



EUROPEAN CENTRAL BANK
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Economic and monetary developments

Overview

Based on a thorough assessment of the economic and inflation outlook for the euro area, also taking into account the latest staff macroeconomic projections, the Governing Council took a series of monetary policy decisions at its monetary policy meeting on 6 June to support the convergence of inflation towards levels of below, but close to, 2%. Despite the somewhat better than expected data for the first quarter, the most recent information indicates that global headwinds continue to weigh on the euro area outlook. The prolonged presence of uncertainties, related to geopolitical factors, the rising threat of protectionism and vulnerabilities in emerging markets, is leaving its mark on economic sentiment. At the same time, further employment gains and increasing wages continue to underpin the resilience of the euro area economy and gradually rising inflation. Against this overall background, the Governing Council decided to keep the key ECB interest rates unchanged and adjust its forward guidance on the key ECB rates to indicate its expectation that they will remain at their present levels at least through the first half of 2020, 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. It also reiterated its forward guidance on reinvestments. And, finally, it decided upon the modalities of the new series of quarterly targeted longer-term refinancing operations (TLTRO III), most notably their pricing parameters. The Governing Council also assessed that, at this point in time, the positive contribution of negative interest rates to the accommodative monetary policy stance and to the sustained convergence of inflation is not undermined by possible side effects on bank-based intermediation. However, the Governing Council will continue to monitor carefully the bank-based transmission channel of monetary policy and the case for mitigating measures.

Economic and monetary assessment at the time of the Governing Council meeting of 6 June 2019

Underlying global growth momentum continued to soften in early 2019, notwithstanding better than expected data in some key advanced economies. Survey-based indicators signal continued weakness in global manufacturing activity, despite some recent stabilisation at low levels, and a recent deterioration in activity in the service sector following a period of relative resilience. Global growth is projected to decelerate this year amid high and rising policy and political uncertainty, which is weighing on global investment, and the renewed intensification of trade tensions between the United States and China. While those headwinds are expected to continue to weigh on global activity and trade this year, recent policy measures are expected to provide some support thereafter. As a result, global growth is projected to decrease in 2019, but to stabilise over the medium term. Global trade is expected to weaken more significantly this year and to grow in line with economic activity in the

medium term. Global inflationary pressures are expected to remain contained, while downside risks to global economic activity have intensified.

Long-term risk-free rates have declined since the Governing Council's meeting in March 2019 amid market expectations of continued accommodative monetary policy and a resurgence of trade tensions. Non-financial equity prices have increased slightly, exhibiting some volatility, supported by low risk-free rates and improving earnings expectations. However, uncertainty related to resurgent trade tensions is weighing on the prices of risky assets. In foreign exchange markets, the euro has broadly appreciated in trade-weighted terms.

Euro area real GDP growth increased in the first quarter of 2019 to 0.4% quarter on quarter, following the slowdown in the second half of last year against the background of a weaker trend in euro area external demand. However, incoming economic data and survey information point to somewhat weaker growth in the second and third quarters of this year. This reflects the ongoing weakness in international trade in an environment of prolonged global uncertainties, which are weighing, in particular, on the euro area manufacturing sector. At the same time, the euro area services and construction sectors are showing resilience and the labour market is continuing to improve. Looking ahead, the euro area expansion will continue to be supported by favourable financing conditions, the mildly expansionary euro area fiscal stance, further employment gains and rising wages, and the ongoing – albeit somewhat slower – growth in global activity.

This assessment is broadly reflected in the June 2019 Eurosystem staff macroeconomic projections for the euro area. These projections foresee annual real GDP increasing by 1.2% in 2019, 1.4% in 2020 and 1.4% in 2021. Compared with the March 2019 ECB staff macroeconomic projections, the outlook for real GDP growth has been revised up by 0.1 percentage points for 2019 and has been revised down by 0.2 percentage points for 2020 and by 0.1 percentage points for 2021. The risks surrounding the euro area growth outlook remain tilted to the downside on account of the prolonged presence of uncertainties related to geopolitical factors, the rising threat of protectionism and vulnerabilities in emerging markets.

According to Eurostat's flash estimate, euro area annual HICP inflation was 1.2% in May 2019, after 1.7% in April, reflecting mainly lower energy and services price inflation. On the basis of current futures prices for oil, headline inflation is likely to decline over the coming months, before rising again towards the end of year. Measures of underlying inflation remain generally muted, but labour cost pressures continue to strengthen and broaden amid high levels of capacity utilisation and tightening labour markets. Looking ahead, underlying inflation is expected to increase over the medium term, supported by the ECB's monetary policy measures, the ongoing economic expansion and stronger wage growth.

This assessment is also broadly reflected in the June 2019 Eurosystem staff macroeconomic projections for the euro area, which foresee annual HICP inflation at 1.3% in 2019, 1.4% in 2020 and 1.6% in 2021. Compared with the March 2019 ECB staff macroeconomic projections, the outlook for HICP inflation has been revised up by 0.1 percentage points for 2019 and revised down by 0.1 percentage

points for 2020. Annual HICP inflation excluding energy and food is expected to be 1.1% in 2019, 1.4% in 2020 and 1.6% in 2021.

The annual growth of broad money and loans to the private sector increased in April 2019. Broad money (M3) growth stood at 4.7% in April 2019, after 4.6% in March. Sustained rates of broad money growth reflect ongoing bank credit creation for the private sector and low opportunity costs of holding M3. Furthermore, M3 growth remained resilient in the face of the fading out of the mechanical contribution of the net purchases under the asset purchase programme (APP). At the same time, lending conditions remained favourable; the annual growth rate of loans to non-financial corporations increased to 3.9% in April 2019 from 3.6% in March. The monetary policy measures decided by the Governing Council, including TLTRO III, will help to safeguard favourable bank lending conditions and will continue to support access to financing, in particular for small and medium-sized enterprises.

The aggregate fiscal stance for the euro area is projected to continue to be mildly expansionary, thereby providing support to economic activity. This profile is mainly driven by cuts in direct taxes and social security contributions in Germany and France, but also by relatively dynamic expenditure growth in several other countries.

Monetary policy decisions

Based on the regular economic and monetary analyses, the Governing Council made the following decisions:

- First, the key ECB interest rates were kept unchanged. The Governing Council now expects them to remain at their present levels at least through the first half of 2020, 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.
- Second, the Governing Council intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the asset purchase programme for an extended period of time past the date when it starts raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.
- Third, regarding the modalities of the new series of quarterly targeted longer-term refinancing operations (TLTRO III), the Governing Council decided that the interest rate in each operation will be set at a level that is 10 basis points above the average rate applied in the Eurosystem's main refinancing operations over the life of the respective TLTRO. For banks whose eligible net lending exceeds a benchmark, the rate applied in TLTRO III will be lower, and can be as low as the average interest rate on the deposit facility prevailing over the life of the operation plus 10 basis points.

These decisions were taken to provide the monetary accommodation necessary for inflation to remain on a sustained path towards levels that are below, but close to, 2% over the medium term. In fact, they ensure that financial conditions will remain very favourable, supporting the euro area expansion, the ongoing build-up of domestic price pressures and, thus, headline inflation developments over the medium term. At the same time, looking ahead, the Governing Council is determined to act in the event of adverse contingencies and also stands ready to adjust all of its instruments, as appropriate, to ensure that inflation continues to move towards the Governing Council's inflation aim in a sustained manner.

1 External environment

Underlying global growth momentum continued to soften in early 2019, notwithstanding better than expected data in some key advanced economies. This is in line with survey-based indicators, which signal continued weakness in global manufacturing activity. Following a period of relative resilience, activity in the service sector has also deteriorated recently. Global growth is projected to decrease this year amid high and rising policy and political uncertainty, which is weighing on global investment, and the renewed intensification of trade tensions between the United States and China. While those headwinds are expected to continue to weigh on global activity and trade this year, recent policy measures are expected to provide some support thereafter. As a result, global growth is projected to decrease in 2019, but to stabilise over the medium term. Global trade is expected to weaken more significantly this year and to grow in line with economic activity in the medium term. Global inflationary pressures are expected to remain contained, while downside risks to global economic activity have intensified.

Global economic activity and trade

Underlying global growth momentum continued to soften in early 2019, notwithstanding better than expected data in some key advanced economies. In the United States, Japan and the United Kingdom, growth was better than expected in the first quarter. However, this mostly reflected temporary factors. In the United States and Japan, economic activity was supported by positive contributions from net trade, which, however, conceal negative growth rates in real imports of goods and services. Inventory building also bolstered growth, while domestic demand was subdued. In the United States, the latter was associated with the partial federal government shutdown. A stronger than expected outturn in the United Kingdom largely reflected strong government spending and significant stock-building by businesses in the run-up to the original deadline of 29 March for the country's withdrawal from membership of the European Union (Brexit). In China, the economy remained on a path of gradual deceleration, cushioned by expansionary policy measures.

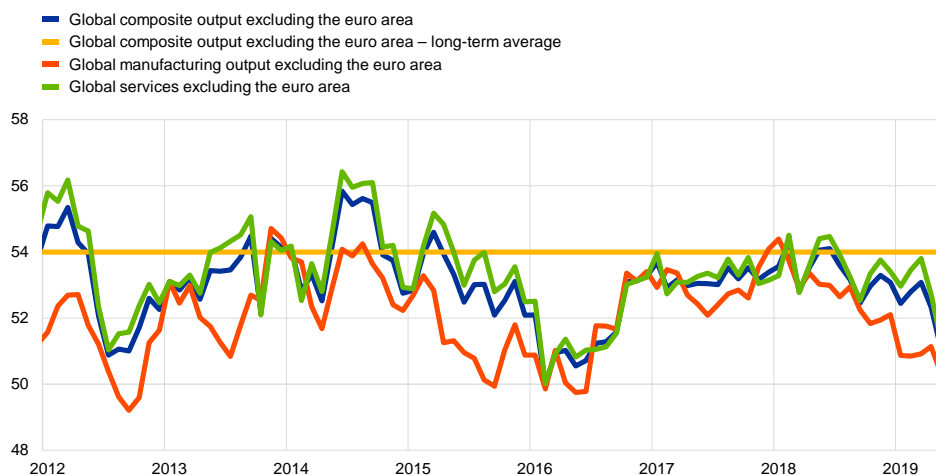
Survey-based indicators confirm a gradual weakening in growth momentum.

The global composite output Purchasing Managers' Index (PMI), excluding the euro area, softened in the first quarter of 2019 and weakened further in April and May. This is mainly related to a weaker performance across advanced economies, while emerging market economies have recorded a slightly smaller deterioration in activity. Global activity in the service sector, which had been more resilient overall in recent months, deteriorated in May, alongside a further decline in global manufacturing activity (see Chart 1).

Chart 1

Global composite output PMI

(diffusion indices)



Sources: Markit and ECB calculations.

Notes: The latest observations are for May 2019. "Long-term average" refers to the period from January 1999 to May 2019.

