the composite bank lending rate for loans to NFCs remained broadly stable at 1.65%, which is very close to its historical low seen in May of this year. The composite bank lending rate for housing loans remained stable in August at 1.81%, which is also close to its historical low from 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 on loans to NFCs, as well as on loans to small firms (assuming that very small loans of up to €0.25 million are granted mainly 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 August 2018.

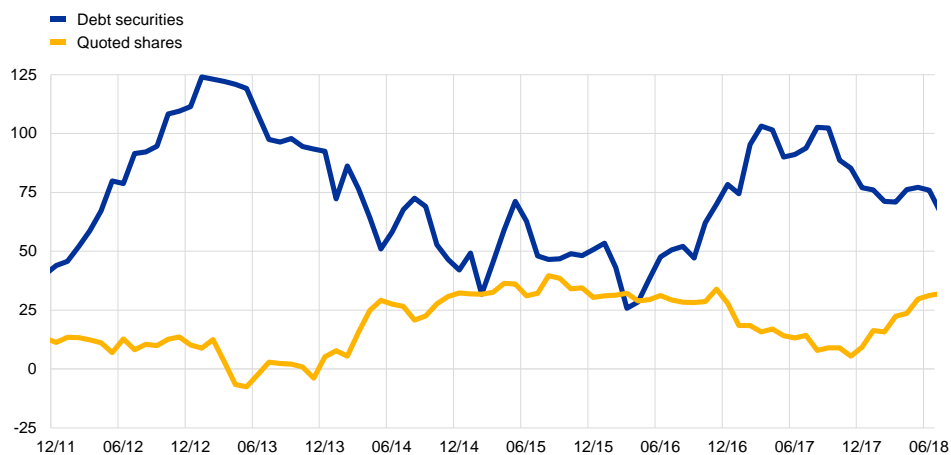
### Net issuance of debt securities by euro area NFCs declined in the first two months of the third quarter of 2018 compared with the equivalent months in the previous quarter.

The latest ECB data indicate that, on a net basis, the total flow of debt securities issued by NFCs in July and August 2018 remained marginally positive and in line with the typical seasonal patterns observed over the last few years. From a more medium-term perspective (see Chart 12), the annual flows of debt securities continued to decline from the peaks reached around a year ago. Available market data suggest there was a considerable increase in the amount of debt securities issued over the period from September to October 2018. Total net issuance of quoted shares by NFCs was negative in July and August 2018, in line with the seasonal pattern of the series. Notwithstanding a slight decline in August relative to the previous month, annual flows 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 August 2018.

**Financing costs for euro area NFCs increased marginally in the first two months of the third quarter of 2018.**

The overall nominal cost of external financing for NFCs, comprising bank lending, debt issuance in the market and equity finance, rose to around 4.7% in August, up from 4.6% in June, and is projected to have remained at this level in September and October. Although the cost of financing is currently estimated to stand around 41 basis points above the historical low of August 2016, it is still considerably below the levels observed in the summer of 2014. The increase in the cost of financing since the end of the second quarter of 2018 reflects an increase in the cost of equity and, more recently, an increase 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 Purchases of green bonds under the Eurosystem’s asset purchase programme

Prepared by Roberto A. De Santis, Katja Hettler, Madelaine Roos and Fabio Tamburrini

**This box analyses the impact of the Eurosystem’s asset purchase programme (APP) on the growing market for green bonds<sup>4</sup>.** It describes the composition of the Eurosystem’s green bond holdings and assesses developments in prices and outstanding volumes of green bonds, before discussing the extent to which these may have been affected by the APP.

**The APP aims to support a sustained adjustment in the path of inflation that is consistent with the ECB’s primary objective of price stability, defined as an inflation rate below, but close to, 2% over the medium term.** Eligibility criteria for the APP are deliberately broad in order to provide a large range of purchasable securities. This supports the effectiveness of the programme and avoids distortions of specific market segments. The implementation of the APP is guided by the principle of market neutrality and does not positively or negatively discriminate on the basis of environmental or any other criteria. In the specific case of the corporate sector purchase programme (CSPP), which aims to further strengthen the pass-through of the benefits of the asset purchases to financing conditions in the real economy, the purchases of securities issued by non-bank corporations reflect proportionally the market value of all eligible bonds in terms of sectors of economic activity and rating groups.

**Despite the absence of an explicit environmental target in the APP, ECB has purchased green bonds under both the CSPP and the public sector purchase programme (PSPP).** These purchases have contributed to the establishment of a well-diversified portfolio.

**The term “green bond” refers to debt securities whose proceeds are used to finance investment projects with an environmental benefit.** There are different approaches to defining and certifying green bonds, and no global market standard has emerged so far.<sup>5</sup> While many green bonds are self-labelled, some jurisdictions have developed their own certification framework and others rely on various different guidelines.<sup>6</sup> As well as reducing transparency for investors, it is believed that the lack of standardised definitions and reporting requirements and the varying granularity of

<sup>4</sup> In this box, “green bonds” are defined on the basis of the Bloomberg classification of the bonds’ use of proceeds, where proceeds are exclusively applied to new and existing green projects, defined as projects and activities that promote climate or other environmental sustainability purposes.

<sup>5</sup> For an overview of existing definitions and certifications, see Ehlers, T. and Packer, F., “[Green bond finance and certification](#)”, *BIS Quarterly Review*, September 2017.

<sup>6</sup> See, for example, “[Green Bond Principles](#)”, International Capital Market Association, 2018.

the underlying classifications are holding back supply,<sup>7</sup> inter alia because issuers face reputational risks and potential accusations of “greenwashing” if proceeds are not used for their declared purposes.<sup>8</sup> The ECB supports current EU initiatives under the European Commission’s action plan on sustainable finance to create a harmonised definition of “green” assets (taxonomy), which could improve transparency and facilitate the supply of green debt instruments.

**The market for green bonds has developed rapidly in recent years**, with global issuance rising from less than €1 billion in 2008 to more than €120 billion in 2017 (see Chart A, panel b). Euro-denominated net green bond issuance has increased ten-fold since 2013 (see Chart A, panel a). During the period 2013-2018, total net euro-denominated green investment grade issuance in the euro area represented around 24% of global net green issuance. However, despite the recent growth, in the same period green bonds still accounted for only 1% of the overall bond supply denominated in euro. Green bonds are not unlike other bonds in that they tend to price tighter than the initial price guidance and tend to be oversubscribed. They generally offer similar yields to comparable conventional bonds, but there is evidence that in some market segments issuers can borrow at lower rates than via conventional bonds, which is consistent with the interpretation that investors are prepared to forgo some income as a result of their self-imposed investment constraints.<sup>9</sup>

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<sup>7</sup> See “[Green Bonds: Country Experiences, Barriers and Options](#)”, input report prepared for the G20 Green Finance Study Group, 2016.

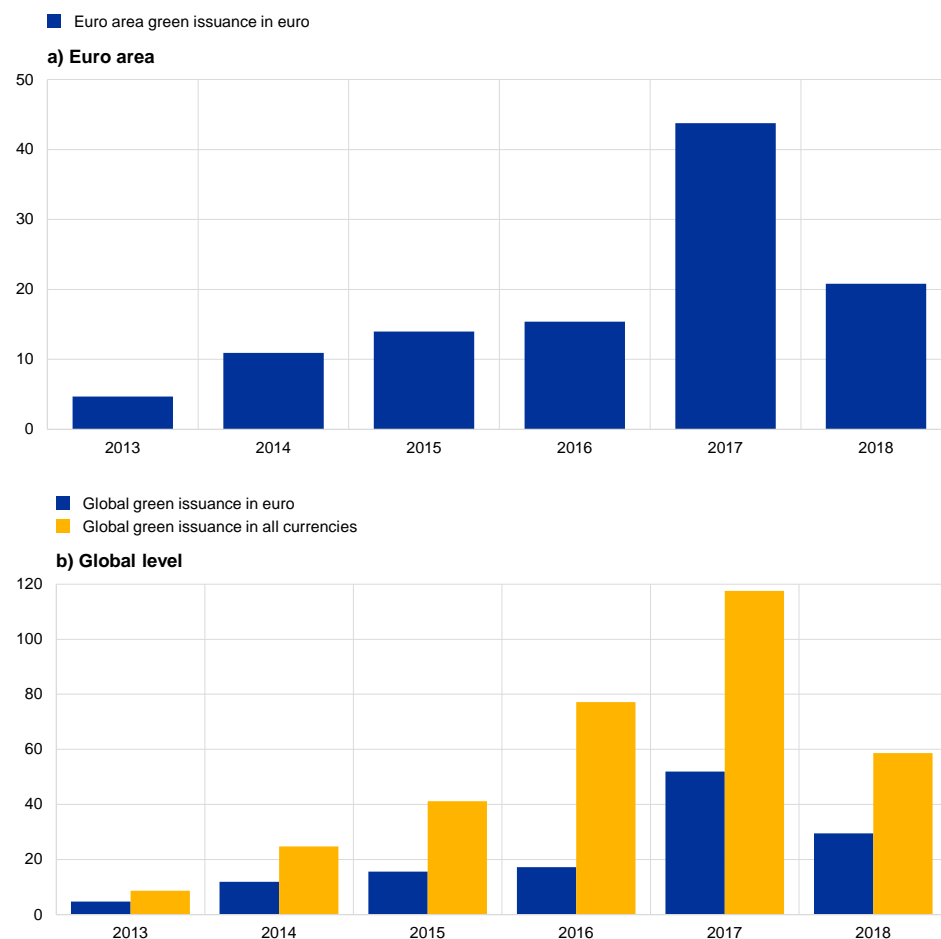
<sup>8</sup> See Wang, E.K., “[Financing Green: Reforming Green Bond Regulation in the United States](#)”, *Brooklyn Journal of Corporate, Financial & Commercial Law*, Vol. 12, No 2, 2017, pp. 467-491.

<sup>9</sup> See Ehlers, T. and Packer, F., op. cit.; and Baker, M., Bergstresser, D., Serafeim, G. and Wurgler, J., “[Financing the Response to Climate Change: The Pricing and Ownership of U.S. Green Bonds](#)”, *NBER Working Paper*, No 25194, October 2018.

## Chart A

### Net issuance of euro-denominated green bonds

(EUR billions)



Sources: Bloomberg and ECB calculations.  
Note: Data for 2018 refer to issuance from January to August.

**Green bond purchases under the CSPP are broadly in line with the growing share of green bonds in the eligible universe.** The CSPP-eligible green corporate bond universe currently has an outstanding volume of €31 billion (see Chart B, right panel), of which the Eurosystem holds close to 20% – in line with the 20% holding of the Eurosystem in the entire CSPP-eligible universe. In the overall CSPP-eligible universe, green bonds represent a small but growing segment, contributing around 4% to the total (see Chart B, left panel). Looking more closely at the distribution by economic sector, green bond issuance is not evenly spread across industries and shows a significant concentration in carbon-intensive sectors, such as utilities, infrastructure, transportation and construction.<sup>10</sup> Companies in these sectors issue green bonds to finance the adoption of more efficient technologies, reduce their carbon footprints and reorient their energy portfolios towards renewable sources. While these sectors jointly account for 35% of overall bond issuance in the CSPP-eligible universe, they account for 94% of the CSPP-eligible green bond

<sup>10</sup> Based on internal ECB classifications. According to Eurostat data, utilities, infrastructure, transportation and construction accounted for 67% of total greenhouse gas emissions in the EU in 2015.

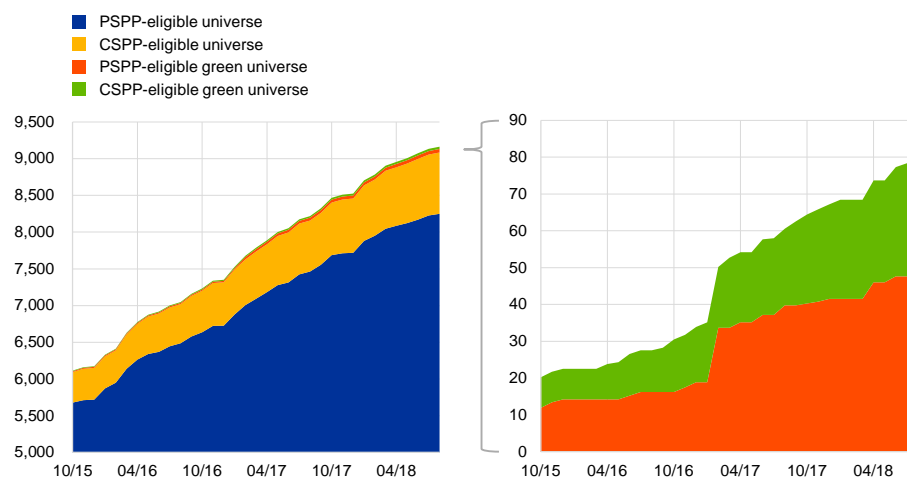


issuance. The concentration of green bonds in these sectors is also reflected in the CSPP portfolio.

### Chart B

#### CSPP and PSPP-eligible universe and eligible green bonds – amounts outstanding

(EUR billions)



Sources: Bloomberg and ECB calculations.

Notes: Based on amounts outstanding in nominal terms. The latest observation is for 31 August 2018.

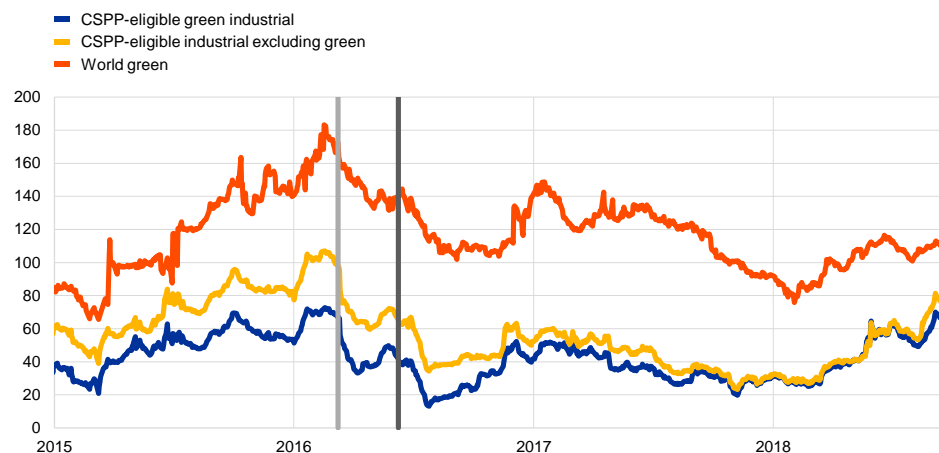
**Since the CSPP announcement on 10 March 2016, green corporate bond spreads have steadily declined, and a significant part of this effect can be attributed to the Eurosystem’s purchases.** In the industrial sector, the evolution of the average corporate bond spread for CSPP-eligible green bonds mirrors that for other CSPP-eligible bonds (see Chart C). The change in spreads for eligible green bonds in the period after the CSPP announcement (from 10 March 2016 to the end of December 2017) was compared with that in the period prior to the announcement (1 April 2015 to 9 March 2016), controlling for other determinants that may affect corporate bond spreads, such as bond-specific credit risk. The CSPP accounted for an average decline in spreads for eligible green bonds of 25 basis points, which was almost the entire drop recorded after the announcement of the programme. Since the end of 2016, in conjunction with the simultaneous rapid growth in bond supply and the increase in green bond spreads globally, the gap between spreads of green bonds and those of the overall industrial sector have gradually closed, and the yields of green and conventional bonds have tightly co-moved since the end of 2017.<sup>11</sup>

<sup>11</sup> The increase in green corporate bond spreads at the end of 2016 was due in part to technical factors. On 10 October 2016 a new €1.75 billion issue from Electricité de France increased the volume-weighted average of green corporate bond spreads by six basis points from 25 to 31 basis points.

## Chart C

### CSPP-eligible bond spreads in the industrial sector and global green bond spreads

(Z-spread, basis points)



Sources: Bloomberg and ECB calculations.

Notes: Z-spread volume-weighted averages based on bonds with (i) issued amounts above €250,000, (ii) rating buckets ranging from A to BBB and (iii) residual maturity ranging from 3 to 11 years for CSPP-eligible bonds or from 1.5 to 20 years for global green bonds. Extreme outliers for global green bond spreads were removed. The vertical lines denote the announcement of the CSPP on 10 March 2016 (light grey line) and the start of purchases under the CSPP on 8 June 2016 (dark grey line). The latest observation is for 27 September 2018.

#### Issuance of green bonds picked up immediately after the announcement of the CSPP in March 2016 and has been rising ever since.

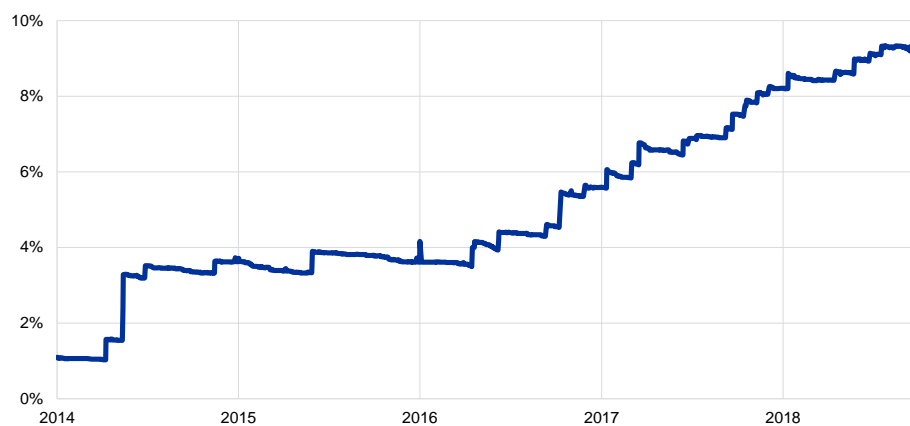
The ratio of the amount outstanding of green bonds to the total amount outstanding in the industrial sector, including utilities, infrastructure, transportation and construction, has increased steadily since the announcement of the CSPP, from under 4% in March 2016 to over 9% at the end of September 2018 (see Chart D). These results are consistent with previous findings on the impact of the CSPP on overall bond issuance by non-financial corporations, which increased after the announcement of the programme, particularly among eligible issuers.<sup>12</sup> These findings are corroborated by an analysis of the more homogenous utilities sector as well as for specific maturities. It should be noted, however, that this positive trend partly reflects a world-wide phenomenon, as green bond issuance has increased globally, from less than €10 billion in 2013 to almost €120 billion in 2017.

<sup>12</sup> For an overview of the of the CSPP impact, see the article entitled “[The impact of the corporate sector purchase programme on corporate bond markets and the financing of euro area non-financial corporations](#)”, *Economic Bulletin*, Issue 3, ECB, 2018.

### Chart D

Volume of CSPP-eligible green bonds relative to total CSPP-eligible bonds in the industrial sector

(percentages)



Sources: Bloomberg and ECB calculations.

Notes: Based on amounts outstanding in nominal terms. The latest observation is for 27 September 2018.

**The Eurosystem has also purchased green bonds issued by sovereigns, agencies and supranational institutions since the start of the PSPP, with a growing presence over time.** The volume of eligible green bonds issued by such public sector entities is small relative to the PSPP-eligible universe (less than 1%). While multilateral development banks such as the European Investment Bank and agencies like Kreditanstalt für Wiederaufbau have a long history of issuing green bonds and account for a relative large share of the total issuance of PSPP-eligible green bonds (see Chart E, panel a), governments entered the green bond market only recently, with the French Treasury becoming the first euro area sovereign to issue a green bond in January 2017. Governments, however, show a tendency to tap the market on a large scale, exceeding the amounts that are issued by corporates in the same jurisdiction (see Chart E, panel b). Overall, green bonds issued by public sector entities contribute a volume of €48 billion to the PSPP-eligible universe, out of which the Eurosystem currently holds 24%, which is broadly in line with its total PSPP holdings of the entire PSPP universe and compares with a share of 15% in 2015.

Overall, while the amount of green bonds held by the Eurosystem remains relatively small, evidence suggests that through its purchases the Eurosystem has reduced yields of green bonds and supported their issuance by non-financial corporations.

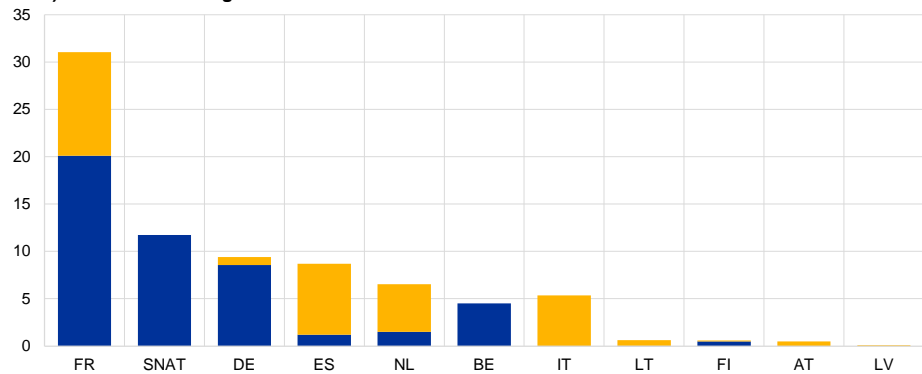
### Chart E

#### Public and corporate sector green bond issuance by jurisdiction (amounts outstanding)

(EUR billions)

■ PSPP universe  
■ CSPP universe

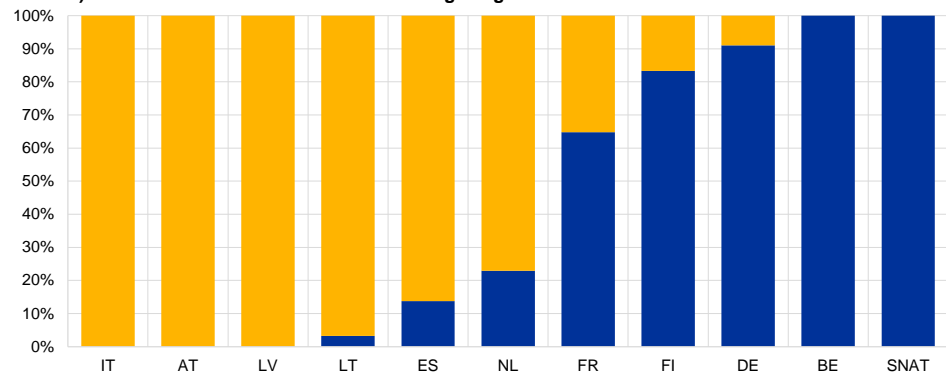
##### a) Total issuance of green bonds



(percentages)

■ PSPP universe  
■ CSPP universe

##### b) Shares in combined PSPP and CSPP-eligible green issuance



Sources: Bloomberg and ECB calculations.

Notes: SNAT stands for supranational entities, which includes multilateral development banks. Data refer to the period from January 2012 to August 2018.

## 2 The geography of the euro area current account balance

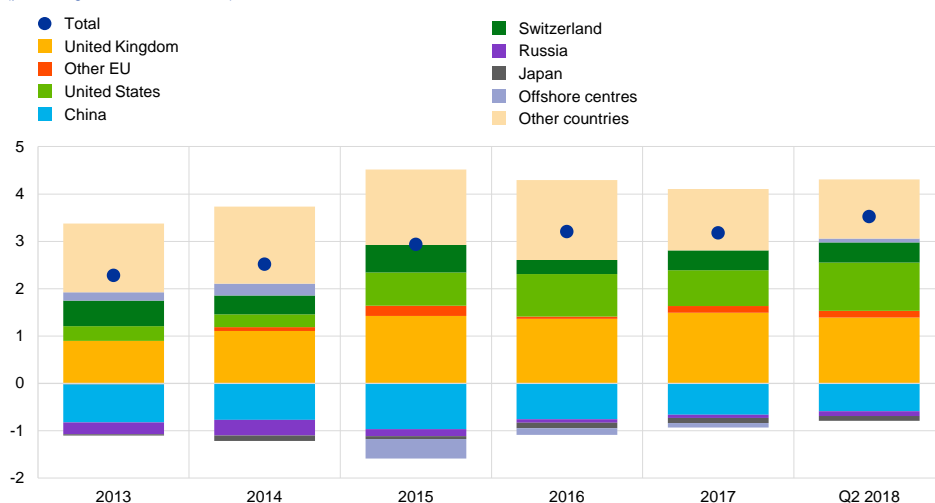
Prepared by Michael Fidora and Martin Schmitz

**The composition of the euro area current account balance in terms of its geographical counterparts has been fairly stable in recent years, with the euro area's most important trading partners accounting for the largest part of the bilateral surpluses and deficits (see Chart A).** Newly available data on the geographical breakdown of the euro area current account balance reveal that the largest share of the euro area's external surplus of 3.5% of GDP in the year to the end of the second quarter of 2018 was accounted for by the United Kingdom and the United States, which contributed 1.4% and 1.0% of euro area GDP, respectively, followed by Switzerland (0.4% of euro area GDP). China, on the other hand, contributed negatively (about -0.6% of euro area GDP) to the current account balance of the euro area. At the same time, the impact of all other major trading partners for which a geographical breakdown is available was relatively limited, while a residual group of countries – including major oil producers – also contributed positively to the euro area's external surplus (about 1.3% of euro area GDP).

### Chart A

#### Current account balance by geographical counterpart

(percentages of euro area GDP)



Source: ECB.

Notes: "Q2 2018" refers to the four quarters to the end of the second quarter of 2018. "Other EU" comprises EU Member States and EU institutions outside the euro area, excluding the United Kingdom.

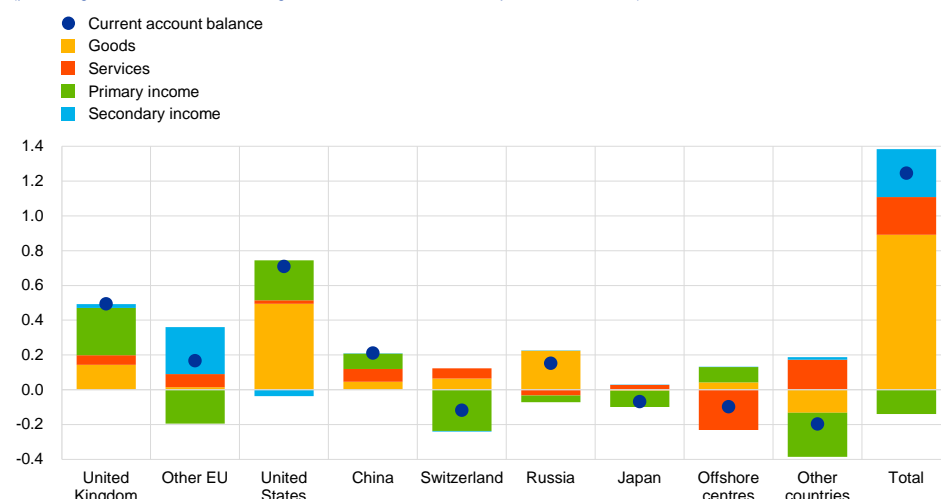
**The bulk of the increase in the euro area's current account surplus of about 1.2 percentage points of GDP since 2013 was accounted for by improvements vis-à-vis the euro area's three largest trading partners (see Chart B).** Over this period, the euro area's current account surpluses vis-à-vis the United States and the United Kingdom increased by 0.7 and 0.5 percentage point of euro area GDP, while the euro area's current account deficit with China narrowed by 0.2 percentage point of euro area GDP. Moreover, the euro area's current account balance also improved vis-à-vis non-euro area EU countries (excluding the United Kingdom) and Russia,

while, for all other major trading partners, the euro area's current account balance deteriorated.

### Chart B

#### Change in the main components of the current account balance by geographical counterpart

(percentages of euro area GDP, change between 2013 and the four quarters to Q2 2018)



Source: ECB.

Note: "Other EU" comprises EU Member States and EU institutions outside the euro area, excluding the United Kingdom.

**The largest changes in the geographical breakdown of the euro area current account balances since 2013 were recorded for trade in goods and primary income (see Chart B).** Improvements in the bilateral current account balances mostly reflected increases in balances of trade in goods and primary income balances, in particular in the cases of the United Kingdom and the United States. At the same time, decreases in the current account balances were mostly due to a deterioration in bilateral primary income balances,<sup>13</sup> in particular vis-à-vis Switzerland, Japan and the residual group of countries. Moreover, the euro area recorded an improvement in its secondary income balance<sup>14</sup> vis-à-vis the rest of the EU (excluding the United Kingdom) owing to a decline in contributions to the EU budget.

**Improvements in the balance of the euro area's bilateral trade in goods since 2013 were largely export-driven in an environment of buoyant global demand, while imports also picked up overall (see Chart C).** The largest increase in net exports was recorded vis-à-vis the United States. This was due to a strong increase in exports to the United States, which exceeded a modest increase in imports into the euro area, reflecting stronger domestic demand in the United States and the appreciation of the US dollar against the euro. At the same time, net exports also increased significantly vis-à-vis Russia as the result of a strong reduction in trade

<sup>13</sup> Primary income represents the return that accrues to resident institutional units on their contribution to the production process or for the provision of financial assets and renting natural resources to non-resident institutional units (e.g. compensation of employees, dividends and interest).

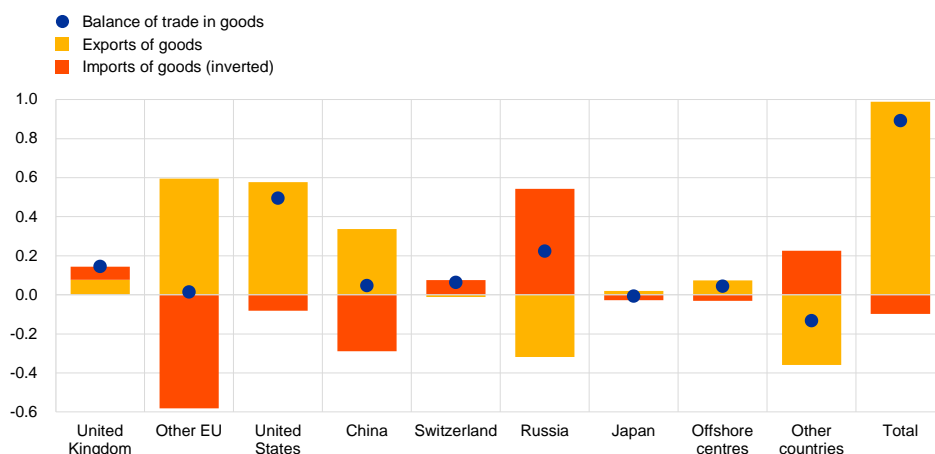
<sup>14</sup> Secondary income pertains to those current transfers between residents and non-residents that directly affect the level of gross national disposable income and thus influence the economy's ability to consume goods and services (such as international cooperation and workers' remittances).

values, including a significant decline in euro area imports in the light of the depreciation of the Russian rouble and falling commodity prices. For the other trading partners, changes in net exports were less significant. In particular, net exports to other EU countries and China changed only marginally, reflecting a relatively balanced, robust expansion of trade with those trading partners. The strong expansion of bilateral trade with other EU countries was driven by the economic recovery in the EU and, in particular, the resurgence of value chains since the trade collapse triggered by the global financial crisis. At the same time, net goods exports to the United Kingdom and Switzerland increased slightly, partly on account of a decline in imports from those countries. The euro area recorded a slight worsening of net exports vis-à-vis the residual group of other countries, reflecting an overall reduction in export and import values, the latter mostly related to the observed decline in commodity prices.

### Chart C

#### Change in exports and imports of goods by geographical counterpart

(percentages of GDP, change between 2013 and the four quarters to Q2 2018)



Source: ECB.

Notes: The inverse of the change in imports of goods is shown on the chart, so a negative value denotes an increase and a positive value a decrease. "Other EU" comprises EU Member States and EU institutions outside the euro area, excluding the United Kingdom.

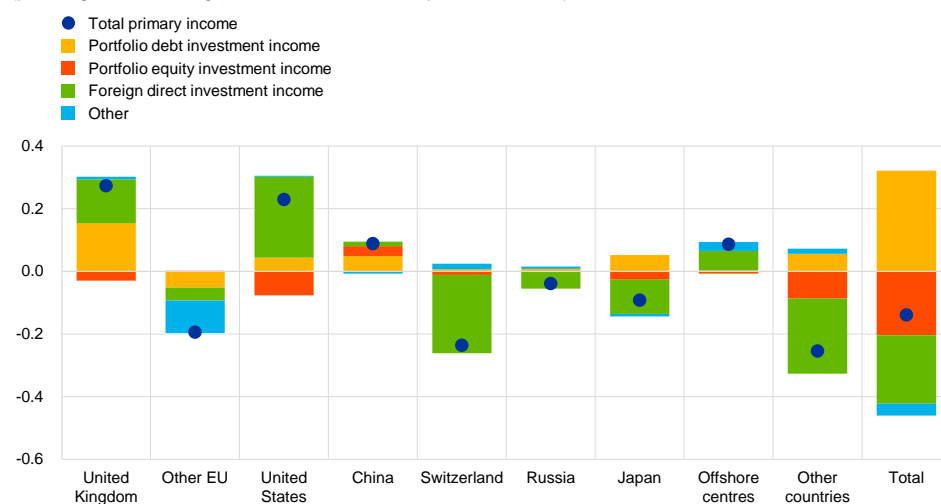
**Developments in bilateral primary income balances since 2013 were largely driven by income on foreign direct investment (FDI) – which evolved rather heterogeneously across geographical counterparts – and income on portfolio debt investment (see Chart D).** The euro area's FDI income balance is largely shaped by the operations of multinational enterprises (MNEs) resident inside and outside the euro area. In particular, MNEs' investment decisions and profitability determine the evolution of FDI income. The largest improvement in the euro area's FDI income balance was recorded vis-à-vis the United States, followed by the United Kingdom. This mainly reflected a larger increase in FDI positions of euro area residents in the United States and the United Kingdom than in FDI positions of United States and United Kingdom residents in the euro area. Conversely, the euro area's FDI income balance declined most significantly vis-à-vis Switzerland, Japan and the residual group of countries. For the first two, this is in line with a relative increase in Swiss and Japanese residents' FDI positions in the euro area. In the case of the residual group of countries, the decline in the FDI income balance was driven by lower

(operational) profits recorded on euro area foreign direct investment in these destinations. The increase in the investment income balance on portfolio debt vis-à-vis the United Kingdom, the United States and Japan reflects the pronounced shift by euro area investors towards debt securities issued by entities resident in those countries in recent years, as well as a decline in yields on euro area debt securities.<sup>15</sup>

#### Chart D

#### Change in the main components of the primary income balance by geographical counterpart

(percentages of GDP, change between 2013 and the four quarters to Q2 2018)



Source: ECB.

Notes: "Other EU" comprises EU Member States and EU institutions outside the euro area, excluding the United Kingdom. "Other" includes compensation of employees, investment income on other investment and reserve assets and other primary income. All income on reserve assets is allocated to "Other countries".

<sup>15</sup> See Fidora, M. and Schmitz, M., "Factors driving the recent improvement in the euro area's international investment position", *Economic Bulletin*, Issue 3, ECB, 2018.



## 3 Investment in intangible assets in the euro area

Prepared by Malin Andersson and Lorena Saiz

**Investment in intangible assets enables productivity gains.** Intangible assets<sup>16</sup> are non-monetary assets without physical or financial substance. They encompass a broad range of highly heterogeneous assets, including human capital, innovative products, brands, patents, software, consumer relationships, databases and distribution systems. Some of these assets enable firms to obtain productivity gains and efficiencies from new technologies and, as such, play a strategic role in a firm's value creation. This box reviews the characteristics of intangibles and looks at a number of implications of their increasing importance.

**Investment in intangible assets has increased in importance in the euro area, both in absolute terms and relative to tangible assets, with several factors contributing to that development.** In euro area countries and other advanced economies, investment in intangibles has grown strongly in recent decades. Over the last 20 years, growth in intellectual property products – a group of intangible assets included in the national accounts<sup>17</sup> – has outpaced growth in tangible investment in the euro area (see Chart A). Investment in those products has also made a significant contribution to annual growth in euro area non-construction investment over the last two decades (see Chart B). The fact that the growth rate of intangibles is higher than that of tangibles is being driven by factors such as the increase in global competition, the sectoral shift from industry to services, the expansion of the digital economy, changing international specialisations in the area of production, new business models (e.g. for tax optimisation purposes) and general technological advances.

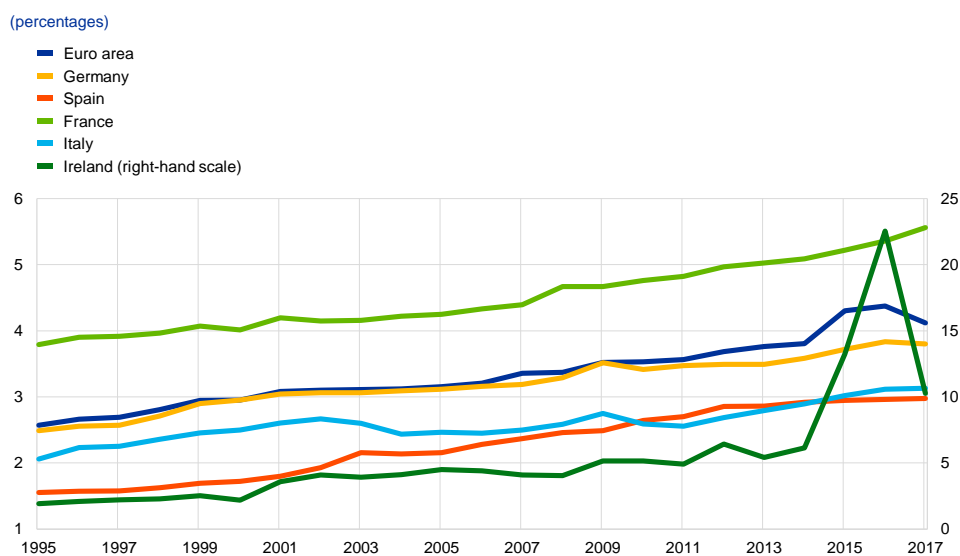
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<sup>16</sup> More specifically, intangibles comprise investment relating to (i) computing and computerised information (such as software and databases), (ii) innovative properties and company competencies (such as scientific and non-scientific R&D, copyrights, designs and trademarks), and (iii) economic competencies (including brand equity, firm-specific human capital, networks linking people and institutions together, organisational know-how that increases efficiency, and aspects of advertising and marketing). These are sometimes referred to as "intellectual assets", "knowledge assets" or "intellectual capital".

<sup>17</sup> In 2014 the current methodological standards for national accounts, SNA 2008 and ESA 2010, began regarding spending on purchased and own-account R&D as investment. As a result, intangible investment now includes spending on ICT equipment and intellectual property products. ESA 2010 defines intellectual property products as knowledge derived from R&D, investigations or innovation which is restricted by law or other means of protection in terms of its use. Intangible assets such as human capital, consumer relationships and distribution systems are not covered by the national accounts.

## Chart A

### Intangible investment as a percentage of total investment

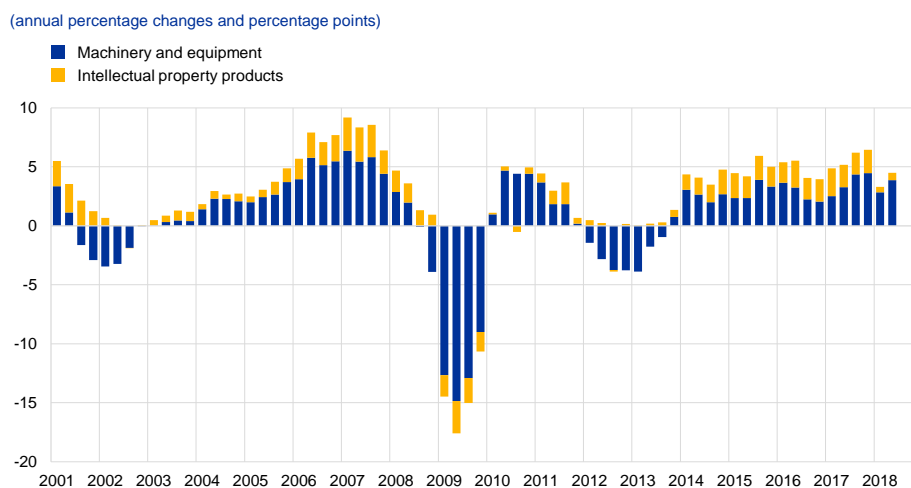


Sources: Eurostat and ECB calculations.

Notes: Here, "intangible investment" refers to intellectual property products included in the national accounts. Volatility in Irish and Dutch data, which is mainly due to intellectual property-related transactions conducted by large multinational companies, makes a significant contribution to fluctuations in euro area data.

## Chart B

### Breakdown of growth in euro area non-construction investment



Sources: Eurostat and ECB calculations.

Note: Data for Belgium and Cyprus are not available; data for Ireland and the Netherlands have been excluded on account of their volatility.

**The specific nature of intangible assets makes them less easy to use as collateral, which may result in suboptimal investment.** Intangible assets share some characteristics with tangible assets. For example, both are costly to acquire, but help to create future profits, and entail some risk-taking. However, intangible assets also have a number of specific characteristics that distinguish them from tangible

assets,<sup>18</sup> with their scalability or non-rival nature, for instance, meaning that the benefits they provide to individual users are not dependent on the total number of users. At the same time, some intangibles have little market value and the cost of producing them is almost entirely a sunk cost, which makes them hard to trade,<sup>19</sup> more likely to be firm-specific, and associated with particularly high risks for firms undertaking such investment. Finally, they are productivity-enhancing, they are often more efficient when combined with other assets (e.g. training which helps workers to use software and computers more efficiently), and they tend to generate positive spillovers and benefits for people other than those developing them (i.e. they are non-excludable). Such characteristics make them less easy to use as collateral and may therefore mean that they are more reliant on internal financing (i.e. savings) than physical capital.<sup>20</sup> Overall, those features could lead firms to underinvest in such assets.<sup>21</sup>

**Analysis based on microdata for listed companies shows that intangible assets can explain part of the gap between firms' investment in tangible assets and Tobin's Q.**<sup>22</sup> Since the financial crisis, euro area firms' investment in tangible assets has been weaker than one would expect on the basis of Tobin's Q (see Chart C, panel a). This may indicate either underinvestment or overvaluation in equity markets. Two recent publications have shown that intangible assets are able to explain some of that gap in the United States.<sup>23</sup> Regression analysis conducted for the euro area shows that including intangible assets that are not capitalised (i.e. not included in the balance sheet as assets) in both investment and Tobin's Q<sup>24</sup> reduces the size of the gap between the two (see Chart C, panel b). The sensitivity of investment to Tobin's Q also increases, albeit in all cases Tobin's Q explains only one-third of total variation in investment.

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<sup>18</sup> For more details, see Haskel, J. and Westlake, S., *Capitalism without Capital – The Rise of the Intangible Economy*, Princeton University Press, 2017. See also the appendix entitled "Characteristics of intangibles per asset type" in European Commission, "Investment in the EU Member States: An Analysis of Drivers and Barriers", *European Economy Institutional Papers*, No 062, October 2017.

<sup>19</sup> In some cases, the value of an intangible asset cannot be determined before it has generated value (i.e. there is low ex ante verifiability).

<sup>20</sup> See Falato, A., Kadyrzhanova, D. and Sim, J.W., "Rising intangible capital, shrinking debt capacity, and the US corporate savings glut", *FEDS Working Paper Series*, No 2013-67, Federal Reserve System, 2013.

<sup>21</sup> On the other hand, the potential to generate economies of scale that enhance market power provides incentives to invest in intangibles.

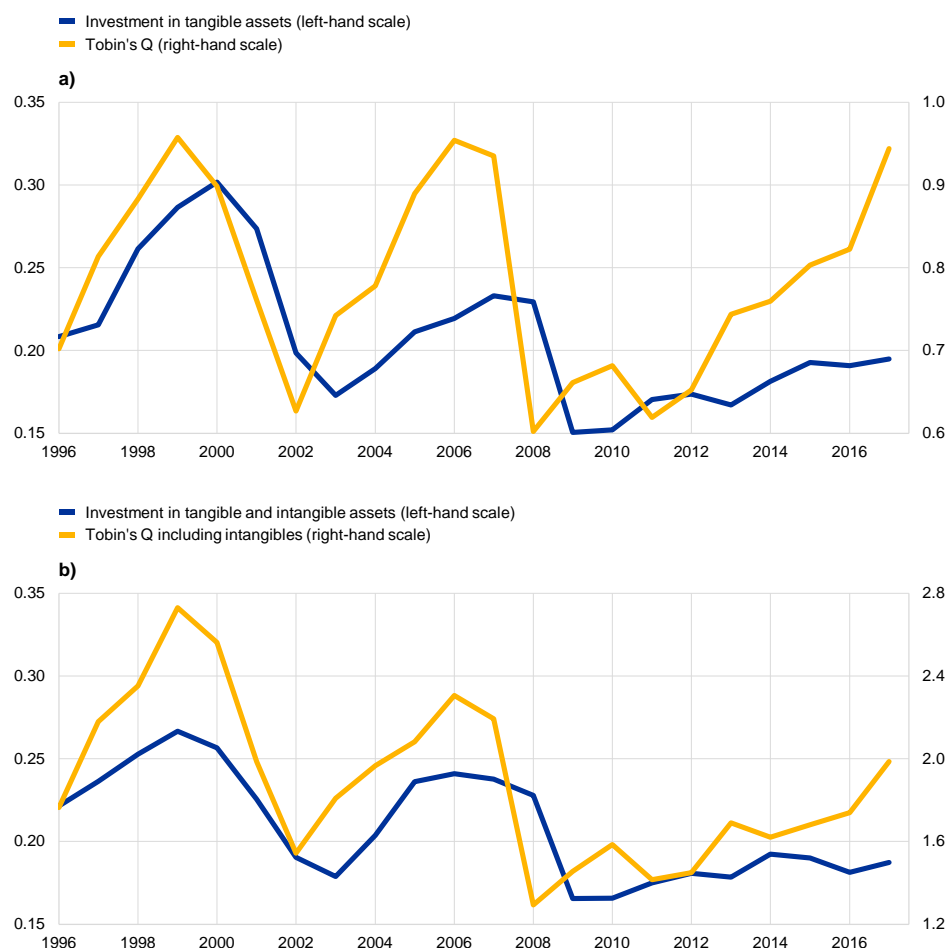
<sup>22</sup> Tobin's Q is the ratio of the market value of a firm's assets to their replacement value. If Tobin's Q is greater than 1.0, this may suggest that the market value reflects some unmeasured or unrecorded assets held by the firm. High values for Tobin's Q may encourage firms to invest more in capital assets because their value exceeds the price they paid for them, and the opposite is true where Tobin's Q is lower than 1.0.

<sup>23</sup> See Peters, R.H. and Taylor, L.A., "Intangible capital and the investment-q relation", *Journal of Financial Economics*, Vol. 123, 2017, pp. 251-272, and Crouzet, N. and Eberly, J., "Understanding Weak Capital Investment: the Role of Market Concentration and Intangibles", paper prepared for the Jackson Hole Economic Policy Symposium, 2018.

<sup>24</sup> See Peters, R.H. and Taylor, L.A., op. cit., for details.

## Chart C Investment and Tobin's Q

(median values)



Source: Worldscope (listed euro area firms).

Notes: Investment in tangible assets is defined as expenditure on property, plant and equipment over tangible fixed assets in the previous period. Tobin's Q is defined as the firm's market value plus total debt at book value minus cash and short-term investments over total assets at book value. Investment in intangible assets is defined as R&D costs plus 30% of sales, general and administrative expenses. In the lower panel, investment in tangible and intangible assets and Tobin's Q both have as a denominator tangible fixed assets at book value plus capitalised R&D costs and 30% of sales, general and administrative expenses, using the perpetual inventory method and the depreciation rates that were used by Peters and Taylor<sup>25</sup>.

**The specific nature of intangible assets poses challenges as regards the measurement of activity, profits and capital stock, as well as the distribution of productivity across firms.**<sup>26</sup> Measurement issues relating to activity stem from the fact that such assets are generally regarded as firm-specific intermediate consumption rather than investment in firms' balance sheets, and they remain underreported in the national accounts to some extent.<sup>27</sup> Although the percentage of intangible assets that are reported in firms' annual accounts is gradually increasing, particularly in the service sector (see Chart D), the underreporting of intangible assets could mean that real output is also being underreported. Moreover, the classification of intangibles as

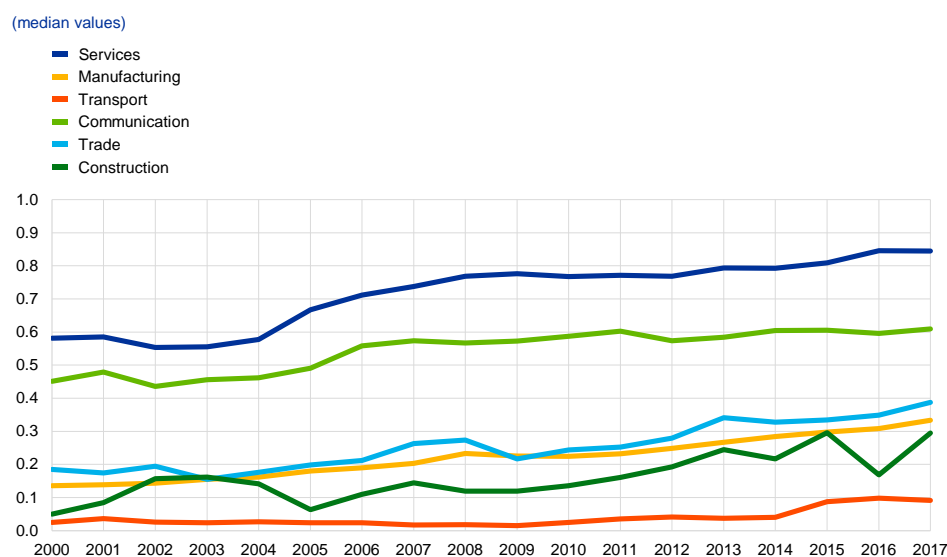
<sup>25</sup> *ibid.*

<sup>26</sup> See also European Commission, "Unlocking investment in intangible assets in Europe", in *Quarterly Report on the Euro Area*, Vol. 16(1), 2017, pp. 23-35.

<sup>27</sup> For example, national accounts do not cover human capital, knowledge contained in databases, organisational capital or brands.

expenses to be deducted from earnings – as opposed to assets – is weighing on profits. As regards measurement of capital stock, while estimates of depreciation rates are associated with considerable uncertainty, the increasing share of intangible assets presumably implies higher overall depreciation rates. As a result, the amount of investment that is required to offset the consumption of capital and keep the capital stock at a constant level is rising. At the same time, it is possible that the capital stock remains underestimated owing to insufficient incorporation of intangible investment in the national accounts (see also the section on capital in the article on potential growth in the post-crisis period in this issue of the Economic Bulletin), which is particularly important when the contribution that capital makes to euro area potential output increases relative to that made by labour as labour force constraints grow. Also, a slowdown in intangible capital services growth could manifest itself in the data as a slowdown in total factor productivity growth. As regards the dispersion of productivity, intangible-rich firms appear to be scaling up investment dramatically, contributing to a widening gap between leading firms and those that are lagging behind.

**Chart D**  
Intangible intensity



Source: Worldscope (listed euro area firms).  
Note: This chart shows the ratio of intangible fixed assets to tangible and intangible fixed assets at book value.

Specific policies in a number of areas would be helpful in order to foster further investment in intangibles and enable stronger potential growth, notably as regards questions of ownership, tax treatment, property rights, competition and product regulation.

## 4 Digitalisation and its impact on the economy: insights from a survey of large companies

Prepared by Catherine Elding and Richard Morris

**This box summarises the findings of an ad hoc ECB survey of leading euro area companies looking at the impact that digitalisation has on the economy.**<sup>28</sup>

Digitalisation may be viewed as a technology/supply shock which affects the main economic aggregates, notably via competition, productivity and employment effects, as well as through its interaction with institutions and governance. Digital technologies are also changing the ways in which firms do business and interact with their customers and suppliers. Understanding digital transformation and the channels through which it influences the economy is therefore increasingly relevant for the conduct of monetary policy.

**The main aim of the survey was to look at how digital transformation is affecting macroeconomic aggregates, as perceived by firms.** The questionnaire asked companies about their take-up of digital technologies and the main obstacles to the adoption of such technologies. It then asked about the various channels through which they saw digital transformation affecting their sales, prices, productivity and employment, as well as the expected overall direction and magnitude of the impact over the next three years. Responses were received from 74 leading non-financial companies, split equally between producers of goods and providers of services. Those companies were generally very large, accounting for a combined total of around 3.7% of output and 1.7% of employment in the euro area.

**The take-up of digital technologies at those companies is very high, with big data and cloud computing being the most widely adopted (see Chart A).** The take-up of big data and cloud computing is pervasive across all sectors, as is the use of e-commerce, which is crucial in business-to-consumer segments. In the manufacturing and energy sectors, artificial intelligence, the “internet of things”, robotics and 3D printing are almost equally widespread, with respondents tending to report that the real impact comes when these technologies are combined. The main obstacles to the adoption of digital technologies are the difficulty of adjusting the organisation of the company and the need to recruit and retain highly skilled ICT staff. Regulation and legislation were not typically seen as a major obstacle, although some firms noted that, while not a hindrance, regulatory frameworks did need to evolve.

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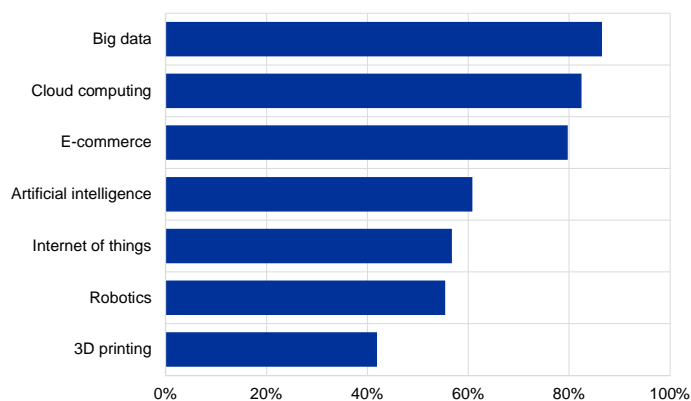
<sup>28</sup> This survey – the ECB Digitalisation Survey – was conducted in spring 2018.

## Chart A

### Take-up of digital technologies and obstacles to their adoption

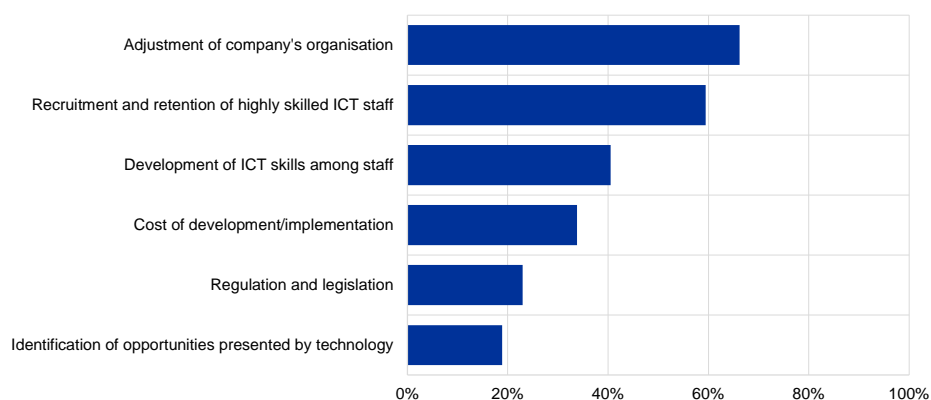
#### Take-up of digital technologies

(percentages of respondents; responses ranked by overall rating)



#### Obstacles to the adoption of digital technologies

(percentages of respondents; responses ranked by overall rating)



Sources: ECB Digitalisation Survey and ECB calculations.

Note: Based on responses to the following two questions: "Which digital technologies has your company adopted, including those you are in the process of adopting?" and "What are the main obstacles your company faced in relation to the adoption of digital technologies?"

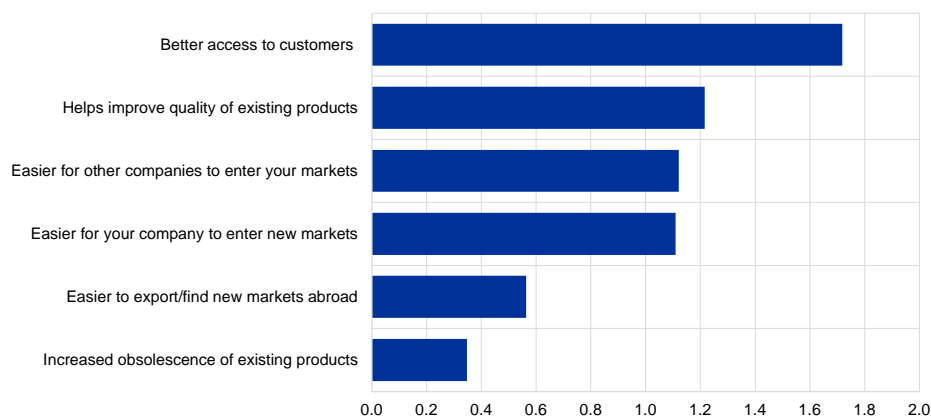
**Overall, the vast majority of respondents see digitalisation as having a positive impact on their company's sales (see Chart B).** More than half expect the adoption of digital technologies to give rise to a "slight increase" in sales over the next three years, while around one-third expect a "significant increase". To some extent, this positive view may reflect the relative size and strength of the companies surveyed, as their high take-up rate for digital technologies was in some cases seen as enabling them to gain market share.

## Chart B

### Impact of digitalisation on sales

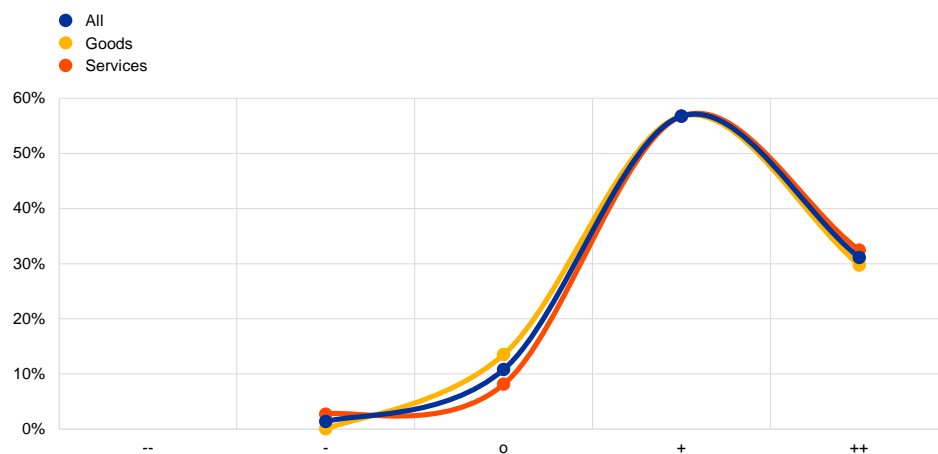
#### Channels through which digitalisation affects sales

(average scores across all replies: 0 = not important; 1 = important; 2 = very important)



#### Overall impact on sales

(percentages of respondents)



Sources: ECB Digitalisation Survey and ECB calculations.

Note: Based on responses to questions about (i) how digital technologies have affected the respondent company's sales and (ii) the overall impact that the adoption of digital technologies is expected to have on sales over the next three years, with answers ranging from "significant decrease" (--) to "significant increase" (++)

#### **Better access to customers is the main channel through which digitalisation supports sales growth.**

In particular, respondents stressed the role that digital technologies play in providing access to customer data, which helps firms to understand their customers' needs (termed "customer intimacy") and offer new or improved services and tailored solutions with higher levels of quality. This, in turn, supports improvements in the quality of existing products (in addition to purely technology-driven improvements). Easier access to markets is also widely viewed as important.

#### **Respondents also see digitalisation increasing their flexibility when it comes to price setting (see Chart C).**

Around half of the respondents said that the adoption of digital technologies had increased their company's ability to adjust prices in relation to those of their competitors, over time and/or across markets. In particular, respondents

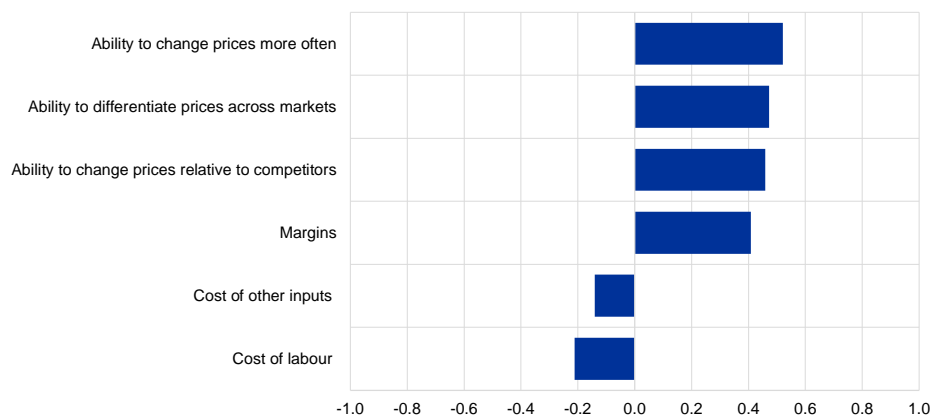


stressed the ability to “leverage more accurately peaks in demand” and thereby “capture the value” of the goods and services provided to customers. At the same time, digitalisation also makes it possible to “manage and optimise sourcing much better” and “get rid of waste and friction across the value chain”. While most companies, particularly manufacturers, tended to see digitalisation reducing costs and increasing margins, retailers were more likely to see input costs increasing and margins being squeezed.

### Chart C Impact of digitalisation on prices

#### Channels through which digitalisation affects prices

(average scores across all replies: -1 = decrease; 1 = increase; 0 = no change)

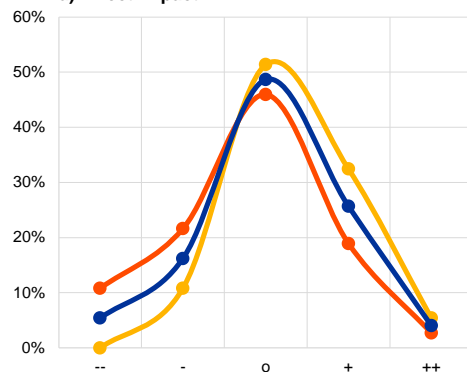


#### Overall impact on prices

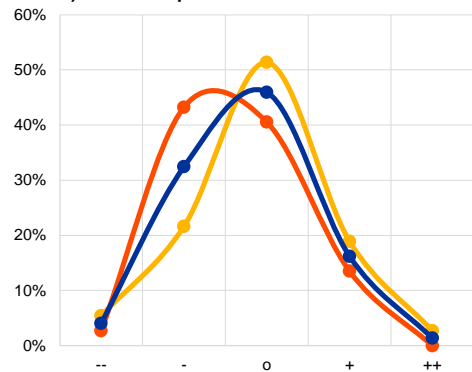
(percentages of respondents)

- All
- Goods
- Services

##### a) Direct impact



##### b) Indirect impact



Sources: ECB Digitalisation Survey and ECB calculations.

Note: Based on responses to questions about (i) how the adoption of digital technologies affects the respondent company's prices and costs, and (ii) the overall impact that the adoption of digital technologies by (a) the respondent company and (b) other parties (i.e. suppliers, customers and competitors) is expected to have on sales prices over the next three years, with answers ranging from “significant decrease” (--) to “significant increase” (++)

### The impact that digitalisation is having on prices is unclear, with downward pressure being observed mainly in the consumer services segment.

Respondents were asked about the impact that the adoption of digital technologies by (i) their own company (“direct impact”) and (ii) other parties, i.e. suppliers, competitors

and customers (“indirect impact”), was expected to have on prices. In both cases, the number of respondents who expected little or no impact, or were unsure, was relatively high (around 50%). On balance, producers of goods tended to see their own adoption of digital technologies as enabling them to increase prices.<sup>29</sup> In contrast, service providers (especially retailers) were more inclined to see the adoption of digital technologies by others as putting downward pressure on their sales prices.

**Respondents see digitalisation increasing productivity, driven by the ease of sharing knowledge and more efficient production processes (see Chart D).**

Virtually all respondents regarded the easier sharing of knowledge (especially within the company) as being an important channel through which digitalisation raises productivity, with around half considering that aspect to be very important. The role that digitalisation plays in making the production process more efficient via automation is almost equally as important. Many respondents emphasised that the increase in the amount of data and information that they collected, both inside and outside of the organisation, was helping them to satisfy their customers’ needs. The overall effect on productivity was perceived to be overwhelmingly positive, with a stronger effect typically being reported in service sectors, particularly in business-to-business segments.

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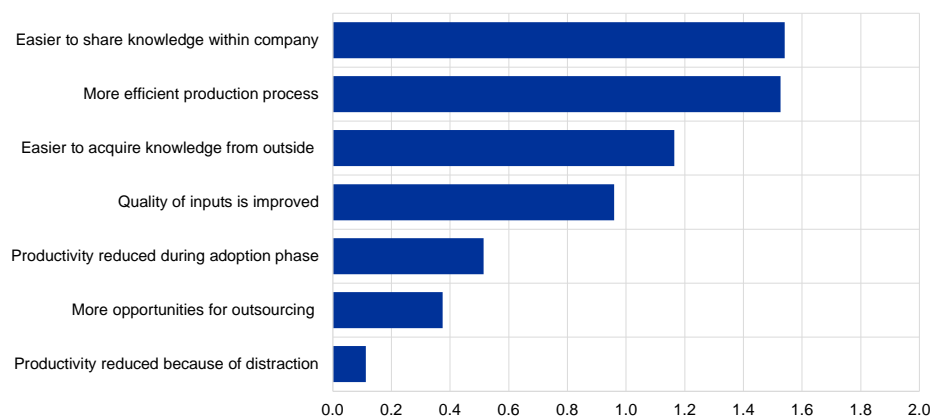
<sup>29</sup> However, to the extent that higher sales prices reflect greater added value, this could still be consistent with digitalisation putting downward pressure on producer prices for goods and services on a “like-for-like” basis.

## Chart D

### Impact of digitalisation on productivity

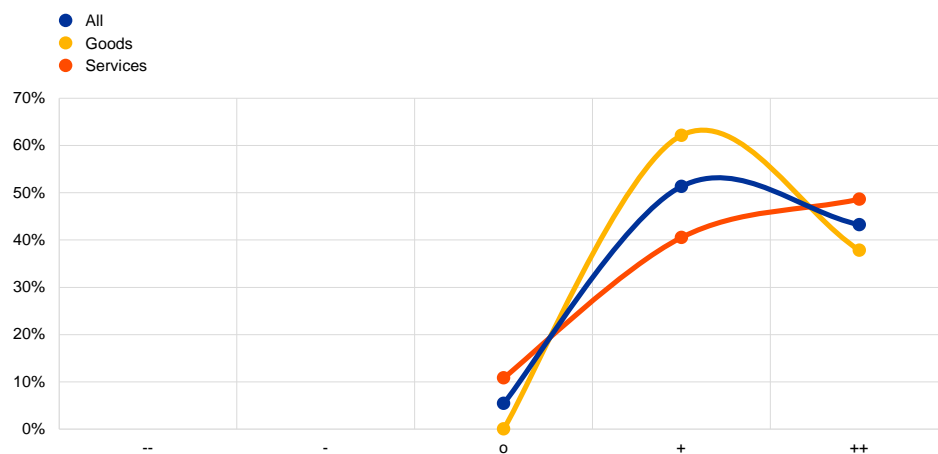
#### Channels through which digitalisation affects productivity

(average scores across all replies: 0 = not important; 1 = important; 2 = very important)



#### Overall impact on productivity

(percentages of respondents)



Sources: ECB Digitalisation Survey and ECB calculations.

Note: Based on responses to questions about (i) how digital technologies affect the respondent company's productivity and (ii) the overall impact that the adoption of digital technologies is expected to have on productivity over the next three years, with answers ranging from "significant decrease" (--) to "significant increase" (++)

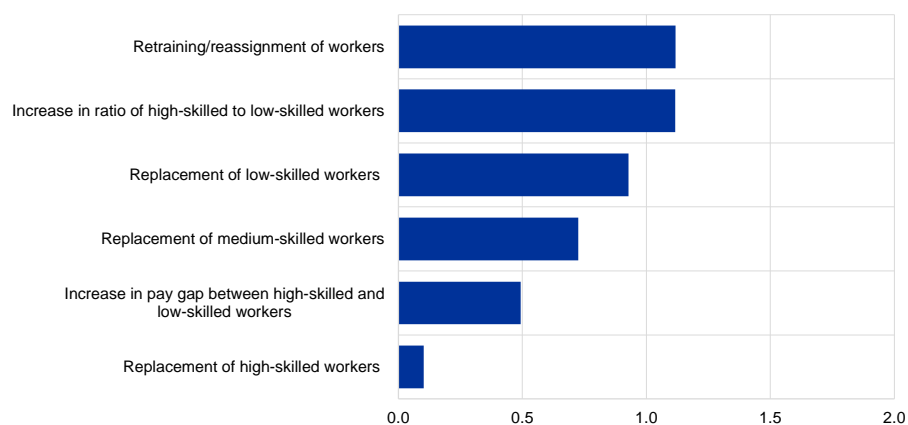
**On balance, respondents see digitalisation having a small negative impact on employment, while emphasising the importance of retraining and upskilling (see Chart E).** Around one-third of respondents expected digitalisation to reduce employment in their company over the next three years, while around one-fifth foresaw increases in employment. Digitalisation was seen as replacing low and medium-skilled jobs, but not high-skilled jobs. Above all, digitalisation was regarded as increasing the ratio of high-skilled to low-skilled workers, with emphasis on retraining and the reassignment of workers to new tasks supported by digital technologies.

## Chart E

### Impact of digitalisation on employment

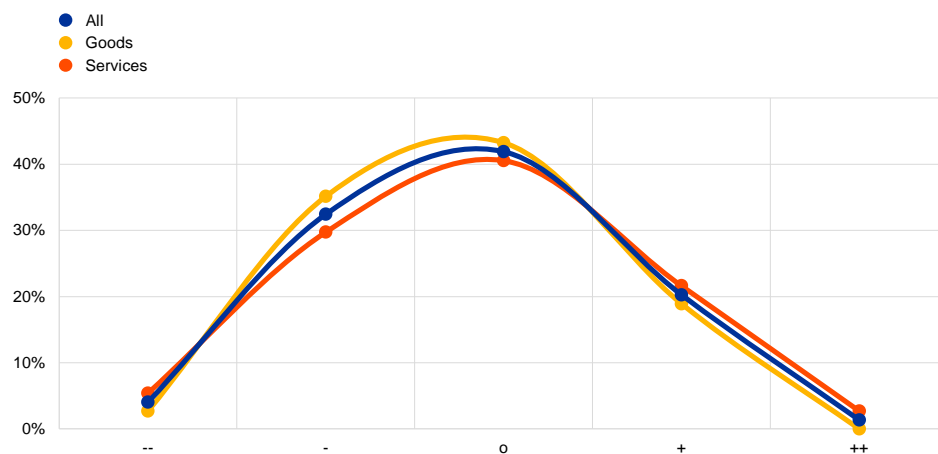
#### Channels through which digitalisation affects employment

(average scores across all replies: 0 = not important; 1 = important; 2 = very important)



#### Overall impact on employment

(percentages of respondents)



Sources: ECB Digitalisation Survey and ECB calculations.

Note: Based on responses to questions about (i) how digital technologies affect the respondent company's employment and (ii) the overall impact that the adoption of digital technologies is expected to have on employment over the next three years, with answers ranging from "significant decrease" (–) to "significant increase" (++)

## 5 The role of energy prices in recent inflation outcomes: a cross-country perspective

Prepared by Ieva Rubene

**Euro area headline inflation is currently dominated by a strong contribution from energy prices.** In the third quarter of 2018, energy prices contributed 0.9 percentage point to the headline HICP inflation rate of around 2.0%, thus accounting for almost half. This large contribution mainly reflects past developments in crude oil prices, a factor that constitutes a common influence across euro area countries. However, the contribution of energy to HICP inflation depends both on the share of energy in consumption expenditure and on the degree of pass-through of oil price developments to consumer energy prices. This box reviews the extent to which these features can help explain differences across euro area countries in the recent contribution of energy to overall HICP inflation.<sup>30</sup>

**The contribution of energy to HICP inflation currently differs significantly across euro area countries.** For most large countries, in the third quarter of 2018 the share of HICP inflation accounted for by the energy contribution was fairly close to the euro area average, i.e. up to half (see Chart A). However, for some smaller countries, this share ranged from very small (energy accounting for almost nothing in Malta) to very high (energy accounting for almost all of HICP inflation in Ireland). It should be noted that this cross-country comparison is only indicative of the relative importance of energy, as headline HICP is also determined by developments in HICP inflation excluding energy.<sup>31</sup>

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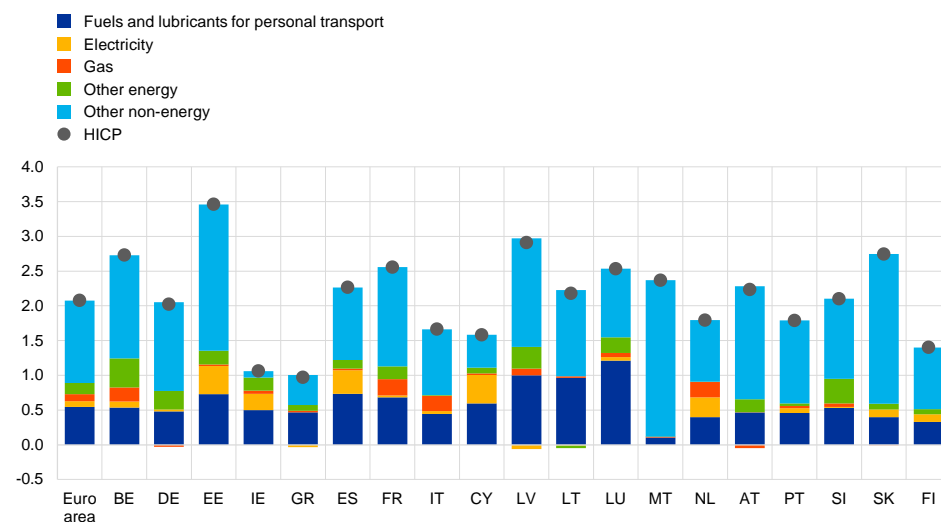
<sup>30</sup> This box does not cover the impact of tax changes on energy inflation and the indirect first-round effects of oil price changes. For a description of latter, see Task Force of the Monetary Policy Committee of the European System of Central Banks, “[Energy markets and the euro area macroeconomy](#)”, *Occasional Paper Series*, No 113, ECB, June 2010, in particular the section entitled “The impact of energy prices on inflation”. On the impact of oil prices on euro area consumer energy prices, see also the box entitled “[Oil prices and euro area consumer energy prices](#)”, *Economic Bulletin*, Issue 2, ECB, 2016.

<sup>31</sup> Relative contributions can also be distorted if HICP excluding energy and/or energy inflation rates are negative.

## Chart A

### Energy inflation in HICP inflation in the third quarter of 2018

(percentage point contributions; annual percentage changes in HICP)



Sources: Eurostat and ECB calculations.

Note: "Other energy" includes liquid and solid fuels and heat energy.