Global financial conditions have been volatile in recent months. In advanced economies, they are broadly unchanged from the levels seen at the time of the March 2019 ECB staff macroeconomic projections. This stability, however, masks two distinct developments: financial conditions initially eased in response to monetary policy actions taken in the United States and other key advanced economies, but have tightened since the announcements of new tariffs between the United States and China. The latter development also contributed to a tightening of financial conditions in China and, to a lesser extent, in other emerging market economies. Financial conditions in Turkey have also tightened considerably in recent weeks owing to a renewed sharp depreciation of the lira, against the background of dwindling foreign currency reserves and rising political uncertainty. In global stock markets similar developments have been observed. Until the news about new tariffs broke, global equity prices had been rising. Since then global stock markets have declined amid increased volatility.

Global growth is projected to decelerate this year amid increasing headwinds.

These headwinds include weak global manufacturing activity and trade in an environment of high and rising policy and political uncertainty. The sizeable procyclical fiscal stimulus in the United States, including lower taxes and increased expenditure, continues to provide impetus to US growth this year. In China, the slowdown in domestic demand has been cushioned by policy measures, especially those related to fiscal policy. Recent monetary policy actions across key advanced economies have supported the easing of global financial conditions and helped to contain the impact of policy uncertainties. However, the positive effect of these factors on demand seems to have been eroded by the recent escalation of the trade dispute between the United States and China.

Looking further ahead, global growth is projected to stabilise at relatively low levels over the medium term. Three key forces look set to shape the global economy

over the projection horizon. First, cyclical momentum is expected to slow in key advanced economies, as capacity constraints become increasingly binding, and policy support may gradually diminish amid positive output gaps and low unemployment rates. Second, China is expected to continue its orderly transition to a more balanced, albeit weaker, growth path that is less dependent on investment and exports. Finally, growth is projected to recover in several key emerging market economies which are currently going through, or have recently experienced, deep recessions. Overall, the pace of global expansion is expected to settle at rates below those seen prior to the 2007-08 financial crisis.

Turning to developments in individual countries, activity in the United States has remained strong, notwithstanding the headwinds related to the trade dispute with China and the less favourable external environment.

The strong labour market, accommodative financial conditions and current fiscal stimulus continue to support growth, while the adverse impact of the partial federal government shutdown on domestic demand is assumed to be temporary. Overall, real GDP expanded at an annualised rate of 3.1% in the first quarter of 2019, accelerating from 2.2% in the final quarter of last year. However, the surprisingly strong growth data in the first quarter also reflected temporary factors, such as the positive contributions from inventories and falling imports. At the same time, domestic demand has declined, suggesting subdued underlying growth. Annual headline consumer price inflation picked up to 2.0% in April from 1.9% in the previous month, largely on account of increasing energy prices. Consumer price inflation excluding food and energy also increased slightly, rising to 2.1% in April. Growth is projected to gradually return to the potential growth rate of just below 2%, while consumer price inflation is expected to remain slightly above 2% over the medium term.

Growth in China has recorded a gradual slowdown. In the first quarter of 2019 annual GDP growth stabilised, supported by a positive net trade contribution as imports decreased more than exports. Looking through their volatility, the latest indicators point to stable growth momentum in the near term. A number of fiscal and monetary policy measures announced and implemented by the Chinese authorities recently are expected to cushion domestic demand and thus to deliver a smooth deceleration in activity this year. The recent escalation of the trade dispute with the United States is expected to weigh on trade, while its impact on growth is expected to be contained by policies. Looking further ahead, progress with the implementation of structural reforms is projected to result in an orderly transition to a more moderate growth path that is less dependent on investment and exports.

In Japan, underlying growth momentum remains muted. Growth in the first quarter of 2019 was 0.5% (quarter on quarter), which was better than expected, as a number of transitory factors were at play, including a large positive contribution from net exports owing to a sharp contraction in imports which exceeded the weakness in exports. Looking ahead, economic activity is expected to resume its path of moderate growth. The strong labour market and still favourable financial conditions remain supportive, although the economy is facing headwinds related to weak foreign demand, especially from China and the rest of Asia. Households are expected to frontload purchases ahead of the consumption tax hike scheduled for October 2019,

which could in turn provide a temporary boost to activity over the summer months. In addition, fiscal measures aimed at counterbalancing the negative impact of the higher consumption tax are expected to support demand later in the year. Wage growth is still modest – despite the very tight labour market – and inflation expectations are stable at low levels, suggesting that inflation will remain well below the Bank of Japan’s 2% target over the medium term.

In the United Kingdom, growth rebounded in the first quarter of 2019 on the back of a fiscal boost and strong stock-building. Against the background of a last-minute extension to the long-anticipated departure date of the United Kingdom from the European Union, strong stockpiling, together with fiscal support and better than expected data on both consumption and private investment, resulted in quarterly UK real GDP growth of 0.5% in the first quarter, after a modest 0.2% in the final quarter of 2018. Net trade made a negative contribution to headline growth as imports surged at a rate rarely seen in the past 40 years, partly owing to inventory building, while exports remained flat. However, short-term indicators at the start of the second quarter suggest a continuation of the broad underlying trend of slowing growth momentum seen since the referendum on EU membership. Annual CPI inflation declined to 1.8% in the first quarter of 2019 – slightly below the Bank of England’s 2.0% target – as sharp reductions in energy prices fed through to headline inflation. Stronger domestic cost pressures from higher unit labour costs amid higher wage growth at the start of 2019 have been largely offset by the decline in import prices as the impact of the past depreciation of the pound sterling following the referendum continues to wane. CPI inflation rebounded slightly to 2.1% in April 2019 largely as a consequence of an increase in retail energy prices, as well as marked rises in air fares for the Easter period. Over the medium term growth is expected to remain below the level recorded prior to the referendum.

In central and eastern European countries, growth is projected to moderate somewhat this year. Investment growth remains strong, supported by EU funds, and consumer spending also remains robust, underpinned by the strong labour market performance. However, the slowdown in the euro area is weighing on the growth outlook for this region. Over the medium term the pace of economic expansion in these countries is expected to decelerate further towards potential.

The outlook for economic activity in large commodity-exporting countries remains mixed. The outlook for growth in Russia is shaped by developments in global oil markets, the execution of fiscal and structural policies, and the international sanctions under which the economy is currently operating. As a result, growth is expected to decelerate somewhat in the medium term. In contrast, growth in Brazil is projected to strengthen, supported by accommodative financial conditions. However, the existing fiscal constraints and uncertainties about the implementation of the current reform agenda continue to weigh on investment.

In Turkey, economic activity contracted significantly in the fourth quarter of 2018. This contraction reflects the legacy of last summer’s financial turmoil, high inflation, and procyclical monetary and fiscal policies. The economy returned to growth in the first quarter of 2019, supported by fiscal spending and higher lending by state-owned banks in the run-up to local elections in March. The expected

disappearance of these supportive factors, together with the recent tightening of financial conditions, could undermine the projected gradual recovery in economic activity this year.

Global trade momentum weakened significantly at the turn of the year. It has decelerated considerably more than global activity. This is explained by weaker global investment activity and a turn in the global tech cycle¹ amid high and rising policy and geopolitical uncertainty, which in turn weighed on manufacturing output and trade. The volume of global merchandise imports, excluding the euro area, contracted by 0.6% in March in three-month-on-three-month terms, confirming subdued trade momentum in the first quarter (see Chart 2). As survey indicators signal a further deterioration in global manufacturing activity, the current weakness in global trade is likely to continue in the near term.

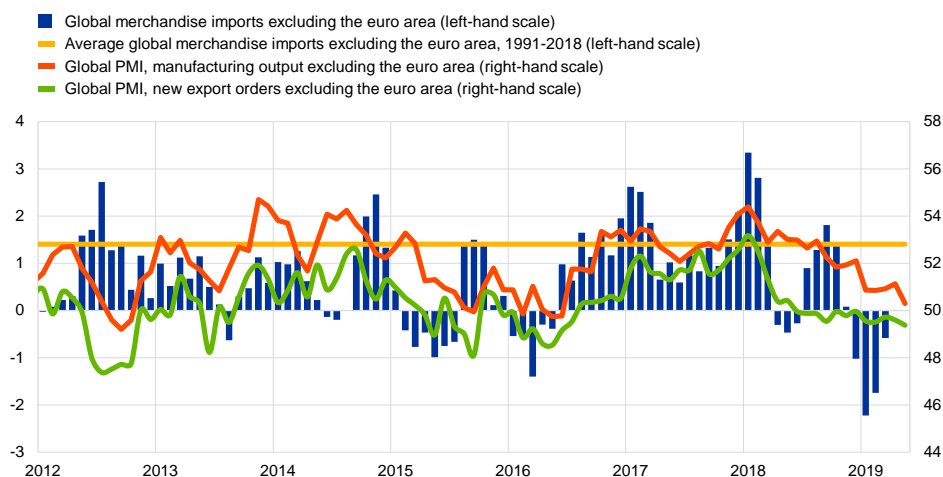
Bilateral trade talks between the United States and China suffered a setback in early May. The US Administration announced that it would increase the tariff rate on USD 200 billion of Chinese exports from 10% to 25%. This increase was originally scheduled for 1 January 2019, but had been postponed twice: initially for three months owing to the temporary truce agreed between the two countries in early December, and again in late February amid tangible progress in the bilateral trade talks. China retaliated by raising the tariff rate on USD 60 billion of US exports from between 5% and 10%, to between 10% and 25%. In addition, the risk of a further escalation looms large, as the US Administration has threatened to impose additional 25% tariffs on all remaining US imports from China. The prospect of a further intensification of the trade dispute between the two countries has raised global uncertainty and is weighing on investment. Moreover, the possibility that the US Administration may impose new tariffs on imports from other countries cannot be ruled out. For instance, in mid-May it announced that new tariffs of 25% on imported automobiles and auto parts, focusing primarily on imports from the EU and Japan, would be postponed for up to six months, allowing time for bilateral trade negotiations between the United States and these trading partners.

¹ For further details on the global tech cycle, see the box entitled "What the maturing tech cycle signals for the global economy", *Economic Bulletin*, Issue 3, ECB, 2019.

Chart 2

Surveys and global trade in goods

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



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

Note: The latest observations are for May 2019 for the PMIs and March 2019 for global merchandise imports.

Global economic growth is projected to weaken this year, before stabilising over the medium term.

According to the June 2019 Eurosystem staff macroeconomic projections, global real GDP growth (excluding the euro area) is projected to decelerate to 3.3% this year, from 3.8% in 2018. This reflects increasing headwinds to global growth in an environment of high and rising political and policy uncertainty. Over the period 2020-21 world economic activity is projected to stabilise at 3.6%, as the (cyclical) slowdown in key advanced economies and China's transition to a more moderate growth path are expected to be counterbalanced by a recovery in several key emerging market economies. As the growth headwinds weigh more significantly on trade-intensive demand components, such as investment, growth in euro area foreign demand is projected to slow more significantly than global activity this year, falling to 1.7%, from 3.6% in 2018. Global imports are projected to gradually increase and grow in line with global activity over the medium term. Compared with the March 2019 ECB staff macroeconomic projections, global GDP growth has been revised slightly downwards for this year. At the same time, growth in euro area foreign demand has been revised downwards more significantly over the projection horizon. From a geographical perspective, these revisions reflect weaker than expected trade prospects for China and the rest of Asia, as well as the outlook of slower import growth across some key trading partners, including the United Kingdom and other European countries outside the euro area.

Downside risks to global activity have intensified lately. A further escalation of trade disputes may pose a risk to global trade and growth. Moreover, a "no deal" Brexit scenario could have more adverse spillover effects, especially in Europe. A sharper slowdown of China's economy could be harder to counteract with efficient policy stimulus and might prove a challenge to the ongoing rebalancing process in China. Repricing in financial markets might weigh significantly on vulnerable emerging market economies. A further escalation of geopolitical tensions could also adversely affect global activity and trade.

Global price developments

While oil prices have declined since April, they have recently been volatile.

Since April oil prices have declined by 13%. However, they have exhibited more pronounced volatility recently. While potential disruptions to the global oil supply owing to geopolitical tensions, particularly in the Middle East, have sent oil prices higher, concerns over trade tensions between the United States and China and their impact on global demand have lately led to downward pressure on oil prices.

In the June 2019 Eurosystem staff macroeconomic projections oil prices are expected to increase in the near term and to decline over the projection

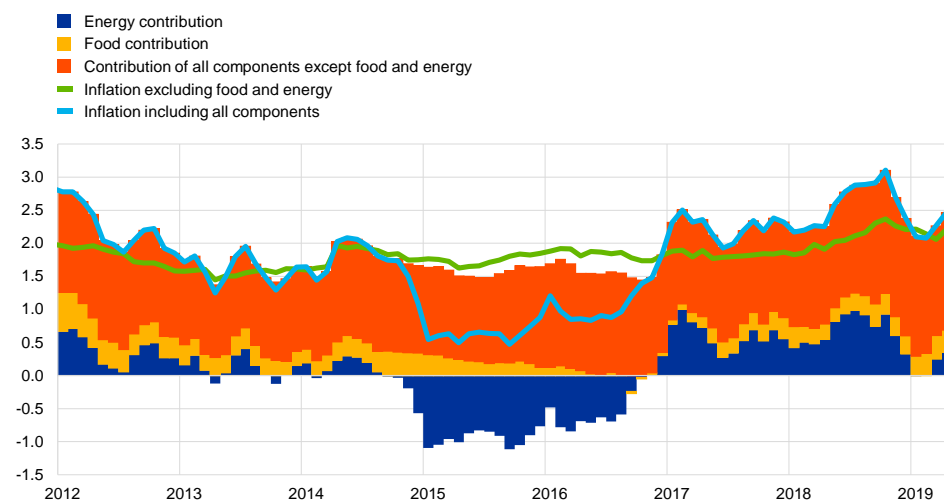
horizon. Amid short-term volatility, supply factors have continued to bolster oil prices, in particular the agreement between OPEC and other major oil producers to curb production. However, weaker global oil demand and higher than expected shale oil production in the United States could also weigh on oil prices. Consequently, the oil price assumptions underpinning the June 2019 Eurosystem staff macroeconomic projections were around 10.4% higher for this year (and 7.3% and 3.4% higher for 2020 and 2021 respectively) relative to the assumptions underpinning the March 2019 ECB staff macroeconomic projections. Since the cut-off date for the June projections, however, the price of oil has declined, with Brent crude oil standing at USD 61 per barrel on 5 June.

Global inflationary pressures remain contained. In countries belonging to the Organisation for Economic Co-operation and Development (OECD), annual headline consumer price inflation averaged 2.5% in April 2019, up from 2.3% in the previous month, owing to an increase in the contribution of the energy component (see Chart 3). Core inflation (excluding food and energy) increased slightly to 2.2% in April from 2.1% in March. Tight labour market conditions across the major advanced economies have so far translated into only moderate wage increases, suggesting that underlying inflation pressures remain subdued. Nevertheless, they should recover gradually over the projection horizon, reflecting diminishing slack.

Chart 3

OECD consumer price inflation

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



Sources: OECD and ECB calculations.

Note: The latest observations are for April 2019.

Looking ahead, global inflationary pressures are expected to remain contained.

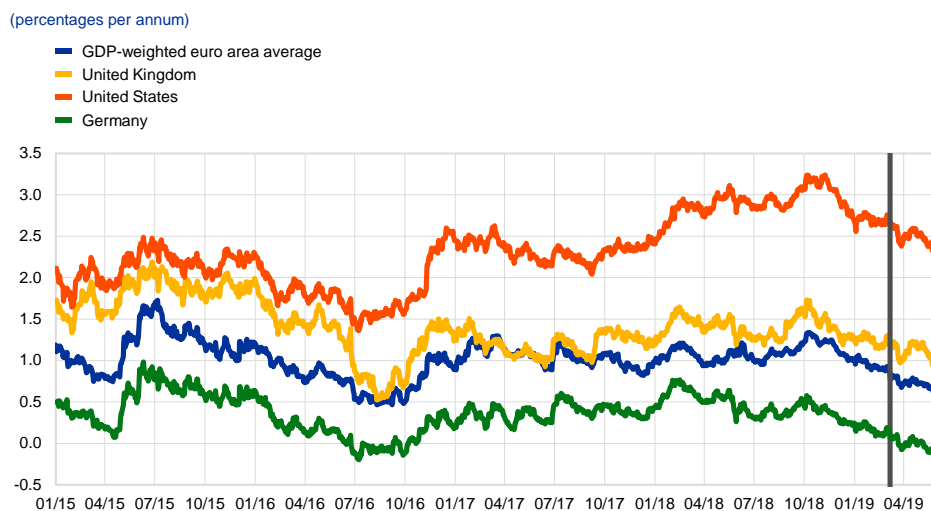
Growth in the export prices of the euro area's competitors is expected to weaken sharply this year and gradually decelerate over the medium term. This reflects the impact of a downward sloping oil price futures curve, which is expected to outweigh the upward pressure arising from gradually diminishing global spare capacity.

2 Financial developments

Since the Governing Council's meeting in March 2019, global long-term risk-free rates have declined amid both market expectations of continuing accommodative monetary policy and a resurgence of trade tensions. Non-financial equity prices have increased slightly, amid some volatility, supported by the low risk-free rates and improving earnings expectations. Uncertainty related to trade tensions is weighing on the prices of risky assets. In foreign exchange markets, the euro has appreciated in trade-weighted terms.

In the review period long-term yields in both the euro area and the United States continued their decline which started in late 2018. During the period under review (7 March to 5 June 2019), the euro area ten-year risk-free overnight index swap (OIS) rate fell by 31 basis points to around 0.11% and the GDP-weighted euro area ten-year sovereign bond yield fell by 27 basis points to 0.50% (see Chart 4). Ten-year sovereign bond yields in the United States and United Kingdom also dropped, by 50 and 32 basis points respectively. The fall in global long-term yields comes on the back of communications from both the Federal Reserve System and the ECB that were perceived by market participants as suggesting continuing accommodative monetary policy. It also reflects the resurgence of trade tensions since early May.

Chart 4
Ten-year sovereign bond yields



Sources: Thomson Reuters and ECB calculations.

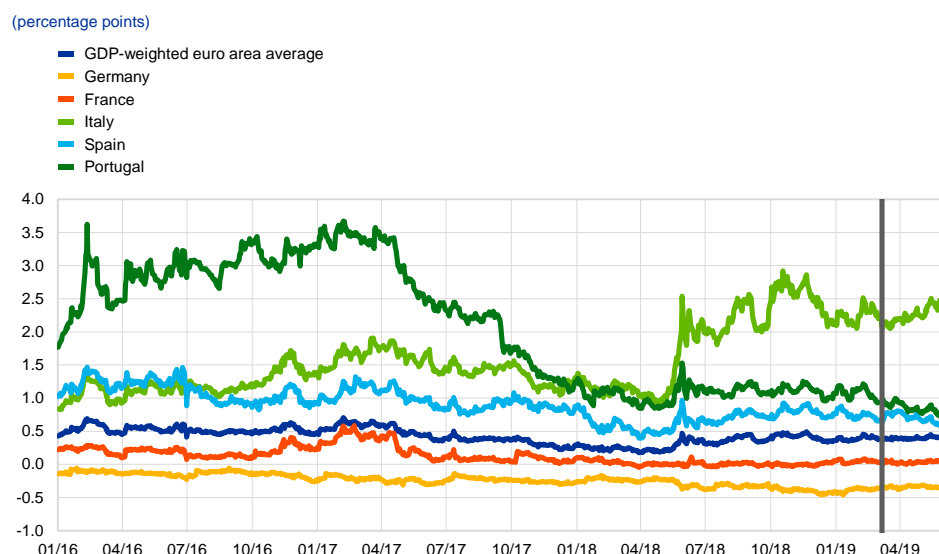
Notes: Daily data. The vertical grey line denotes the start of the review period on 7 March 2019. The latest observations are for 5 June 2019.

Euro area sovereign bond spreads relative to the risk-free OIS rate remained broadly stable over the review period. The spread on Portuguese debt tightened by 34 basis points in response to an improvement in the country's fiscal position and a subsequent credit rating upgrade by Standard & Poor's, see Chart 5. Spanish sovereign spreads decreased overall by 12 basis points, following some volatility around the April elections. Meanwhile, the spread on the debt of Italy remained volatile

and elevated relative to levels seen prior to the 2018 elections; it rose by 33 basis points to 2.38 percentage points over the period under review. Overall, the spread between the GDP-weighted average of euro area ten-year sovereign bond yields and the ten-year OIS rate remained broadly stable, standing at 0.39 percentage points on 5 June.

Chart 5

Ten-year euro area sovereign bond spreads vis-à-vis the OIS rate



Sources: Thomson Reuters and ECB calculations.

Notes: The spread is calculated by subtracting the ten-year OIS rate from the ten-year sovereign bond yield. The vertical grey line denotes the start of the review period on 7 March 2019. The latest observations are for 5 June 2019.

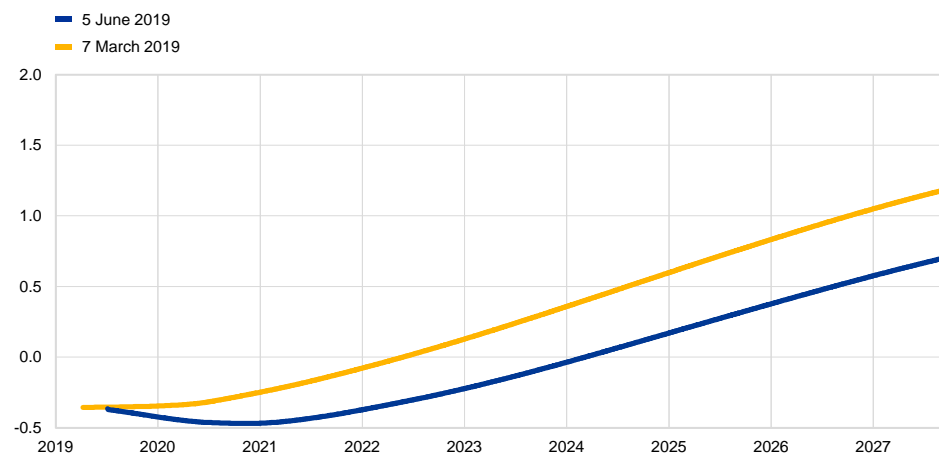
The euro overnight index average (EONIA) averaged -0.37% over the review period. Excess liquidity increased by around €6 billion to €1,904 billion. For further details of developments in liquidity conditions, see Box 2.

The EONIA forward curve shifted downwards over the review period. At the end of the period the curve was below zero for all horizons prior to 2024, reflecting market expectations of a prolonged period of negative interest rates (see Chart 6).