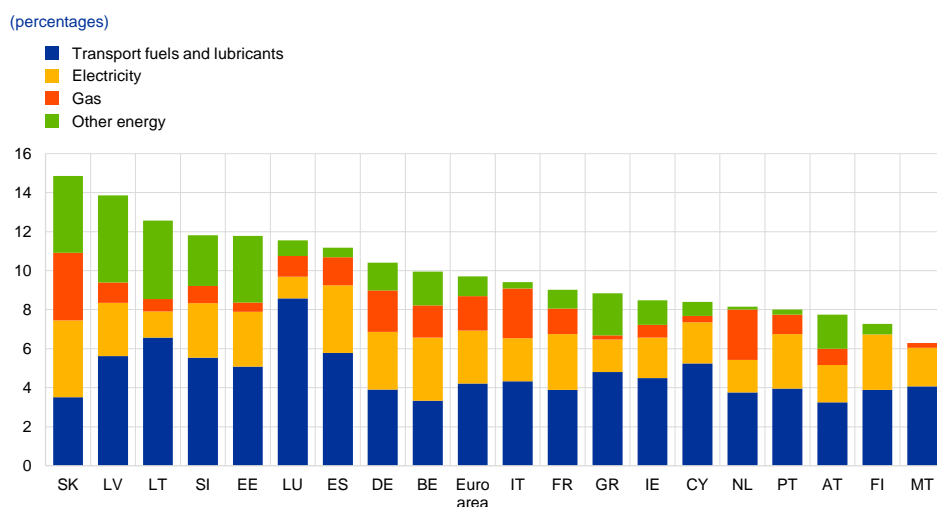
#### The weight of energy in the HICP differs across countries, but cannot fully explain current differences in contributions to headline inflation.

Current contributions of energy prices to headline inflation are generally above what would be implied by the energy weight in the HICP. These weights range from around 6% in Malta to almost 15% in Slovakia, while for the euro area as a whole the weight of energy in HICP is 10% (see Chart B). On balance, transport fuels account for roughly half of the energy weight (more than any other energy item), and fuel prices typically follow changes in crude oil prices in euro more closely than other energy components. This explains why, in all countries, fuel prices have historically been the main determinant of energy inflation dynamics.<sup>32</sup> At the same time, the differences in fuel price inflation across countries in the third quarter of 2018 were larger than can be accounted for by the differences in weights. This suggests that other factors are also at work in determining the pass-through.

<sup>32</sup> Over the period since 1999, the average (unweighted) contemporaneous correlation across euro area countries between annual rates of change in total energy and fuel prices has been 0.9, while for gas prices (at 0.5) and electricity prices (at 0.1) it has been significantly smaller.

## Chart B

### Weights of energy and its main sub-items in HICP in 2018



Sources: Eurostat and ECB calculations.

Note: "Other energy" includes liquid and solid fuels and heat energy. The relatively large weight of transport fuels in Luxembourg also reflects purchases by consumers who are not resident in Luxembourg.

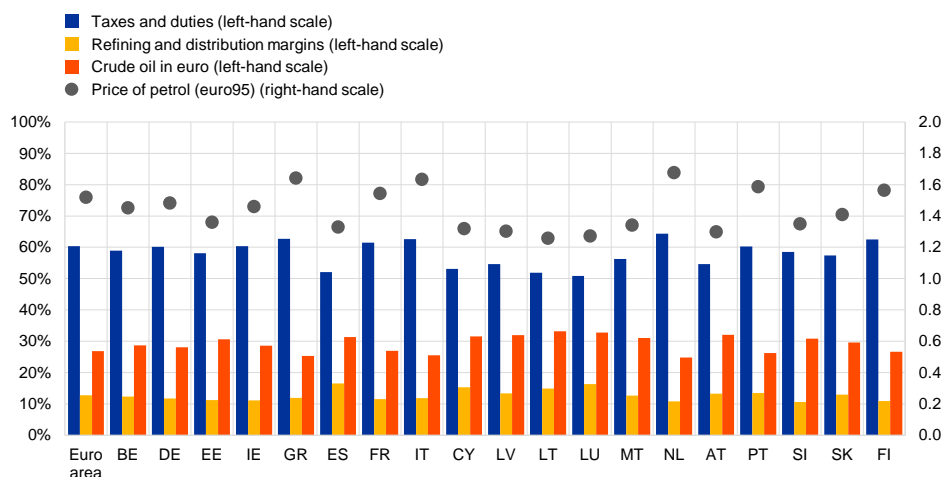
**The pass-through of oil prices to fuel prices is not one-to-one, as the final consumer price also depends on taxes and the behaviour of margins.** Changes in taxes (in particular excise taxes) usually have a noticeable impact on fuel prices,<sup>33</sup> and the level of taxes affects the pass-through of oil price changes. The larger the share of excise taxes – a fixed amount per litre – is in a country's fuel price, the smaller the percentage change in fuel prices is for a given change in oil prices. By contrast, although differences in rates of value added tax (VAT) can partly explain differences in the level of the consumer price of fuel, owing to the proportional nature of VAT, different VAT rates across countries cannot explain differences in the pass-through of changes in oil prices to fuel prices. In the case of petrol prices, the total tax share varies across countries from around 50% in Luxembourg, Malta and Spain to just above 60% in the Netherlands, Italy and Greece, thus partly helping to explain differences in the final level of the fuel price and the pass-through of crude oil price changes to fuel prices (see Chart C). Costs and margins arising in the refining and distribution processes usually constitute a relatively small part of fuel prices (just above 10%). Over longer horizons it is unlikely that, for instance due to differences in technology or buffering practices, such costs and margins could account for major differences across countries in the pass-through of crude oil prices to fuel prices. However, over shorter horizons, for instance if margins were to react to seasonal boosts in demand, such differences might become relevant.

<sup>33</sup> For example, increases in excise taxes contributed to higher annual fuel price inflation in Estonia and Latvia in the third quarter of 2018. Changes in excise taxes in France and Finland had smaller impacts.

## Chart C

### Decomposition of petrol prices in the third quarter of 2018

(left-hand scale: percentages; right-hand scale: EUR per litre)



Sources: Bloomberg, European Commission and ECB calculations.

Note: Refining margins are calculated as the difference between refined oil and crude oil prices, and distribution margins are calculated as the difference between petrol prices before taxes and refined oil prices.

### Gas and electricity inflation does not necessarily co-move with oil prices and fuel inflation.

While the pass-through of crude oil prices to fuel prices is relatively straightforward and fast (almost complete within five weeks),<sup>34</sup> the pass-through to consumer gas and electricity prices is more complex and more limited. Consumer gas prices are driven largely by wholesale gas prices, which over time have become less strongly linked to oil prices.<sup>35</sup> Electricity is generated in many different ways (hydro, solar, wind, nuclear, coal, etc.) and the frequency of price changes for electricity is different from that for fuel and gas. In all euro area countries, the link between oil prices and gas and electricity prices is more delayed and weaker than the link between oil prices and fuel prices, and the strength of the link also varies more across countries for gas and electricity than it does for fuel (see Chart D).<sup>36</sup> Moreover, in a number of euro area countries, gas and electricity prices (as well as heat energy) are fully or partly regulated, so they may respond to oil price changes with a delay or they may not respond at all.<sup>37</sup> Owing to this weaker link between gas and electricity prices and crude oil prices, euro area countries with a higher share of fuel in their energy basket have generally also had a higher contribution of energy to their inflation outcomes in recent months.

<sup>34</sup> See Task Force of the Monetary Policy Committee of the European System of Central Banks, "Energy markets and the euro area macroeconomy", *Occasional Paper Series*, No 113, ECB, June 2010, in particular the section entitled "The impact of energy prices on inflation".

<sup>35</sup> Owing to developments in spot markets in Europe, the share of oil-linked wholesale gas pricing declined from around 80% in 2005 to around 30% in 2017. See International Gas Union, "Wholesale Gas Price Survey", 2018 Edition, June 2018.

<sup>36</sup> Given the delay in the pass-through for gas and electricity prices, the correlation coefficient for longer lags (unweighted average across euro area countries; calculated using annual inflation rates) would reach 0.6 between crude oil and gas prices and 0.3 between crude oil and electricity prices, which is below the contemporaneous correlation coefficient of 0.8 between crude oil and fuel prices.

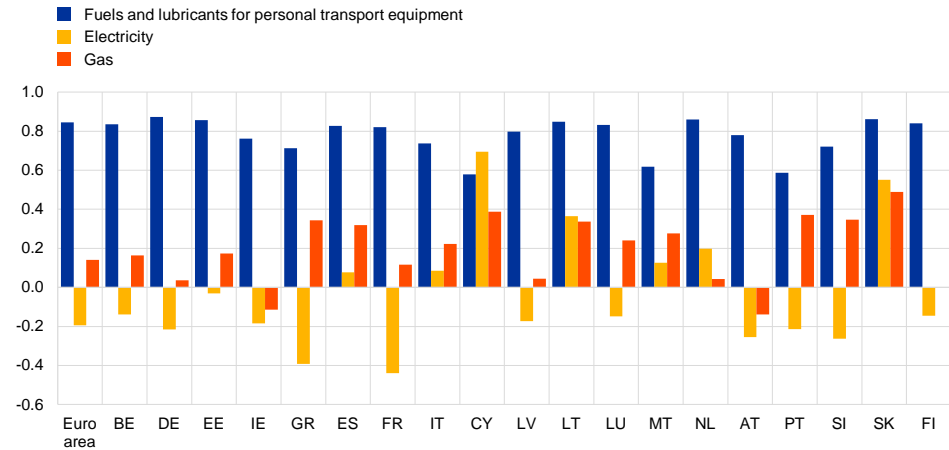
<sup>37</sup> According to Eurostat's classification, the following countries have partly or fully regulated prices for either electricity, gas or heat energy: Estonia, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Malta, the Netherlands, Slovenia, Slovakia and Finland.



## Chart D

### Correlation of energy inflation items with crude oil prices (in euro)

(contemporaneous correlation coefficient of annual inflation rates, January 1999 to September 2018)



Sources: Bloomberg, Eurostat and ECB calculations.

Notes: Finland does not have gas in its consumer price basket. The pass-through of crude oil price changes to gas and electricity prices could take one to two years (the correlation coefficient for longer lags is higher), which is very slow compared to the rather fast pass-through to fuel prices (up to 90% within five weeks). However, even accounting for this delay, the correlation coefficient calculated for longer lags with crude oil prices is lower for gas and electricity prices than for fuel prices.

**To conclude, all euro area countries have faced a rise in the oil price in euro, but this has affected their HICP inflation rates to different extents.** This reflects differences in both the respective weights of energy items (fuel, gas and electricity) in the HICP and the strength of the link between the prices of the different energy items and oil prices. Hence, strong common oil price developments do not necessarily lead to a reduction in inflation dispersion. Looking forward, the small downward trend in crude oil futures prices implies that energy price inflation should moderate somewhat, reducing both its contribution to headline HICP inflation and cross-country differences in headline inflation due to energy outcomes.

# Articles

## 1 Potential output in the post-crisis period

Prepared by Malin Andersson, Bela Szörfi, Máté Tóth and Nico Zorell

*Potential output is typically seen by economic analysts as the highest level of economic activity that can be sustained over the long term. Changes in potential output can be driven by factors such as labour supply, capital investment and technological innovation. Recent estimates by international institutions suggest that the euro area economy is currently operating close to its potential. The ongoing economic expansion appears to have largely absorbed the spare capacity created by the global financial crisis and the sovereign debt crisis. At the same time, the estimated rate of potential output growth also appears to have recovered most of its pre-crisis momentum, underpinned mainly by an expansion of the labour force, a decline in trend unemployment and stronger productivity gains. Looking ahead, projections by international institutions suggest that actual euro area GDP growth will continue to outpace potential growth in the near term. Hence, supply constraints are likely to become increasingly binding going forward, which would be conducive to a gradual strengthening of euro area inflation.*

### 1 Introduction

**Potential output is a key economic concept as its evolution determines how fast an economy can grow in a sustainable way.** It is typically thought of as the highest level of economic activity that can be sustained by means of the available technology and factors of production, in particular labour and capital, without creating inflationary pressure. Institutions that facilitate and encourage innovation, factor accumulation and an efficient allocation of resources are particularly conducive to faster growth in potential output. Therefore, sound structural policies play a key role in promoting sustainable growth.

**For central banks, potential output estimates can support the analysis of the state of the business cycle and the implications for the dynamics of wages and prices.** If economic activity exceeds the level of potential output, the increased factor utilisation will typically put upward pressure on factor costs and ultimately on consumer prices. Similarly, such price pressures tend to recede if economic activity falls below the level of potential output. The output gap, defined as the percentage deviation of the actual level of output (i.e. real GDP) from the potential level, is therefore often regarded as an indicator of the state of the business cycle and possible inflationary pressures. Potential output estimates also provide a basis for adjusting government budget balances for the effects of the business cycle and are included in analyses of the long-term sustainability of public debt. Moreover, they are also used to gauge the impact of structural reforms.

**As potential output is unobservable, it can only be estimated with uncertainty.**

There are various methods for estimating potential output on the basis of observed data. However, regardless of the method used, such estimates are subject to considerable uncertainty and often revised heavily over time. Therefore, they need to be treated with caution.

**Against this backdrop, this article sheds some light on developments in euro area potential output in the post-crisis period.** Section 2 discusses the concept of potential output and its measurement. Section 3 examines recent developments in potential output, while Sections 4 and 5 take a closer look at the main driving factors. Section 6 presents the main policy conclusions.

## 2 The concept of potential output and its measurement

### 2.1 Definition and determinants

**Potential output is typically defined as the highest level of economic activity that can be sustained by means of the available technology and factors of production without creating inflationary pressure.**<sup>38</sup> Attempts to exceed this level of production will lead to rising levels of factor utilisation, thereby putting upward pressure on factor costs and ultimately on consumer price inflation. Starting from a neutral position in the economic cycle, a sustainable, non-inflationary increase in output needs to be underpinned by an expansion of potential output.

**It is important to distinguish between the level and the rate of growth of potential output.** If the level of potential output exceeds actual output, a negative output gap emerges. In such circumstances, the closing of a negative output gap would require actual growth to exceed potential growth for a period of time.

**Potential output is usually thought to be determined by supply-side factors, highlighting the importance of sound structural policies for sustainable long-term growth.** The supply-side determinants include the state of technology and the available factors of production, most notably labour and capital. At a more fundamental level, the long-term capacity of an economy to produce is shaped by its institutional framework, including the structure of property rights, regulations and the judicial and educational systems. Economies with institutions that facilitate and encourage innovation, factor accumulation and an efficient allocation of resources can be expected to record faster growth in the long run.<sup>39</sup> Indeed, according to

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<sup>38</sup> Alternative concepts whereby potential output is defined as the level of output that could be obtained in the absence of price-setting frictions or market inefficiencies (such as imperfect competition) also appear in the literature. However, the corresponding potential output series are highly dependent on the underlying model and the frictions assumed therein. See Vetlov, I., Hlédik, T., Jonsson, M., Kucsera, H. and Pisani, M., "Potential output in DSGE models", *Working Paper Series*, No 1351, ECB, June 2011.

<sup>39</sup> See Acemoglu, D., Johnson, S. and Robinson, J., "Institutions as a Fundamental Cause of Long-Run Growth", in Aghion, P. and Durlauf, S. (eds.), *Handbook of Economic Growth*, Vol. 1, Part A, Elsevier, 2005, pp. 385-472.

Eurosystem estimates, the implementation of best institutional practices in euro area countries could significantly boost their potential growth rates.<sup>40</sup>

**The global financial crisis has led to suggestions that demand-side factors might also have very persistent or even permanent impacts on output.**<sup>41</sup>

According to the “hysteresis” hypothesis, demand shortfalls can perpetuate themselves by adversely affecting the supply potential of the economy and thereby lowering the level of potential output or even its longer-term growth rate. For instance, a demand-led recession may discourage workers from searching for jobs or lead to the erosion of their skills. Firms may refrain from undertaking investment decisions or cut their innovation budgets, which would lower the level of production that can be sustained without stoking (dis-)inflationary pressure. According to this view, countercyclical policies could reduce the risks of hysteresis in times of crisis or reverse its effects *ex post*, with lasting positive impacts on output.<sup>42</sup> Whether the hysteresis hypothesis is valid is ultimately an empirical question and may also vary across economies and over time.

## 2.2 Measurement

**Since potential output cannot be observed directly, it has to be estimated.**

Simple statistical methodologies (“univariate filters”) – such as the Hodrick-Prescott (HP) filter – derive potential output by smoothing out fluctuations in actual output. They mechanically split the observed output series into a trend component and a cyclical component. More sophisticated statistical approaches (“multivariate filters”) also use information from other economic indicators, such as inflation, to disentangle the trend from the cycle. Another common approach, which is employed by the European Commission and the Organisation for Economic Co-operation and Development (OECD), is based on a macroeconomic production function, i.e. a simple model of the supply side of the economy relating potential output to the trend components of productivity and the available factor inputs (usually labour and capital).<sup>43</sup> Hybrid methods combine useful elements from both the statistical approach and the production function approach (see Box 1). Other approaches are based on more complex structural economic models.<sup>44</sup> Importantly, all these methods for measuring potential output have their limitations. Therefore, the analysis below will draw on a broad range of estimates based on alternative methodologies.

**Regardless of the method used, estimates of potential output are subject to considerable uncertainty.** The choice of a specific statistical or economic model

<sup>40</sup> See Masuch, K., Anderton, R., Setzer, R. and Benalal, N. (eds.), “Structural policies in the euro area”, *Occasional Paper Series*, No 210, ECB, June 2018.

<sup>41</sup> See Ball, L., “Long-term damage from the Great Recession in OECD countries”, *European Journal of Economics and Economic Policies: Intervention*, Vol. 11, No 2, 2014, pp. 149-160, and Blanchard, O., “Should We Reject the Natural Rate Hypothesis?”, *Working Papers*, No 17-14, Peterson Institute for International Economics, November 2017.

<sup>42</sup> See Yellen, J.L., “Macroeconomic Research After the Crisis”, speech at the 60th annual economic conference sponsored by the Federal Reserve Bank of Boston, Boston, October 2016.

<sup>43</sup> The potential output estimates by the IMF are not based on a uniform method and may incorporate judgement. For the euro area countries, the production function approach is usually applied.

<sup>44</sup> See Coenen, G., Smets, F. and Vetlov, I., “Estimation of the Euro Area Output Gap Using the NAWM”, *Working Paper Series*, No 5, Lietuvos bankas, 2009.

always implies judgement and introduces uncertainty. Since models are simplifications of reality, not all information that is possibly relevant for estimating potential output can be processed. In addition, owing to the typically stochastic nature of these models, a degree of uncertainty inherently stems from the characteristics of their shocks. The uncertainty also relates to the parameters of such models which can only be estimated with imprecision. Moreover, the data – both historical and projected – which are used to estimate the models are subject to revisions. Such modifications can result in significant revisions to the estimated path of potential output. Overall, owing to these different types of uncertainty, any point estimate of the output gap has to be treated with a significant degree of caution.

### Box 1

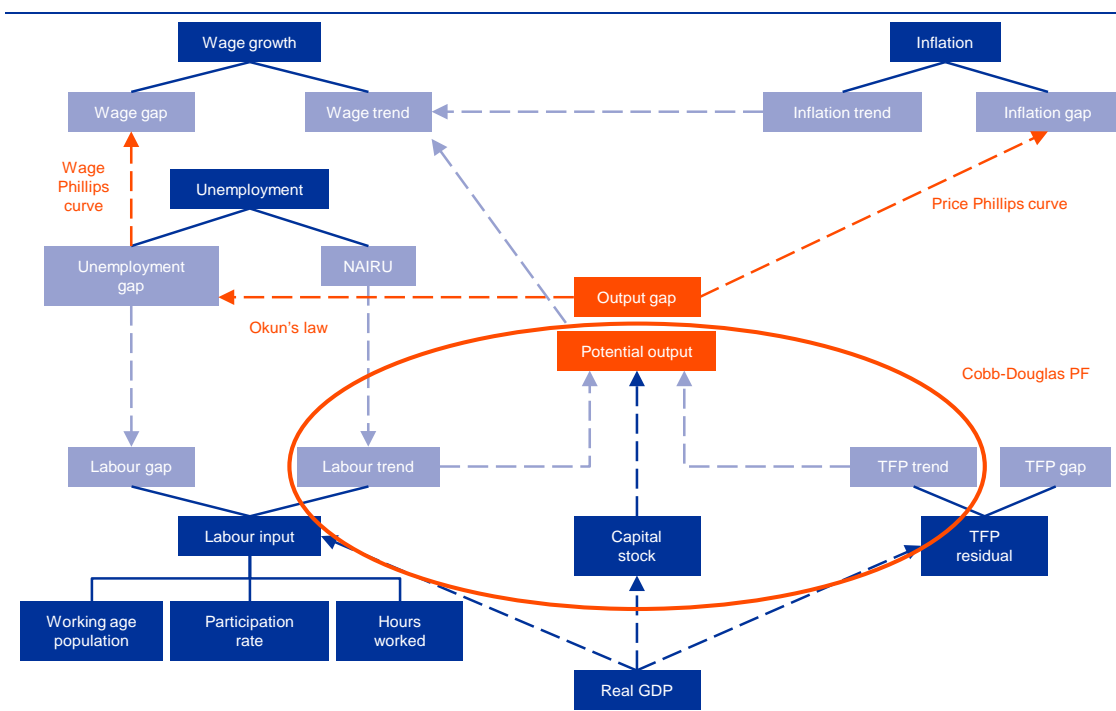
#### An unobserved components model for euro area potential output

Prepared by Máté Tóth

The unobserved components model (UCM-PF) introduced in this box combines a multivariate filter approach with a Cobb-Douglas production function (PF) relating potential output to labour, capital and total factor productivity (TFP). This combination incorporates more economic structure than the traditional production function approach, in which production inputs are typically filtered individually with the help of univariate filters. A possible shortcoming of the latter approach is that the resulting potential output path may closely resemble a potential output path extracted with a univariate filter applied to the output series itself, thus providing little added value. The UCM-PF approach addresses this issue by estimating the trends of the relevant production inputs jointly in a system of equations in which the trend-cycle decomposition is subject to certain key, albeit reduced-form, economic relationships (see Figure A).

Figure A

Stylised representation of the UCM-PF



Source: ECB staff.

**The underlying model is a backward-looking state-space model that employs the Kalman filter to decompose four key observable variables (real GDP, the unemployment rate, a measure of core inflation and wage inflation) into trend and cyclical components.** For this purpose, it relies on several economic relationships, including a Cobb-Douglas production function, a wage and a price Phillips curve and an Okun's law relationship. A number of additional variables enter the model as exogenously determined observables (e.g. the capital stock and the working age population), while others (such as the labour force participation rate and average hours worked) are endogenously decomposed into cyclical and trend components, with the latter serving as input into the embedded production function. In the model, a closed output gap is consistent with the absence of excessive price or wage pressures, namely inflation being on its long-run trend and wage inflation being consistent with trend inflation and trend productivity growth. In the following sections, model-based uncertainty bands generated by the UCM-PF will be used to highlight the uncertainty surrounding point estimates of the output gap, potential growth and the trend unemployment rate (or non-accelerating inflation rate of unemployment – NAIRU).

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### 3 Recent developments in potential output

**This section analyses recent developments in potential output in the euro area.**

It focuses on the post-crisis period (2014-18), but also briefly revisits the crisis years (2008-13) and the pre-crisis period (1999-2007).<sup>45</sup> The analysis is based on a broad range of estimates by the European Commission, the International Monetary Fund (IMF) and the OECD, along with estimates based on the model presented in Box 1.

**Potential growth in the euro area is estimated to have increased over recent years, although it is still weaker than before the global financial crisis.** Prior to the crisis, potential growth was judged to be on a secular downward trend (see Chart 1). Between 1999 and 2007, the estimated rate of potential growth gradually declined from around 2.3% to around 1.7%. The outbreak of the global financial crisis seems to have led to a further decline in potential growth to below 1.0%. However, available estimates indicate that potential output recovered in the post-crisis period, reaching growth rates close to 1.5%. Hence, the latest estimates for euro area potential growth are well above those for the crisis years, albeit still below those for the pre-crisis period. All these estimates are subject to considerable uncertainty, as indicated by the shaded bands in Chart 1. At the same time, they all point to an inverted J-shaped path for euro area potential growth in the period between 1999 and 2017. Moreover, estimates of the euro area aggregate mask significant heterogeneity across individual euro area countries.

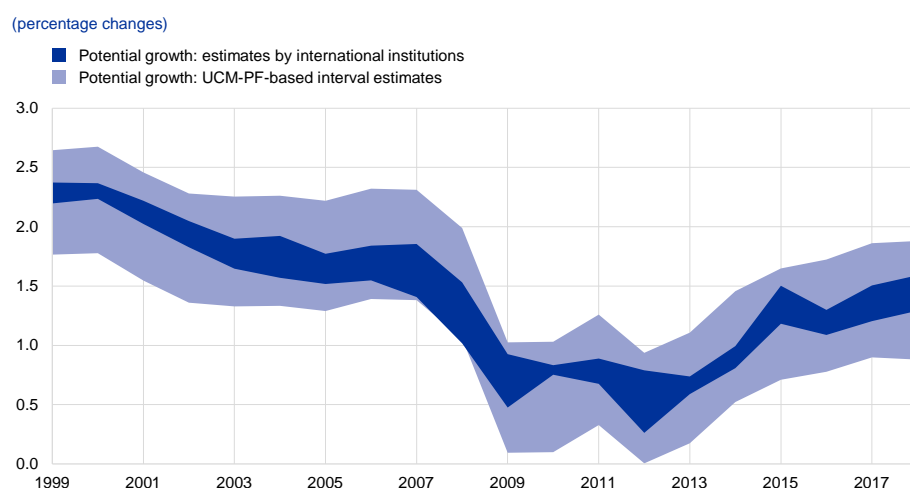
**The level of euro area potential output remains well below the path implied by the pre-crisis trends.** This can be illustrated with a simple linear projection in which it is assumed that from 2007 onwards potential output steadily increased at the pace recorded in that year. The European Commission's latest estimate of potential output

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<sup>45</sup> For the crisis period, see Anderton et al., "Potential output from a euro area perspective", *Occasional Paper Series*, No 156, ECB, November 2014, and the articles entitled "Potential output, economic slack and the link to nominal developments since the start of the crisis", *Monthly Bulletin*, ECB, November 2013, and "Trends in potential output", *Monthly Bulletin*, ECB, January 2011.

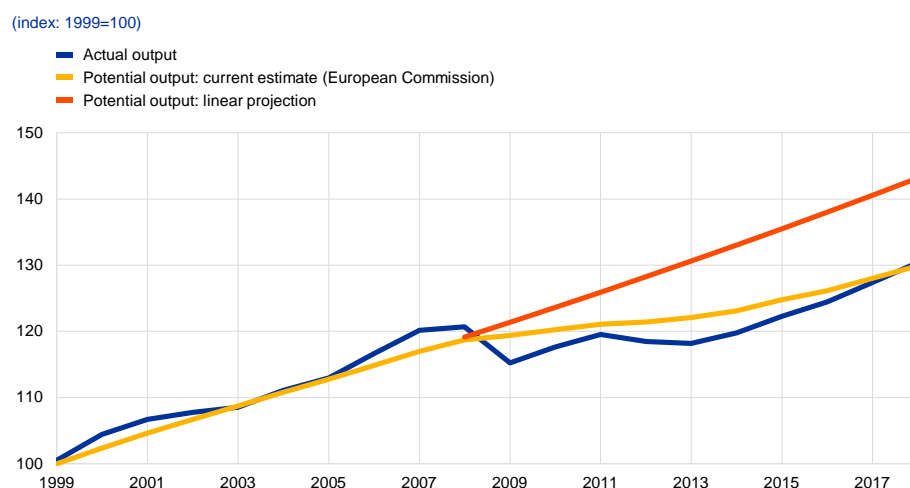
in 2017 is around 10% below the level implied by the linear projection (see Chart 2). However, caution is warranted when using such gaps as a proxy for the impact of the crisis. Real-time estimates of potential output are often subject to substantial revisions, especially in times of crisis. In fact, the potential output estimates for the euro area were widely revised downwards following the onset of the global financial crisis, before these revisions went into reverse more recently.

**Chart 1**  
Estimates of potential growth



Sources: European Commission, IMF, OECD and ECB staff calculations.  
 Notes: The dark blue area indicates the range of estimates by international institutions, and the light blue area indicates interval estimates based on the UCM-PF model presented in Box 1 (with an uncertainty band of plus/minus two standard deviations around the point estimate).

**Chart 2**  
Levels of actual and potential output

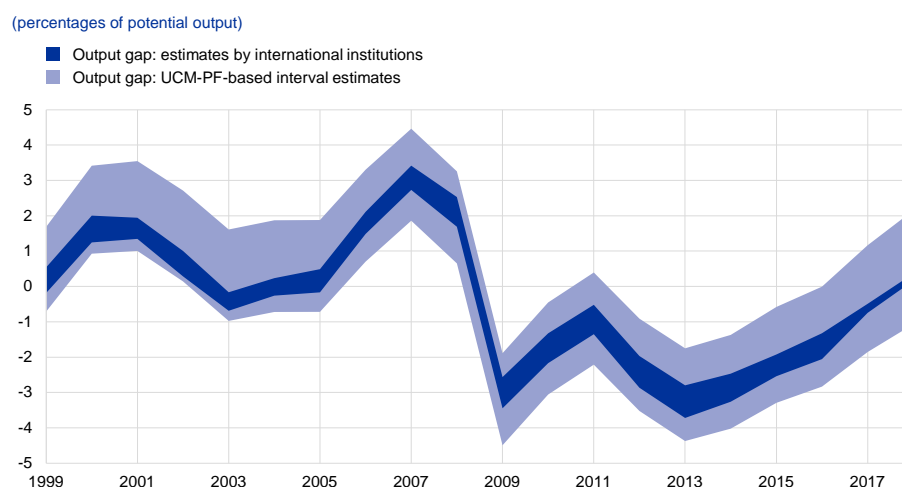


Sources: Eurostat, European Commission and ECB staff calculations.  
 Notes: Actual output is real GDP. Potential output is based on European Commission estimates. The counterfactual scenario assumes that from 2007 onwards potential output steadily increased at the potential growth rate recorded in that year.

**The available estimates imply that the euro area economy is currently operating close to its potential.** Following the eruption of the global financial crisis, actual output – i.e. real GDP – declined precipitously. At the same time, potential output

apparently continued to increase, albeit at a slower pace than before the crisis. As a result, a negative output gap opened up, signalling slack in the euro area economy (see Chart 3).<sup>46</sup> During the economic recovery, GDP growth consistently exceeded available estimates of potential growth. Consequently, the negative output gap gradually declined and now seems to be close to zero. Supply constraints are likely to become increasingly binding going forward, which would be conducive to a gradual strengthening of wage growth and underlying inflation.

**Chart 3**  
Output gap estimates



Sources: European Commission, IMF, OECD and ECB staff calculations.  
Notes: The dark blue area indicates the range of estimates by international institutions, and the light blue area indicates interval estimates based on the UCM-PF model presented in Box 1 (with an uncertainty band of plus/minus two standard deviations around the point estimate). The UCM-PF estimates for 2018 only incorporate data up to the second quarter of 2018.

**The similarity in estimates by international institutions understates the uncertainty surrounding the current output gap in the euro area.** In particular, it has been argued that economic slack might still be larger than indicated by the consensus view of international institutions. This argument is often based on the observation that the underlying potential growth estimates and their revisions tend to co-move with economic activity.<sup>47</sup> This procyclicality could partly be a statistical artefact due to methodological issues, such as the well-known end-point problem of filtering procedures. There may therefore be reason to believe that the degree of economic slack in the euro area over recent years has been larger than indicated by the estimates of international institutions.<sup>48</sup> This could also help explain the relatively muted dynamics of underlying inflation over this period. However, the procyclicality of potential growth and output gap estimates may also stem from hysteresis, the downward rigidity of prices and wages, and other effects that pull down potential growth during economic downturns and gradually wane during upturns (see Section 2.1).

<sup>46</sup> See also the box entitled “Measures of slack in the euro area”, *Economic Bulletin*, Issue 3, ECB, 2018.

<sup>47</sup> See Coibion, O., Gorodnichenko, Y. and Ulate, M., “The Cyclical Sensitivity in Estimates of Potential Output”, *NBER Working Papers*, No 23580, National Bureau of Economic Research, 2017.

<sup>48</sup> See Jarocinski, M. and Lenza, M., “An Inflation-Predicting Measure of the Output Gap in the Euro Area”, *Journal of Money, Credit and Banking*, Vol. 50, No 6, September 2018, pp. 1189-1224.

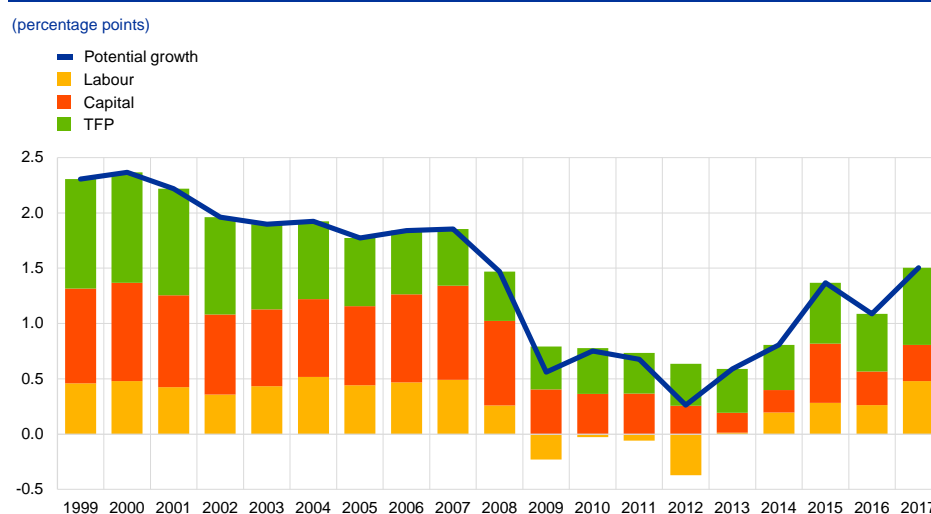


## 4 Dissecting recent developments in potential output

**In an accounting sense, potential output is determined by the trend components of the factors of production – capital and labour – and total factor productivity (TFP).** A macroeconomic production function can be used to decompose potential growth into the contributions from labour, capital and TFP (see Section 2.2). TFP captures the overall efficiency of the use of the factors of production and its evolution is therefore often seen as a rough indication of technological progress. In practice, TFP is not directly observable and is typically calculated as a residual term in a growth accounting exercise. Thus it cannot be considered a pure measure of productivity.

**Both the decline in potential growth during the crisis and its subsequent recovery were largely driven by the contributions of capital and labour.** Both contributions declined during the crisis, before recovering in the post-crisis period (see Chart 4). The latest estimates for 2017 indicate that the contributions of labour and TFP to potential growth are broadly in line with those in 2007. However, the contribution of capital is still weaker than before the crisis, explaining why potential growth has not yet fully recovered. The downward trend in potential growth in the pre-crisis period mainly reflected a secular decline in TFP growth.<sup>49</sup>

**Chart 4**  
Decomposition of potential growth



Source: European Commission.

**While the inverted J-shaped path of potential growth found in the euro area has also been observed in other major advanced economies, there are notable cross-country differences in the underlying driving forces.** Box 2 illustrates this for the United States and Japan. Moreover, from a long-term perspective, potential growth in the euro area has fallen short of that in other major advanced economies, in particular the United States.

<sup>49</sup> See the article entitled “The slowdown in euro area productivity in a global context”, *Economic Bulletin*, Issue 3, ECB, 2017.

## Box 2

### Potential output developments in the United States and Japan

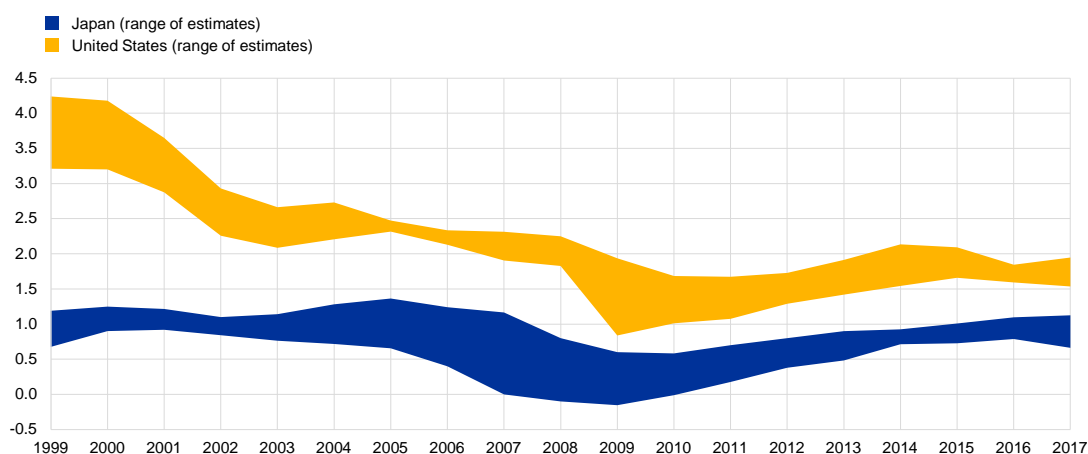
Prepared by Ana-Simona Manu and Marcel Tirpák

**Similarly to developments in the euro area, estimated potential output in the United States and Japan has recovered since 2013 along with economic activity.** At the same time, the current pace of potential growth in the US economy remains well below the growth rates recorded prior to the global financial crisis, while it is broadly comparable to pre-crisis rates in the case of Japan. According to a broad range of estimates, including from national sources and international institutions, potential growth is currently estimated at close to 2% in the United States and around 1% in Japan (see Chart A).

#### Chart A

##### Estimates of potential growth in the United States and Japan

(annual percentage changes)



Sources: Congressional Budget Office, Bank of Japan, Cabinet Office of the Government of Japan, IMF, OECD and ECB staff calculations.