Chart 6

EONIA forward rates

(percentages per annum)



Sources: Thomson Reuters and ECB calculations.

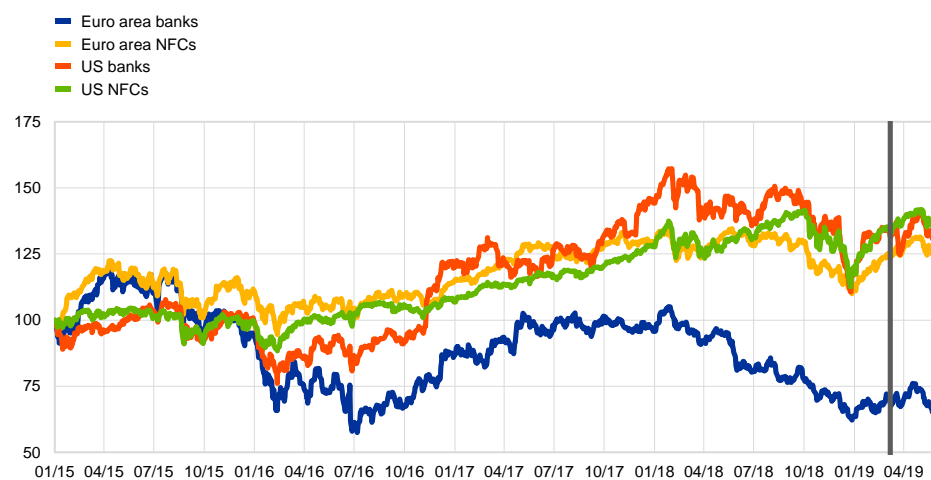
Non-financial equity prices increased slightly in both the euro area and the

United States. The share prices of euro area non-financial corporations (NFCs) and banks increased in the first part of the review period on the back of lower risk-free rates and greater optimism regarding the outlook for global trade. Euro area NFCs were also supported by improving earnings expectations. However, resurging trade tensions since early May reversed much of these gains (see Chart 7). The equity prices of euro area NFCs consequently increased by 0.5% overall, whereas bank shares decreased by 6.8%. Similar developments occurred in the United States, where NFC share prices rose by 2.3% while those of banks increased by 0.9%.

Chart 7

Euro area and US equity price indices

(index: 1 January 2015 = 100)



Sources: Thomson Reuters and ECB calculations.

Notes: The vertical grey line denotes the start of the review period on 7 March 2019. The latest observations are for 5 June 2019.

Despite large movements, euro area corporate bond spreads stood largely unchanged at the end of the review period. Euro area corporate bond spreads initially continued their decreasing trend that started at the beginning of this year. This was halted in early May by a shift in risk sentiment that led to a strong rise in spreads. Overall, the spread between the yield on investment-grade NFC bonds and the risk-free rate declined by around 2 basis points in the review period to stand at 79 basis points (see Chart 8). Yields on financial sector debt were also little changed at the end of the review period, with their spread to the risk-free rate falling by around 3 basis points. Both spreads remained significantly below the levels observed in late 2018.

Chart 8
Euro area corporate bond spreads



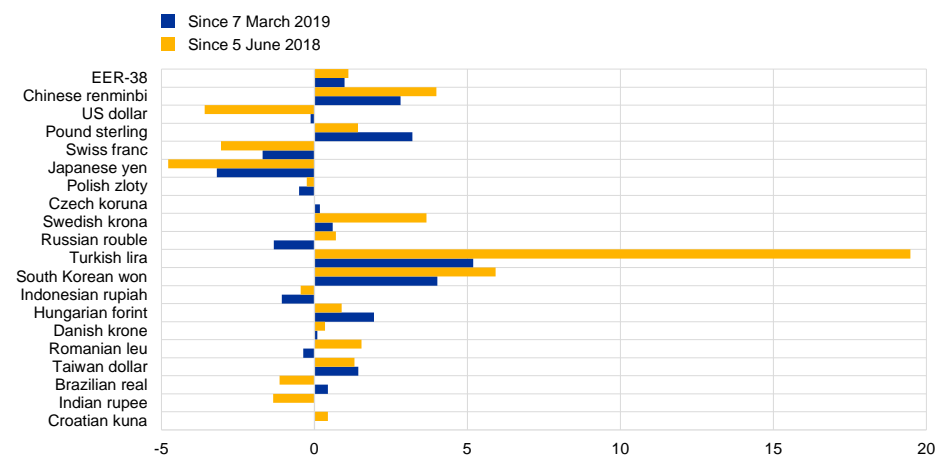
Sources: iBoxx indices and ECB calculations.
Notes: The vertical grey line denotes the start of the review period on 7 March 2019. The latest observations are for 5 June 2019.

In foreign exchange markets, the euro appreciated in trade-weighted terms over the review period (see Chart 9). The nominal effective exchange rate of the euro, as measured against the currencies of 38 of the euro area's most important trading partners, appreciated by 1.0%. In bilateral terms, the euro depreciated slightly against the US dollar (by 0.1%), and weakened against the Japanese yen (by 3.2%) and the Russian rouble (by 1.3%). It appreciated against the Chinese renminbi (by 2.8 %) and the pound sterling (by 3.2%). The euro also appreciated vis-à-vis the currencies of most emerging market economies.

Chart 9

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

(percentage changes)



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 5 June 2019.

3 Economic activity

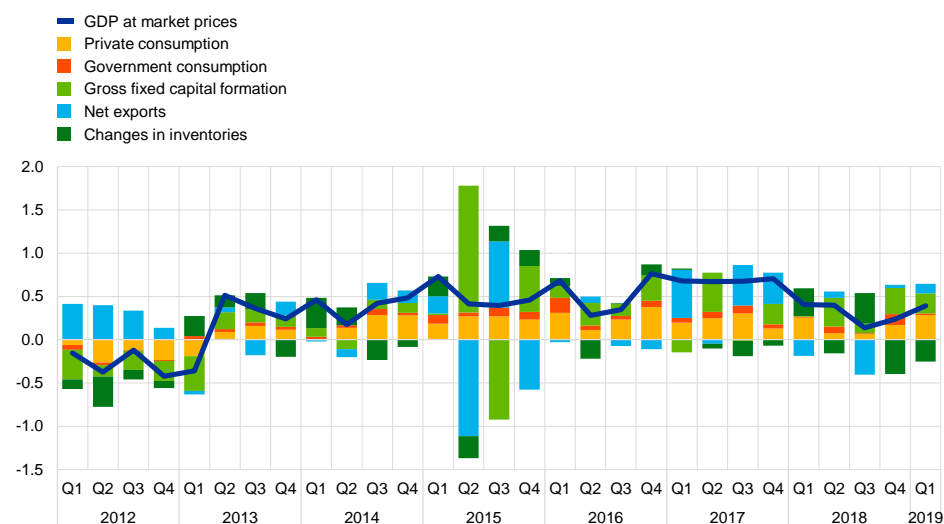
Euro area real GDP growth rose in the first quarter of 2019, following the slowdown of the second half of last year against the background of a weaker trend in euro area external demand. However, incoming data and the latest survey results point to weaker but ongoing growth momentum in the near term. The June 2019 Eurosystem staff macroeconomic projections for the euro area foresee annual real GDP increasing by 1.2% in 2019, 1.4% in 2020 and 1.4% in 2021. Compared with the March 2019 ECB staff macroeconomic projections, the outlook for real GDP growth has been revised up by 0.1 percentage points for 2019 and has been revised down by 0.2 percentage points for 2020 and by 0.1 percentage points for 2021.

Growth increased in the first quarter of 2019, largely reflecting temporary factors. Real GDP increased by 0.4%, in quarter-on-quarter terms, in the first quarter of 2019, following average growth of 0.2% in the second half of 2018 (see Box 3 for an analysis of “soft patches” in the euro area). Domestic demand remained robust in the first quarter of 2019. Notably, private consumption and fixed investment spending were the main drivers of growth, contributing 0.3 percentage points and 0.2 percentage points respectively. Changes in inventories made a negative contribution to real GDP growth in the first quarter, whereas net trade made a small positive contribution (see Chart 10). Output growth in some countries benefited from a spike in exports related to exceptionally strong import demand in the United Kingdom, in anticipation of the original Brexit date. In addition, in Germany, private consumption rebounded strongly as private car registrations surged following disruptions in car production in the second half of 2018. Private consumption was also supported by fiscal measures that became effective in the first quarter, when the measures are expected to have their biggest impact. On the supply side, growth was broadly supported across all value added components. Overall, in quarter-on-quarter terms, industrial production (excluding construction) increased by 0.8% in the first quarter of 2019, after contracting by 1.2% in the previous quarter. Production in construction expanded at a faster pace (2.0%) on account of the good weather conditions during the first few months of 2019.

Chart 10

Euro area real GDP and its components

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



Source: Eurostat.

Note: The latest observations are for the first quarter of 2019.

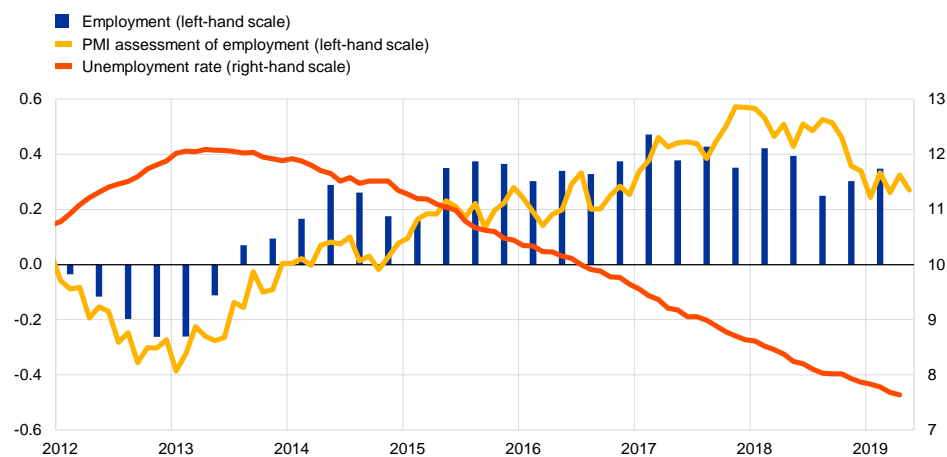
Euro area labour markets remained robust. Employment increased by 0.3% in the first quarter of 2019, unchanged from the last quarter of 2018, benefiting from robust output growth. While employment growth has slowed somewhat, on average, over the last three quarters, compared with the first half of 2018, it remains strong compared with developments in GDP growth. Average hours worked declined slightly in the first quarter of 2019. Meanwhile, productivity per person employed was unchanged in the first quarter of 2019 in quarter-on-quarter terms, after small declines in the second half of 2018.

Recent short-term labour market indicators have continued to point to positive employment growth. The euro area unemployment rate stood at 7.6% in April, down from 7.7% in March. Short-term survey indicators moderated in May but continue to suggest further employment creation in the near future.

Chart 11

Euro area employment, PMI assessment of employment and unemployment

(quarter-on-quarter percentage changes; diffusion index; percentages of the labour force)



Sources: Eurostat, Markit and ECB calculations.

Notes: The Purchasing Managers' Index (PMI) is expressed as a deviation from 50 divided by 10. The latest observations are for the first quarter of 2019 for employment, May 2019 for the PMI and April 2019 for the unemployment rate.

Developments in private consumption continued to be driven primarily by the recovery in the labour market and stronger household balance sheets. Private consumption rose by 0.5%, quarter on quarter, in the first quarter of 2019, following somewhat weaker growth in the last quarter of 2018. Passenger car registrations rose by 4.7%, month on month, in April, consolidating the rebound witnessed in the first quarter and broadly reaching their level of one year ago. The normalisation of car registrations is consistent with households' stated intentions to make major purchases in the coming year. From a longer-term perspective, increasing labour income continues to support the underlying momentum in consumer spending, which is also reflected in above-average consumer confidence. In addition, the further strengthening of household balance sheets remains an important factor for steady consumption growth, as households' creditworthiness is a key determinant of their access to credit.

The ongoing recovery in housing markets is expected to continue to contribute significantly to overall real GDP growth. Housing investment increased by 1.1% in the first quarter of 2019, reflecting its continuing recovery in many euro area countries and in the euro area as a whole. Recent short-term indicators and survey results point to positive but decelerating momentum. Construction production rose for the fourth consecutive quarter in the first quarter of 2019, increasing by 2.0%, similar to its buildings segment. Moreover, the Purchasing Managers' Index (PMI) for construction output extended its current expansion to two and a half years in April, with a similar pattern for its residential component. At the same time, the European Commission's construction confidence indicator decreased in May. Both the PMI indicator and the confidence indicator remained well above their long-run averages.

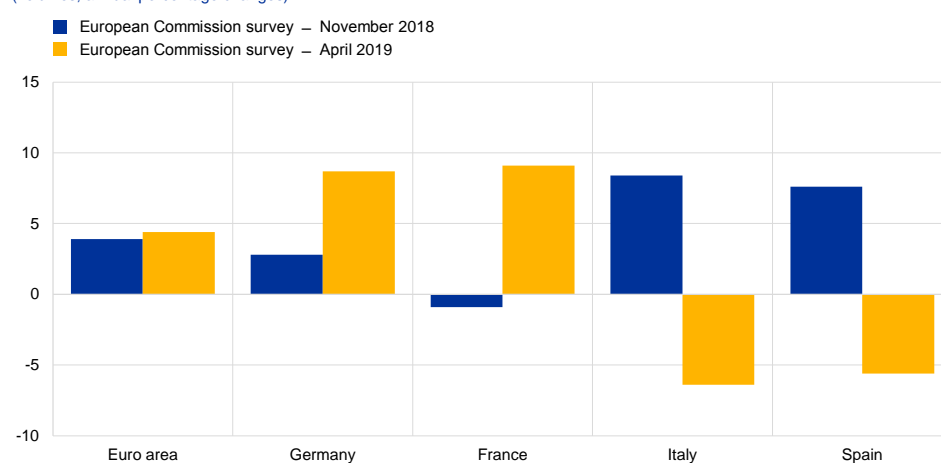
Business investment is expected to continue expanding, albeit at a subdued pace, in tandem with the weakening of external demand. In support of this view, according to the European Commission's latest industrial investment survey,

expectations for euro area annual investment growth in 2019 are broadly unchanged, at 4.4%, compared with the previous survey conducted in November 2018 (see Chart 12). Evidence from the survey further suggests that investment should continue to be supported by the strengthening of domestic demand, high capacity utilisation rates and favourable financing conditions. On a slightly less positive note, investment sentiment in recent quarters has been hampered by geopolitical factors, trade disputes, Brexit and vulnerabilities in China (see Box 4 entitled “Confidence and investment”).

Chart 12

Plans for real industrial investment in 2019

(volumes; annual percentage changes)



Source: European Commission industrial investment survey.

Euro area trade has remained weak but has shown initial signs of stabilisation.

According to the latest release of data from the national accounts, in the first quarter of 2019 total euro area exports increased by 0.6% in real terms, while imports increased by 0.4% on a quarterly basis. The most recent data on the monthly trade in goods have confirmed the weak performance, as nominal extra-euro area exports recorded a slight contraction in March (-0.2% month on month), while nominal extra-euro area imports have recovered somewhat after their decline in February (0.7% month on month). Goods export volumes to China recovered in March and exports to the United Kingdom surprised positively in February, driven by anticipation effects, while exports to the United States weakened during the winter. The latest survey indicators based on export orders give mixed signals.

Despite the positive reading of euro area real GDP growth in the first quarter of 2019, the most recent economic data and survey information point to somewhat weaker growth in the second and third quarters of this year.

Although the impact of country and sector-specific factors appears to have dissipated to some extent, elevated global uncertainty continues to weigh on the euro area growth outlook. The European Commission’s Economic Sentiment Indicator (ESI) stood, on average, at 104.5 in April and May, below its quarterly average of 106 for the first quarter of 2019. Meanwhile, the latest composite output PMI averaged 51.6, broadly unchanged from

its first quarter average. While the ESI remains above its long-term average, the PMI stands slightly below and relatively close to the threshold level of contraction.

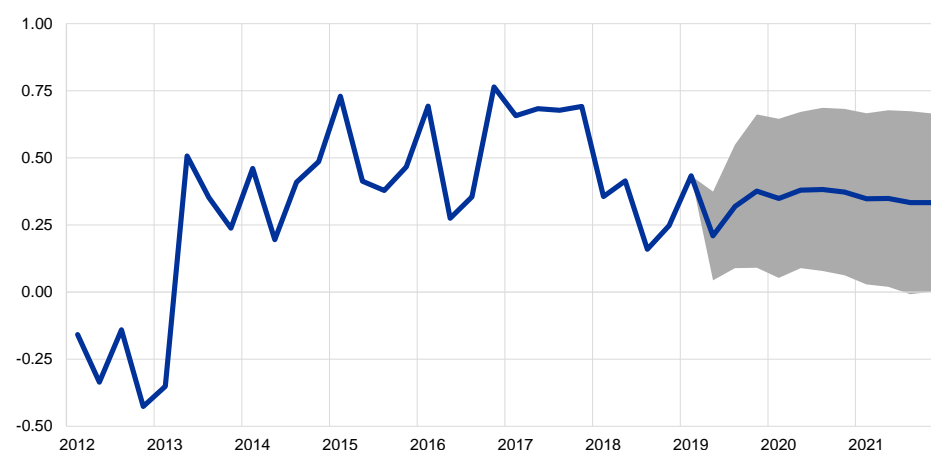
Euro area economic growth is expected to continue at a moderate pace in the near term. The ECB's monetary policy measures continue to support favourable lending rates, fostering economic growth in the euro area. Private consumption is supported by healthy labour markets, ongoing employment gains and household sentiment. Housing investment remains robust, while business investment is backed by favourable financing conditions and solid domestic demand. Global headwinds, however, continue to weigh on the near-term outlook for euro area growth, as the threat of increased protectionism and geopolitical factors has intensified more recently. In this context, the risks surrounding euro area growth remain tilted to the downside.

The June 2019 Eurosystem staff macroeconomic projections for the euro area foresee annual real GDP increasing by 1.2% in 2019, 1.4% in 2020 and 1.4% in 2021 (see Chart 13). Compared with the March 2019 ECB staff macroeconomic projections, the outlook for real GDP growth has been revised up by 0.1 percentage points for 2019 and has been revised down by 0.2 percentage points for 2020 and by 0.1 percentage points for 2021.

Chart 13

Euro area real GDP (including projections)

(quarter-on-quarter percentage changes)



Sources: Eurostat and the article entitled "Eurosystem staff macroeconomic projections for the euro area, June 2019", published on the ECB's website on 6 June 2019.

Notes: The ranges shown around the central projections are based on the differences between actual outcomes and previous projections carried out over a number of years. The width of the range is twice the average absolute value of these differences. The method used for calculating the ranges, involving a correction for exceptional events, is documented in "New procedure for constructing Eurosystem and ECB staff projection ranges", ECB, December 2009.

4 Prices and costs

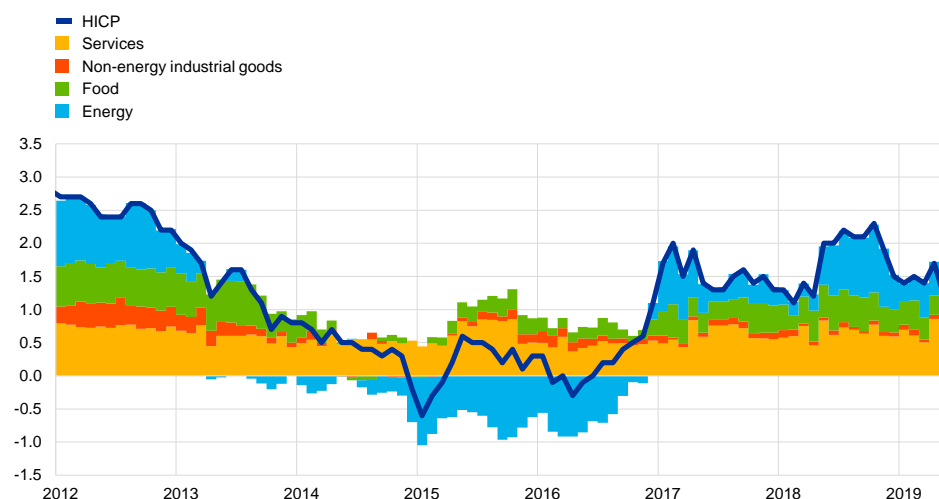
According to Eurostat's flash estimate, euro area annual HICP inflation was 1.2% in May 2019, down from 1.7% in April. Looking through the recent volatility due to temporary factors, measures of underlying inflation remain generally muted, but labour cost pressures continue to strengthen and broaden amid high levels of capacity utilisation and tightening labour markets. Looking ahead, underlying inflation is expected to increase gradually over the medium term, supported by the ECB's monetary policy measures, the ongoing economic expansion and stronger wage growth. This assessment is also broadly reflected in the June 2019 Eurosystem staff macroeconomic projections for the euro area, which foresee annual HICP inflation at 1.3% in 2019, 1.4% in 2020 and 1.6% in 2021. Compared with the March 2019 ECB staff macroeconomic projections, the outlook for HICP inflation has been revised up by 0.1 percentage points for 2019 and revised down by 0.1 percentage points for 2020. Annual HICP inflation excluding energy and food is expected to be 1.1% in 2019, 1.4% in 2020 and 1.6% in 2021.

Headline inflation decreased in May owing to weaker annual inflation rates in more volatile categories. According to Eurostat's flash estimate, euro area annual HICP inflation fell to 1.2% in May 2019 from 1.7% in April (see Chart 14). The increase in April and subsequent decrease in May largely reflected the later timing of Easter this year and the effect this has on the year-on-year growth rates of prices of certain travel-related items. This effect is particularly evident in the evolution of HICP services inflation, which increased from 1.1% in March to 1.9% in April before falling back to 1.1% in May. HICP energy inflation declined from 5.8% in April to 3.8% in May.