**An increasing stock of capital, reflecting strengthening investment activity in this period, was a key contributory factor in the recovery in potential output in both countries.** While investment activity plummeted in the aftermath of the global financial crisis, the ensuing demand recovery – supported by economic policies – helped stimulate investment spending amid gradually declining spare capacities (see Chart B).

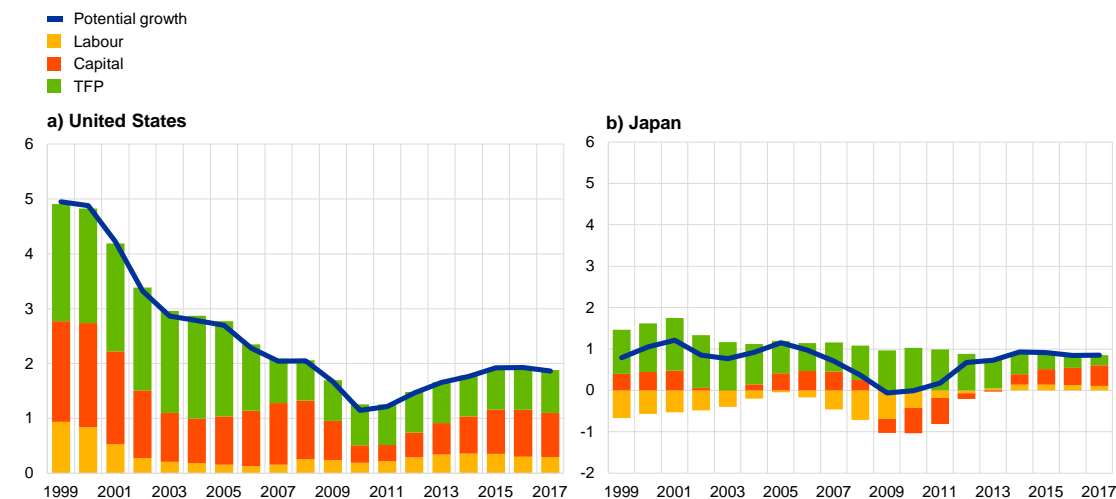
**By contrast, the contribution of the labour component to potential growth in the United States and Japan differed, owing to secular trends observed in these two countries.** In the United States, the labour contribution has remained positive and broadly unchanged since the global financial crisis, as slower growth in the potential labour force was counteracted by a gradual decline in the trend unemployment rate. The latter could reflect the gradual waning of hysteresis effects and also shifts in the composition of the workforce, which in turn may reflect, for example, the fact that older and more educated workers tend to have lower unemployment rates. In Japan, the contribution of labour to potential growth turned positive in 2013, following a prolonged period of strong negative readings. Demographic developments, leading to a shrinking workforce, are the main factor that led to labour having acted as a drag on potential output. Recent measures taken by the Japanese government to encourage the participation of women in the labour market, the increasing willingness of retired workers to remain active amid rising longevity, and more flexible working contracts offered by Japanese firms have all helped to increase labour force participation in the Japanese economy,

thereby limiting the negative impact of the shrinking workforce amid very tight labour market conditions.

## Chart B

### Decomposition of potential growth in the United States and Japan

(annual percentage changes, percentage points)



Sources: Congressional Budget Office, Bank of Japan and ECB staff calculations.

Notes: For the United States, "potential growth" refers to the non-farm business sector and "labour" refers to the contribution of hours worked, while "capital" refers to the contribution of capital services. For Japan, "labour" refers to the sum of contributions of the number of people employed and hours worked.

**TFP growth contributed positively to potential output in both countries, although it has shown diverging patterns over the recent past.** In the United States, the contribution from TFP growth has remained broadly stable during the post-crisis period. In Japan, the estimated positive contribution of TFP growth has roughly halved over the same period, which can be attributed to an ageing capital stock and delays in the introduction of new technologies.<sup>50</sup> However, the increasing implementation of technological advances, especially in sectors currently facing acute labour shortages, could strengthen underlying productivity growth over the longer term.<sup>51</sup>

**Looking ahead, demographic developments present both countries with a challenge that needs to be resolved to avoid weakening their potential growth.** In Japan, progress in implementing the government's growth strategy, including regulatory and institutional reforms, further increases in labour force participation, and continued efforts by firms to increase productivity are expected to tackle this and contribute to gradually accelerating potential growth over the next few years.<sup>52</sup> In the United States, the recent changes in income taxes could encourage more people to enter the labour force, thereby limiting the negative impact on potential growth stemming from population ageing.<sup>53</sup> Also, the reduction in corporate income tax could boost investment and thereby contribute to higher potential output, whereas recent policies aimed at reducing immigration could have an opposite effect by further weakening the growth of the labour force.

<sup>50</sup> See Sakurai, M. and Kataoka, M., "Hysteresis and Sluggish Growth in Wages and Prices: The Case Study of Japan", paper presented at the 30th Villa Mondragone International Economic Seminar, Rome, June 2018.

<sup>51</sup> See Amamiya, M., "Japan's Economy and Monetary Policy", speech at a meeting with business leaders in Kyoto, Bank of Japan, August 2018.

<sup>52</sup> See "Outlook for Economic Activity and Prices", Bank of Japan, July 2018.

<sup>53</sup> See *The Budget and Economic Outlook: 2018 to 2028*, Congressional Budget Office, April 2018.

## 5 A closer look at the factors driving potential output

**This section takes a closer look at some of the underlying factors driving recent developments in potential output in the euro area.** In particular, it seeks to answer the question of why the contributions of labour and TFP to potential growth have broadly returned to their pre-crisis levels, while the capital contribution remains subdued. The section concludes by looking at the longer-term outlook for potential growth.

### 5.1 Labour

**The contribution of labour to potential growth can be traced back to trends in the labour force, the unemployment rate and hours worked per employee.** The labour force includes all those in work or seeking work. Changes in the labour force, in turn, can be decomposed into changes in the working age population (15-74 years of age) and the labour force participation rate (i.e. the percentage of the working age population participating in the labour force).

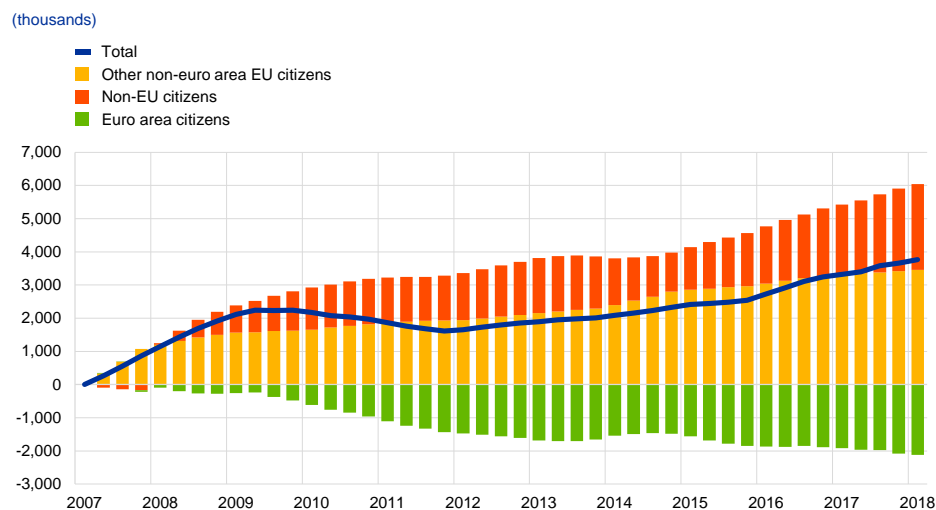
**The enlargement of the working age population on account of immigration has supported potential growth over recent years.** Following a contraction between 2009 and 2015, the working age population has been increasing over recent years. These developments reflect two countervailing forces (see Chart 5). On the one hand, “natural” population growth has been negative for some time now, since the “baby-boomer” generation is reaching retirement age and fertility rates are low. On the other hand, there has been a net inflow of people of working age, in particular from other EU Member States.<sup>54</sup>

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<sup>54</sup> It should be noted that the decomposition of changes in the working age population by citizenship is only an imperfect proxy of migration flows.

## Chart 5

### Cumulative changes in the working age population of the euro area since the first quarter of 2007 by citizenship



Source: Eurostat (European Union Labour Force Survey).

Notes: "Euro area citizens" refers to all members of the working age population aged 15 to 74 holding citizenship of an EU Member State whose currency is the euro. The data have been adjusted for structural breaks, in particular for Germany (first quarter of 2010) and France (first quarter of 2014). The chart is based on four-quarter averages.

### Labour force participation has continued to increase during the recovery, underpinned by increased participation of the older generations and women.<sup>55</sup>

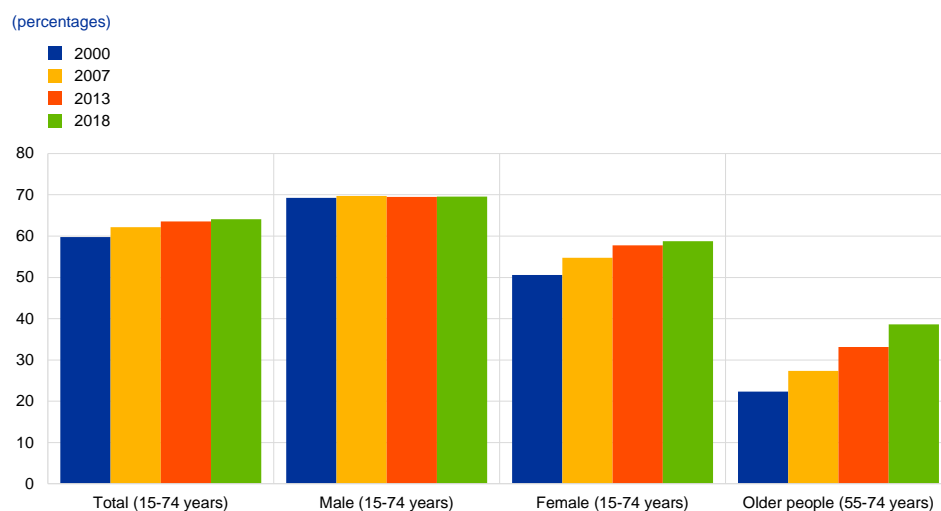
While the euro area labour force is ageing, more people are remaining economically active later in life. In line with this longer-term trend, the participation rate of those aged 55 to 74 has continued to increase during the recovery. This reflects increases in the pension age in many euro area countries, as well as other factors, most notably rising education levels. In addition, the labour force participation of women has continued to increase, which is also partly due to rising education levels.<sup>56</sup> All these structural changes have contributed to a steady increase in the participation rate over recent years (see Chart 6). Coupled with a growing working age population, this trend has led to an expansion of the labour force during the ongoing economic recovery. However, the rate of growth of the labour force still remains below that recorded in the pre-crisis period.

<sup>55</sup> See the article entitled "Labour supply and employment growth", *Economic Bulletin*, Issue 1, ECB, 2018, and the box entitled "Recent developments in euro area labour supply", *Economic Bulletin*, Issue 6, ECB, 2017.

<sup>56</sup> See Thévenon, O., "Drivers of Female Labour Force Participation in the OECD", *OECD Social, Employment and Migration Working Papers*, No 145, OECD, 2013.

## Chart 6

### Labour force participation rate by gender and age



Source: Eurostat.

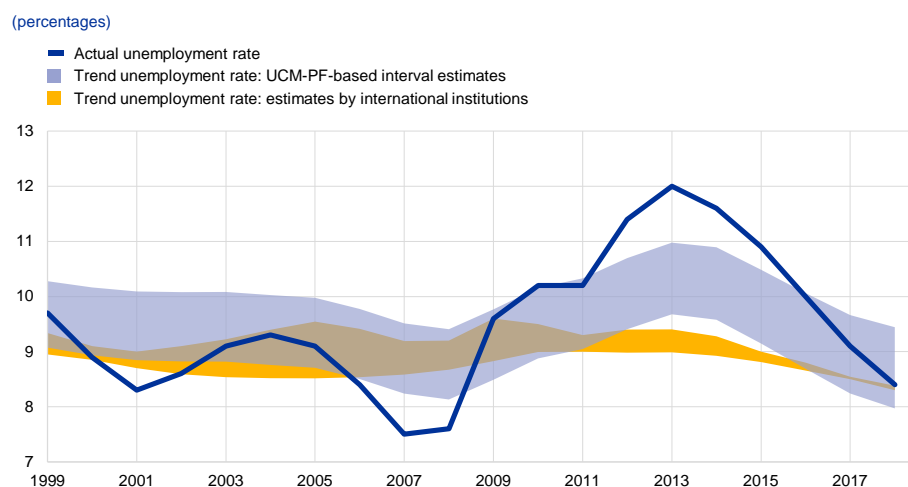
Notes: The total participation rate is defined as the labour force as a percentage of the working age population. The latter comprises those aged between 15 and 74. The participation rates for individual groups (i.e. women, men and older people) only relate to the relevant parts of the labour force and the population.

**A decline in the trend unemployment rate is estimated to be another important driver of the post-crisis recovery in potential growth.** The trend unemployment rate broadly corresponds to the unemployment rate that is consistent with non-accelerating wage (or price) inflation.<sup>57</sup> Available estimates overall suggest that the trend unemployment rate in the euro area increased in the crisis period, partly due to hysteresis effects, before declining to around 8.0-9.5% more recently (see Chart 7). To some extent, these developments reflect transitory factors. Since wages tend to adjust slowly to shocks, the macroeconomic adjustment partly operates through persistent changes in the unemployment rate. However, the post-crisis decline in the estimated trend unemployment rate is also likely to be driven by structural factors, most notably the labour market reforms undertaken in some euro area countries.

<sup>57</sup> An alternative concept is the “structural unemployment rate”, which is affected only by structural factors, such as institutions and technology – see Havik et al., “The Production Function Methodology for Calculating Potential Growth Rates & Output Gaps”, *European Economy – Economic Papers*, No 535, European Commission, November 2014, Box 1.

## Chart 7

### Unemployment rate and estimates of the trend unemployment rate



Sources: Eurostat, European Commission, IMF, OECD and ECB staff calculations.

Notes: The yellow area indicates the range of estimates by international institutions, and the light blue area indicates interval estimates based on the UCM-PF model presented in Box 1 (with an uncertainty band of plus/minus two standard deviations around the point estimate). The UCM-PF estimates for 2018 only incorporate data up to the second quarter of 2018.

**Hours worked per employee have continued to decline over recent years, although there are some signs of stabilisation.**<sup>58</sup> The longer-term downward trend in average hours worked per employee mainly reflects secular changes in the composition of euro area employment. Most importantly, the shares of part-time workers and the services sector (where hours worked are typically lower than in other sectors) in overall employment have increased over the past decade.

## 5.2 Capital

**The capital stock is another essential determinant of potential output, but data are not easy to obtain.** The gross capital stock is the physical capital available in the private and public sectors of the economy for production processes.<sup>59</sup> The true potential capital stock is not directly measurable but can be calculated using the “perpetual inventory” method. The current net capital stock is then derived from the past capital stock, subtracting depreciation and adding new investment. Such capital stock data come with a long publication lag.<sup>60</sup> The real capital stock also depends on price trends of capital goods. These trends could be very different from those of intermediate and consumer goods. Over the past two decades, the investment deflator – and in particular the quality-adjusted prices of information and

<sup>58</sup> See the box entitled “Factors behind developments in average hours worked per person employed since 2008”, *Economic Bulletin*, Issue 6, ECB, 2016.

<sup>59</sup> See Anderton et al. (2014), op. cit.

<sup>60</sup> Official capital stock data (based on non-financial asset balance sheets) that are in line with the ESA 2010 Transmission Programme are available for the total economy and by asset (at annual frequency) for most EU countries, but not for the euro area as a whole, with a publication lag of about 24 months.

communications technology (ICT) goods – has been less dynamic than the overall value added deflator, which has supported the capital-output ratio in real terms.<sup>61</sup>

**The rising share of intangible investment increases capital consumption and poses challenges to measuring the capital stock.** The capital stock in the construction sector generally depreciates very slowly, while the business sector capital stock, particularly intangibles, depreciates much faster.<sup>62</sup> Aggregate depreciation rates are likely to increase gradually as countries' income levels rise, assuming that the share of assets with shorter lifespans (such as intangible assets) grows in economically more advanced countries. As a result, the amount of investment required to offset the consumption of capital and to maintain the capital stock at a constant level increases. At the same time, it is possible that the size of the capital stock remains underestimated owing to insufficient incorporation of intangible investment<sup>63</sup> in the national accounts (see also the box entitled "Investment in intangibles in the euro area" in this issue of the Economic Bulletin).<sup>64</sup> Intangible investment has long been considered largely as intermediate consumption – as opposed to investment – on the balance sheets of firms, reflecting the fact that such investment was thought to exclusively benefit firms themselves. Available estimates suggest that GDP (and gross saving and investment rates) in Europe would be 5 to 10 percentage points higher if all intangibles were classified as investment.<sup>65</sup>

**The cyclical recovery in overall investment since the crisis has given some positive impetus to the capital stock in the euro area, although its contribution to the capital stock has been lower than in the pre-crisis period.** Increasing demand, low financing costs and better access to finance as a result of the ECB's accommodative monetary policy have supported the recovery in investment.<sup>66</sup> As a result, capital stock growth rates have accelerated in the euro area in the period since the crisis (see Chart 8). However, lower than pre-crisis growth rates of investment<sup>67</sup> have weighed on capital stock contributions to potential growth in the recovery period (see Chart 4). There are a number of factors behind the lower growth rates. First, it took time to unwind excess capacity accumulated during the crisis in the construction sector – particularly in housing, but also in commercial and industrial construction – which resulted in underutilised capital and excess capacity. Second, recent years have still been characterised by persistently high uncertainty, slowing growth expectations related partly to population ageing, and remaining deleveraging needs, both in the

<sup>61</sup> For evidence on Germany, see the article entitled "Investment in the euro area", *Monthly Report*, Deutsche Bundesbank, January 2016, pp. 31-49.

<sup>62</sup> Depreciation rates range from about 1% per year for the stock of residential structures to around 20% for research and development, and around 30% for software, according to data from the [EU KLEMS database](#).

<sup>63</sup> See Haskel, J. and Westlake, S., *Capitalism without Capital: The Rise of the Intangible Economy*, Princeton University Press, 2017.

<sup>64</sup> However, since its revision in 2014, the European System of Accounts (ESA 2010) has distinguished between construction investment (about 50% of euro area total investment), machinery and equipment (about 30%) and investment in intellectual property products (about 20%).

<sup>65</sup> See Corrado, C., Haskel, J., Jona-Lasinio, C. and Iommi, M., "Intangible Capital and Growth in Advanced Economies: Measurement Methods and Comparative Results", *IZA Discussion Paper*, No 6733, July 2012. See also <http://www.intan-invest.net/>.

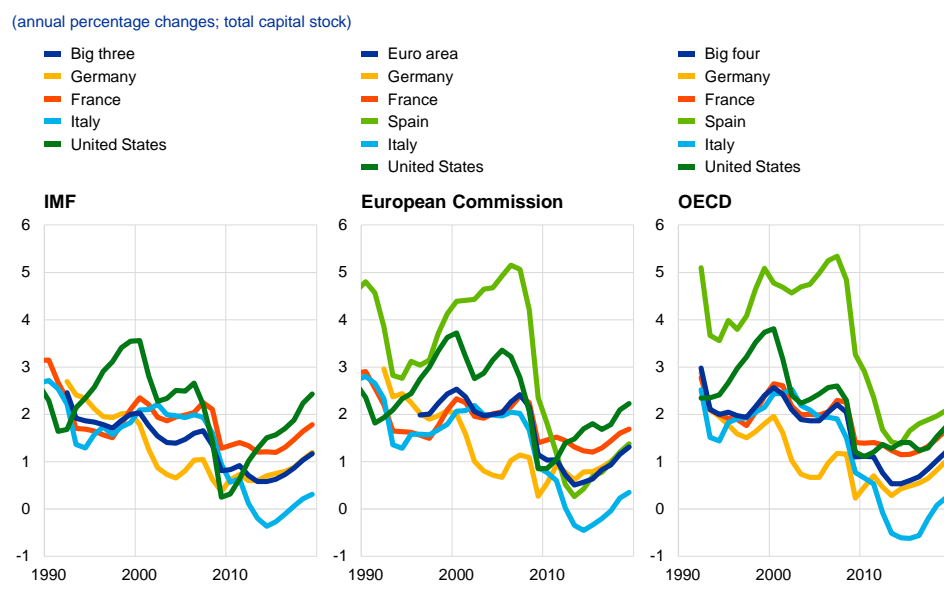
<sup>66</sup> See the article entitled "Business investment developments in the euro area since the crisis", *Economic Bulletin*, Issue 7, ECB, 2016.

<sup>67</sup> See "Investment in the EU Member States: An Analysis of Drivers and Barriers", *European Economy – Institutional Papers*, No 062, European Commission, October 2017.



private and public sectors. Third, in the early phase of the recovery the average scrapping rate might have been higher due to crisis-related company liquidations. Also, in this period public investment was subdued owing to fiscal constraints in some countries. Public investment has been shown to have considerable spillover effects on private investment.<sup>68</sup>

**Chart 8**  
Growth in the real capital stock in selected economies



Sources: European Commission (AMECO), IMF and OECD.  
Notes: The "big three" of the euro area are Germany, France and Italy, while the "big four" also includes Spain. The growth rates of the capital stocks include projections until 2019. Data for Spain from the IMF are missing.

### 5.3 Total factor productivity

**In the decade leading up to the global financial crisis, TFP growth was on a downward trend in the euro area and in other advanced economies.**

Between 1999 and 2007, trend TFP growth gradually slowed from 1.0% to 0.5%, according to European Commission estimates (see Chart 9). Several explanations have been proposed for this deceleration, some of which are complementary.<sup>69</sup> Mismeasurement problems, for instance with regard to intangible investments, may have led to an underestimation of TFP growth. More fundamentally, recent innovations might have been less pervasive than earlier technological advances, such as the railways and electricity. Moreover, there is evidence that it takes longer for technological innovations by pioneering firms to be incorporated into the production processes of other firms.

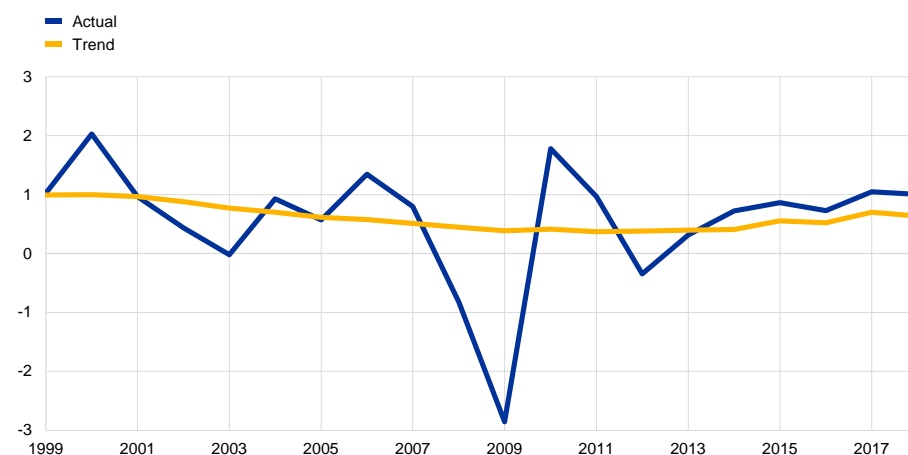
<sup>68</sup> See "Business investment in EU countries", *Occasional Paper Series*, No 215, ECB, October 2018.

<sup>69</sup> See the article entitled "The slowdown in euro area productivity in a global context", *Economic Bulletin*, Issue 3, ECB, 2017.

## Chart 9

### Total factor productivity growth

(percentage changes)



Source: European Commission.

Note: The trend is based on estimates by the European Commission.

**The global financial crisis exacerbated the decline in TFP growth.** In fact, TFP growth is even estimated to have turned negative during the crisis, albeit largely driven by its cyclical component. Firm-level evidence indicates that bank forbearance and inadequate insolvency regimes locked capital into firms with low levels of productivity, weakening the cleansing effects typically associated with recessions.<sup>70</sup> Following the unwinding of macroeconomic imbalances in euro area countries, structural rigidities may have hampered the necessary reallocation of resources towards more productive sectors and firms. Moreover, protracted private sector balance sheet repair has weakened investment, thereby potentially limiting technological innovation.

**TFP growth has increased during the ongoing economic recovery, broadly returning to its pre-crisis rates.** The adverse effects of the crisis on TFP growth, for instance through disruptions in financial intermediation, cuts in research and development budgets and subdued spending on public infrastructure, have started to wane. There is also evidence that the crisis has ultimately led to a reallocation of resources towards more productive firms (e.g. through the elimination of unviable businesses). Moreover, it may simply take some time for innovations in the field of digitalisation to be widely adopted throughout the economy. Sustained improvements in educational attainment also continue to support TFP growth.

## 5.4 Longer-term outlook

**Euro area potential growth will remain broadly stable over the coming years, according to the projections by international institutions.** On average, the European Commission, the IMF and the OECD envisage potential growth of 1.4% in

<sup>70</sup> See Andrews, D. and Petroulakis, F., "Breaking the Shackles: Zombie Firms, Weak Banks and Depressed Restructuring in Europe", *Economics Department Working Papers*, No 1433, OECD, 2017.

2018 and 1.5% in 2019 (see Table 1). The projections are below those for actual GDP growth, implying that supply constraints will become more binding.

**Table 1**  
Projections for actual and potential growth by international institutions

(percentage changes)				
	<i>Memo: 2007</i>	2017	2018	2019
<b>Potential growth</b>				
<b>European Commission</b>	1.9	1.5	1.5	1.5
<b>IMF</b>	1.4	1.4	1.6	1.6
<b>OECD</b>	1.7	1.2	1.3	1.4
<b>Actual growth (real GDP)</b>				
<b>European Commission</b>	3.1	2.4	2.3	2.0
<b>IMF</b>	3.0	2.3	2.4	2.0
<b>OECD</b>	3.0	2.6	2.2	2.1

Sources: European Commission, IMF and OECD.

**While the longer-term outlook for potential growth is more uncertain, population ageing looks set to exert increasing downward pressure.<sup>71</sup>**

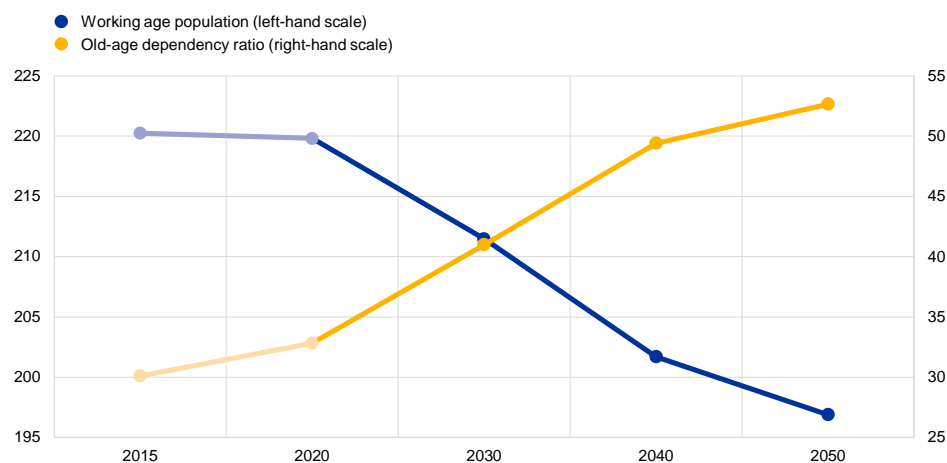
According to projections by Eurostat, the euro area's old-age dependency ratio (i.e. the number of people aged 65 or over as a percentage of the working age population) will increase from around 30% at present to around 50% by 2050 and the working age population will decline by around 23 million over the same period (see Chart 10). This forecast already takes into account net immigration of around 800,000 persons per year. The expected decline in the working age population could be partly offset by further increases in the overall participation rate on the back of previous pension reforms and rising education levels. However, on the basis of these projections, the euro area labour force looks set to decline over the coming decades, exerting downward pressure on potential growth.

<sup>71</sup> See the article entitled "The economic impact of population ageing and pension reforms", *Economic Bulletin*, Issue 2, ECB, 2018.

**Chart 10**

**Working age population and old-age dependency ratio (Eurostat projections)**

(left-hand scale: millions; right-hand scale: percentages)



Source: Eurostat (population projections 2015).

**The impact of population ageing on potential growth could be partly offset by other factors.** In particular, automation and digitalisation could support TFP growth (see Box 3). However, when and to what extent this will happen is highly uncertain.

**With regard to the capital stock, it could be expected to continue growing and to contribute positively to potential growth.** International institutions also expect capital stock growth to accelerate further in the next few years. The reasons for continued capital accumulation include sustained cyclical demand, near-full capacity utilisation in the capital goods-producing sector and a continued need to replace and upgrade capital in order to face the challenges posed by globalisation and the digital economy. In the longer term, expectations of further advances in technology – and the resulting changing composition of the capital stock – point to an accelerating need for capital accumulation to keep up with rising overall depreciation rates. Recent research has also found that the capital stock of intangible assets adjusts more slowly to fluctuations in the economy than tangible investment,<sup>72</sup> given the irreversible nature of intangible investment. This could result in a capital stock that is becoming less sensitive to the business cycle.

**Box 3**

**The role of digitalisation in shaping developments in potential output and the output gap in the euro area**

Prepared by Vincent Labhard

**Digitalisation may be viewed as a supply shock affecting key macroeconomic aggregates for the euro area, including potential output and the output gap, largely via possible competition,**

<sup>72</sup> See Peters, R. and Taylor, L., "Intangible capital and the investment-q relation", *Journal of Financial Economics*, Vol. 123(2), February 2017, pp. 251-272.

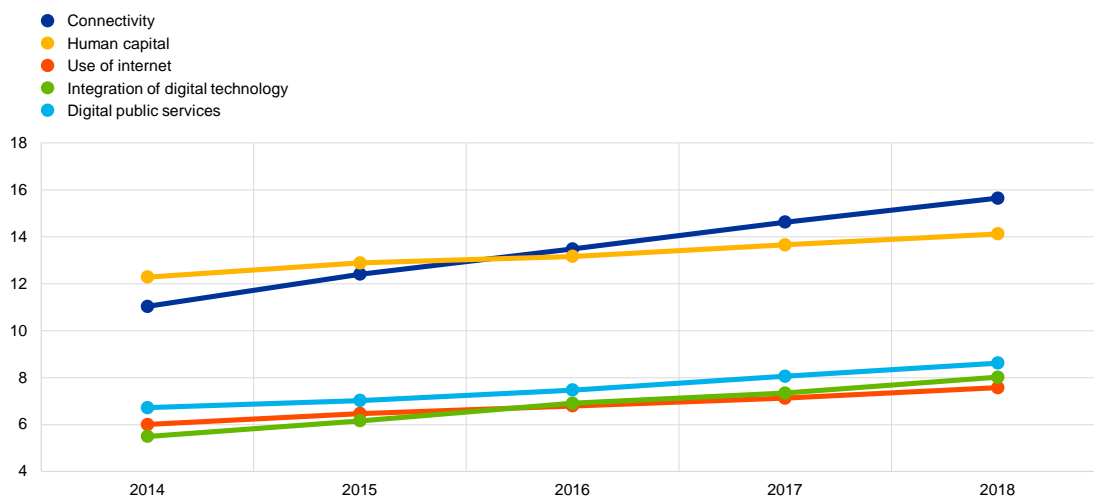
**productivity and employment effects.**<sup>73</sup> One aspect of this is the digitalisation of production and supply chains, involving automation, robotisation and artificial intelligence. This tends to change relative prices and the allocation of work across factors of production, for instance between labour and capital or between routine and non-routine jobs, and thereby affect productivity. Another aspect of digitalisation is digital and mobile communication and connectivity, encompassing the internet, social media, cloud computing and big data analysis. These have an impact on competition by altering relative prices and market shares between, for instance, digital and non-digital firms or small and large firms (the “winner takes all” phenomenon). The third aspect of digitalisation is new goods and services, both information technology (IT)-related and non-IT-related, which may lead to changes in prices and/or consumer preferences.

**While some aspects of digitalisation are more advanced than others, it seems to be progressing relatively steadily for the EU as a whole.** This can be seen, for example, from the European Commission’s Digital Economy and Society Index (DESI), as displayed in Chart A for the EU for the sample between 2014 and 2018. It is important to note, however, that many of the major milestones of digitalisation occurred before the sample covered in Chart A, such as early research on artificial intelligence in the 1950s, the first computer networks in the 1960s, the first email in the 1970s, the first driverless car in the 1980s, the world-wide web, the internet of things and search engines in the 1990s, and social media in the 2000s. As a result, digitalisation is perhaps best described as a succession of supply shocks occurring, and impacting on the economy, over time.

### Chart A

Digitalisation in the EU28 from 2014 to 2018

(index: between 0 and 25 for connectivity and human capital; between 0 and 20 for integration of digital technology; between 0 and 15 for use of internet and digital public services)



Source: European Commission.

**Digitalisation may affect all the contributions to potential output – namely labour, capital and TFP.** Digital production and supply chains, for example, may raise TFP, because of the greater efficiency (in terms of time and/or quality) of digitally-enhanced or digitally-supported (e.g. just-in-time) production technology. Digital communication and connectivity may also support TFP, by enabling the faster collection and evaluation of data. At the same time, there have been

<sup>73</sup> Information on the findings of an ad hoc ECB survey of leading euro area companies on the impact of digitalisation on the economy is available in the box entitled “Digitalisation and its impact on the economy: insights from a survey of large companies” in this issue of the Economic Bulletin.

suggestions that some digital and mobile communication applications could act as a distraction from productive activity. While it is unclear how the TFP contribution has been or is going to be affected by digital technology, it seems likely that the overall effect would be supportive of potential growth. It is also likely that the TFP contribution of digital technologies has been supportive of potential growth in the past, although it is noteworthy that this has not been sufficient to offset the decline in trend TFP growth.

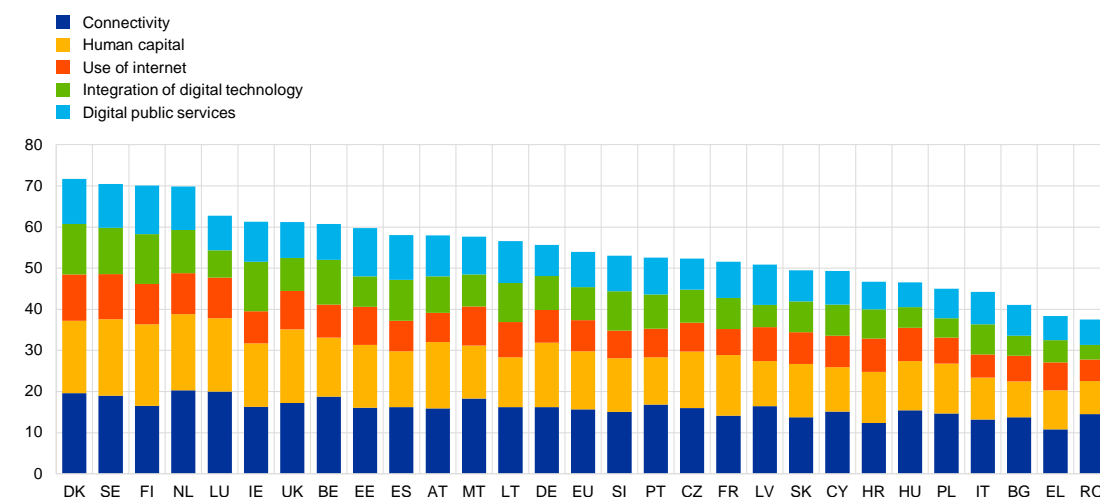
**While digitalisation may support potential output via the TFP contribution, the effects via the contributions from labour and capital are more uncertain.** Digital production and supply chains may lead to an increased need for labour for non-repetitive, non-routine tasks, digital skills and professions, or other skills and professions for the digital work environment (such as openness to change and/or adaptability to new technologies). At the same time, however, they may entail a reduced requirement for lower skilled labour for more routine tasks and a corresponding shift to more (IT) capital. Although these effects might be expected to be broadly offsetting, it is also conceivable that the labour contribution to potential output may be pushed up or pulled down somewhat in ways that are difficult to predict. The same might be true of the capital contribution. While substantial investments in digital technology might be expected, the effect on the overall physical capital stock might be limited, particularly if the new technologies increase the intensity with which capital assets can be used.

**How the effects of digitalisation on potential output might unfold depends on a number of factors, and is therefore difficult to predict.** It is noticeable, however, that some economies are more advanced than others in certain aspects of digitalisation (see Chart B). Going forward, economies with an environment conducive to research and innovation are likely to see faster adoption and implementation of digital technologies and thus also a faster impact on potential output.

### Chart B

Digitalisation in the EU28 in 2018

(index: between 0 and 25 for connectivity and human capital; between 0 and 20 for integration of digital technology; between 0 and 15 for use of internet and digital public services)



Source: European Commission.

**Summing up, digitalisation is likely to affect potential output and the output gap, but the dynamics of those effects are difficult to predict.** While the effects of digitalisation on the labour

and capital contributions to potential output are particularly uncertain, the effects of digitalisation on the TFP contribution are more likely to be supportive of potential output.

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## 6 Conclusions

**Available estimates indicate that euro area potential growth has increased over recent years, although it remains weaker than before the global financial crisis.**

Following a significant slowdown during the crisis, potential growth is estimated to have recovered since the start of the ongoing economic recovery. Over recent years, potential growth has been underpinned by an expansion of the labour force, a decline in trend unemployment and stronger productivity gains. While capital formation has also accelerated over recent years, it remains weaker than before the crisis.

**Supply constraints are expected to become increasingly binding going forward, which would be conducive to a gradual strengthening of wage growth and underlying inflation.**

During the ongoing economic recovery, real GDP growth has consistently exceeded available estimates of potential growth. This has led to a gradual shrinking of the output gap that opened up during the crisis. The economy now seems to be operating close to its potential. It should be noted, however, that estimates of potential output and the output gap are fraught with uncertainty.

**Given the imminent challenges arising from population ageing, well-designed structural policies with a focus on enhancing productivity are essential to boost potential growth.**<sup>74</sup>

Population ageing is expected to exert downward pressure on euro area potential growth over the coming decades. This could be offset at least partly by sound structural policies for labour, product and services markets that can be expected to raise the labour or TFP contribution to potential growth. To exploit the full potential of digitalisation, the euro area economy needs improvements in the quality of the digital infrastructure and the availability of digital skills. The deepening of the Single Market and competition-enhancing product market reforms, in particular in the services sector, would also foster productivity growth. In addition, the cutting of red tape would facilitate firm entry and exit and the efficient reallocation of resources across firms. Labour force and employment growth could be supported by policies that help the long-term unemployed, migrants and other groups whose participation rates remain low to enter or return to the labour market, or to find jobs that better match their skills.

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<sup>74</sup> See Masuch et al. (2018), op. cit., and “Economic Surveys: European Union”, OECD, 2018.

## 2 The state of the housing market in the euro area

Prepared by Niccolò Battistini, Julien Le Roux, Moreno Roma and John Vourdas

The housing market has important macroeconomic and macroprudential implications for the euro area economy. In view of the duration of the ongoing upturn in euro area house prices and residential investment, which started at the end of 2013, analysing the state of the housing market is particularly informative. This article discusses the ongoing housing market upturn, from a chronological and fundamental perspective. It also explores a selected set of indicators that can potentially inform on the state of the housing market, elaborating on the demand and supply factors underpinning the current upturn, as well as their relative importance.

### 1 Introduction

**Understanding and monitoring the state of the housing market is important because of its macroeconomic and macroprudential implications.** Housing market developments affect investment and consumption decisions and can thus be a major determinant of the broader business cycle. They also have wealth and collateral effects and can thus play a key role in shaping the broader financial cycle. The housing market's pivotal role in the business and financial cycles makes it a regular subject of monitoring and assessment for monetary policy and financial stability considerations.<sup>75</sup> This is especially relevant given that housing markets can be the source of booms and busts, with severe and long-lasting consequences for economic and financial development. Such episodes tend to reflect a decoupling of expectations over housing market tendencies from their fundamental determinants.

**The housing market has a price and a volume dimension.** Residential property prices (hereafter "house prices") and residential investment are relevant dimensions and are the main focus of this article. They can be seen, in a broader context, as outcomes determined by the interaction of different supply and demand factors. Price and volume developments are not necessarily synchronised, so that possible misalignments between them can be an additional source of information. However, they can also make the overall assessment of the state of the housing market more challenging. For the euro area, this assessment is subject to the caveat that there is considerable heterogeneity across housing markets and their developments across countries. In addition, disentangling developments that could be associated with past boom/bust episodes, with a period of accommodative monetary policy or with changes in structural factors adds to the complexity of the analysis.

**The state of the housing market is, by nature, unobservable but can be assessed from different perspectives.** From a chronological perspective, the state of the market can be characterised by the length of its upturns or downturns, in particular, in comparison with the average durations of such phases. From a

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<sup>75</sup> For an earlier discussion, see the article entitled "The state of the house price cycle in the euro area", *Economic Bulletin*, Issue 6, ECB, 2015.



fundamental perspective, it can be assessed by the position of key indicators relative to benchmarks, for instance to determine possible house price overvaluation or unsustainably high activity in construction. The set of indicators that can potentially inform on the state of the housing market is large and the discussion in this article therefore needs to be selective.<sup>76</sup> It aims to distinguish broadly between demand and supply factors, although even this distinction may be difficult given the nature of some of the indicators.

Against this background, this article has two main sections. Section 2 puts into perspective the recent developments in house prices and residential investment in relation to the business cycle. Unless otherwise stated, these two indicators are expressed in nominal and real terms respectively. Section 3 elaborates on the demand and supply factors underpinning the current upturn in the housing market, as well as their relative importance.

## 2 The state of the euro area housing sector: a look at residential investment and house prices

**The upturn in the euro area housing market is in its fourth year.** Measured in terms of annual growth rates, house prices started to pick up at the end of 2013, while the pick-up in residential investment started somewhat later, at the end of 2014. The latest available data (first quarter of 2018) indicate annual growth rates above their long-term averages (see Chart 1, left-hand panel) for both indicators. This is more evident for residential investment (where the upturn in growth rates has levelled off) than for house prices (where it has continued). The timing of the start of the upturn is broadly the same when measured in terms of the levels of the two indicators. At the same time, the level perspective highlights that residential investment is still considerably below earlier peaks, while house prices have recovered from the declines recorded during the financial crisis (see Chart 1, right-hand panel). In the aftermath of the financial crisis, residential investment declined sharply by 25%, bottoming out in 2014. Thus far it has only partially recovered and in early 2018 was still 15% below its pre-crisis level. House prices, on the other hand, contracted by only 6% between peak and trough, and in early 2018 were standing 5% above their pre-crisis level (although in real terms – deflated by the HICP – they were 5% below their pre-crisis level).

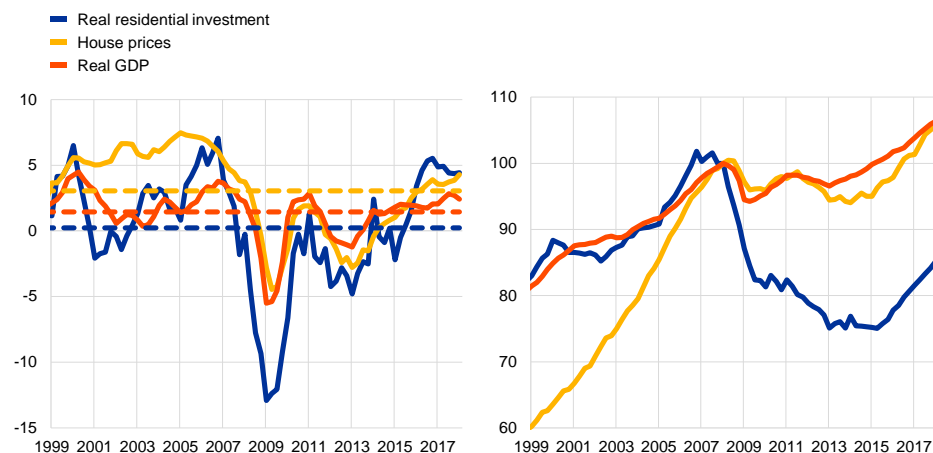
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<sup>76</sup> In this respect, the article does not discuss some indicators that regularly feature in other assessments of the housing market, such as household balance sheet positions. For additional indicators see, for instance, "Methodologies for the Assessment of Real Estate Vulnerabilities and Macroprudential Policies – Residential Real Estate", ESRB, forthcoming.

## Chart 1

### Residential investment, house prices and real GDP in the euro area

(left-hand panel: annual growth rates; right-hand panel: indices (Q1 2008=100))



Sources: Eurostat and ECB calculations.

Note: Left-hand panel: long-term averages have been computed since the first quarter of 1999 and are shown as dashed lines.

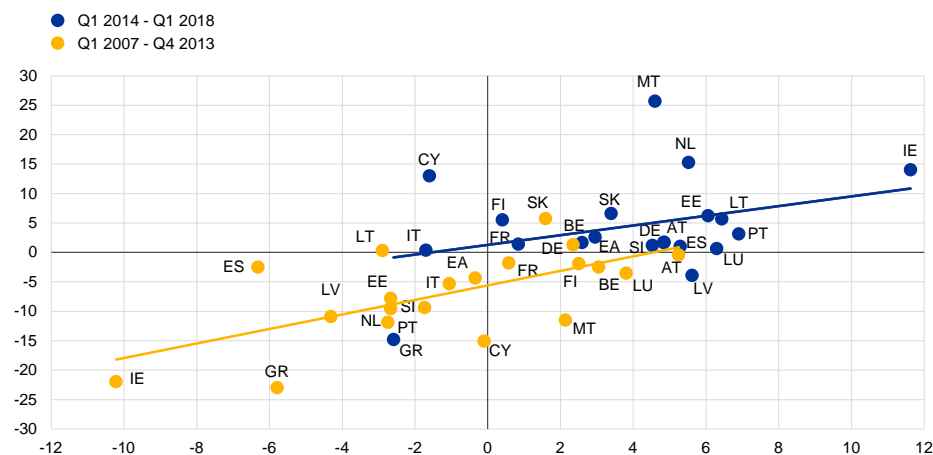
### The upturn in the housing market is common to the majority of euro area

**countries.** Over the last four years almost all of the countries have witnessed positive average growth in both residential investment and house prices, although with different magnitudes (see Chart 2). On balance, the majority of the countries share the feature, observed for the euro area as a whole, of concurrent growth in investment and house prices during the current upturn (blue dots), mirroring the relative adjustments in the preceding downturn (yellow dots). Some natural questions arise. How prolonged is the current housing market upturn compared with historical regularities? And, what can we expect going forward?

## Chart 2

### Residential investment and house prices during the most recent upturn and downturn

(x-axis: house prices; y-axis: real residential investment; annual average growth rates)



Sources: Eurostat and ECB calculations.

**A turning point analysis suggests that the housing market upturn is in a relatively advanced phase compared with the average duration of such upturns.**

From a chronological perspective, at the aggregate euro area level, the length of the current upturn in both residential investment and house prices of about 4 years amounts to the average duration of historical upturns in residential investment and half the duration of historical upturns in house prices (see Table 1). For the purpose of this article, an upturn exceeding half the average duration of previous upturns shall be considered relatively mature. It should be borne in mind that turning point analysis is surrounded by considerable uncertainty, especially at the end of the sample, and that there is no unique way of dating the economic phases. Notwithstanding these caveats, if we consider the five largest euro area countries, the residential investment cycle has reached a mature phase in Germany and the Netherlands, while it is still at an early stage in France, Italy and, to a lesser extent, Spain. According to this metric, the house price cycle is likewise advanced in Germany, while it is still at a rather preliminary stage in the other countries. In Italy, the formal turning point analysis does not yet suggest an upturn in house prices.<sup>77</sup> The maturity of the upturn can also be related to the strength of the recovery, with more mature cycles generally exhibiting lower rates of growth compared with those recorded at an early stage of the cycle.

**The current euro area upturn is stronger than historical averages for residential investment but weaker for house prices.**

If cycles were to evolve around an unchanged trend, the relatively strong upturn in residential investment can be related to the relatively large fall in the aftermath of the crisis: during the ongoing upturn, euro area residential investment has increased at an annual average rate of 3.5%, clearly above the average of 1.9% recorded for the same duration in previous upturn phases (see Table 1). For euro area house prices, the corresponding comparison suggests a relatively muted upturn, with an annual average rate of increase of 2.7% – below the historical average of 6.3%. For house prices, this relatively muted pattern is common across the largest euro area countries, whereas in the case of residential investment the outcomes are mixed: the Netherlands and France exhibited higher than average upturns, while the opposite was true for Germany, Spain and Italy. This metric is an additional gauge for assessing the state of the housing market, but it comes with the caveat that the relative strength of the upturn may look “artificially” low in countries where the historical averages are influenced by unsustainable booms in the housing market. To this end, assessments against fundamental values are also needed.

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<sup>77</sup> A visual inspection of the series would instead suggest a trough around the first quarter of 2015, after which house prices have been broadly stable.

**Table 1**

Turning points in the housing market: euro area and largest euro area countries

	Euro area	Germany	Spain	France	Italy	Netherlands
<b>Residential investment</b>						
Latest trough	Q3 2014	Q4 2009	Q1 2014	Q2 2016	Q4 2014	Q3 2013
Average duration of upturns (quarters)	15	19	38	37	22	17
Duration of recent upturn (quarters)	14	36	16	7	13	19
Average annual growth during recent upturn (%)	3.5	3.3	4.1	3.2	2.0	13.8
Average growth during upturn(s) with the same duration as the current one (%)	1.9	4.9	6.4	2.2	2.9	5.1
<b>House prices</b>						
Latest trough	Q4 2013	Q3 2008	Q4 2013	Q2 2015	Q3 2007 (*)	Q3 2013
Average duration of upturns (quarters)	36	38	41	26	25 (*)	90
Duration of recent upturn (quarters)	17	38	17	11	42 (*)	18
Average annual growth during recent upturn (%)	2.7	3.5	4.4	2.1	-1.6 (*)	4.8
Average growth during upturn(s) with the same duration as the current one (%)	6.3	3.4	9.6	6.6	n.a	5.2

Sources: Eurostat and ECB calculations.

Notes: The identification of upturns and downturns is based on real residential investment and real house prices (house prices deflated by HICP) using a modified Bry and Boschan (1971) quarterly algorithm ("BBQ"), as in Harding and Pagan (2002). The parameter of minimum phase duration set to six quarters, as in Borio and McGuire (2004) and Bracke (2011). Average growth denotes the annual rate of change of real residential investment and nominal house prices over the period Q1 1980-Q1 2018. Only completed phases are included in the computation of average durations and growth rates.

(\*) In Italy, where house prices have not yet bottomed out, data refer to downturn phases.

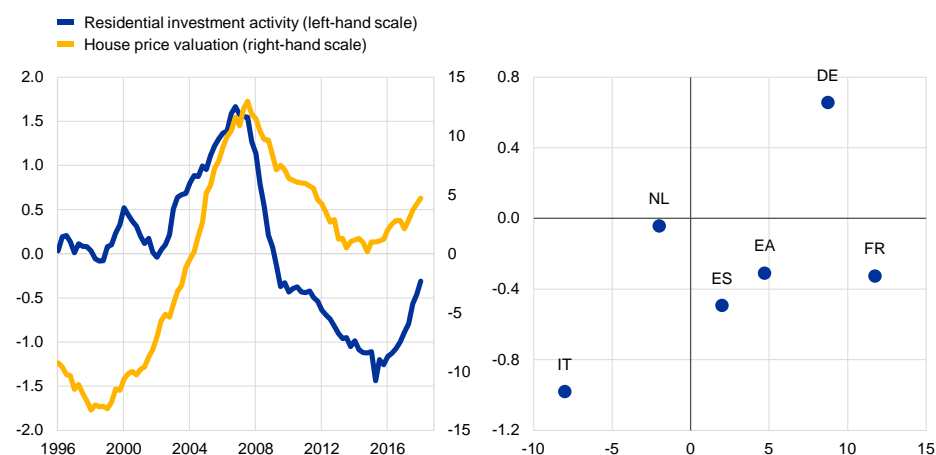
**Assessing house prices and residential investment against fundamentals also provides insights on the state of the cycle.** Chronologies of the housing cycle can only provide a partial gauge for assessing the state of the housing market, although, empirically, being out of tune with fundamentals often coincided with the state of the cycle being relatively more advanced and having seen a relatively strong magnitude of adjustment. Benchmarking against fundamentals can take several forms, such as simple ratios, deviations from model-explained values, or synthetic combinations of such metrics. In the case of house prices, valuation estimates are regularly applied in financial stability assessments<sup>78</sup> and currently point to a slight overvaluation for the euro area as a whole, as well as for Germany and France (see Chart 3). In the case of residential investment, this article introduces a synthetic indicator constructed from different (standardised) ratios for output and employment in the construction sector. For both the euro area and the largest euro area countries, this indicator suggests that the residential investment cycle is close to its historical norm, somewhat above for Germany and somewhat below in the case of Italy.

<sup>78</sup> Valuation estimates are surrounded by a high degree of uncertainty, while their interpretation may be complicated at the country level, given national specificities like fiscal treatment or structural factors (e.g. tenure status). Moreover, developments are heterogeneous not only across countries but in some cases across regions within a country. For further discussion, see "Financial Stability Review", ECB, May 2018 and "Monthly Report", Deutsche Bundesbank, February 2018.

### Chart 3

#### Benchmarking against fundamentals for residential investment activity and house prices

(left-hand panel: standardised index (left-hand scale); percentage points (right-hand scale); right-hand panel: x-axis: percentage points for house price valuation in Q1 2018; y-axis: standardised index for residential investment activity in Q1 2018)



Sources: Eurostat, ECB and staff calculations.

Notes: The synthetic indicator of residential investment activity is a simple average of four indicators (standardised so as to have zero mean and unit standard deviation since their earliest available date) and includes (1) residential investment as a share of GDP (both in nominal terms), (2) construction employment as a share of total employment, (3) labour shortages from the European Commission Survey on construction, and (4) building permits. A high level of the synthetic indicator may be interpreted as high residential investment compared with historical standards. The valuation estimates for residential property prices are based on four indicators: the price-to-income and price-to-rent ratios, a model-based estimate (Bayesian inverted demand model) and an asset pricing model. For further details, see Box 3 in the "Financial Stability Review", ECB, June 2011, and Box 3 in the "Financial Stability Review", ECB, November 2015.

**Overall, the state of the euro area housing market is relatively mature but is not, so far, characterised by disproportionate residential investment activity or house price dynamics.** The analysis shown in this section suggests more strength and maturity in the euro area residential investment cycle than in the house price cycle. However, measured against underlying fundamentals, the former does not appear, so far, to be above its historical norm. Given that the housing sector can be an important driver of the business cycle and that residential investment and house prices can have leading indicator properties for future economic activity, the current state does not herald imminent risks of a move towards a contraction in the economic cycle (see Box 1 for a more detailed analysis).

### Box 1

#### The housing market as a predictor of prolonged contractions in economic activity

Prepared by Niccolò Battistini and John Vourdas

**Fluctuations in the housing market are an important factor affecting business cycle dynamics and macroeconomic expectations.**<sup>79</sup> While residential investment is a relatively small component of the economy (accounting, in nominal terms, for 6% of GDP between the first quarter of 1997 and the first quarter of 2018), it exhibits greater volatility than the other expenditure components of GDP. Residential investment is an expenditure component in its own right but can also have significant implications in terms of consumption expenditures in durable goods as new or refurbished housing is equipped. Housing-related decisions tend to be strongly correlated across households, since they are

<sup>79</sup> For a comprehensive overview of the literature on housing and business cycles, see Piazzesi, M. and Schneider, M., "Housing and Macroeconomics", *Handbook of Macroeconomics*, Vol. 2B, 2016.

affected by aggregate variables such as demographic transitions and credit and financing conditions, thus acting as an important propagating mechanism of underlying shocks. Consequently, residential investment developments can have a wider impact on the economy. In particular, residential investment developments have been found to lead developments in GDP, especially before recessions.<sup>80</sup> In addition, house price developments have also been found to carry important information for subsequent recessions, especially when triggered by exuberant expectations and excessive credit growth. This box illustrates how residential investment and house prices can contribute to the estimation of short-term probabilities of future prolonged contractions in economic activity.

**The specific hypothesis that housing market dynamics can predict prolonged contractions can be formally tested on the basis of a panel logit model on euro area data.**<sup>81</sup> Following Kohlscheen et al. (2018),<sup>82</sup> the panel logit model regresses a binary indicator of a prolonged (at least two-quarter) contraction in real GDP occurring within the following four quarters on (1) the slope of the yield curve and (2) the number of quarters with a negative quarterly growth rate in the current and the previous three quarters of the two housing market indicators of interest.<sup>83</sup> In order to benchmark the predictive power of residential investment and house prices, the latter metric is also constructed for other GDP components: non-residential investment, total consumption and the trade balance.<sup>84</sup>

**The model confirms a statistically significant predictive power of housing market variables for future prolonged contractions.** All specifications in Table A confirm that the slope of the yield curve – except when considered alone in column (1) – provides useful information for forecasting the start of a prolonged contraction.<sup>85</sup> Columns (2) and (3) show that residential investment and house prices, respectively, significantly increase the predictive power of the model (from 3% to within 16-18%, broadly in line with the estimates presented in Kohlscheen et al., 2018, with a similar model). Furthermore, as shown in column (4) of Table A, including both indicators at the same time further improves the predictive power (up to 21%). Columns (5) and (6) show that total consumption has a statistically significant predictive power both on its own (as do non-residential investment and the trade balance, which are not reported) and when all expenditure components are included in the model. The loss of statistical significance by house prices in the latter model may be due to the

<sup>80</sup> For evidence of the predictive power of residential investment for recessions in the United States, see Leamer, E.E., “Housing really is the business cycle: What survives the lessons of 2008-09?”, *Journal of Money, Credit and Banking*, Supplement to Vol. 47, No 1, 2015.

<sup>81</sup> The sample includes a panel of eight large countries between the first quarter of 1997 and the first quarter of 2017. The selection of the countries aimed to identify economically significant estimates from a euro area perspective over the last 20 years, thus excluding relatively small countries joining the euro area in the late 2000s and (former) programme countries (Ireland, Greece and Portugal). Results for housing variables (investment and prices) are robust to the inclusion of the latter countries.

<sup>82</sup> Kohlscheen, E., Mehrota, A. and Mihailjek, D., “Residential investment and its role in economic activity: Evidence from the past five decades”, *BIS Working Papers*, No 726, 2018.

<sup>83</sup> Several studies have found the yield curve to be the best single predictor of recessions (e.g. Rudebusch, G. and Williams, J., “Forecasting recessions: the puzzle of the enduring power of the yield curve”, *Journal of Business and Economic Statistics*, Vol. 27, 2009, pp. 492-503). However, more recent evidence has questioned the power of the slope of the yield curve as a predictor of prolonged contractions, due to a decoupling of future short-term interest rates from their expected path (e.g. Schrimpf, A. and Wang, Q., “A reappraisal of the leading indicator properties of the yield curve under structural instability”, *International Journal of Forecasting*, Vol. 26, 2010, pp. 836-857). These deviations may have stemmed from default risk – leading to the steepening of the yield curve before a prolonged contraction – and the ensuing implementation of unconventional monetary policies – leading to the flattening of the yield curve before a recovery.

<sup>84</sup> Endogeneity is then partially taken into account by the lag difference between the dependent variable and the independent variables.

<sup>85</sup> The lack of significance of the slope of the yield curve as a single predictor in column (1) may be due to an omitted variable bias, which is then (at least partially) addressed by the introduction of further regressors.

correlation of its information content with that of consumption, as house price declines may in turn weaken consumer confidence.<sup>86</sup>

**Table A**

Logistic regressions for the probability of a prolonged contraction starting within the following four quarters

(probability of the start of a prolonged contraction between t+1 and t+4 (log odds ratio))

	(1)	(2)	(3)	(4)	(5)	(6)
<b>Yield curve slope (10 years to 3 months)</b>	-0.199 (0.299)	-0.396* (0.238)	-0.454** (0.225)	-0.503** (0.246)	-0.688*** (0.200)	-0.737*** (0.256)
<b>Real residential investment</b>		0.771*** (0.215)		0.549*** (0.142)		0.418*** (0.155)
<b>Real house price</b>			0.850*** (0.304)	0.505* (0.286)		0.429 (0.280)
<b>Real non-residential investment</b>						0.0394 (0.233)
<b>Real total consumption</b>					0.988*** (0.260)	0.551*** (0.205)
<b>Trade balance ratio</b>						0.0200 (0.271)
<b>Log-likelihood</b>	-359.3	-303.1	-311.9	-292.8	-314.8	-282.9
<b>Pseudo R2</b>	0.0285	0.180	0.156	0.208	0.149	0.235

Sources: Eurostat, OECD and ECB calculations.

Notes: The sample includes a balanced panel with observations over the period Q1 1997-Q1 2017 for Germany, France, Italy, Spain, the Netherlands, Belgium and Finland. The dependent variable is a 0-1 indicator, taking the value of 1 if a prolonged contraction (defined as a quarter belonging to a period of at least two consecutive quarters of negative real GDP quarterly growth) occurs at any time in the following four quarters (and 0 otherwise). All independent variables are computed as the number of quarters of the negative quarterly growth rate of the respective original variable in the current and the previous three quarters (except for the trade balance as a ratio of GDP, for which the quarter-on-quarter change is used in place of the growth rate), except for the slope of the yield curve, which is computed as the difference between the ten-year and the three-month government bond yields. House prices are computed as the house price index divided by the overall HICP. The logit regressions are based on panel data estimation with fixed effects and standard errors clustered by country. Coefficients represent the log odds ratio. Standard errors are in parentheses. Asterisks denote the statistical significance of coefficients at the following confidence levels: \*\*\* 1%, \*\* 5% and \* 10%. Coefficients for the constant and fixed effects are not reported.

**Model specifications, including housing market variables, do not raise significant concerns about the viability of a continued economic expansion over the short term (see Chart A).**

The estimated parameters of the model specification, including the slope of the yield curve, residential investment and house prices (column (4) of Table A), are applied to euro area aggregate data between the first quarter of 1997 and the first quarter of 2018. It is then possible to generate fitted probabilities of four-quarter-ahead prolonged contractions until the first quarter of 2017 – to be compared with actual realisations of economic downturns – and forecast probabilities from the second quarter of 2017 to the first quarter of 2018 – to produce model-implied predictions. Compared with the 30% probability before the financial crisis started in 2008 and the 20% probability before the sovereign debt crisis started in 2011, the forecast probability of a prolonged contraction starting within the following four quarters is very low (about 3%) in the first quarter of 2018.<sup>87</sup> Importantly, both prolonged contractions observed over the past 20 years were preceded by model-implied probabilities of at least 20%, although probabilities of the same magnitude were observed that were not followed by contractions.

<sup>86</sup> See, e.g. Campbell, J. and Cocco, J., “How do house prices affect consumption? Evidence from micro data”, *Journal of Monetary Economics*, Vol. 54, 2007, pp. 591-621.

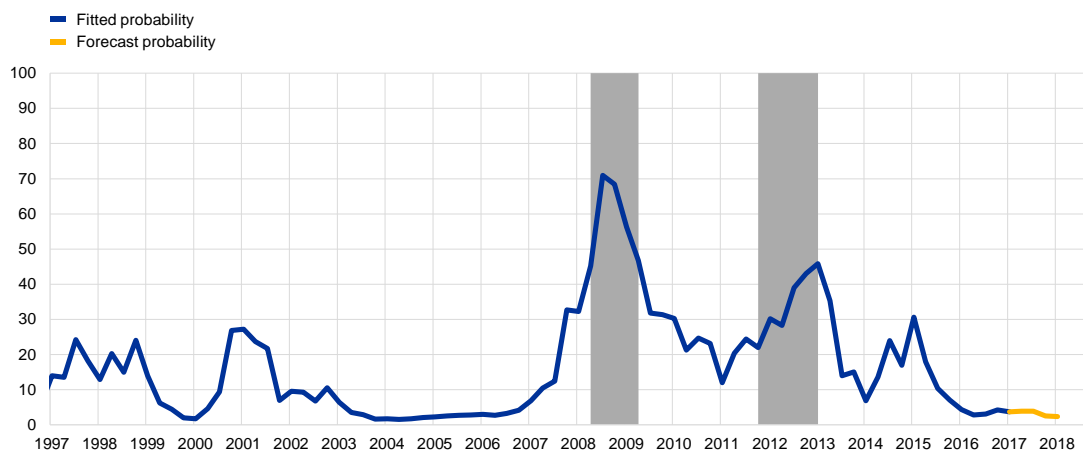
<sup>87</sup> Compared with results from only housing market variables, introducing all variables – as in the model reported in column (7) of Table A – would produce comparable results, yielding a lower probability of a prolonged contraction (about 30%) before the second quarter of 2008, a higher probability (again, about 30%) before the fourth quarter of 2011 and a broadly similar probability in the first quarter of 2018 (about 2%).

**Overall, housing market variables significantly contribute to the prediction of imminent economic contractions beyond what can be inferred from the slope of the yield curve.** At the same time, housing market variables alone cannot fully predict future economic contractions and other indicators, such as financial variables, may further improve on their predictive power. At the current juncture, the analysis presented in this box does not raise significant concerns of an imminent economic contraction as a result of housing market dynamics.

### Chart A

Fitted and forecast probabilities of a prolonged contraction in the euro area starting within the following four quarters based on residential investment and house prices

(percentages)



Sources: Eurostat, OECD and ECB calculations.

Notes: The chart reports the fitted and forecast probabilities of a prolonged contraction in the euro area starting within the following four quarters, based on the parameters estimated through the panel logit model, with residential investment and house prices for eight large euro area countries over the period Q1 1997-Q1 2017, corresponding to column (3) of Table A. The fitted and forecast probabilities are then obtained by applying the estimated parameters to aggregate euro area data for Q1 1997-Q1 2017 and Q2 2017-Q1 2018 respectively. The shaded areas represent prolonged contractions, defined as periods of two or more consecutive quarters of negative quarterly real GDP growth.

## 3 Supply and demand factors behind the current state of the housing market

House prices and residential investment can be seen, in a broader context, as outcomes determined by the interaction of supply and demand factors. Such underlying factors can thus shed additional light on the state of the housing market. However, corresponding indicators are scarce, often lagging, and are not always easy to interpret in terms of whether they provide information unequivocally on the demand or the supply side. This section makes a selective approach to discussing some of these indicators.

### 3.1 Demand factors

#### **Consumer survey indicators point to ongoing increases in demand for housing.**

During the current upturn of the housing cycle, the number of respondents intending to carry out home improvements and to purchase or build a home has gradually increased in the euro area and in the vast majority of euro area countries (see

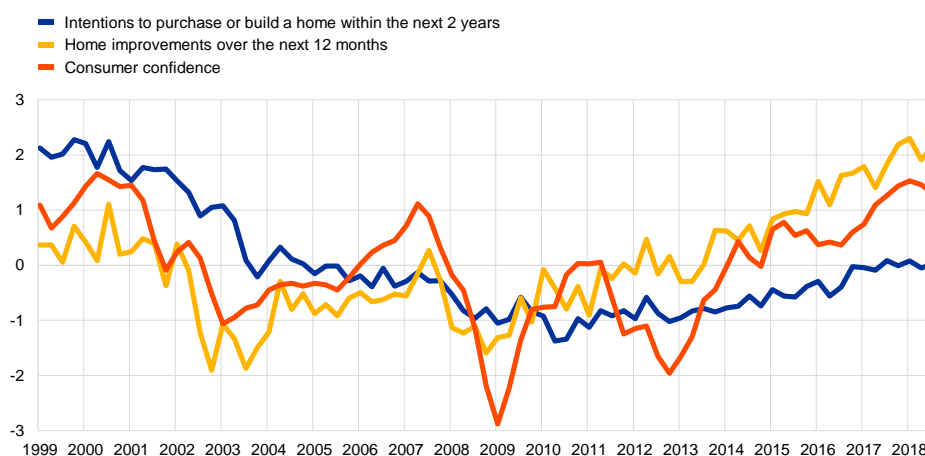


Chart 4). The latest data thus suggest that further demand for housing – related to both the stock and the flow (investment) – may still be in the pipeline. For the euro area as a whole, the intention to carry out home improvements was close to an all-time high in mid-2018, while the intention to purchase or build a home had increased more modestly and remained well below pre-crisis peaks. Since housing-related sentiment indicators have improved, on balance, more moderately than overall consumer confidence, data do not seem to point to a risk of exuberant demand. Intentions to purchase or build a home reflect a combination of cyclical and structural factors. Box 2 discusses homeownership as an example of the latter.

#### Chart 4

##### Euro area survey data as indicators of housing demand

(standardised percentage balances)



Sources: European Commission and ECB calculations.

Notes: Data are standardised so as to have zero mean and unit standard deviation from the first quarter of 1999.

#### The rising demand for housing has been supported by developments in income and financing conditions.

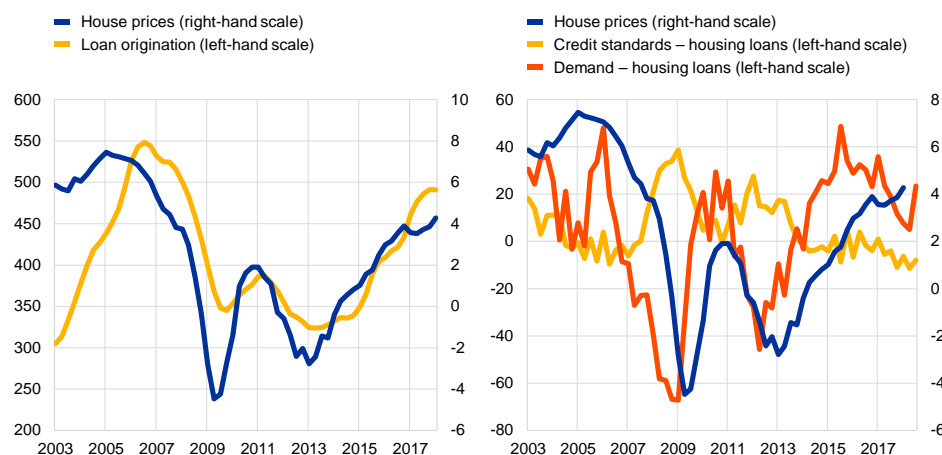
The current euro area housing upturn has been accompanied by an expansion in real disposable income. In addition, financing conditions remained favourable, as reflected in composite bank lending rates for house purchase that have declined by more than 130 basis points since 2013 and by easing credit standards. This has given rise to a higher demand for loans for house purchase and a substantial strengthening in new mortgage lending (see Chart 5). The expansion in loans for house purchases net of repayments has been rather moderate and thus suggests that the upturn in the housing market came with more moderate increases in mortgage indebtedness. However, gross loan origination suggests, at the same time, that the actual availability of credit for the purpose of purchasing and building houses is more than ample.<sup>88</sup> In this respect, the growth in mortgage loan origination in the euro area has been more synchronised with the growth in house prices. From a cross-country perspective, loan origination is currently at historical highs in Germany and France, close to its historical average in Italy, while it remains subdued in Spain.

<sup>88</sup> For a discussion, see the box entitled “Developments in mortgage loan origination in the euro area”, *Economic Bulletin*, Issue 5, ECB, Frankfurt am Main, 2018.

## Chart 5

### House prices, loan origination, credit standards and demand for housing loans in the euro area

(left-hand panel: percentage changes, accumulated 12-month flows in EUR billions; right-hand panel: percentage changes, net percentages)



Sources: ECB (euro area bank lending survey) calculations based on national data.

Notes: The latest observations are for the third quarter of 2018 for the bank lending survey (July 2018) and the first quarter of 2018 for loan origination and house prices.

#### Housing demand is likely to have been supported also by investment motives.

The relative attractiveness of housing as an investment class has increased during the recent housing upturn. Estimates of the return on housing-related investment are surrounded by considerable uncertainty but suggest an increase in the relative attractiveness of investment in residential property vis-à-vis alternative asset classes – such as government bonds, deposits and equities – since 2013 (see Chart 6).<sup>89</sup> Private and institutional investors, both domestically and globally based, searching for yield may thus have contributed to additional housing demand.<sup>90</sup> One expression of this search is portfolio reallocation and flows into real estate funds, which have increased steadily for the euro area as a whole since the beginning of 2013, also as a share of residential investment (see Chart 7). While too small in terms of size to account for substantial shifts in overall demand for real estate properties (some of which could also be directed to commercial real estate or outside the euro area jurisdictions), these funds can nevertheless indicate additional housing demand for investment purposes.

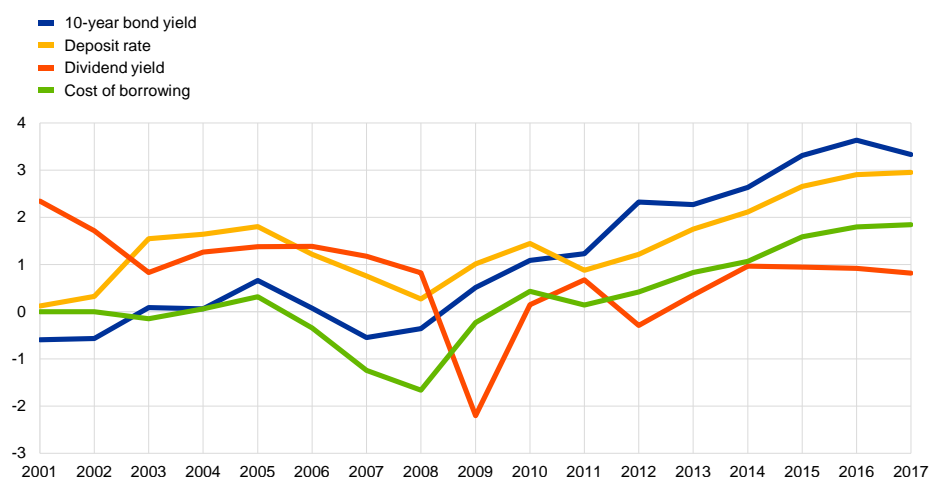
<sup>89</sup> The first estimate – the gross rental yield – is computed as the ratio of actual and imputed rents over the gross housing capital stock and is meant to be a broad, macroeconomic measure of rental yield. The second estimate of housing return is from the MSCI Quarterly Research Database and reflects residential property portfolios for institutional investors. These portfolios are likely to invest predominantly in the prime or close-to-prime market, a sector which is likely to have a different dynamic from the entire residential market; this estimate is therefore narrower in scope.

<sup>90</sup> See Chapter 3 of the IMF's *Global Financial Stability Report*, April 2018, documenting an increase in real estate investments by private equity firms and real estate investment trusts in advanced economies. This is also supported by the considerable increase in the size of the professionally managed real estate investment market globally and in several euro area countries in 2017, with the German market replacing China as the fourth largest market globally. For a discussion, see "Real Estate Market Size 2017", MSCI, June 2018.