Chart 14

Contributions of components to euro area headline HICP inflation

(annual percentage change; percentage point contributions)



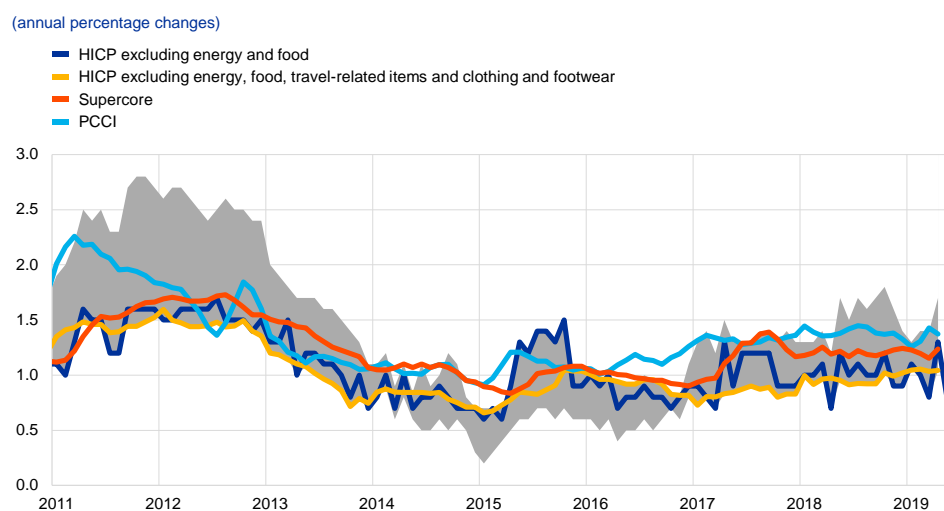
Sources: Eurostat and ECB calculations.

Notes: The latest observations are for May 2019 (flash estimates). Growth rates for 2015 are distorted upwards owing to a methodological change (see Box 5 in *Economic Bulletin*, Issue 2, ECB, 2019).

Measures of underlying inflation remained generally muted. HICP inflation excluding energy and food was 0.8% in May, following 1.3% in April and 0.8% in March

(see Chart 15). As with overall HICP inflation, the increase in this underlying inflation measure in April and its subsequent decrease in May also reflected the effect of the later timing of Easter. This temporary upward impact on the April inflation rate is also captured by the trimmed-mean measures included in the swathe, and it is likely that the May numbers will not change the broad picture of sideways movements in measures of underlying inflation observed in recent months. Indeed, those measures that help to abstract from such temporary effects, such as the HICP excluding energy, food, travel-related items and clothing and footwear, the Persistent and Common Component of Inflation (PCCI) and the Supercore indicator were all unchanged in April (the latest available data).² Looking ahead, measures of underlying inflation are expected to increase gradually, especially driven by the robust wage growth and the pick-up seen in producer output price inflation.

Chart 15
Measures of underlying inflation



Sources: Eurostat and ECB calculations.

Notes: The latest observations are for May 2019 (flash estimate) for HICP excluding energy and food and for April 2019 for all the other measures. The range of measures of underlying inflation consists of the following: HICP excluding energy; HICP excluding energy and unprocessed food; HICP excluding energy and food; HICP excluding energy, food, travel-related items and clothing; the 10% trimmed mean; the 30% trimmed mean; and the weighted median of the HICP. Growth rates for HICP excluding energy and food for 2015 are distorted upwards owing to a methodological change (see Box 5 in *Economic Bulletin*, Issue 2, ECB, 2019).

Price pressures in the later stages of the non-energy industrial goods supply chain remained well above their historical average, but eased slightly in the earlier stages. Producer price inflation for non-food consumer goods sold in the euro area declined slightly to 0.9% in April from 1.0% March, although this was still well above its historical average of 0.55%. Its rise from a trough of -0.2% in December 2016 has been broad-based across the constituent manufacturing sub-sectors, suggesting some robustness. The corresponding import price inflation continued on a steady rise to 1.5% in March from a recent low of 0.3% in December, largely reflecting the impact of the recent depreciation of the euro effective exchange rate. This may have counterbalanced somewhat weaker global price pressures, with global Producer Price Index (PPI) inflation excluding energy easing further in March to 3.3%, down from its peak of 4.8% in September 2018.

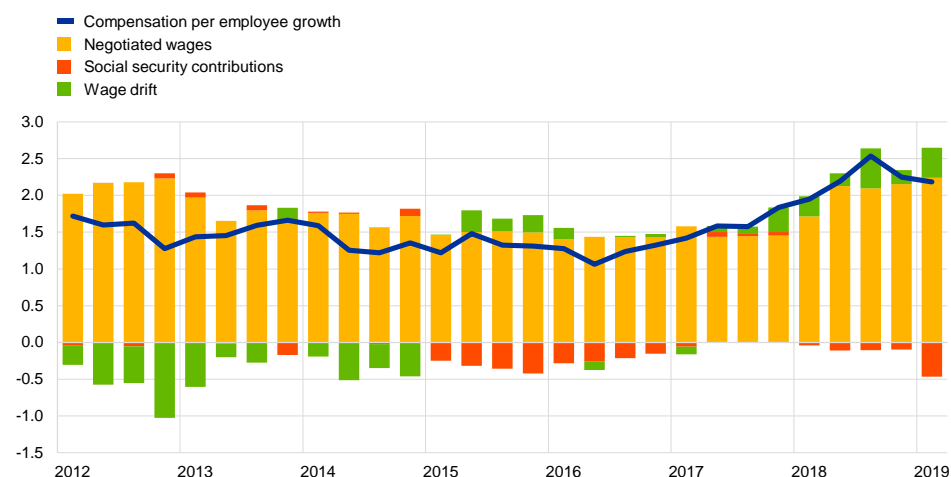
² For more information on these measures of underlying inflation, see Boxes 2 and 3 in the article "[Measures of underlying inflation for the euro area](#)", *Economic Bulletin*, Issue 4, ECB, 2018.

Wage growth remained robust, underscoring the build-up in domestic cost pressures. Annual growth in compensation per employee was 2.2% in the first quarter of 2019, unchanged from the fourth quarter of 2018 and above its long-term average (see Chart 16). Annual growth in negotiated wages in the euro area was 2.2% in the first quarter of 2019, also unchanged from the fourth quarter of 2018. In contrast to the wage drift, negotiated wage growth is more persistent, reacting gradually to cumulative changes in the unemployment rate. The outlook for continued strong negotiated wage growth ahead largely rests on some longer-term agreements (in some cases up to 2020) and should support a robust pace of growth in compensation per employee throughout 2019.

Chart 16

Contributions of components of compensation per employee

(annual percentage change; percentage point contributions)



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

Market measures of longer-term inflation expectations have fallen somewhat, while survey-based expectations have remained stable. The five-year inflation-linked swap rate five years ahead stood at 1.29% on 5 June 2019, eight basis points below the rate which prevailed at the time of the April Governing Council meeting (see Chart 17). The forward profile of market-based measures of inflation expectations continues to point to a prolonged period of low inflation with only a very gradual return to inflation levels close to, but below 2%. The risk-neutral probability of negative average inflation over the next five years implied by inflation options markets is negligible, which suggests that markets currently consider the risk of deflation to be very low. Longer-term inflation expectations as measured by surveys remained stable at rates below, but close to, 2%. In the ECB Survey of Professional Forecasters for the second quarter of 2019, longer-term inflation expectations remained at 1.8%, while in the April Consensus Economics and Euro Zone Barometer surveys longer-term inflation expectations remained at 1.9%.

Chart 17

Measures of inflation expectations

(annual percentage changes)



Sources: ECB Survey of Professional Forecasters (SPF), Consensus Economics, Thomson Reuters and ECB calculations.

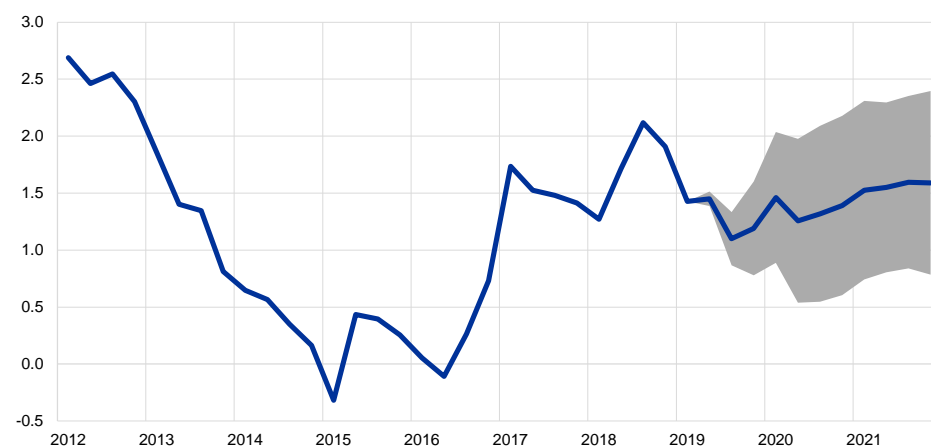
Notes: In the SPF, the longer-term horizon refers to a calendar year four to five years ahead of the survey date, while in the Consensus Economics survey the longer-term horizon refers to the average for a period five to ten years ahead of the survey date. The latest observations are for the second quarter of 2019 for the SPF, for April 2019 for Consensus Economics and for 5 June 2019 for inflation-linked swap rates.

The June 2019 Eurosystem staff macroeconomic projections expect underlying inflation to increase gradually. On the basis of the information available at mid-May, these projections expect headline HICP inflation to average 1.3% in 2019, 1.4% in 2020 and 1.6% in 2021, compared with 1.2%, 1.5% and 1.6% respectively in the March 2019 ECB staff macroeconomic projections (see Chart 18). These revisions are largely explained by the energy component, which is revised upwards markedly for 2019, due to stronger growth in oil prices, and downwards for 2020, due to a more steeply downward sloping profile for oil price futures. HICP inflation excluding energy and food is projected to follow an upward path, supported by the more gradual but continued economic recovery and the tightening labour market conditions, leading to higher domestic cost pressures. HICP inflation excluding energy and food is expected to rise from 1.1% in 2019 to 1.4% in 2020 and 1.6% in 2021. This profile represents a small downward revision for 2019, mainly reflecting weaker than expected data outturns so far this year.

Chart 18

Euro area HICP inflation (including projections)

(annual percentage changes)



Sources: Eurostat and the article entitled "June 2019 Eurosystem staff macroeconomic projections for the euro area", published on the ECB's website on 6 June 2019.

Notes: The latest observations are for the first quarter of 2019 (data) and the fourth quarter of 2021 (projection). The ranges shown around the central projections are based on the differences between actual outcomes and previous projections carried out over a number of years. The width of the ranges is twice the average absolute value of these differences. The method used for calculating the ranges, involving a correction for exceptional events, is documented in the "New procedure for constructing Eurosystem and ECB staff projection ranges", ECB, December 2009. The cut-off date for data included in the projections was 22 May 2019.