## Chart 6

### Return on housing-related investment in the euro area relative to alternative asset classes and to the cost of borrowing

(percentages per annum)



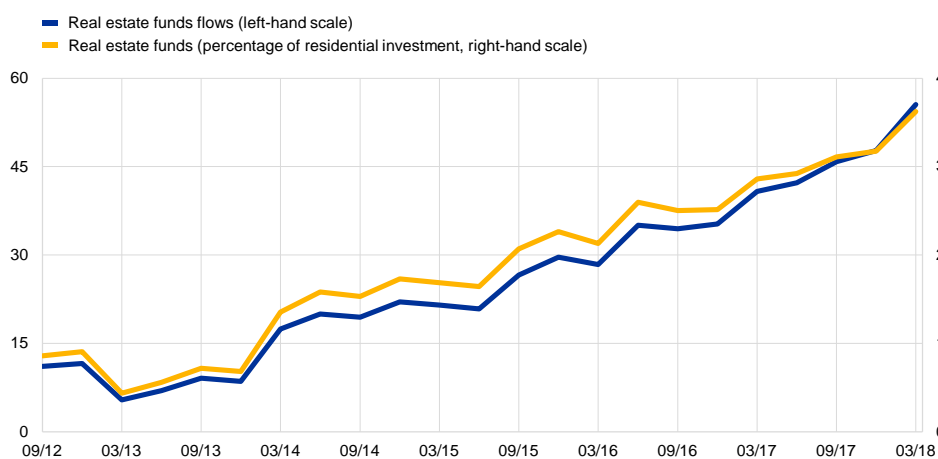
Sources: Eurostat, MSCI, DataStream, ECB and ECB calculations.

Notes: The chart shows relative returns computed as the difference between the return on investment in housing-related assets and the returns on alternative asset classes (deposit, bonds and equities). The return on housing is computed as an average of two estimates: the gross rental yield and housing return. The deposit rate refers to deposits with agreed maturity over two years denominated in euro. The dividend yield represents the return on equity investments. The cost of borrowing refers to the composite lending rate for house purchases across different periods of interest rate fixation, weighted with a 24-month moving average of new business volumes.

## Chart 7

### Flows into real estate funds

(12-month flows in EUR billions; percentages)



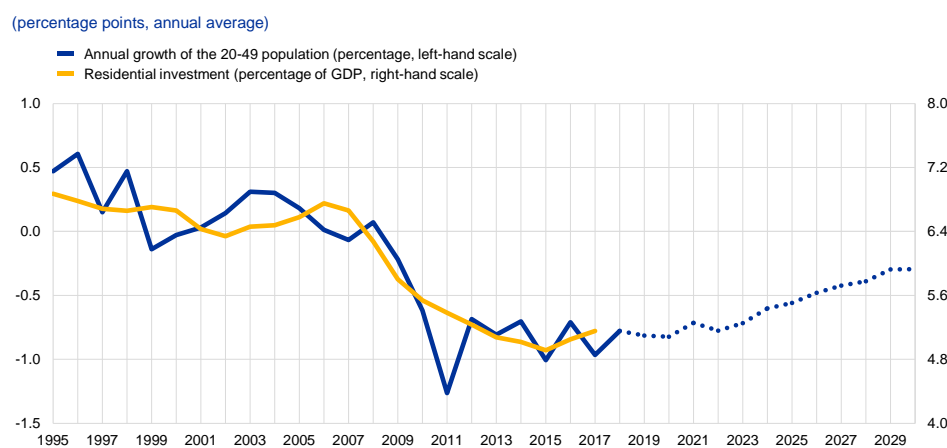
Sources: Eurostat, ECB Investment Funds Balance Sheet Statistics and ECB calculations.

### From a longer-term perspective, the positive cyclical factors of housing demand may have been dampened by structural factors such as demographics.

Since 1995, the decreasing growth rate of the 20-49 population age group, which is an important cohort in terms of housing demand, can contribute to explaining the declining residential investment share of GDP in the euro area and may have exacerbated the sharp cyclical fall in residential investment following the onset of the crisis (see Chart 8). Looking ahead, projections of growth in the euro area 20-49 year-old population bracket suggest a bottoming out of this dampening structural

factor in the coming years, leaving more room for ongoing positive cyclical forces to fuel demand for residential investment (as a share of GDP). Over a longer period of time, the relationship between the growth rate of the 20-49 population age and residential investment is also observed at the country level.<sup>91</sup>

**Chart 8**  
Population growth and residential investment in the euro area



Sources: Eurostat and ECB calculations.  
Notes: From 2018 onwards, growth in the 20-49 year-old population bracket is based on Eurostat projections. The ratio of residential investment to GDP is measured in real terms.

**Box 2**  
Explaining homeownership ratios making use of micro data

Prepared by Julien Le Roux

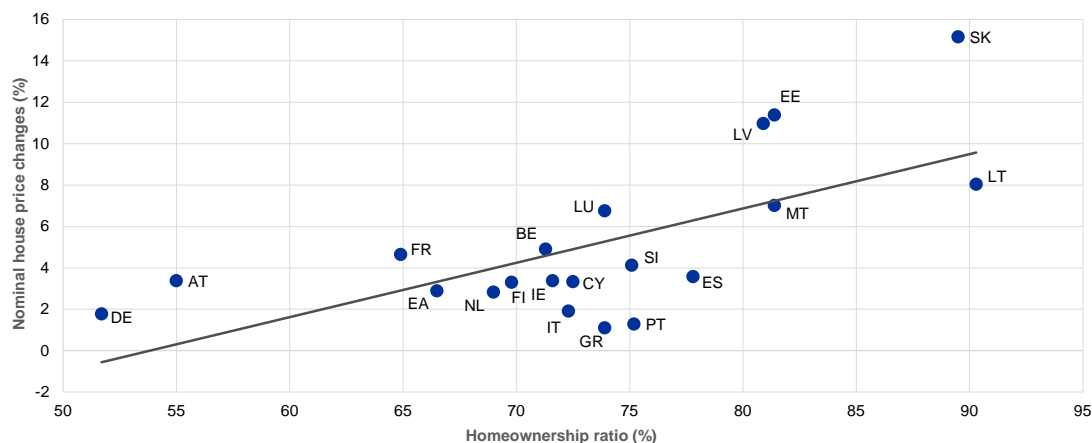
**The degree of homeownership can be a structural factor determining housing demand and thus house price dynamics.** For instance, wealth effects associated with owning a house can stimulate economic growth and thereby house prices. Moreover, homeowners can use capital gains to “trade up” in the housing market, thus enhancing house price dynamics. The higher the homeownership ratio, the more potential there may be for increasing the dynamics, volatility and excessiveness of house price dynamics. An indicative although causally not exhausting relationship is that existing between the level of the homeownership ratio and the average growth in house prices across euro area countries (see Chart A). This box investigates the main determinants of homeownership making use of micro data.

<sup>91</sup> Monnet, E., and Wolf, C., “Demographic Cycle, Migration and Housing Investment”, *Journal of Housing Economics*, Vol. 38, 2017, pp. 38-49. At the euro area level, data are only available from 1995, while Monnet and Wolf (2017) carried out estimations at the country level from 1980. Highlighting the strong cyclicity of the 20-49 year-old population growth rate, they show that housing demand is better measured when looking only at the evolution of the age group relevant for household formation, all other age groups being held constant.

## Chart A

### Nominal house price changes and homeownership ratio across countries

(x-axis: homeownership ratio in 2016; y-axis: annual average of nominal house price changes over the period 2000-17)



Sources: EU statistics on income and living conditions (EU-SILC) and ECB calculations.

Notes: Changes in homeownership appear to be a slow-moving process: from 2010 to 2016, the ownership rate decreased from 66.8% to 66.4% at the euro area level. Thus, looking only at the level of ownership appears to be still meaningful.

### Results of the Household Finance and Consumption Survey indicate that both household-specific and structural characteristics are important drivers of homeownership.<sup>92</sup>

They indicate that the probability of owning the main residence is positively linked to the age of the households, to having previously received inheritances, to being married and having children, and to net wealth. In addition, households that experienced higher aggregate consumer price inflation in the past are more likely to own their home. This also holds when considering aggregate house price inflation and can be reconciled with a desire to hedge against inflation and acquire real assets.

Furthermore, low real mortgage interest rates experienced in the past are also a driver of ownership, but only among households that experienced the highest cost of borrowing. All in all, these results are broadly consistent with findings in the literature.<sup>93</sup>

**Overall, micro data can be usefully employed in the analysis of housing developments, as they provide complementary information to macro data.** This is typically the case the more house price dynamics have been affected by structural factors. While conjunctural factors can be sufficiently assessed with aggregate indicators, as presented in Sections 2 and 3 of this article, structural characteristics are better explored on the basis of micro data. Among the structural characteristics of the housing market is homeownership, a preference that is important to understand for assessing housing market prospects. In the coming years, as the population gets older and past experiences of macroeconomic conditions move over time, shifts in ownership across countries might occur, spawning effects on housing markets.

<sup>92</sup> The [Household Finance and Consumption Survey](#) collects household-level data on assets, liabilities, income and consumption. The survey is conducted by statisticians and economists from the European System of Central Banks and a number of national statistical institutes. The survey took place in 2010 and 2011 for the first wave and between 2013 and 2015 for the second wave (the third wave is currently under way).

<sup>93</sup> Arrondel, L et al, "How do households allocate their assets? Stylised facts from the Eurosystem Household Finance and Consumption Survey", ECB, 2016. Malmendier, U and Steiny, A., "Rent or buy? The role of lifetime experiences of macroeconomic shocks within and across countries", *Working Paper Series*, UC Berkeley, January 2017.

**Table A****Average marginal effects from a probit regression of homeownership across euro area countries**

(marginal probability of being the owner of main residence, compared with a baseline [explained in brackets])

	Individual characteristics	Structural country specificities
<b>Age [base: below 40 years old]</b>		
40-64 years	0.117*** (0.035)	0.110*** (0.010)
65 years and over	0.171*** (0.022)	0.125*** (0.011)
<b>Household type [base: single]</b>		
>=2 adults, no children	0.109*** (0.016)	
single parent	-0.007 (0.017)	
>=2 adults with children	0.143*** (0.026)	
<b>Inheritance [base: no substantial inheritance]</b>		
substantial inheritance	0.050** (0.016)	
<b>Net wealth [base: &lt; 60% of the median wealth]</b>		
above 60% of the median wealth	0.470*** (0.017)	0.507*** (0.007)
<b>Experienced consumer price inflation [base: 1st-3rd quintiles]</b>		
4-5th quintiles		0.011*** (0.000)
<b>Experienced real house price changes [base: 1st-3rd quintiles]</b>		
4-5th quintiles		0.047*** (0.005)
<b>Experienced real mortgage rates [base: 1st-3rd quintiles]</b>		
4-5th quintiles		-0.030*** (0.007)
<b>Number of households</b>	74,773	71,257
<b>Pseudo-R2</b>	0.347	0.306

Sources: Household Finance and Consumption Network 2016 and ECB calculations, based on 18 out of 19 euro area countries. Data for Lithuania are missing. Notes: Standard errors are in parentheses. Asterisks denote statistical significance of coefficients at the following levels: \*\*\* 1%, \*\* 5% and \* 10%. Regressions are carried out at the household level and include country fixed effects for which the estimates are not reported. Age corresponds to the age of the reference person in the household. Based on this age and on the date of interview, one reconstructs the experienced inflation, real house prices, mortgage rates, regulation and tax regime over the life of each household. Households are finally clustered into quintiles, determined by the degree of past average experiences for the different variables. The average marginal effect gives the effect on the probability of the change in explanatory variables: on the top line of the table under Age, 0.117 means that the probability of owning a house increases by 0.117 for the 40-64 year-old cohort compared with those less than 40 years old.

### 3.2 Supply factors

This section analyses how the volume of houses has evolved in recent years and the extent to which there are factors which constrain housing supply.

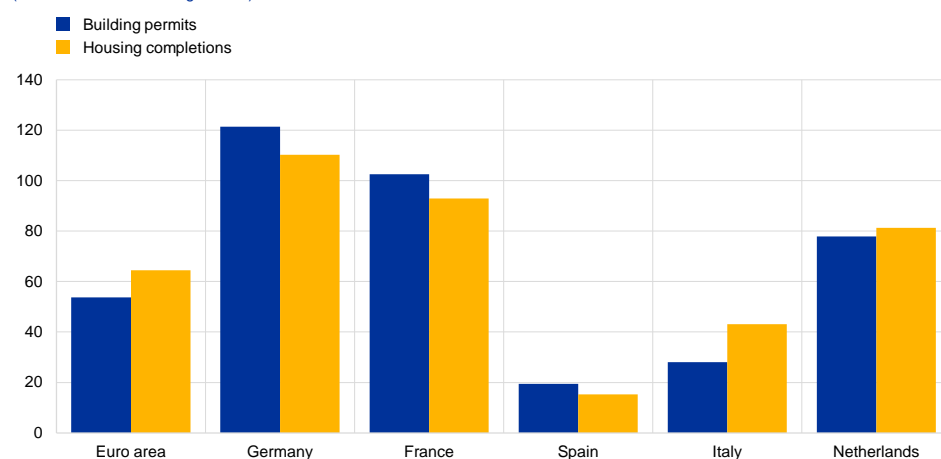
**Housing completions in the euro area have remained substantially below their average level since the start of monetary union.** This indicator can be viewed as a measure of the flow of new houses supplied to the market. In Germany and France this flow has recently been close to the average levels observed since the start of monetary union, whereas in Spain, Italy and, to a lesser extent, the Netherlands it has

remained subdued (see Chart 9). At the same time, the granting of building permits, which are a necessary – but not sufficient – condition to building a house, has increased more strongly than housing completions in a number of large euro area countries. Since it appears that the supply constraints from a lack of building permits have been easing, increases in residential investment activity and new housing supply may be forthcoming.

### Chart 9

#### Housing completions and building permits in the euro area and large euro area countries: latest available data

(index: 1999-2017 average = 100)



Sources: Eurostat and ECB calculations.

Note: Owing to a lack of recent data on housing completions, for the sake of comparability within countries both building permits and housing completions refer to the same year in each country, specifically 2017 for Germany and Spain and 2016 for the other countries and the euro area aggregate.

**The lack of building permits can be a constraint to housing supply.** In central locations and cities, especially, the number of issued permits may fall short of actual demand due to the scarcity of building land. A relatively low number of permits then pose a constraint on the supply of new homes. In central locations, where the availability of land is limited, the competition for scarce building permits may be aggravated by demand from investors interested in building commercial real estate, and who – according to anecdotal evidence – currently seem to have a preference for urban areas. However, data limitations prevent firm conclusions from being drawn.<sup>94</sup> The notion of local supply constraints is supported by a stronger increase in house prices in capital cities vis-à-vis the corresponding countries' average in the current housing market upturn.<sup>95</sup>

**In the shorter term, housing supply can also be constrained by the time required to receive permits.** Administrative restrictions – such as the time required

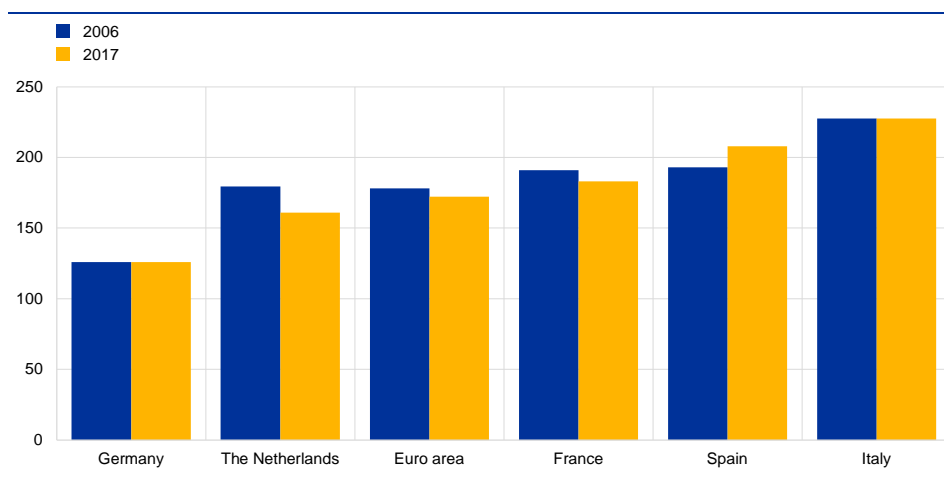
<sup>94</sup> In Germany 43% of the stock of apartments is held by professional commercial landlords (including institutional investors) and another 42% by small private landlords; only around 15% is owner-occupied (European Public Real Estate Association). Anecdotal evidence suggests an increasing role of institutional investors, which are also absorbing the supply of new flats coming onto the market.

<sup>95</sup> For a discussion, see Box 3 entitled "Residential real estate prices in capital cities: a review of trends", *Financial Stability Review*, ECB, May 2017, which shows that in the second quarter of 2016 the growth in house prices in selected euro area cities outpaced the aggregate of the respective national averages by 3.7 percentage points.

to obtain a building permit – are a major factor affecting the elasticity of housing supply in reaction to demand.<sup>96</sup> Consequently, when demand for housing picks up, one would expect it to show initially in a relatively larger rise in house prices than in quantities, as measured by residential investment. To illustrate this point, in 2017 a construction company needed roughly 126 days to obtain a building permit in Germany, compared with 228 days in Italy and 208 days in Spain (see Chart 10).

**Chart 10**

Number of days to obtain a building permit in the euro area and in the large euro area countries



Sources: World Bank's "Doing Business 2018 – Reforming to create jobs" and ECB.

Note: The euro area aggregate is a weighted average (using GDP weights) of 18 euro area countries (data for Malta are not available).

**Another factor that may have limited housing supply is a shortage of labour in construction production.** Survey data on the percentage of construction firms signalling constraints on production due to a lack of workers suggest that labour shortages have started to become an issue in the current housing market upturn. The percentage of companies reporting labour as a factor limiting production recorded a fourfold increase in the euro area over the past three years, from almost 5% in the third quarter of 2015 to more than 20% in the third quarter of 2018 (see Chart 11). Among the five largest euro area economies, these developments were more accentuated in Germany, France and the Netherlands.

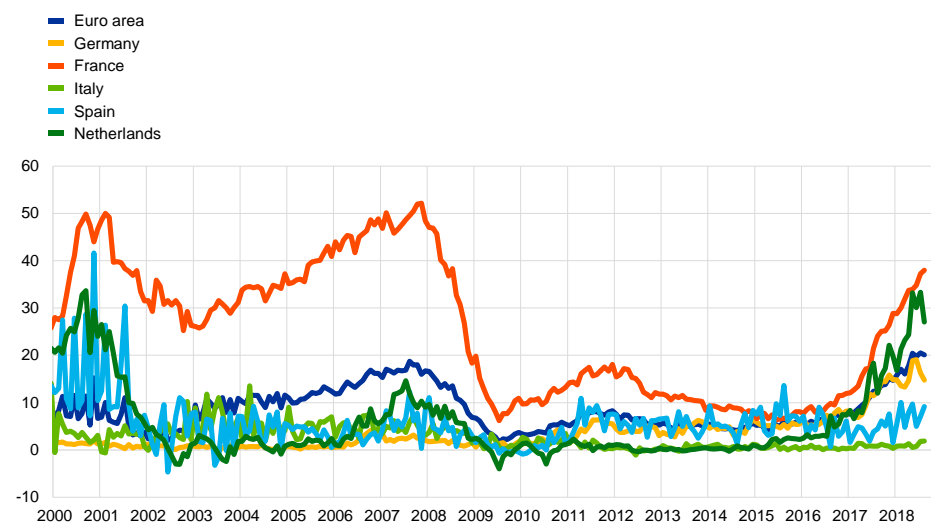
<sup>96</sup> Besides land regulation and a number of other factors like construction costs, credit availability, the weather, etc., different spatial factors and historical patterns are also found to affect housing supply elasticities. For instance, the distribution of pre-existing land uses matters for local and aggregate supply elasticities, as shown by Ball, M., Meen, G. and Nygaard, C., "Housing supply price elasticities revisited: Evidence from international, national, local and company data", *Journal of Housing Economics*, Vol. 19(4), 2010, pp. 255-268.



## Chart 11

### Labour as a factor limiting construction production in the euro area and in the large euro area countries

(percentage of respondents; seasonally adjusted)



Source: European Commission's (DG-ECFIN) Construction Survey.

Notes: A number of the observations are negative due to seasonal adjustment of the data. These observations are shown to illustrate the true evolution of labour shortages.

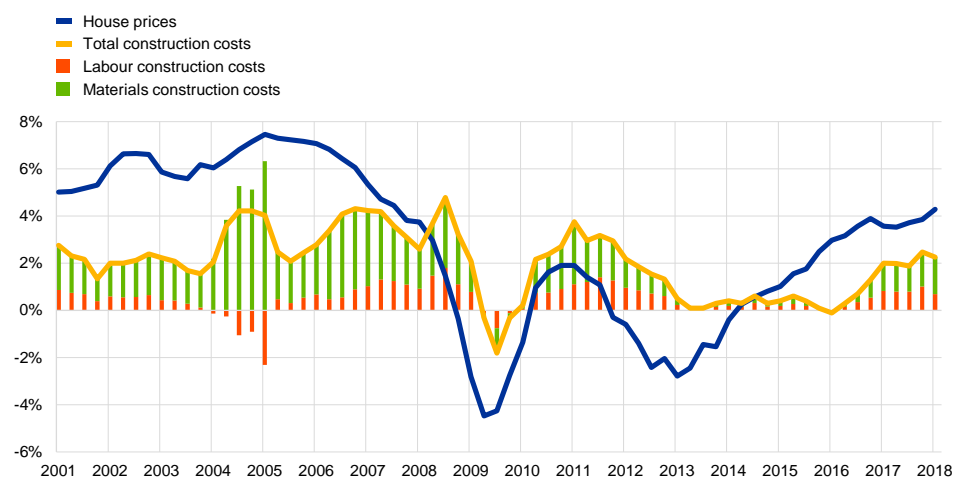
#### **Labour shortages may affect the prices in the housing market in different ways.**

On the one hand, shortages may lead to gradually higher wages in the construction sector, which, in a situation of sufficient demand, will then be passed through to construction output prices. On the other hand, shortages may constrain or delay the supply of new houses in relation to demand and then imply a rise in house prices that does not necessarily come with higher construction output prices. Thus far, the marked rise in construction costs since 2014 has been increasingly fuelled by rising labour costs (despite their lower weight in the overall index), indicating growing labour shortages, and has been accompanied by strong momentum in house price growth, signalling buoyant demand (see Chart 12).

## Chart 12

### House prices and construction costs

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



Sources: Eurostat and ECB calculations.

Notes: The construction cost index refers to new residential buildings excluding residences for communities. Materials construction costs capture all non-labour construction costs, including materials (which are typically the largest part), as well as architectural, legal and other fees.

### 3.3 The relative importance of housing demand and supply

**Assessing the relative importance of housing demand and supply factors is intrinsically challenging, as data mainly refer to equilibrium outcomes.** For example, rising house prices may reflect an increase in demand for housing or a reduced supply of houses. With this caveat in mind, this subsection reviews available survey evidence and model-based results to assess the relative contribution of supply and demand factors to the state of euro area housing markets.

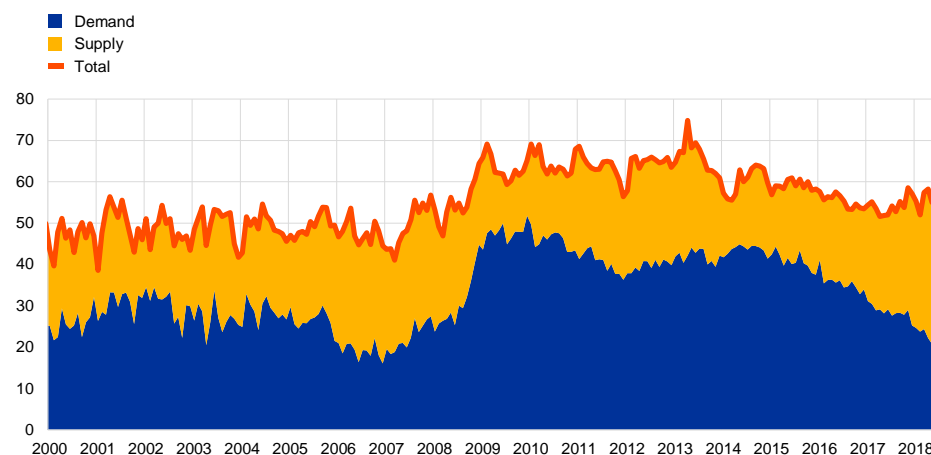
**Survey data point to an increasing relative importance of supply factors in determining the dynamics of prices and investment in the housing market.** The proportion of construction firms<sup>97</sup> indicating constraints to their production has hovered between 50% and 60% since 2014. However, the composition between reported demand-side and supply-side constraints has varied significantly: the share of firms reporting insufficient demand as a factor limiting production has decreased substantially, with opposite developments for firms reporting supply-side constraints (see Chart 13). Recently, there has been approximately a 10-percentage point increase in the number of respondents noting supply-side rather than demand-side constraints limiting production. This suggests that constraints on construction producers' output have recently mainly come from the supply side. This evidence is confirmed through the lenses of a stylised model with residential investment and house prices (see Box 3).

<sup>97</sup> The European Commission's Construction Survey sample also includes firms that operate in commercial real estate and civil engineering. However, as the factors affecting output in the residential construction sector are similar to those affecting the construction sector as a whole, the survey is informative of factors affecting production in the residential real estate sector.

**Chart 13**

**Factors limiting construction production in the euro area**

(percentage of respondents, seasonally adjusted)



Sources: European Commission's (DG-ECFIN) Construction Survey.

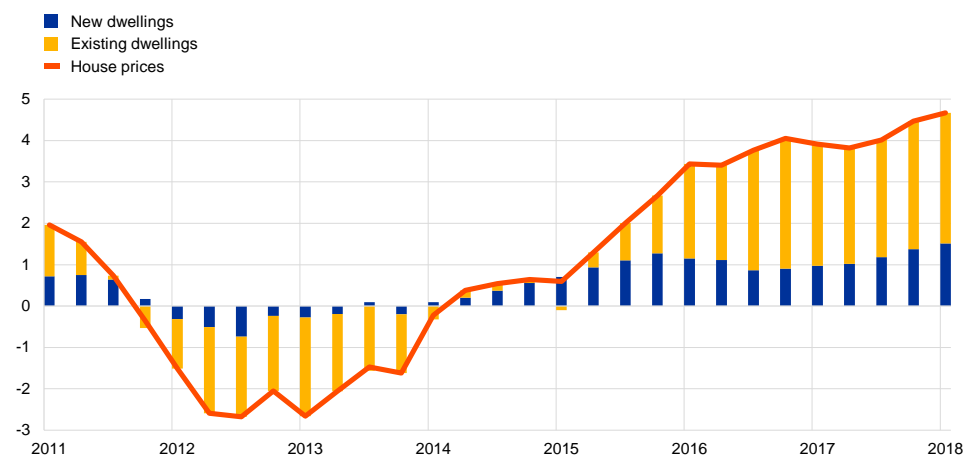
Notes: Demand refers to the percentage of respondents noting insufficient demand as a factor limiting production. Supply refers to the percentage of respondents reporting neither insufficient demand nor no constraints (i.e. one hundred minus the percentage of respondents reporting no constraints minus the percentage of respondents reporting insufficient demand).

**The relative importance of housing demand and supply factors can also be assessed by means of information concerning the composition of house prices.** The more demand outpaces supply, the more prices of existing dwellings should be expected to rise as the competition for housing extends to existing properties. Whether the prices of existing dwellings rise faster than those of new dwellings also naturally depends on whether there are bottlenecks in the supply of new dwellings and on the responsiveness of construction output prices. It is thus conceivable that the prices of existing dwellings reach a larger amplitude at the peaks of the cycle compared with the prices of new dwellings. Indeed, over recent years, the contribution of prices of existing dwellings to overall house price growth has risen sharply, from close to 10% at the start of the upturn in 2014 to almost 80% in 2016, hovering above 70% – but on a declining path – over the last year (see Chart 14). At the same time, the increase in the contribution of prices of new dwellings since late 2016 (although still subdued) may confirm a tightening housing market, with increasingly binding supply-side constraints: amid buoyant housing demand, new dwellings cannot be provided fast enough and their prices tend to rise more rapidly.

**Chart 14**

**Decomposition of house price growth by type of dwelling**

(year-on-year growth rates and percentage point contributions)



Sources: Eurostat and ECB calculations.

**The analysis presented in this section suggests an increasing role for supply-side constraints in determining dynamics in the euro area housing market.** During the early stage of the upturn, a significant positive adjustment in residential investment was accompanied by relatively smaller house price increases. Over the most recent quarters, as the upturn in the housing market continues, buoyant demand amid increasing supply constraints has been associated with moderating residential investment growth and continued rising growth in house prices.

**Box 3**

**The relative importance of demand and supply factors in driving housing market developments**

Prepared by Kyriacos Lambrias

**Individual indicators of demand and supply factors can be inconclusive about their relative importance in driving residential investment and house prices.** This relative importance can be better captured, assessed and quantified through the lenses of economic models. This box presents a rather stylised, two-variable Bayesian Vector Auto-Regression (BVAR) model with residential investment and house prices. The relative importance of supply and demand factors is assessed by identifying demand and supply shocks and by measuring their relative contribution in driving fluctuations in these two variables. This practice – typically referred to as historical decomposition – is rather standard in the empirical economics literature. Shocks are identified by imposing (sign) restrictions to the reaction of the underlying variables in response to these shocks: a demand shock leads to a positive co-movement between residential investment and house prices, and a supply shock to a negative co-movement.<sup>98</sup> Naturally, this identification restriction is rather general and

<sup>98</sup> Restrictions are imposed for four periods (one year).

encompasses a rather broad range of “demand shocks” and “supply shocks” but illustrates a possibility to disentangle supply and demand “forces”, broadly defined.<sup>99</sup>

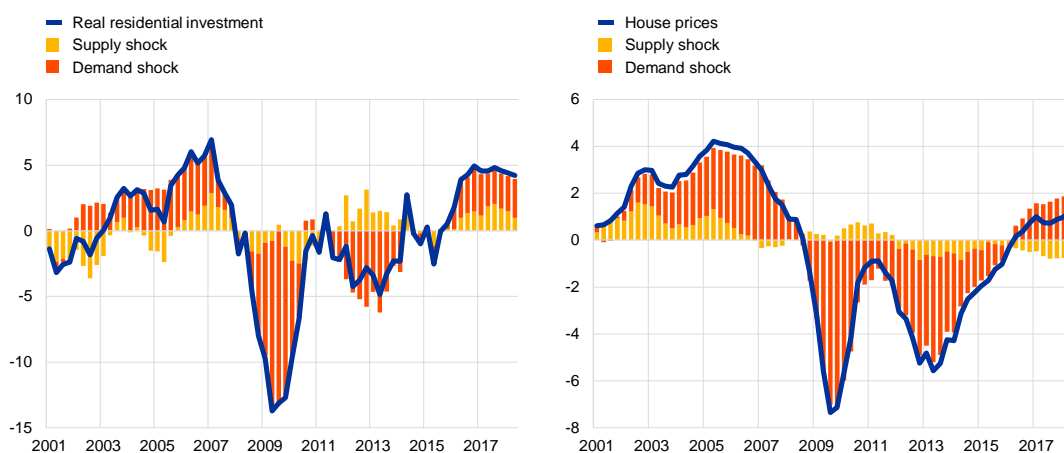
**In the interpretation of the model, demand is the main driver of aggregate movements in the housing market.** The relative importance can be assessed in terms of “forecast error variance decomposition”, where demand shocks explain approximately 65% of the movements in residential investment and as much as 80% of those in house prices.

**Consistent with the overall dominance of demand factors in driving the housing cycle, model evidence suggests that demand buoyancy has more than compensated for lacklustre supply in the housing sector over the last few years.** On the volume side, residential investment growth has been growing positively and above average since the third quarter of 2015. According to the BVAR model, during this period residential investment growth has been supported by both supply and demand shocks, turning positive following a long period of subdued demand that dates back to the Great Recession (see Chart A, left-hand panel). On the price side, house prices have been increasing above average since 2016. As with the volume side, this reflects primarily a strong positive contribution from demand factors, which turned positive, having persistently contributed to lower house prices since the second quarter of 2008 (see Chart A, right-hand panel). Strong demand over this period has outweighed positive supply-side developments that have otherwise contributed to lower house-price growth. Finally, focusing on developments over this last year, the relative contribution of supply factors to both residential investment and house-price growth has been steadily decreasing, whereas the relative importance of demand factors has increased. This evidence is consistent with the presence of increasing supply-side bottlenecks and demand-side momentum behind the expansion of the housing cycle at the current juncture.

### Chart A

Historical decomposition of residential investment and house prices between supply and demand shocks

(annual growth rates)



Sources: Eurostat and ECB calculations.

Notes: Supply and demand shocks refer to shocks to euro area real residential investment and house prices identified through sign restrictions in a Bayesian Vector Auto-Regression (BVAR) model with four lags and Minnesota priors. The series are demeaned. The house price series is seasonally adjusted.

<sup>99</sup> For example, the broad category of demand shocks in the context of this simple model would also include monetary policy shocks and government spending shocks, e.g. incentives to families to buy a house. Supply shocks, on the other hand, would encompass, *inter alia*, oil-price shocks, which would contribute to higher production costs, as well as labour-supply shocks, e.g. changes in collective agreements between employers and trade unions active in the sector. A more elaborate model would be needed to further disentangle these broadly defined categories.

## 4 Conclusions

**The euro area housing market has been in an upturn since the end of 2013 and is in a relatively advanced state of the cycle in terms of duration.** House prices have surpassed their pre-crisis peaks, while residential investment is still significantly below. The state of the euro area housing market is, so far, not characterised by generalised investment activity or house price levels above their fundamentals. However, considerable heterogeneity in developments across and within countries makes the overall assessment more challenging.

**The housing market upturn is expected to continue but at a more moderate pace.** This reflects expectations in currently available forecasts and projections that the euro area economic expansion will continue, reflecting the favourable impact of the very accommodative stance of monetary policy, improving labour market conditions and stronger balance sheets. This context generates income and financing conditions conducive to housing demand. Lending to households for house purchase is also expected to remain dynamic in the coming years. Nevertheless, in line with the expected slowdown in the pace of economic activity, the rate of expansion in the housing market is also expected to moderate. A moderation in residential investment might also emerge from the increasing presence of supply-side constraints in some euro area countries, which may currently be more binding than in the respective economies as a whole. These constraints could however mitigate the envisaged moderation in house prices.

**Monitoring a broad set of housing-related indicators is key to assessing the macroeconomic and macroprudential implications of the housing market.** To fully assess the state of the housing market it is necessary to look at both the major demand and supply determinants and their interactions. Moreover, given the extended interactions between real and financial variables, a broader set of indicators – some of which were discussed in this article – that goes beyond house prices and residential investment (such as loan developments, house price valuation, household balance sheets, etc.) should be continuously monitored to fully understand the macroeconomic and macroprudential implications of the ongoing housing upturn.

# Statistics

## Contents

1 External environment	S 2
2 Financial developments	S 3
3 Economic activity	S 8
4 Prices and costs	S 14
5 Money and credit	S 18
6 Fiscal developments	S 23

## Further information

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

## 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 <sup>1)</sup> (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 <sup>2)</sup> (HICP)
							Total	excluding food and energy					
	1	2	3	4	5	6	7	8	9	10	11	12	13
2015	3.5	2.9	2.3	1.4	6.9	2.1	0.6	1.7	0.1	0.0	0.8	1.4	0.0
2016	3.2	1.6	1.8	1.0	6.7	1.9	1.1	1.8	1.3	0.7	-0.1	2.0	0.2
2017	3.8	2.2	1.7	1.7	6.8	2.4	2.3	1.8	2.1	2.7	0.5	1.6	1.5
2017 Q3	1.0	0.7	0.4	0.6	1.8	0.7	2.2	1.8	2.0	2.8	0.6	1.6	1.4
Q4	0.9	0.6	0.4	0.2	1.6	0.7	2.3	1.9	2.1	3.0	0.6	1.8	1.4
2018 Q1	0.9	0.5	0.1	-0.2	1.4	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	2.6	2.0	2.7	2.4	0.7	1.8	1.7
2018 Apr.	-	-	-	-	-	-	2.3	1.9	2.5	2.4	0.6	1.8	1.3
May	-	-	-	-	-	-	2.6	2.0	2.8	2.4	0.7	1.8	1.9
June	-	-	-	-	-	-	2.8	2.0	2.9	2.4	0.7	1.9	2.0
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.	-	-	-	-	-	-	.	.	2.3	2.4	1.2	2.5	2.1

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 <sup>1)</sup>		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index <sup>2)</sup>			Global	Advanced economies	Emerging market economies
	Global <sup>2)</sup>	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
2015	53.1	55.8	56.2	51.4	50.4	53.8	51.8	53.7	50.4	1.0	3.6	-0.6
2016	51.6	52.4	53.4	50.5	51.4	53.3	51.8	52.0	50.2	1.1	1.2	1.0
2017	53.3	54.3	54.7	52.5	51.8	56.4	53.9	53.8	52.8	5.3	3.1	6.9
2017 Q4	53.4	54.6	55.2	52.6	51.9	57.2	53.5	53.4	52.2	1.4	1.4	1.4
2018 Q1	53.6	54.6	53.4	52.1	53.0	57.0	53.8	53.5	52.3	2.2	0.7	3.1
Q2	53.9	55.9	54.3	52.3	52.5	54.7	53.2	54.2	50.3	-0.5	-1.0	-0.2
Q3	53.1	54.8	54.0	51.5	52.1	54.3	52.7	53.3	49.8	.	.	.
2018 May	54.1	56.6	54.5	51.7	52.3	54.1	53.0	54.4	50.4	-0.3	-1.0	0.2
June	54.1	56.2	55.2	52.1	53.0	54.9	53.0	54.5	50.0	-0.5	-1.0	-0.2
July	53.6	55.7	53.5	51.8	52.3	54.3	52.7	53.9	50.0	0.8	-0.7	1.8
Aug.	53.2	54.7	54.2	52.0	52.0	54.5	53.0	53.3	49.9	.	.	.
Sep.	52.5	53.9	54.1	50.7	52.1	54.1	52.3	52.6	49.6	.	.	.
Oct.	.	.	.	.	.	52.7	.	.	.	.	.	.