5 Money and credit

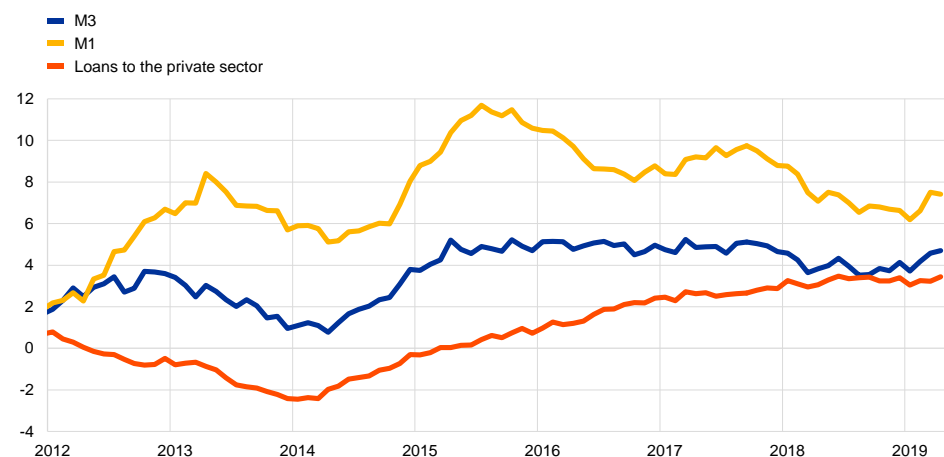
The annual growth of broad money and loans to the private sector increased in April 2019. M3 growth remained resilient in the face of the fading out of the mechanical contribution of the net purchases under the asset purchase programme (APP). At the same time, bank funding and lending conditions remained favourable, also reflecting the monetary policy measures announced in March and June. Net issuance of debt securities by NFCs rebounded in the first quarter of 2019 after declining in the fourth quarter of 2018, amid an improvement in bond market conditions and, until April, the decline in the cost of market-based debt financing.

Broad money growth edged up in April, returning to its growth rate at the end of 2017. The annual growth rate of M3 increased to 4.7% in April 2019 from 4.6% in March (see Chart 19), supported by lower opportunity costs. In this respect, M3 growth remained resilient in the face of the fading out of the mechanical contribution of the APP, implying that the latter had a smaller positive impact. M3 growth had moderated from late 2017 until a recent low in August 2018, as the net asset purchases were scaled down. The narrow money aggregate M1, which includes the most liquid components of M3, remained the main contributor to broad money growth. The annual growth rate of M1 was broadly stable in April at 7.4%, as opposed to 7.5% in March, confirming the halt of the downward trend observed since late 2017. Given the leading properties of real M1 with respect to real GDP growth, this development is consistent with a stabilisation in economic activity going forward.³

Chart 19

M3, M1 and loans to the private sector

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



Source: ECB.

Notes: Loans are adjusted for loan sales, securitisation and notional cash pooling. The latest observation is for April 2019.

Overnight deposits, the main component of M1, continued to grow at a robust annual pace. The annual growth rate of overnight deposits remained unchanged at

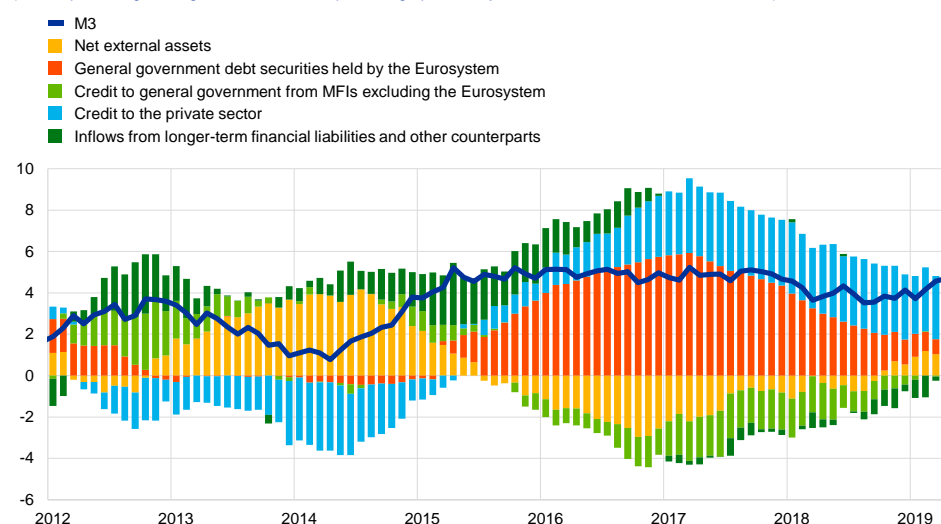
³ See Box 4 entitled “The predictive power of real M1 for real economic activity in the euro area”, Economic Bulletin, Issue 3, ECB, 2019.

7.8% in April, reflecting the stable annual growth rate of overnight deposits held by households, while the corresponding rate for NFCs declined. Moreover, notwithstanding some short-term volatility, the growth in currency in circulation has followed its long-established trend, thus speaking against any material substitution of cash for deposits in an environment of very low or negative interest rates for the euro area as a whole. The contribution of short-term deposits other than overnight deposits (i.e. M2 minus M1) became positive for the first time since late 2013, continuing the upward trend observed in recent quarters and supported by lower opportunity costs of holding M3. Marketable instruments (i.e. M3 minus M2) continued to contribute negatively to M3 growth as a result of the relatively low remuneration of these instruments.

The decreasing mechanical contribution of the APP to M3 growth has been largely offset, from the counterparts' perspective, by positive contributions from credit to the private sector and, recently, from external monetary inflows (see Chart 20). The positive contribution to M3 growth from general government securities held by the Eurosystem, which reflects the mechanical contribution of the APP to M3 growth, decreased further (see the red parts of the bars in Chart 20). While credit to the private sector remained the main source of money creation (see the blue parts of the bars in Chart 20), the lower contribution of the APP has been replaced during recent months by external monetary flows (see the yellow parts of the bars in Chart 20). The increasing contribution from net external assets reflects the higher interest of foreign investors in euro area assets.

Chart 20
M3 and its counterparts

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



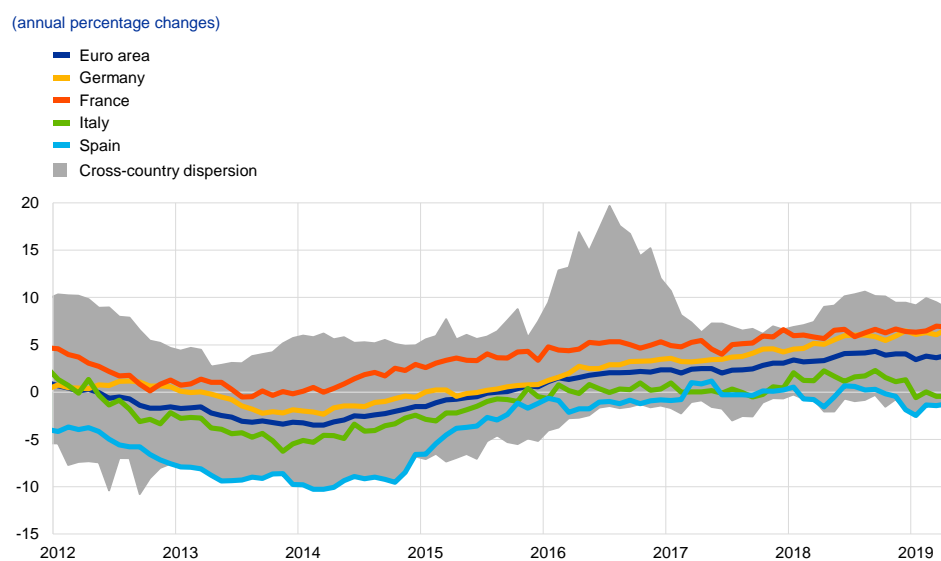
Source: ECB.

Notes: Credit to the private sector includes MFI loans to the private sector and MFI holdings of debt securities issued by the euro area private non-MFI sector. As such, it also covers purchases by the Eurosystem of non-MFI debt securities under the corporate sector purchase programme. The latest observation is for April 2019.

Loan growth has broadly followed the slowdown in economic activity but picked up somewhat in April. The annual growth rate of MFI loans to the private sector (adjusted for loan sales, securitisation and notional cash pooling) edged up to

3.4% in April, from 3.2% in March (see Chart 19). This was mainly owing to the increase in the annual growth rate of loans to NFCs to 3.9% in April, from 3.6% in March. Looking beyond short-term volatility, NFC loan growth has moderated somewhat, but remained relatively close to its September 2018 peak of 4.3%. This is in line with its lagging cyclical pattern with respect to real economic activity and the slowdown in aggregate demand observed over the course of 2018. The moderation was largely driven by diminished loan demand owing to firms' lower financing needs. By contrast, bank lending and bond market conditions remained favourable (see below), suggesting that supply forces are not weighing on credit dynamics given the ample degree of monetary policy accommodation. Loan growth for firms was characterised by considerable heterogeneity across countries (see Chart 21). The annual growth rate of loans to households increased slightly to 3.4% in April, from 3.3% in March, also characterised by cross-country heterogeneity (see Chart 22). The overall gradual expansion of loans to households continued to be driven by both consumer credit and housing loans, the latter growing moderately in net terms by historical standards for the euro area as a whole. At the same time, housing loan growth and house price developments are also heterogeneous across countries.

Chart 21
MFI loans to NFCs in selected euro area countries



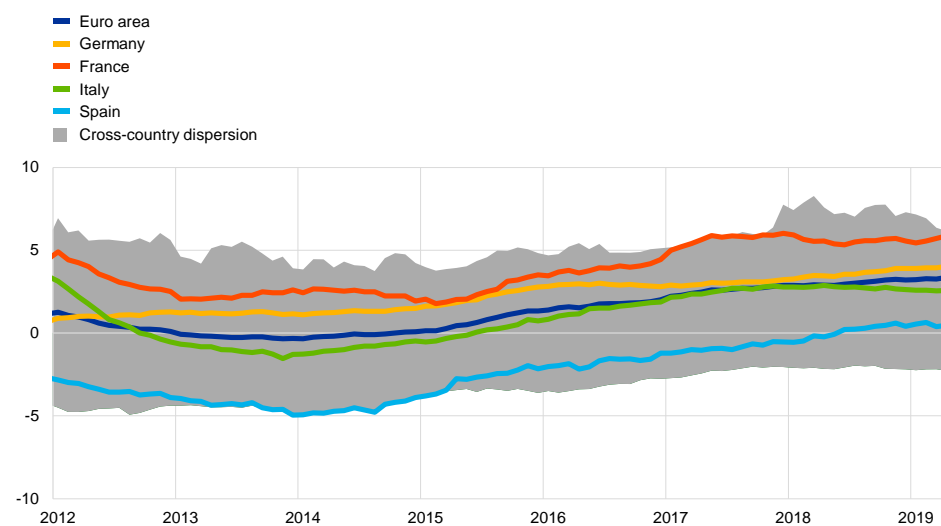
Source: ECB.

Notes: Loans are adjusted for loan sales, securitisation and notional cash pooling. The cross-country dispersion is calculated on the basis of minimum and maximum values using a fixed sample of 12 euro area countries. The latest observation is for April 2019.

Chart 22

MFI loans to households in selected euro area countries

(annual percentage changes)



Source: ECB.