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 <sup>1)</sup>					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
2015	-0.11	-0.07	-0.02	0.05	0.17	0.32	0.09
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 Mar.	-0.36	-0.37	-0.33	-0.27	-0.19	2.17	-0.05
Apr.	-0.37	-0.37	-0.33	-0.27	-0.19	2.35	-0.04
May	-0.36	-0.37	-0.33	-0.27	-0.19	2.34	-0.03
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

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 <sup>1), 2)</sup>					Euro area <sup>1), 2)</sup>	United States	United Kingdom	Euro area <sup>1), 2)</sup>			
	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
2015	-0.45	-0.40	-0.35	0.02	0.77	1.17	1.66	1.68	-0.35	-0.22	0.82	1.98
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 Mar.	-0.67	-0.70	-0.61	-0.10	0.55	1.25	0.65	0.61	-0.67	-0.35	0.75	1.47
Apr.	-0.63	-0.66	-0.57	-0.04	0.63	1.29	0.72	0.73	-0.63	-0.30	0.85	1.56
May	-0.63	-0.72	-0.69	-0.25	0.40	1.12	0.63	0.73	-0.76	-0.52	0.57	1.34
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

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
2015	356.2	3,444.1	717.4	261.9	628.2	299.9	189.8	500.6	373.2	278.0	377.7	821.3	2,061.1	19,203.8
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 Mar.	375.9	3,374.3	769.1	258.0	699.7	308.0	183.6	622.9	498.9	268.9	292.0	775.6	2,702.8	21,395.5
Apr.	383.3	3,457.6	772.6	260.7	724.8	331.3	185.5	627.7	496.3	281.3	302.6	789.1	2,653.6	21,868.8
May	392.3	3,537.1	806.4	272.3	735.3	351.0	182.5	653.1	527.3	287.9	302.6	819.1	2,701.5	22,590.1
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

Source: ECB.

## 2 Financial developments

### 2.4 MFI interest rates on loans to and deposits from households (new business) <sup>1), 2)</sup>

(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 <sup>3)</sup>	By initial period of rate fixation			APRC <sup>3)</sup>	Composite cost-of-borrowing indicator			
			Up to 2 years	Over 2 years					Floating rate and up to 1 year		Over 1 year			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 Sep.	0.05	0.44	0.35	0.74	6.26	16.80	5.07	5.71	6.20	2.37	1.70	1.93	1.96	1.96	2.20	1.89
Oct.	0.05	0.44	0.35	0.75	6.23	16.80	4.94	5.68	6.16	2.43	1.68	1.91	1.93	1.96	2.18	1.88
Nov.	0.04	0.44	0.33	0.75	6.21	16.80	4.73	5.69	6.14	2.38	1.67	1.92	1.95	1.94	2.16	1.87
Dec.	0.04	0.44	0.34	0.73	6.09	16.84	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	16.90	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	16.86	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	16.87	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	16.84	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	16.87	4.83	5.88	6.39	2.39	1.58	1.87	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	1.84	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	1.86	1.93	1.85	2.12	1.81
Aug. <sup>(p)</sup>	0.03	0.45	0.30	0.63	6.02	16.79	5.23	5.88	6.37	2.39	1.63	1.82	1.92	1.85	2.12	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) <sup>1), 2)</sup>

(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 Sep.	0.04	0.07	0.44	2.43	2.44	2.73	2.41	1.71	1.69	1.77	1.19	1.47	1.59	1.73
Oct.	0.04	0.11	0.40	2.40	2.39	2.69	2.38	1.70	1.66	1.73	1.23	1.35	1.61	1.73
Nov.	0.04	0.08	0.30	2.36	2.43	2.61	2.37	1.71	1.62	1.72	1.23	1.33	1.57	1.71
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	0.42	2.36	2.37	2.48	2.33	1.66	1.62	1.74	1.18	1.34	1.63	1.70
Mar.	0.04	0.08	0.40	2.33	2.42	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. <sup>(p)</sup>	0.03	0.09	0.60	2.25	2.21	2.42	2.35	1.66	1.63	1.74	1.14	1.27	1.68	1.65

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 <sup>1)</sup>						
	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	520	156	.	70	438	57	368	167	55	.	37	79	31
2018 Mar.	1,307	542	161	.	84	453	67	389	168	63	.	41	84	33
Apr.	1,326	543	171	.	94	450	69	400	181	54	.	43	73	49
May	1,318	539	170	.	99	445	66	387	182	42	.	44	79	41
June	1,308	523	179	.	90	457	59	390	157	73	.	43	82	36
July	1,313	528	176	.	96	453	60	428	197	63	.	48	79	42
Aug.	1,306	524	175	.	94	447	65	396	200	50	.	31	82	33
Long-term														
2015	15,250	3,786	3,244	.	1,102	6,481	637	215	68	45	.	14	80	9
2016	15,392	3,695	3,219	.	1,195	6,643	641	220	62	54	.	18	78	8
2017	15,360	3,560	3,082	.	1,255	6,821	642	247	66	74	.	17	83	7
2018 Mar.	15,443	3,580	3,079	.	1,257	6,904	624	282	68	83	.	26	96	7
Apr.	15,446	3,578	3,094	.	1,265	6,886	624	232	61	65	.	16	85	4
May	15,532	3,586	3,128	.	1,271	6,927	621	202	49	54	.	17	80	3
June	15,535	3,573	3,135	.	1,263	6,944	620	223	64	65	.	14	72	7
July	15,546	3,567	3,130	.	1,272	6,956	621	214	55	49	.	17	87	8
Aug.	15,537	3,579	3,102	.	1,270	6,964	622	123	51	29	.	2	38	3

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	16,518.8	4,303.1	3,390.6	.	1,163.8	6,958.9	702.4	6,814.4	584.3	968.3	5,261.9
2016	16,633.5	4,212.9	3,354.2	.	1,254.6	7,108.1	703.5	7,089.5	537.6	1,080.2	5,471.6
2017	16,600.8	4,079.4	3,237.7	.	1,325.1	7,258.9	699.8	7,954.8	612.5	1,249.5	6,092.8
2018 Mar.	16,750.6	4,122.2	3,240.5	.	1,341.2	7,356.1	690.5	7,814.1	599.0	1,240.4	5,974.7
Apr.	16,772.4	4,121.1	3,265.0	.	1,358.4	7,335.1	692.8	8,143.4	620.8	1,337.5	6,185.1
May	16,850.5	4,125.4	3,297.6	.	1,369.1	7,371.5	686.8	8,028.1	531.2	1,289.8	6,207.1
June	16,843.5	4,095.5	3,313.1	.	1,353.5	7,401.4	679.8	7,959.8	543.5	1,267.0	6,149.3
July	16,859.2	4,095.2	3,306.0	.	1,367.9	7,409.1	681.0	8,168.6	576.1	1,293.7	6,298.8
Aug.	16,842.5	4,103.0	3,276.7	.	1,364.4	7,411.0	687.5	8,022.8	521.1	1,282.6	6,219.1
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	-1.0	.	6.4	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 Mar.	1.6	-0.1	2.0	.	6.0	2.1	-2.7	1.0	1.5	3.6	0.4
Apr.	1.6	0.5	1.1	.	6.0	2.0	-0.8	1.3	1.5	5.5	0.5
May	1.1	-0.1	0.4	.	5.9	1.6	-1.9	1.4	1.6	5.4	0.5
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	0.5	.	4.3	2.4	-2.5	1.2	0.4	4.8	0.6
Aug.	1.3	-0.2	1.2	.	3.7	2.2	-2.6	1.2	0.5	4.7	0.5

Source: ECB.

## 2 Financial developments

### 2.8 Effective exchange rates <sup>1)</sup>

(period averages; index: 1999 Q1=100)

	EER-19						EER-38	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM <sup>2)</sup>	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2015	91.7	87.6	88.6	82.9	81.6	88.4	105.7	86.9
2016	94.4	89.5	90.9	85.0	79.8	89.3	109.7	88.8
2017	96.6	91.4	92.0	85.9	79.7	90.0	112.0	90.0
2017 Q4	98.6	93.2	93.5	87.5	80.3	91.4	115.0	92.0
2018 Q1	99.6	94.0	94.5	88.1	81.3	91.9	117.0	93.4
Q2	98.4	93.1	93.2	87.2	80.4	91.0	117.0	93.4
Q3	99.2	93.7	93.4	.	.	.	119.2	94.8
2018 Apr.	99.5	93.9	94.2	-	-	-	117.9	94.0
May	98.1	92.8	92.8	-	-	-	116.6	93.1
June	97.9	92.6	92.4	-	-	-	116.7	93.0
July	99.2	93.8	93.5	-	-	-	118.2	94.2
Aug.	99.0	93.5	93.2	-	-	-	119.0	94.6
Sep.	99.5	93.9	93.6	-	-	-	120.4	95.6
	<i>Percentage change versus previous month</i>							
2018 Sep.	0.5	0.4	0.4	-	-	-	1.2	1.0
	<i>Percentage change versus previous year</i>							
2018 Sep.	0.4	0.3	-0.5	-	-	-	4.7	3.7

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
2015	6.973	7.614	27.279	7.459	309.996	134.314	4.184	0.726	4.4454	9.353	1.068	1.110
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
2017 Q4	7.789	7.533	25.650	7.443	311.597	132.897	4.232	0.887	4.6189	9.793	1.162	1.177
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
2018 Apr.	7.735	7.421	25.365	7.448	311.721	132.158	4.194	0.872	4.6578	10.372	1.189	1.228
May	7.529	7.391	25.640	7.448	316.930	129.572	4.285	0.877	4.6404	10.342	1.178	1.181
June	7.551	7.382	25.778	7.449	322.697	128.529	4.304	0.879	4.6623	10.279	1.156	1.168
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
	<i>Percentage change versus previous month</i>											
2018 Sep.	1.1	0.0	-0.3	0.0	0.6	1.8	0.3	-0.5	0.1	-0.2	-1.1	1.0
	<i>Percentage change versus previous year</i>											
2018 Sep.	2.1	-0.5	-1.8	0.2	5.3	-1.1	0.7	-0.2	1.0	9.5	-1.6	-2.1

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 <sup>1)</sup>			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 Q3	24,839.7	25,633.3	-793.6	10,775.6	8,756.8	8,386.5	10,955.4	-62.2	5,065.0	5,921.1	674.8	14,129.9
Q4	24,835.5	25,544.2	-708.7	10,671.6	8,769.0	8,550.7	10,950.1	-55.6	4,999.1	5,825.1	669.7	13,898.7
2018 Q1	24,850.9	25,602.9	-752.0	10,593.7	8,682.3	8,529.5	10,919.5	-77.1	5,131.4	6,001.1	673.4	14,118.9
Q2	25,408.4	25,943.9	-535.5	10,732.7	8,687.8	8,742.0	10,994.5	-84.8	5,328.5	6,261.6	690.0	14,295.2
<i>Outstanding amounts as a percentage of GDP</i>												
2018 Q2	222.8	227.5	-4.7	94.1	76.2	76.7	96.4	-0.7	46.7	54.9	6.1	125.4
<i>Transactions</i>												
2017 Q3	62.0	-54.4	116.4	-154.9	-163.1	187.5	61.6	-10.3	39.1	-47.1	0.5	-
Q4	81.9	-37.3	119.3	33.9	45.5	86.2	18.8	4.5	-44.4	-101.7	1.9	-
2018 Q1	453.5	328.1	125.4	63.0	-60.4	194.7	176.7	-4.5	188.9	211.8	11.4	-
Q2	98.7	14.8	83.8	-59.6	-122.8	-1.9	-42.4	40.5	113.0	180.0	6.6	-
2018 Mar.	0.9	-103.5	104.3	19.5	-50.8	50.1	86.4	-2.9	-75.0	-139.1	9.2	-
Apr.	104.8	113.2	-8.4	21.9	-21.2	8.3	-22.5	12.1	66.2	156.9	-3.6	-
May	133.1	103.3	29.8	-23.6	-16.4	-2.9	-53.1	15.5	141.6	172.7	2.3	-
June	-139.2	-201.7	62.5	-57.9	-85.2	-7.3	33.1	12.9	-94.8	-149.6	7.9	-
July	102.4	96.3	6.1	-2.0	17.2	42.6	8.6	5.7	60.5	70.5	-4.3	-
Aug.	15.7	-11.7	27.4	9.1	4.5	19.6	-51.7	7.5	-23.7	35.6	3.3	-
<i>12-month cumulated transactions</i>												
2018 Aug.	797.3	357.1	440.2	59.0	-125.7	406.4	145.3	51.5	255.2	337.5	25.2	-
<i>12-month cumulated transactions as a percentage of GDP</i>												
2018 Aug.	7.0	3.1	3.9	0.5	-1.1	3.6	1.3	0.5	2.2	3.0	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 <sup>1)</sup>		
		Total	Private consumption	Government consumption	Gross fixed capital formation			Changes in inventories <sup>2)</sup>	Total	Exports <sup>1)</sup>	Imports <sup>1)</sup>	
					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	10,534.2	10,060.1	5,743.1	2,172.5	2,110.8	1,014.6	640.4	449.7	33.6	474.1	4,865.1	4,391.1
2016	10,827.5	10,349.6	5,877.4	2,223.3	2,210.9	1,053.5	679.1	472.2	38.1	477.9	4,941.4	4,463.5
2017	11,205.8	10,683.0	6,058.2	2,279.5	2,302.9	1,121.6	716.3	459.2	42.4	522.8	5,293.6	4,770.8
2017 Q3	2,818.4	2,680.3	1,518.8	571.8	577.1	282.7	180.7	112.2	12.6	138.2	1,325.1	1,187.0
Q4	2,843.9	2,703.3	1,531.1	576.1	589.2	288.1	185.4	114.3	6.9	140.6	1,360.5	1,219.9
2018 Q1	2,864.5	2,723.9	1,543.9	578.0	592.4	292.2	184.2	114.5	9.7	140.6	1,356.5	1,215.9
Q2	2,890.0	2,757.3	1,553.2	584.4	603.4	297.7	189.1	115.3	16.3	132.8	1,376.7	1,244.0
<i>as a percentage of GDP</i>												
2017	100.0	95.3	54.1	20.3	20.6	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 Q3	0.7	0.3	0.4	0.5	-0.3	1.2	2.0	-7.0	-	-	1.3	0.6
Q4	0.7	0.3	0.2	0.2	1.5	0.9	2.5	1.7	-	-	2.1	1.5
2018 Q1	0.4	0.6	0.5	0.1	0.1	0.6	-0.6	-0.2	-	-	-0.7	-0.5
Q2	0.4	0.5	0.2	0.4	1.4	1.1	2.6	0.5	-	-	1.0	1.2
<i>annual percentage changes</i>												
2015	2.1	2.4	1.8	1.3	4.9	0.4	5.6	15.6	-	-	6.5	7.6
2016	1.9	2.4	2.0	1.8	4.0	2.8	5.8	4.3	-	-	3.0	4.2
2017	2.4	1.7	1.6	1.2	2.6	3.9	5.0	-3.5	-	-	5.2	3.9
2017 Q3	2.8	2.0	1.9	1.4	2.5	4.3	5.8	-6.1	-	-	5.7	4.1
Q4	2.7	1.3	1.6	1.2	2.6	4.2	6.8	-6.8	-	-	6.3	3.6
2018 Q1	2.4	1.9	1.7	1.1	3.5	3.6	5.5	0.0	-	-	3.8	2.7
Q2	2.2	1.6	1.4	1.1	2.8	3.8	6.6	-5.2	-	-	3.8	2.8
<i>contributions to quarter-on-quarter percentage changes in GDP; percentage points</i>												
2017 Q3	0.7	0.3	0.2	0.1	-0.1	0.1	0.1	-0.3	0.0	0.4	-	-
Q4	0.7	0.3	0.1	0.0	0.3	0.1	0.2	0.1	-0.2	0.4	-	-
2018 Q1	0.4	0.5	0.3	0.0	0.0	0.1	0.0	0.0	0.2	-0.2	-	-
Q2	0.4	0.5	0.1	0.1	0.3	0.1	0.2	0.0	0.0	0.0	-	-
<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	1.9	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 Q3	2.8	1.9	1.1	0.3	0.5	0.4	0.4	-0.3	0.0	0.9	-	-
Q4	2.7	1.3	0.9	0.3	0.5	0.4	0.4	-0.3	-0.4	1.4	-	-
2018 Q1	2.4	1.8	0.9	0.2	0.7	0.4	0.3	0.0	-0.1	0.6	-	-
Q2	2.2	1.6	0.8	0.2	0.6	0.4	0.4	-0.2	0.0	0.6	-	-

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
<b>Current prices (EUR billions)</b>												
2015	9,461.6	159.5	1,901.3	468.0	1,784.9	433.5	470.2	1,078.0	1,031.0	1,805.1	330.2	1,072.6
2016	9,715.8	158.6	1,962.6	486.8	1,836.0	452.7	464.1	1,098.7	1,069.3	1,849.8	337.2	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	344.2	1,157.3
2017 Q3	2,528.4	43.1	513.4	129.3	482.2	118.4	113.5	283.8	281.6	476.4	86.5	290.0
Q4	2,551.2	43.5	520.2	131.5	486.3	119.1	114.0	285.3	284.8	479.6	86.8	292.7
2018 Q1	2,568.1	42.9	518.9	134.1	489.9	120.5	114.4	287.5	289.2	483.1	87.5	296.4
Q2	2,589.9	42.5	522.0	136.3	494.7	122.0	114.0	289.7	292.5	488.5	87.7	300.1
<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	-
<b>Chain-linked volumes (prices for the previous year)</b>												
<i>quarter-on-quarter percentage changes</i>												
2017 Q3	0.7	0.3	1.5	0.5	0.5	1.7	-0.1	0.4	0.7	0.4	0.4	0.3
Q4	0.7	0.6	1.3	1.2	0.7	0.3	0.3	0.3	0.8	0.3	0.1	0.5
2018 Q1	0.4	0.9	-0.7	0.9	0.8	1.7	-0.4	0.6	1.0	0.5	0.1	0.3
Q2	0.4	-0.4	0.4	0.7	0.6	1.5	0.3	0.1	0.8	0.2	0.0	0.5
<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	0.9	2.7
2017	2.4	0.8	3.1	3.2	3.1	4.3	-0.6	1.1	4.0	1.1	0.9	2.4
2017 Q3	2.8	0.7	4.5	3.5	3.5	4.6	-0.7	1.4	4.4	1.2	1.1	2.3
Q4	2.8	2.4	3.9	4.3	3.4	3.8	-0.2	1.3	4.5	1.2	1.1	2.0
2018 Q1	2.5	1.6	3.1	3.9	2.8	4.8	0.0	1.5	3.5	1.6	1.1	1.6
Q2	2.2	1.4	2.4	3.3	2.6	5.3	0.1	1.3	3.3	1.4	0.6	1.7
<i>contributions to quarter-on-quarter percentage changes in value added; percentage points</i>												
2017 Q3	0.7	0.0	0.3	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	-
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	0.0	0.1	0.1	0.0	0.0	0.1	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 Q3	2.8	0.0	0.9	0.2	0.7	0.2	0.0	0.2	0.5	0.2	0.0	-
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	0.3	0.0	-

Sources: Eurostat and ECB calculations.

## 3 Economic activity

### 3.3 Employment <sup>1)</sup>

(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	-0.6	-0.6	1.2	1.8	1.7	3.1	-1.2	1.5	3.1	1.3	1.4
2017 Q3	1.7	2.1	-0.7	-1.4	1.4	1.9	1.8	2.9	-1.3	1.4	3.1	1.3	2.2
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	1.2
2018 Q1	1.5	1.9	-0.8	-0.8	1.5	2.1	1.5	2.5	-0.9	1.7	3.2	1.3	0.5
Q2	1.5	1.8	-0.5	-0.5	1.5	2.6	1.3	2.4	-0.8	1.6	3.1	1.2	0.5
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	-0.4	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 Q3	1.8	2.3	-0.4	-0.9	1.8	2.0	2.0	3.0	-1.0	1.8	3.4	1.3	1.8
Q4	1.8	2.4	-0.6	-0.6	2.1	3.5	1.5	3.0	-1.7	3.6	3.7	1.3	0.7
2018 Q1	1.5	2.1	-0.9	-0.9	1.8	2.2	1.3	2.4	-1.0	3.0	3.2	1.2	0.2
Q2	1.8	2.4	-0.7	0.0	2.0	2.7	1.2	2.9	-0.4	1.7	3.7	1.5	1.4
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	0.6	-0.1	-0.2	-0.6
2017 Q3	0.1	0.3	0.3	0.4	0.4	0.2	0.2	0.1	0.3	0.4	0.3	0.0	-0.3
Q4	0.2	0.4	0.1	0.6	0.7	1.0	0.0	0.0	-0.2	2.0	0.2	0.0	-0.4
2018 Q1	0.0	0.1	-0.1	-0.1	0.2	0.1	-0.2	-0.2	0.0	1.3	0.1	0.0	-0.3
Q2	0.3	0.6	-0.2	0.5	0.5	0.2	0.0	0.5	0.4	0.0	0.5	0.3	0.9

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 <sup>1)</sup>	Under-employment, % of labour force <sup>1)</sup>	Unemployment										Job vacancy rate <sup>2)</sup>	
			Total		Long-term unemployment, % of labour force <sup>1)</sup>	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	17.469	10.9	5.6	14.305	9.8	3.165	22.3	9.261	10.7	8.208	11.1	1.5
2016	162.029	4.3	16.254	10.0	5.0	13.289	9.0	2.964	20.9	8.483	9.7	7.770	10.4	1.7
2017	162.659	4.1	14.766	9.1	4.4	12.097	8.1	2.669	18.8	7.638	8.7	7.128	9.5	1.9
2017 Q3	163.344	4.0	14.621	9.0	4.2	11.980	8.1	2.641	18.5	7.582	8.6	7.039	9.3	1.9
Q4	163.133	3.9	14.203	8.7	4.2	11.641	7.8	2.562	18.0	7.322	8.4	6.881	9.1	2.0
2018 Q1	162.591	4.0	13.933	8.5	4.2	11.435	7.7	2.498	17.5	7.187	8.2	6.746	8.9	2.1
Q2	163.179	3.9	13.496	8.3	3.9	11.076	7.4	2.420	17.0	6.957	7.9	6.539	8.7	2.1
2018 Mar.	-	-	13.790	8.4	-	11.327	7.6	2.463	17.3	7.107	8.1	6.683	8.9	-
Apr.	-	-	13.647	8.4	-	11.195	7.5	2.452	17.2	7.042	8.0	6.605	8.7	-
May	-	-	13.427	8.2	-	11.022	7.4	2.405	16.9	6.919	7.9	6.507	8.6	-
June	-	-	13.414	8.2	-	11.012	7.4	2.402	16.9	6.909	7.9	6.505	8.6	-
July	-	-	13.322	8.2	-	10.952	7.4	2.370	16.7	6.875	7.8	6.446	8.5	-
Aug.	-	-	13.220	8.1	-	10.854	7.3	2.367	16.6	6.827	7.8	6.393	8.5	-

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													
2015	2.6	2.9	1.4	7.0	2.2	0.7	-0.6	3.4	2.9	1.6	4.0	2.7	8.8
2016	1.6	1.8	1.8	1.9	1.7	0.4	3.1	0.5	1.6	1.0	2.1	1.4	7.2
2017	2.9	3.2	3.7	3.9	1.4	1.3	3.0	7.9	2.3	1.4	3.3	0.9	5.6
2017 Q4	4.1	4.8	5.4	6.0	2.2	-0.5	2.9	9.5	2.0	0.8	3.0	0.1	6.3
2018 Q1	3.2	3.5	3.1	4.4	2.5	0.9	2.6	6.5	1.6	1.6	1.8	0.2	5.3
Q2	2.4	2.9	2.0	4.4	2.2	-2.3	2.7	3.8	1.7	1.1	2.3	0.8	3.2
Q3	-	-	-	-	-	-	-	-	-	-	-	-	3.4
2018 Apr.	1.9	2.2	1.0	4.3	1.1	-1.7	1.5	4.0	1.8	-0.3	3.8	0.9	2.7
May	2.8	3.3	2.8	4.2	3.1	-2.1	2.2	4.5	1.6	2.0	1.6	0.3	2.8
June	2.6	3.2	2.1	4.8	2.2	-3.1	3.4	3.0	1.5	1.8	1.4	1.2	3.9
July	0.3	0.6	0.1	1.7	-0.3	-1.8	2.2	2.0	1.0	1.0	1.0	-0.6	7.8
Aug.	0.9	1.1	-0.4	1.3	2.6	-0.3	2.5	1.6	1.8	0.9	2.9	-0.3	30.9
Sep.	-	-	-	-	-	-	-	-	-	-	-	-	-21.2
month-on-month percentage changes (s.a.)													
2018 Apr.	-0.6	0.0	-0.5	2.6	-1.4	-5.8	1.5	-0.6	0.0	-1.3	2.0	-0.2	-1.1
May	1.4	1.6	1.8	0.7	2.5	0.3	0.3	1.8	0.3	1.3	-0.8	0.3	2.1
June	-0.7	-0.8	-0.5	-1.9	-0.9	0.1	0.7	-1.9	0.4	0.5	0.1	1.1	0.0
July	-0.7	-0.7	-1.0	1.0	-1.3	0.7	-0.1	-1.0	-0.6	-1.0	-0.1	-1.5	2.3
Aug.	1.0	0.9	0.4	1.4	1.6	1.9	-0.5	2.3	-0.2	-0.3	0.0	-0.6	19.7
Sep.	-	-	-	-	-	-	-	-	-	-	-	-	-37.4

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
2015	103.8	-2.8	81.3	-6.2	-22.4	1.0	8.7	88.5	52.2	53.4	54.0	53.8
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
2017 Q4	114.3	8.9	84.2	-0.2	1.7	3.9	16.1	90.1	59.7	60.7	56.0	57.2
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	.	-1.8	6.7	1.7	14.8	.	54.3	54.0	54.4	54.3
2018 May	112.5	6.9	-	0.2	7.1	0.7	14.4	-	55.5	54.8	53.8	54.1
June	112.3	6.9	-	-0.6	5.6	0.7	14.4	-	54.9	54.2	55.2	54.9
July	112.1	5.8	84.1	-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	2.7	14.6	-	53.2	52.7	54.7	54.1
Oct.	.	.	-	-2.7	.	.	.	-	52.1	51.2	53.3	52.7

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) <sup>1)</sup>	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth <sup>2)</sup>	Housing wealth	Profit share <sup>3)</sup>	Saving ratio (net)	Debt ratio <sup>4)</sup>	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	12.5	94.1	1.7	2.0	1.3	3.0	1.8	34.2	6.6	136.0	4.6	7.7	2.5	
2016	12.2	94.2	1.9	2.1	6.1	3.3	2.7	34.2	6.6	139.9	4.2	5.9	2.4	
2017	12.0	94.0	1.2	2.0	6.9	4.4	4.6	34.8	8.5	137.6	3.6	5.5	2.0	
2017 Q3	11.9	94.0	1.4	2.1	7.1	4.1	3.9	34.4	7.3	137.8	4.2	3.3	2.5	
Q4	12.0	94.0	1.5	2.0	7.0	4.4	4.6	34.8	8.5	137.6	3.6	1.4	2.0	
2018 Q1	12.0	93.7	1.7	2.0	5.9	4.1	5.1	35.0	8.6	137.0	2.9	-1.1	1.5	
Q2	.	.	1.9	1.8	8.0	3.9	4.9	35.2	8.6	.	2.9	1.4	1.4	

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 <sup>1)</sup>	
	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 Q3	988.9	879.9	109.0	569.6	478.9	215.4	188.1	176.2	147.6	27.7	65.4	7.0	11.2
Q4	1,001.8	905.8	96.0	583.3	494.3	218.8	187.8	170.5	160.7	29.3	63.1	12.1	10.5
2018 Q1	994.7	888.8	105.8	577.4	491.6	216.9	187.4	172.3	150.9	28.1	58.9	9.0	6.4
Q2	1,019.4	925.4	94.0	583.9	505.1	218.1	189.8	190.1	166.5	27.2	63.9	8.0	6.6
2018 Mar.	333.2	297.8	35.4	192.0	163.0	72.7	63.0	58.7	49.2	9.7	22.5	3.9	3.0
Apr.	337.9	302.7	35.2	192.0	165.7	72.5	63.3	64.2	52.5	9.1	21.2	2.4	2.3
May	334.8	304.0	30.7	193.0	168.0	72.5	63.2	60.2	52.8	9.2	20.0	2.6	2.3
June	346.7	318.7	28.0	198.9	171.4	73.1	63.3	65.8	61.3	8.9	22.7	3.1	2.1
July	328.6	309.2	19.5	192.1	173.4	73.1	62.9	54.3	50.0	9.0	22.9	2.7	1.7
Aug.	333.2	309.3	23.9	196.6	175.0	72.7	64.0	54.5	47.7	9.3	22.6	2.7	1.7
	<i>12-month cumulated transactions</i>												
2018 Aug.	4,009.1	3,629.7	379.5	2,326.3	1,999.5	871.8	754.7	698.8	621.8	112.2	253.6	36.7	30.9
	<i>12-month cumulated transactions as a percentage of GDP</i>												
2018 Aug.	35.1	31.8	3.3	20.4	17.5	7.6	6.6	6.1	5.4	1.0	2.2	0.3	0.3

1) The capital account is not seasonally adjusted.

### 3.9 Euro area external trade in goods<sup>1)</sup>, values and volumes by product group<sup>2)</sup>

(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	Consump- tion goods		Intermediate goods	Capital goods	Consump- tion 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 Q3	6.0	8.1	547.0	257.0	114.7	164.3	460.3	485.6	272.9	80.8	123.2	354.6	48.5
Q4	6.1	7.7	561.6	268.2	116.1	166.9	471.3	501.1	285.3	81.5	125.5	360.7	58.7
2018 Q1	2.1	2.0	560.8	270.2	113.7	167.8	469.5	504.2	291.4	81.4	123.5	357.6	65.1
Q2	4.3	5.7	566.4	271.0	117.0	166.8	473.5	515.3	301.3	79.3	126.5	363.0	65.6
2018 Mar.	-3.2	-1.9	186.4	88.6	38.0	56.7	156.7	167.3	96.2	27.3	41.4	118.9	20.4
Apr.	8.2	8.1	187.3	88.9	39.3	55.3	156.5	169.4	98.3	26.0	42.5	119.7	21.1
May	-0.8	0.7	187.9	90.3	38.1	54.8	157.4	171.3	99.6	26.7	42.0	122.0	21.5
June	6.0	8.7	191.2	91.8	39.6	56.7	159.7	174.6	103.4	26.6	42.1	121.3	23.0
July	9.3	13.4	189.2	91.5	38.6	55.4	155.9	176.6	103.2	28.2	42.1	123.8	22.6
Aug.	5.6	8.5	193.1	.	.	.	160.4	176.5	.	.	.	121.9	.
	<i>Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)</i>												
2017 Q3	3.7	3.8	123.8	121.7	124.8	128.3	124.1	114.2	113.9	115.8	114.2	117.8	100.0
Q4	4.5	4.1	126.3	125.6	125.8	130.4	126.7	114.8	114.8	113.7	115.7	118.6	105.6
2018 Q1	2.4	2.2	125.8	125.5	123.2	131.5	126.1	114.4	114.9	113.5	114.9	117.6	110.1
Q2	3.3	2.3	125.9	124.4	126.1	129.7	126.4	115.2	115.5	111.2	117.9	119.0	101.6
2018 Feb.	2.3	2.8	124.1	124.3	122.3	128.3	124.4	113.6	114.5	111.8	113.0	116.8	110.2
Mar.	-2.6	-1.0	125.6	123.4	123.7	133.7	126.3	115.0	114.7	116.1	117.1	118.4	106.2
Apr.	8.3	7.5	125.8	123.4	127.3	129.9	125.9	115.0	115.5	109.0	119.0	118.1	104.2
May	-1.5	-1.8	125.3	124.6	123.5	127.2	126.1	115.7	115.2	113.5	118.0	120.9	99.1
June	3.7	1.8	126.8	125.1	127.4	132.0	127.4	114.9	115.9	111.0	116.6	118.0	101.4
July	6.3	6.1	124.8	124.3	124.1	127.6	123.9	115.7	115.4	117.0	115.6	120.1	99.8

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 <sup>1)</sup>

(annual percentage changes, unless otherwise indicated)

	Total					Total (s.a.; percentage change vis-à-vis previous period) <sup>2)</sup>						Memo item: Administered prices	
	Index: 2015 = 100	Total		Goods	Services	Total	Processed food	Unpro- cessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Adminis- tered 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
2015	100.0	0.0	0.8	-0.8	1.2	-	-	-	-	-	-	-0.1	1.0
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
2017 Q4	102.4	1.4	0.9	1.6	1.2	0.5	0.5	1.0	0.1	2.6	0.1	1.5	1.2
2018 Q1	102.3	1.3	1.0	1.2	1.3	0.5	0.7	0.1	0.1	1.9	0.5	1.2	1.9
Q2	103.7	1.7	0.9	2.0	1.3	0.6	0.8	0.8	0.0	1.9	0.5	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
2018 Apr.	103.3	1.3	0.8	1.4	1.0	0.1	0.3	0.2	0.0	0.8	0.0	1.2	1.6
May	103.8	1.9	1.1	2.1	1.6	0.4	0.0	0.7	0.0	2.2	0.3	1.9	1.6
June	104.0	2.0	0.9	2.5	1.3	0.2	0.2	0.2	0.1	0.9	0.0	2.0	1.6
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	0.7	0.0	1.2	0.1	2.0	2.4

	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	
2015	1.0	0.6	1.6	-1.8	0.3	-6.8	1.2	1.1	1.3	-0.8	1.5	1.2	
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	
2017 Q4	2.2	2.1	2.3	1.3	0.4	3.5	1.2	1.2	1.7	-1.7	2.0	0.4	
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	
2018 Apr.	2.4	3.0	1.5	0.9	0.3	2.6	1.3	1.3	0.8	-0.7	1.2	1.2	
May	2.5	2.6	2.4	1.8	0.3	6.1	1.3	1.3	1.7	-0.6	2.5	1.3	
June	2.7	2.6	2.9	2.4	0.4	8.0	1.1	1.0	1.5	-0.8	1.7	1.3	
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	2.7	0.3	9.5	1.1	1.1	1.3	-1.2	1.9	1.3	

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 <sup>1)</sup>										Con- struction	Residential property prices <sup>2)</sup>	Experimental indicator of commercial property prices <sup>2)</sup>
	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	0.7	-0.6	-0.9	0.2	-8.7	0.3	1.7	2.3
2016	97.8	-2.2	-1.4	-0.5	-1.6	0.4	0.0	0.0	0.0	-6.9	0.5	3.4	5.0
2017	100.8	3.1	3.0	2.1	3.2	0.9	1.9	2.7	0.2	5.9	2.1	3.7	5.1
2017 Q3	100.5	2.4	2.7	2.1	3.0	1.0	2.2	3.1	0.2	3.3	2.0	3.7	5.7
Q4	101.7	2.5	2.5	2.0	3.2	0.9	1.6	2.0	0.3	3.8	2.4	3.9	6.6
2018 Q1	102.5	1.8	1.7	1.6	2.4	1.0	0.9	1.1	0.5	2.2	2.3	4.3	.
Q2	103.2	2.8	2.7	1.4	2.5	1.0	0.4	0.2	0.5	6.8	2.3	4.1	.
2018 Mar.	102.5	2.0	1.7	1.4	2.2	1.0	0.9	1.2	0.5	3.6	-	-	-
Apr.	102.5	1.9	1.8	1.3	2.1	1.0	0.5	0.4	0.4	3.5	-	-	-
May	103.3	3.0	2.9	1.4	2.5	1.0	0.4	0.1	0.5	7.6	-	-	-
June	103.7	3.6	3.4	1.6	3.0	1.1	0.2	0.0	0.5	9.3	-	-	-
July	104.4	4.3	3.4	1.7	3.2	1.1	0.1	-0.2	0.6	11.9	-	-	-
Aug.	104.7	4.2	3.2	1.5	3.2	.	0.1	-0.3	0.6	12.0	-	-	-

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

1) Domestic sales only.

2) 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](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 <sup>1)</sup>		Imports <sup>1)</sup>	Import-weighted <sup>2)</sup>			Use-weighted <sup>2)</sup>		
			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		
2015	106.0	1.4	0.4	0.3	0.5	0.7	0.4	-1.9	47.1	0.0	4.2	-4.5	2.9	7.0	-2.7
2016	106.9	0.8	0.5	0.4	0.5	0.7	-1.4	-2.5	39.9	-3.6	-3.9	-3.3	-7.4	-10.3	-3.0
2017	108.0	1.1	1.5	1.4	1.3	1.5	1.9	2.9	48.1	5.9	-3.5	16.4	5.5	-3.3	17.5
2017 Q4	108.5	1.3	1.5	1.4	1.6	1.6	1.2	1.8	52.2	-2.6	-9.5	4.6	0.0	-5.3	6.3
2018 Q1	108.9	1.4	1.4	1.2	1.4	1.7	0.4	0.4	54.6	-8.9	-14.5	-3.6	-7.6	-12.6	-1.9
Q2	109.4	1.3	1.7	1.4	1.8	1.9	1.1	1.9	62.6	1.6	-6.6	9.6	1.1	-7.1	10.8
Q3	.	.	.	.	.	.	.	.	64.8	0.9	-5.1	6.5	2.8	-1.6	7.9
2018 Apr.	-	-	-	-	-	-	-	-	58.4	-4.9	-10.1	0.1	-5.2	-11.1	1.5
May	-	-	-	-	-	-	-	-	64.9	4.1	-4.7	12.6	3.2	-5.8	13.8
June	-	-	-	-	-	-	-	-	64.4	6.0	-4.8	16.8	5.6	-4.4	17.8
July	-	-	-	-	-	-	-	-	63.7	1.2	-6.8	9.3	2.3	-4.6	10.9
Aug.	-	-	-	-	-	-	-	-	63.3	2.0	-2.5	6.1	4.4	1.2	7.7
Sep.	-	-	-	-	-	-	-	-	67.6	-0.6	-5.9	4.1	1.9	-1.2	5.2

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
2015	-3.1	3.1	2.3	-13.2	-0.2	48.9	53.5	49.6	49.0
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
2017 Q4	10.9	7.1	8.2	8.2	13.8	67.9	56.9	56.3	52.1
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
2018 May	9.3	7.3	9.0	14.3	18.0	65.3	57.6	56.4	52.0
June	10.1	6.8	9.0	12.5	21.1	67.6	58.6	55.7	53.2
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	7.2	8.4	11.9	22.6	63.6	59.1	55.7	52.8
Oct.	.	.	.	.	.	65.1	58.6	54.9	52.8

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 <sup>1)</sup>
			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	1.6	1.4
2017	107.4	1.8	1.8	1.7	1.9	1.5	1.5
2017 Q3	103.8	1.8	1.7	2.0	2.1	1.1	1.5
Q4	114.0	1.5	1.6	1.4	1.8	1.0	1.5
2018 Q1	102.6	2.1	1.8	2.8	2.3	1.5	1.8
Q2	113.7	2.2	1.9	2.9	2.5	1.6	2.2

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](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
<b>Unit labour costs</b>												
2015	104.6	0.4	0.4	-1.5	0.6	0.4	0.7	0.5	2.4	1.3	1.4	1.2
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	0.2	-0.4	-0.1	0.3	0.8	-0.5	4.4	2.2	1.6	1.9
2017 Q3	106.1	0.5	0.0	-1.7	-0.8	0.2	1.0	-0.7	3.8	2.2	1.4	1.7
Q4	106.4	0.8	-1.3	-0.6	-0.1	-0.1	1.5	-1.2	4.3	2.2	1.7	1.6
2018 Q1	106.9	1.1	0.5	0.1	-0.5	0.7	0.6	0.7	3.4	2.2	1.5	1.6
Q2	107.6	1.6	0.9	1.5	0.7	0.9	0.0	0.9	3.7	2.7	1.9	2.5
<b>Compensation per employee</b>												
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 Q3	111.3	1.6	2.0	1.3	0.8	1.9	2.7	-0.2	3.8	3.4	1.4	0.7
Q4	112.1	1.8	2.3	1.9	1.6	1.8	2.3	0.0	4.1	3.2	1.6	1.6
2018 Q1	112.6	1.9	2.8	1.6	1.2	2.0	2.8	1.7	3.3	2.4	1.8	2.3
Q2	113.4	2.3	2.8	2.3	1.5	2.3	2.8	1.8	3.3	2.9	2.2	2.6
<b>Labour productivity per person employed</b>												
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 Q3	104.9	1.1	2.1	3.1	1.6	1.7	1.7	0.6	0.0	1.2	-0.1	-1.0
Q4	105.3	1.1	3.6	2.5	1.8	1.9	0.8	1.3	-0.2	1.0	-0.1	-0.1
2018 Q1	105.3	0.9	2.4	1.6	1.7	1.3	2.2	1.0	-0.2	0.3	0.4	0.7
Q2	105.4	0.7	1.9	0.9	0.7	1.4	2.8	0.9	-0.4	0.2	0.2	0.1
<b>Compensation per hour worked</b>												
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 Q3	112.5	1.3	0.4	0.9	0.1	1.7	2.3	-0.5	3.0	2.8	1.4	0.8
Q4	113.2	1.4	1.4	1.1	0.7	1.6	2.0	0.1	1.8	2.6	1.4	1.7
2018 Q1	113.7	1.8	2.8	1.3	0.7	2.1	2.8	1.8	2.0	2.1	1.8	2.0
Q2	114.2	1.7	0.8	1.8	0.9	2.0	2.2	1.3	2.7	2.2	1.9	0.8
<b>Hourly labour productivity</b>												
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	1.2	1.7	1.2	1.1	-0.9	0.9	0.0	0.1
2017 Q3	106.6	1.0	1.6	2.6	1.5	1.5	1.5	0.3	-0.4	0.9	-0.1	-0.7
Q4	107.1	0.9	3.1	1.8	0.7	1.9	0.8	1.5	-2.2	0.8	-0.2	0.3
2018 Q1	107.1	0.9	2.5	1.3	1.6	1.5	2.4	1.0	-1.5	0.2	0.4	0.9
Q2	106.9	0.4	1.4	0.3	0.5	1.4	2.3	0.5	-0.4	-0.4	0.0	-0.8

Sources: Eurostat and ECB calculations.

## 5 Money and credit

### 5.1 Monetary aggregates <sup>1)</sup>

(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	1,037.7	5,575.8	6,613.5	1,444.1	2,159.7	3,603.8	10,217.2	74.5	485.1	75.6	635.2	10,852.4
2016	1,075.5	6,083.9	7,159.4	1,329.8	2,221.2	3,551.0	10,710.4	70.4	523.2	91.7	685.2	11,395.7
2017	1,112.0	6,635.7	7,747.7	1,194.4	2,261.2	3,455.6	11,203.3	75.7	509.4	75.7	660.8	11,864.1
2017 Q4	1,112.0	6,635.7	7,747.7	1,194.4	2,261.2	3,455.6	11,203.3	75.7	509.4	75.7	660.8	11,864.1
2018 Q1	1,113.4	6,746.1	7,859.5	1,171.5	2,258.5	3,430.0	11,289.5	71.6	505.7	74.6	651.9	11,941.4
Q2	1,133.3	6,906.3	8,039.6	1,183.4	2,269.8	3,453.2	11,492.8	73.9	509.1	67.7	650.8	12,143.6
Q3 <sup>(a)</sup>	1,151.8	7,017.1	8,168.9	1,123.1	2,285.1	3,408.2	11,577.1	70.7	492.5	57.9	621.1	12,198.2
2018 Apr.	1,122.2	6,758.9	7,881.1	1,158.9	2,263.4	3,422.3	11,303.4	77.4	510.9	75.2	663.5	11,966.9
May	1,128.3	6,850.3	7,978.6	1,163.1	2,265.3	3,428.4	11,407.0	71.3	503.6	65.1	640.0	12,047.0
June	1,133.3	6,906.3	8,039.6	1,183.4	2,269.8	3,453.2	11,492.8	73.9	509.1	67.7	650.8	12,143.6
July	1,136.5	6,915.1	8,051.6	1,158.9	2,277.5	3,436.4	11,488.0	67.0	510.5	65.2	642.7	12,130.6
Aug.	1,143.8	6,937.5	8,081.3	1,139.6	2,281.4	3,421.0	11,502.3	71.2	503.5	68.8	643.5	12,145.8
Sep. <sup>(a)</sup>	1,151.8	7,017.1	8,168.9	1,123.1	2,285.1	3,408.2	11,577.1	70.7	492.5	57.9	621.1	12,198.2
Transactions												
2015	66.5	566.9	633.3	-134.5	12.3	-122.2	511.2	-47.4	49.7	-27.2	-24.9	486.2
2016	37.9	541.7	579.6	-105.4	16.0	-89.3	490.3	-4.2	38.0	16.9	50.7	541.0
2017	36.6	588.1	624.7	-112.3	36.3	-76.0	548.7	6.7	-13.7	-19.1	-26.0	522.6
2017 Q4	7.2	108.9	116.1	-21.6	9.9	-11.7	104.4	9.4	-21.4	-5.9	-17.9	86.5
2018 Q1	1.4	107.2	108.6	-21.2	5.9	-15.3	93.3	-3.9	-3.6	-0.1	-7.6	85.7
Q2	19.9	149.6	169.5	8.6	10.6	19.2	188.7	-0.9	3.7	-8.6	-5.8	182.9
Q3 <sup>(a)</sup>	17.5	109.0	126.5	-60.6	15.3	-45.3	81.2	-3.3	-16.8	-9.2	-29.3	51.9
2018 Apr.	8.8	9.5	18.3	-13.3	4.9	-8.4	9.9	3.0	5.1	0.1	8.2	18.1
May	6.2	84.8	90.9	1.3	1.5	2.9	93.8	-6.6	-7.2	-11.0	-24.9	68.9
June	5.0	55.3	60.3	20.6	4.1	24.7	85.0	2.6	5.8	2.4	10.9	95.9
July	2.1	9.7	11.8	-23.5	7.7	-15.8	-4.0	-6.8	1.1	-2.3	-8.0	-12.0
Aug.	7.3	20.8	28.1	-20.0	3.9	-16.0	12.1	4.1	-7.0	3.6	0.8	12.9
Sep. <sup>(a)</sup>	8.0	78.5	86.5	-17.1	3.6	-13.5	73.0	-0.6	-10.9	-10.5	-22.0	51.0
Growth rates												
2015	6.8	11.3	10.6	-8.5	0.6	-3.3	5.3	-38.9	11.4	-25.4	-3.8	4.7
2016	3.7	9.7	8.8	-7.3	0.7	-2.5	4.8	-5.7	7.8	22.2	8.0	5.0
2017	3.4	9.7	8.7	-8.5	1.6	-2.1	5.1	9.7	-2.6	-20.9	-3.8	4.6
2017 Q4	3.4	9.7	8.7	-8.5	1.6	-2.1	5.1	9.7	-2.6	-20.9	-3.8	4.6
2018 Q1	2.4	8.5	7.6	-8.7	1.7	-2.1	4.4	-1.6	-4.8	-23.3	-7.0	3.7
Q2	3.5	8.2	7.5	-5.4	1.7	-0.9	4.8	5.2	-0.9	-14.7	-1.9	4.5
Q3 <sup>(a)</sup>	4.2	7.3	6.8	-7.8	1.9	-1.5	4.2	2.2	-7.2	-29.1	-8.9	3.5
2018 Apr.	2.8	7.8	7.0	-8.4	1.8	-1.9	4.2	5.3	-1.6	-5.5	-1.3	3.8
May	3.2	8.3	7.5	-7.6	1.7	-1.7	4.6	-3.6	-3.1	-20.8	-5.3	4.0
June	3.5	8.2	7.5	-5.4	1.7	-0.9	4.8	5.2	-0.9	-14.7	-1.9	4.5
July	3.6	7.5	6.9	-6.5	1.9	-1.1	4.4	-2.1	-1.5	-16.7	-3.3	4.0
Aug.	3.9	6.8	6.4	-7.6	1.8	-1.5	3.9	-2.6	-3.3	-10.0	-4.0	3.4
Sep. <sup>(a)</sup>	4.2	7.3	6.8	-7.8	1.9	-1.5	4.2	2.2	-7.2	-29.1	-8.9	3.5

Source: ECB.

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



## 5 Money and credit

### 5.2 Deposits in M3 <sup>1)</sup>

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

	Non-financial corporations <sup>2)</sup>					Households <sup>3)</sup>					Financial corporations other than MFIs and ICPFs <sup>2)</sup>	Insurance corporations and pension funds	Other general government <sup>4)</sup>
	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
<b>Outstanding amounts</b>													
2015	1,953.2	1,503.9	323.6	117.4	8.3	5,750.7	3,060.7	695.0	1,992.3	2.7	957.9	226.6	365.5
2016	2,082.5	1,617.4	296.5	160.3	8.4	6,052.3	3,400.9	644.8	2,004.7	1.9	989.1	198.2	383.2
2017	2,244.0	1,787.8	287.1	159.7	9.5	6,300.9	3,696.7	561.5	2,042.0	0.6	1,009.9	202.2	409.9
2017 Q4	2,244.0	1,787.8	287.1	159.7	9.5	6,300.9	3,696.7	561.5	2,042.0	0.6	1,009.9	202.2	409.9
2018 Q1	2,258.6	1,820.7	273.3	157.1	7.6	6,375.2	3,788.4	542.8	2,042.5	1.5	991.1	209.5	413.2
Q2	2,298.7	1,856.8	278.6	156.4	6.9	6,462.8	3,870.2	535.9	2,055.7	1.0	1,025.2	220.7	425.9
Q3 <sup>(a)</sup>	2,325.8	1,894.7	266.9	157.5	6.7	6,539.9	3,945.5	525.6	2,067.8	1.1	982.1	210.1	437.9
2018 Apr.	2,270.1	1,837.6	269.5	155.4	7.7	6,406.2	3,815.3	539.4	2,049.7	1.8	953.1	211.5	417.7
May	2,296.2	1,863.5	269.9	156.2	6.7	6,432.8	3,843.0	536.6	2,051.9	1.3	985.1	217.7	418.1
June	2,298.7	1,856.8	278.6	156.4	6.9	6,462.8	3,870.2	535.9	2,055.7	1.0	1,025.2	220.7	425.9
July	2,296.0	1,861.4	271.1	156.1	7.4	6,490.7	3,893.6	532.8	2,062.5	1.8	990.4	216.5	424.8
Aug.	2,301.6	1,869.6	268.1	157.4	6.5	6,513.0	3,918.8	527.9	2,064.5	1.8	963.7	213.2	438.2
Sep. <sup>(a)</sup>	2,325.8	1,894.7	266.9	157.5	6.7	6,539.9	3,945.5	525.6	2,067.8	1.1	982.1	210.1	437.9
<b>Transactions</b>													
2015	85.1	124.3	-32.9	4.9	-11.2	194.7	303.8	-109.8	1.2	-0.4	88.3	-0.5	29.6
2016	128.2	151.8	-24.0	0.2	0.2	299.8	333.3	-46.3	13.7	-0.8	30.9	-29.6	18.8
2017	178.2	180.4	-3.2	-0.2	1.1	253.9	303.7	-81.9	33.4	-1.3	53.9	5.9	26.9
2017 Q4	23.2	16.4	1.2	1.4	4.2	47.6	65.2	-21.8	5.5	-1.3	42.4	2.2	-8.9
2018 Q1	17.4	34.9	-12.9	-2.7	-1.9	76.6	84.8	-18.4	9.4	0.9	-16.8	7.6	3.2
Q2	32.5	31.6	2.6	-0.8	-0.7	85.3	80.9	-7.8	12.6	-0.5	26.9	10.9	12.3
Q3 <sup>(a)</sup>	26.7	37.7	-11.9	1.0	-0.1	77.1	75.4	-10.4	12.0	0.0	-44.6	-10.6	11.9
2018 Apr.	9.5	15.5	-4.4	-1.7	0.1	30.2	26.5	-3.8	7.1	0.3	-41.7	1.8	4.4
May	21.4	23.4	-1.8	0.8	-1.0	25.1	27.3	-3.6	1.9	-0.5	28.5	5.9	0.2
June	1.6	-7.3	8.7	0.1	0.2	30.1	27.1	-0.4	3.6	-0.3	40.1	3.2	7.7
July	-1.6	5.3	-7.2	-0.3	0.5	28.2	23.6	-3.0	6.8	0.7	-34.4	-4.1	-1.1
Aug.	4.7	7.7	-3.4	1.3	-0.9	21.9	25.0	-5.0	1.9	0.0	-27.8	-3.4	13.4
Sep. <sup>(a)</sup>	23.5	24.6	-1.4	0.0	0.2	26.9	26.8	-2.4	3.3	-0.7	17.6	-3.1	-0.5
<b>Growth rates</b>													
2015	4.6	9.0	-9.2	4.4	-57.6	3.5	11.0	-13.6	0.1	-13.2	10.2	-0.2	8.8
2016	6.7	10.1	-7.5	0.2	2.1	5.2	10.9	-6.7	0.6	-29.9	3.1	-13.0	5.2
2017	8.6	11.2	-1.1	-0.1	13.8	4.2	8.9	-12.7	1.7	-65.9	5.6	3.0	7.0
2017 Q4	8.6	11.2	-1.1	-0.1	13.8	4.2	8.9	-12.7	1.7	-65.9	5.6	3.0	7.0
2018 Q1	5.3	8.1	-7.6	-0.2	17.9	4.0	8.3	-12.5	1.6	-42.2	5.4	10.4	5.4
Q2	4.9	7.2	-5.2	-1.2	6.7	4.5	8.6	-10.8	1.8	-54.2	6.7	13.0	5.6
Q3 <sup>(a)</sup>	4.5	6.8	-7.4	-0.7	27.6	4.6	8.4	-10.0	1.9	-46.0	0.8	5.0	4.4
2018 Apr.	5.5	8.3	-7.6	-0.6	13.4	4.2	8.4	-12.0	1.8	-40.6	1.5	7.2	5.0
May	5.7	8.7	-8.2	-0.9	7.1	4.2	8.5	-11.7	1.7	-48.3	3.7	11.6	4.5
June	4.9	7.2	-5.2	-1.2	6.7	4.5	8.6	-10.8	1.8	-54.2	6.7	13.0	5.6
July	4.5	6.8	-6.8	-1.0	20.6	4.7	8.7	-10.4	2.0	-13.9	1.9	11.7	3.7
Aug.	4.0	6.2	-7.2	-0.7	13.3	4.5	8.5	-10.6	1.9	-11.0	-2.2	7.5	5.0
Sep. <sup>(a)</sup>	4.5	6.8	-7.4	-0.7	27.6	4.6	8.4	-10.0	1.9	-46.0	0.8	5.0	4.4

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 <sup>1)</sup>

(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 <sup>3)</sup>	To households <sup>4)</sup>	To financial corporations other than MFIs and ICPFs <sup>3)</sup>	To insurance corporations and pension funds			
	Adjusted loans <sup>2)</sup>	6	7	8						9	10	11
1	2	3	4	5	6	7	8	9	10	11	12	
Outstanding amounts												
2015	3,901.4	1,113.6	2,785.4	12,599.6	10,509.4	10,804.8	4,285.9	5,310.8	789.0	123.8	1,307.8	782.4
2016	4,393.8	1,083.6	3,297.1	12,877.2	10,707.8	10,978.8	4,310.1	5,449.0	836.0	112.7	1,385.4	784.0
2017	4,631.3	1,032.7	3,584.7	13,111.7	10,870.0	11,167.0	4,324.9	5,598.1	838.3	108.7	1,440.1	801.5
2017 Q4	4,631.3	1,032.7	3,584.7	13,111.7	10,870.0	11,167.0	4,324.9	5,598.1	838.3	108.7	1,440.1	801.5
2018 Q1	4,600.7	1,021.7	3,565.2	13,195.0	10,944.6	11,233.4	4,344.9	5,631.8	855.8	112.0	1,466.4	784.0
Q2	4,600.1	1,017.9	3,568.0	13,278.5	10,992.0	11,330.3	4,354.2	5,659.7	857.8	120.3	1,499.6	787.0
Q3 <sup>(p)</sup>	4,631.7	1,004.9	3,612.7	13,362.4	11,062.7	11,396.4	4,394.6	5,698.8	844.5	124.8	1,514.4	785.3
2018 Apr.	4,594.5	1,021.6	3,559.0	13,251.1	10,963.1	11,256.5	4,358.7	5,644.5	842.1	117.9	1,484.2	803.8
May	4,576.7	1,023.2	3,539.3	13,300.4	11,008.4	11,302.2	4,384.5	5,650.5	852.9	120.6	1,490.5	801.5
June	4,600.1	1,017.9	3,568.0	13,278.5	10,992.0	11,330.3	4,354.2	5,659.7	857.8	120.3	1,499.6	787.0
July	4,618.3	1,010.4	3,593.6	13,333.3	11,023.9	11,351.8	4,381.8	5,676.9	844.6	120.6	1,520.3	789.2
Aug.	4,612.5	1,003.8	3,594.5	13,346.0	11,047.4	11,375.7	4,390.8	5,691.9	844.7	119.9	1,519.2	779.4
Sep. <sup>(p)</sup>	4,631.7	1,004.9	3,612.7	13,362.4	11,062.7	11,396.4	4,394.6	5,698.8	844.5	124.8	1,514.4	785.3
Transactions												
2015	295.0	-21.3	316.0	83.8	56.7	76.4	-12.7	97.3	-22.2	-5.7	25.6	1.5
2016	487.4	-34.5	521.8	317.6	233.9	257.8	82.4	119.7	42.9	-11.1	79.7	4.0
2017	290.6	-43.1	333.1	360.5	272.1	314.3	82.1	172.9	20.7	-3.7	64.2	24.2
2017 Q4	90.1	-15.8	105.8	87.5	74.9	92.1	33.3	48.2	-3.5	-3.2	5.9	6.8
2018 Q1	-39.9	-10.2	-29.7	115.7	101.9	97.7	39.7	39.1	19.7	3.4	28.9	-15.1
Q2	35.9	-4.3	39.8	88.6	52.7	105.7	11.8	35.9	-3.2	8.1	33.6	2.3
Q3 <sup>(p)</sup>	58.3	-12.8	71.4	100.5	86.3	83.4	48.9	46.9	-13.9	4.4	16.0	-1.8
2018 Apr.	-4.0	-0.1	-3.9	45.8	13.6	17.7	13.5	12.1	-17.8	5.8	17.6	14.6
May	25.8	1.1	24.3	56.2	48.4	51.7	26.6	11.2	7.9	2.6	6.3	1.5
June	14.1	-5.4	19.4	-13.5	-9.3	36.2	-28.4	12.6	6.7	-0.2	9.7	-13.8
July	26.4	-6.0	32.4	57.4	36.8	26.2	29.8	19.3	-12.4	0.2	20.8	-0.2
Aug.	18.3	-6.7	25.1	15.4	23.1	22.9	10.1	14.4	-0.8	-0.7	0.0	-7.7
Sep. <sup>(p)</sup>	13.6	-0.1	14.0	27.7	26.4	34.3	9.0	13.3	-0.8	4.9	-4.7	6.1
Growth rates												
2015	8.2	-1.9	12.8	0.7	0.5	0.7	-0.3	1.9	-2.7	-4.4	2.0	0.2
2016	12.4	-3.1	18.7	2.5	2.2	2.4	1.9	2.3	5.5	-8.9	6.1	0.5
2017	6.7	-4.0	10.2	2.8	2.6	2.9	1.9	3.2	2.5	-3.3	4.6	3.1
2017 Q4	6.7	-4.0	10.2	2.8	2.6	2.9	1.9	3.2	2.5	-3.3	4.6	3.1
2018 Q1	3.9	-4.0	6.4	2.6	2.6	3.0	2.2	3.0	2.4	-0.4	4.0	-0.1
Q2	3.9	-3.9	6.4	2.8	2.8	3.5	2.5	3.0	3.3	6.8	4.9	-1.3
Q3 <sup>(p)</sup>	3.2	-4.1	5.4	3.0	2.9	3.4	3.1	3.1	-0.1	11.4	5.9	-1.0
2018 Apr.	3.2	-4.0	5.5	2.9	2.7	3.1	2.4	3.0	2.8	3.7	5.2	1.8
May	3.4	-3.6	5.6	3.2	3.0	3.3	2.8	3.0	3.8	8.1	4.6	2.0
June	3.9	-3.9	6.4	2.8	2.8	3.5	2.5	3.0	3.3	6.8	4.9	-1.3
July	3.7	-3.9	6.1	3.0	3.0	3.4	2.9	3.3	1.5	5.6	5.1	-1.1
Aug.	3.3	-4.4	5.6	3.0	2.9	3.4	3.0	3.1	0.8	4.5	6.1	-1.8
Sep. <sup>(p)</sup>	3.2	-4.1	5.4	3.0	2.9	3.4	3.1	3.1	-0.1	11.4	5.9	-1.0

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 <sup>1)</sup>

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

	Non-financial corporations <sup>2)</sup>					Households <sup>3)</sup>				
	Total	Adjusted loans <sup>4)</sup>	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total	Adjusted loans <sup>4)</sup>	Loans for consumption	Loans for house purchase	Other loans
	1					2				
<b>Outstanding amounts</b>										
2015	4,285.9	4,268.5	1,041.5	760.8	2,483.6	5,310.8	5,643.8	595.9	3,949.4	765.5
2016	4,310.1	4,309.7	1,001.9	796.5	2,511.7	5,449.0	5,728.9	615.9	4,083.2	749.9
2017	4,324.9	4,364.5	977.1	820.3	2,527.5	5,598.1	5,865.9	653.1	4,217.0	728.1
2017 Q4	4,324.9	4,364.5	977.1	820.3	2,527.5	5,598.1	5,865.9	653.1	4,217.0	728.1
2018 Q1	4,344.9	4,381.9	1,001.5	819.8	2,523.6	5,631.8	5,905.2	662.8	4,243.3	725.7
Q2	4,354.2	4,423.1	986.4	827.4	2,540.4	5,659.7	5,941.3	669.9	4,274.8	715.0
Q3 <sup>(p)</sup>	4,394.6	4,459.8	997.7	837.2	2,559.8	5,698.8	5,976.5	675.4	4,310.5	712.9
2018 Apr.	4,358.7	4,395.1	1,004.9	821.5	2,532.3	5,644.5	5,919.1	668.2	4,251.1	725.1
May	4,384.5	4,417.1	1,012.6	823.9	2,548.0	5,650.5	5,927.8	670.1	4,258.3	722.2
June	4,354.2	4,423.1	986.4	827.4	2,540.4	5,659.7	5,941.3	669.9	4,274.8	715.0
July	4,381.8	4,443.2	997.4	832.6	2,551.7	5,676.9	5,955.5	675.1	4,286.6	715.2
Aug.	4,390.8	4,450.8	998.1	835.5	2,557.3	5,691.9	5,969.8	676.8	4,301.0	714.2
Sep. <sup>(p)</sup>	4,394.6	4,459.8	997.7	837.2	2,559.8	5,698.8	5,976.5	675.4	4,310.5	712.9
<b>Transactions</b>										
2015	-12.7	24.5	-60.8	32.1	16.1	97.3	75.5	21.2	80.2	-4.1
2016	82.4	99.5	-15.8	44.0	54.3	119.7	113.8	23.5	105.4	-9.3
2017	82.1	131.5	0.4	37.1	44.6	172.9	165.7	43.9	134.2	-5.2
2017 Q4	33.3	56.1	3.0	10.8	19.5	48.2	45.8	11.6	36.8	-0.2
2018 Q1	39.7	38.2	30.0	4.9	4.8	39.1	45.8	11.7	26.8	0.6
Q2	11.8	45.3	-15.6	10.3	17.0	35.9	44.4	11.2	30.8	-6.0
Q3 <sup>(p)</sup>	48.9	44.7	14.7	11.6	22.6	46.9	45.3	7.7	38.4	0.8
2018 Apr.	13.5	13.0	3.4	1.5	8.7	12.1	13.5	4.6	8.0	-0.5
May	26.6	25.2	6.0	5.3	15.4	11.2	14.5	5.3	6.2	-0.3
June	-28.4	7.2	-24.9	3.6	-7.0	12.6	16.4	1.3	16.6	-5.3
July	29.8	21.2	12.2	6.0	11.6	19.3	16.9	5.7	12.6	0.9
Aug.	10.1	8.2	0.7	3.0	6.4	14.4	13.7	2.1	13.4	-1.1
Sep. <sup>(p)</sup>	9.0	15.3	1.8	2.6	4.6	13.3	14.6	-0.1	12.4	1.0
<b>Growth rates</b>										
2015	-0.3	0.6	-5.5	4.4	0.7	1.9	1.4	3.7	2.1	-0.5
2016	1.9	2.3	-1.6	5.8	2.2	2.3	2.0	4.0	2.7	-1.2
2017	1.9	3.1	0.0	4.7	1.8	3.2	2.9	7.1	3.3	-0.7
2017 Q4	1.9	3.1	0.0	4.7	1.8	3.2	2.9	7.1	3.3	-0.7
2018 Q1	2.2	3.2	2.5	4.4	1.4	3.0	2.9	7.1	3.0	-0.5
Q2	2.5	4.0	1.2	5.4	2.1	3.0	3.0	7.2	3.1	-1.3
Q3 <sup>(p)</sup>	3.1	4.3	3.3	4.7	2.6	3.1	3.1	6.6	3.2	-0.7
2018 Apr.	2.4	3.3	3.2	4.1	1.5	3.0	2.9	7.5	2.9	-0.4
May	2.8	3.7	3.4	4.7	1.9	3.0	2.9	7.2	3.1	-0.6
June	2.5	4.0	1.2	5.4	2.1	3.0	3.0	7.2	3.1	-1.3
July	2.9	4.0	2.5	5.4	2.3	3.3	3.0	7.3	3.4	-0.8
Aug.	3.0	4.1	2.7	5.4	2.4	3.1	3.1	7.0	3.2	-0.9
Sep. <sup>(p)</sup>	3.1	4.3	3.3	4.7	2.6	3.1	3.1	6.6	3.2	-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 <sup>1)</sup>

(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 <sup>2)</sup>	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 <sup>3)</sup>	Reverse repos to central counterparties <sup>3)</sup>
1	2	3	4	5	6	7	8	9	10	
<b>Outstanding amounts</b>										
2015	284.7	6,999.2	2,119.4	80.0	2,255.8	2,543.9	1,350.6	284.7	205.9	135.6
2016	314.2	6,956.7	2,090.9	70.9	2,146.5	2,648.4	1,133.3	262.2	205.9	121.6
2017	356.5	6,768.9	1,968.8	59.7	2,016.2	2,724.2	934.1	312.3	143.5	92.5
2017 Q4	356.5	6,768.9	1,968.8	59.7	2,016.2	2,724.2	934.1	312.3	143.5	92.5
2018 Q1	339.7	6,748.3	1,952.1	59.4	2,020.0	2,716.7	911.3	322.5	135.9	86.2
Q2	318.2	6,699.6	1,949.9	58.5	2,021.1	2,670.1	863.4	419.3	174.1	183.8
Q3 <sup>(p)</sup>	416.5	6,696.4	1,935.1	56.8	2,048.4	2,656.1	889.4	427.7	177.3	183.0
2018 Apr.	349.7	6,768.0	1,956.2	59.3	2,019.9	2,732.6	880.8	358.2	147.0	151.8
May	329.2	6,750.3	1,950.8	58.9	2,029.9	2,710.7	857.5	391.9	177.3	186.6
June	318.2	6,699.6	1,949.9	58.5	2,021.1	2,670.1	863.4	419.3	174.1	183.8
July	352.7	6,689.2	1,954.3	57.8	2,011.7	2,665.4	847.8	373.1	184.1	192.4
Aug.	401.2	6,674.7	1,944.4	57.4	2,012.9	2,660.0	848.7	414.3	181.4	189.0
Sep. <sup>(p)</sup>	416.5	6,696.4	1,935.1	56.8	2,048.4	2,656.1	889.4	427.7	177.3	183.0
<b>Transactions</b>										
2015	8.9	-216.5	-106.3	-13.5	-210.9	114.2	-87.5	-12.7	21.4	-4.0
2016	26.7	-122.7	-69.6	-9.1	-118.4	74.4	-274.9	-85.3	12.8	-12.0
2017	46.1	-80.4	-84.7	-8.7	-70.4	83.4	-98.3	-64.4	-60.9	-27.6
2017 Q4	-8.9	-32.5	-17.8	-1.8	-10.5	-2.4	-76.1	-56.5	3.2	7.9
2018 Q1	-16.7	8.7	-16.3	-1.3	12.3	14.0	62.2	-60.2	-7.6	-6.3
Q2	-21.5	-26.0	-5.4	-0.9	-24.8	5.1	-65.8	76.7	16.4	19.4
Q3 <sup>(p)</sup>	101.8	41.5	-15.0	-1.7	23.7	34.6	41.8	-5.5	3.2	-0.8
2018 Apr.	10.1	6.9	3.3	-0.2	-9.1	12.9	-37.8	31.0	-10.6	-12.6
May	-20.5	-16.3	-7.7	-0.4	-6.8	-1.4	-52.8	2.9	30.3	34.7
June	-11.1	-16.6	-1.0	-0.4	-8.8	-6.4	24.7	42.8	-3.2	-2.8
July	34.4	12.3	4.9	-0.7	-5.5	13.6	-1.1	-48.0	10.0	8.6
Aug.	48.4	-3.1	-10.4	-0.4	-2.0	9.7	-8.1	32.7	-2.6	-3.5
Sep. <sup>(p)</sup>	19.0	32.3	-9.6	-0.6	31.2	11.2	51.1	9.8	-4.1	-6.0
<b>Growth rates</b>										
2015	3.5	-3.0	-4.8	-14.4	-8.6	4.6	-	-	11.6	-2.9
2016	9.4	-1.7	-3.3	-11.5	-5.3	2.8	-	-	6.3	-9.0
2017	14.5	-1.2	-4.1	-12.4	-3.4	3.2	-	-	-29.7	-22.7
2017 Q4	14.5	-1.2	-4.1	-12.4	-3.4	3.2	-	-	-29.7	-22.7
2018 Q1	11.8	-0.9	-4.1	-12.5	-1.5	2.5	-	-	-25.6	-22.2
Q2	5.7	-1.1	-3.2	-10.8	-2.6	2.0	-	-	-3.6	-18.0
Q3 <sup>(p)</sup>	15.0	-0.1	-2.7	-9.4	0.0	1.9	-	-	7.7	4.9
2018 Apr.	7.3	-0.6	-3.6	-12.8	-1.6	2.8	-	-	-28.4	-28.3
May	5.9	-1.0	-3.6	-10.3	-2.4	2.4	-	-	-6.8	-12.4
June	5.7	-1.1	-3.2	-10.8	-2.6	2.0	-	-	-3.6	-18.0
July	10.2	-0.8	-2.5	-10.4	-2.9	2.3	-	-	22.7	23.3
Aug.	16.9	-0.8	-2.7	-9.8	-2.5	2.1	-	-	24.6	34.2
Sep. <sup>(p)</sup>	15.0	-0.1	-2.7	-9.4	0.0	1.9	-	-	7.7	4.9

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 Q3	-1.1	.	.	.	.	1.0
Q4	-1.0	.	.	.	.	1.0
2018 Q1	-0.8	.	.	.	.	1.2
Q2	-0.5	.	.	.	.	1.4

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

### 6.2 Revenue and expenditure

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

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure				Capital expenditure	
		Direct taxes	Indirect taxes	Net social contributions				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 Q3	46.1	45.7	12.7	12.9	15.3	0.4	47.1	43.4	9.9	5.1	2.0	22.5	3.7
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	3.8
Q2	46.1	45.7	12.9	12.9	15.2	0.4	46.6	42.9	9.8	5.1	1.9	22.3	3.7

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

### 6.3 Government debt-to-GDP ratio

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

	Total	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	45.4	27.3	46.4	9.8	82.0	18.8	31.8	41.1	89.7	2.1
2015	89.9	2.8	16.2	70.9	45.3	28.5	44.5	9.1	80.8	17.5	31.2	41.2	87.8	2.1
2016	89.1	2.7	15.4	71.0	47.7	31.7	41.4	8.8	80.3	17.1	29.9	42.1	87.0	2.1
2017	86.8	2.6	14.2	70.0	48.4	33.0	38.5	8.0	78.8	15.9	28.8	42.2	85.0	1.8
2017 Q3	88.2	2.8	14.6	70.9	.	.	.	.	.	.	.	.	.	.
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	.	.	.	.	.	.	.	.	.	.

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 <sup>1)</sup>

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

	Change in debt-to-GDP ratio <sup>2)</sup>	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 Q3	-1.6	-1.0	0.0	0.6	0.8	-0.1	-0.1	0.0	-0.1	-0.4	-0.7	1.2
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	-0.4	-1.3	0.5

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

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

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

### 6.5 Government debt securities <sup>1)</sup>

(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 <sup>2)</sup>					Average residual maturity in years <sup>3)</sup>	Average nominal yields <sup>4)</sup>							
	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			
												7	8	9
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 Q2	13.8	12.1	4.3	1.7	0.4	7.0	2.5	1.2	-0.2	2.9	2.6	0.2	1.2	
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	13.0	11.4	4.2	1.6	0.4	7.2	2.4	1.1	-0.2	2.8	2.5	0.4	1.1	
2018 Apr.	12.8	11.2	3.9	1.6	0.4	7.3	2.4	1.1	-0.2	2.8	2.5	0.4	1.1	
May	12.9	11.3	3.7	1.6	0.4	7.3	2.4	1.1	-0.2	2.8	2.5	0.4	1.0	
June	12.8	11.3	3.6	1.6	0.4	7.3	2.4	1.1	-0.2	2.8	2.5	0.4	0.9	
July	12.9	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	11.3	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	2.5	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 Q3	-1.1	1.1	-0.7	-0.6	1.0	-3.1	-3.0	-2.5	1.5	
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	-0.4	1.1	-3.0	-2.7	-2.2	2.5	
Q2	-0.3	1.9	-0.2	-0.5	0.9	-2.7	-2.7	-1.8	3.0	
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 Q3	107.6	64.8	8.6	72.9	177.4	98.4	99.9	133.6	101.3	
Q4	103.8	63.9	8.7	68.4	178.6	98.1	98.5	131.2	96.1	
2018 Q1	106.8	62.7	8.5	69.3	180.3	98.7	99.4	132.9	93.4	
Q2	106.3	61.5	8.3	69.1	179.7	98.1	99.1	133.1	104.0	
	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 Q3	0.1	0.9	1.9	2.9	1.0	-1.2	-2.4	-0.5	-1.5	-1.4
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	1.5	3.1	1.6	-0.7	-0.7	0.5	-0.7	-0.7
Q2	0.2	0.7	1.6	3.9	1.9	0.1	-0.9	0.6	-0.6	-1.1
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 Q3	38.0	39.2	23.5	53.5	57.0	79.8	129.5	79.0	51.3	60.7
Q4	40.0	39.4	23.0	50.9	57.0	78.3	124.8	74.1	50.9	61.3
2018 Q1	35.5	36.0	22.2	50.5	55.1	77.2	125.4	75.5	50.8	60.0
Q2	36.9	35.0	22.0	49.6	54.0	76.5	124.9	72.8	51.8	59.5

Source: Eurostat.

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This Bulletin was produced under the responsibility of the Executive Board of the ECB. Translations are prepared and published by the national central banks.

The cut-off date for the statistics included in this issue was 24 October 2018.

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PDF ISSN 2363-3417, QB-BP-18-007-EN-N  
HTML ISSN 2363-3417, doi:10.2866/15875, QB-BP-18-007-EN-Q