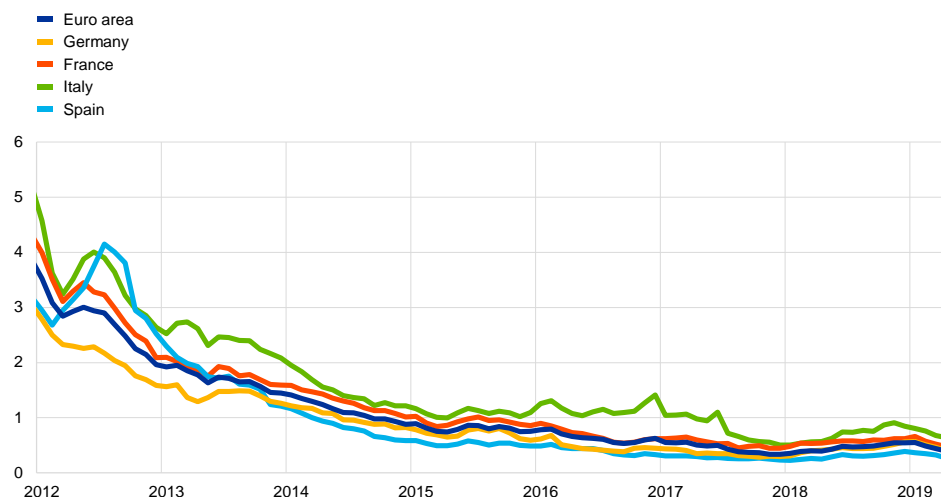
Notes: Loans are adjusted for loan sales and securitisation. The cross-country dispersion is calculated on the basis of minimum and maximum values using a fixed sample of 12 euro area countries. The latest observation is for April 2019.

Banks' debt funding conditions have improved further. In April, the composite cost of debt financing for euro area banks decreased further, down from its recent peak in January 2019 and returning to its level in February 2018 (see Chart 23). This development was driven mainly by a considerable decline in bank bond yields. Still, compared with deposits, bank bonds remained the more expensive source of funding, accounting for a limited share in banks' overall debt funding. In addition, euro area banks' deposit rates remained broadly stable in April. The improvement in banks' debt funding costs was widespread across the largest euro area countries. While deposit rates remained broadly unchanged across these countries, bank bond yields declined considerably in April. In addition, euro area banks reported improved access to funding in the first quarter of 2019 in their responses to the ECB's bank lending survey, primarily on account of their access to debt securities funding. At the same time, the level of bank funding costs remained heterogeneous across the largest euro area countries. In April, euro area banks' loan-deposit margins decreased somewhat for new business. Simultaneously, the compression of loan-deposit margins is ongoing for the rates on outstanding loans in countries with a high reliance on fixed-rate contracts, indicating a gradual repricing of old loan contracts at new, lower rates. The compression of loan-deposit margins as such exerts a dampening impact on bank profitability, which is however compensated by the positive impact of the low or even negative interest rate environment on credit quality (which reduces provisioning costs) and lending volumes. Overall, euro area banks' funding conditions have remained favourable, reflecting the ECB's accommodative monetary policy stance and the strengthening of banks' balance sheets. At the same time, despite banks' progress in consolidating their balance sheets, for instance by reducing non-performing loans, the level of euro area bank profitability remains low.

Chart 23

Banks' composite cost of debt financing

(composite cost of deposit and unsecured market-based debt financing; percentages per annum)



Sources: ECB, Markit iBoxx and ECB calculations.

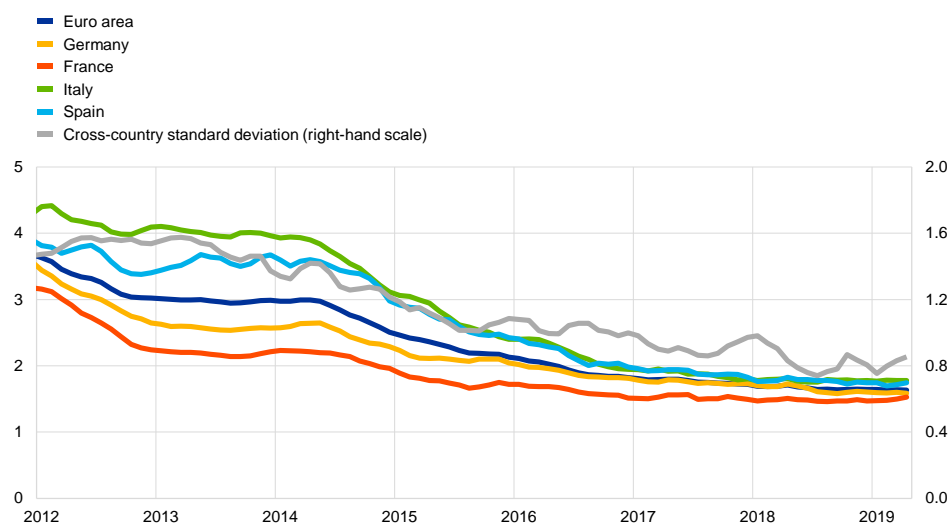
Notes: The composite cost of deposits is calculated as an average of new business rates on overnight deposits, deposits with an agreed maturity and deposits redeemable at notice, weighted by their corresponding outstanding amounts. The latest observation is for April 2019.

Bank lending rates for NFCs and households remained historically low. In April 2019 the composite bank lending rate for NFCs (see Chart 24) declined to 1.62%, matching its historical low level of May 2018. More favourable bank funding costs as well as continued strong competitive pressures had a dampening impact on NFC bank lending rates. In addition, low credit risk for NFCs on aggregate, as indicated by low expected default frequencies, also contributed to keeping lending rates at low levels. The composite bank lending rate for housing loans declined to 1.75% in April, reaching a new historical low (see Chart 25). Competitive pressures as well as more favourable bank funding costs exerted a dampening impact on lending rates for euro area households. Overall, composite bank lending rates for loans to NFCs and households have fallen significantly since the ECB's credit easing measures were announced in June 2014. Between May 2014 and April 2019 composite lending rates on loans to NFCs and households fell by around 130 and 115 basis points, respectively. The reduction in bank lending rates for loans to NFCs, as well as for loans to small firms (assuming that very small loans of up to €0.25 million are primarily granted to small firms), was particularly significant in those euro area countries that were more affected by the financial crisis. This indicates a more uniform transmission of monetary policy to bank lending rates across euro area countries and firm sizes.

Chart 24

Composite lending rates for NFCs

(percentages per annum; three-month moving averages)



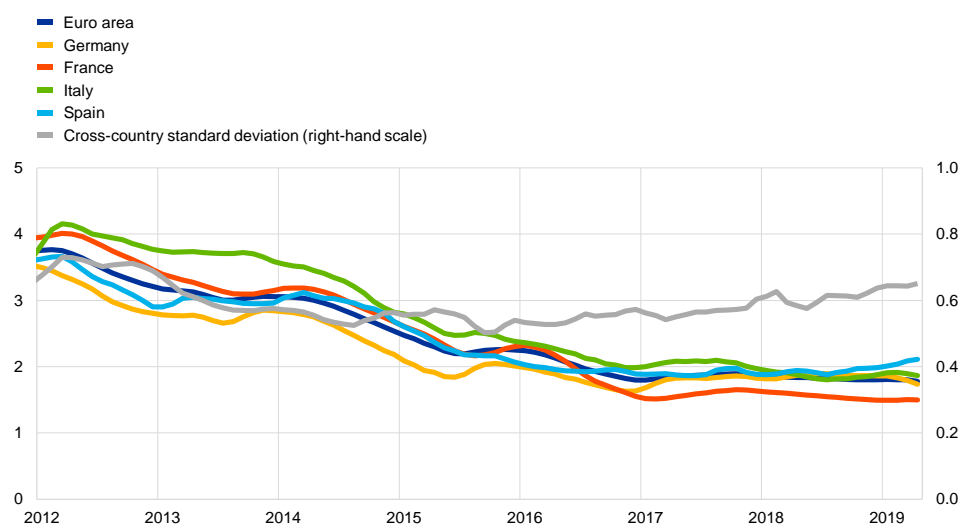
Source: ECB.

Notes: The indicator for the total cost of bank borrowing is calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observation is for April 2019.

Chart 25

Composite lending rates for house purchase

(percentages per annum; three-month moving averages)



Source: ECB.

Notes: The indicator for the total cost of bank borrowing is calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observation is for April 2019.

The annual flow of total external financing to euro area NFCs is estimated to have moderated in the first quarter of 2019. This reflected the moderation in bank lending as well as continued low issuance of listed shares, whereas the net issuance of debt securities was relatively strong. Still, compared with the previous growth slowdown episode in 2015-2016, NFC debt financing flows (based on MFI loans, debt

securities issuance and non-MFI loans) were higher. This is consistent with favourable debt financing conditions and stronger corporate balance sheets. Overall, given the typically lagged reaction of NFC external financing to economic activity, the recent moderation in NFC external financing is consistent with the weakening of economic activity in 2018 and the resultant lower financing needs of firms.

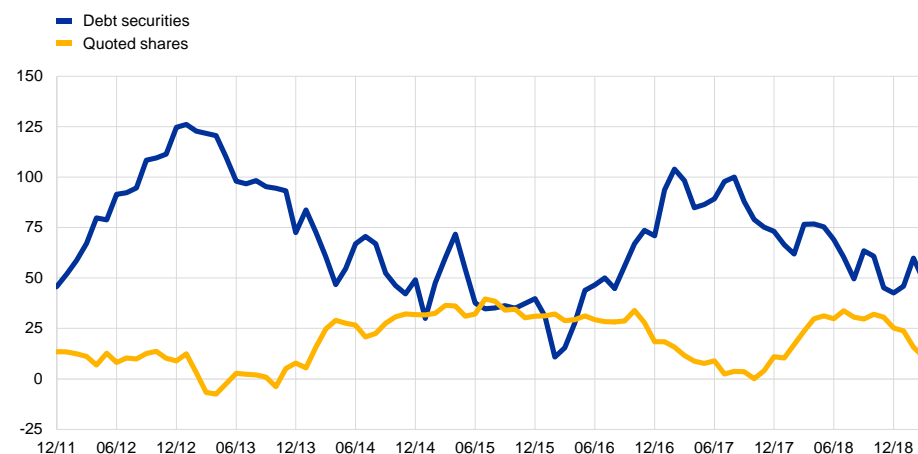
In the first quarter of 2019, the net issuance of debt securities by NFCs rebounded strongly from the negative level recorded in the last quarter of 2018.

The main driver of the positive net flow of NFC debt securities issued in the first quarter of 2019 is most likely the postponed issuance in the last quarter of 2018 that was related to the deterioration in the economic outlook and the increase in the spreads of the bonds issued by NFCs, in the context of broader risk aversion in the market. The rapid decline of the cost of market-based debt financing since the end of 2018 prompted a rebound in NFC net issuance of debt securities. Taking a somewhat longer perspective, the annual net issuance flows for March 2019 were above those in December 2018 – which was the lowest reading since May 2016 (see Chart 26) – and in line with a gradual stabilisation that started at the beginning of 2019. Market data suggest that the net issuance of debt securities by both investment-grade and high-yield issuers in April and May 2019 was much more muted than it was in the first quarter of 2019. The net issuance of listed shares continued to weaken in the first quarter of 2019, reflecting a series of negative net monthly flows that started in November 2018.

Chart 26

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 March 2019.

In April 2019, the cost of financing for NFCs declined further compared to its end-2018 level and reached its historical minimum.

In April, the overall nominal cost of external financing for NFCs, comprising bank lending, debt issuance in the market and equity finance, stood at 4.4%. This is seven basis points lower than it was in March 2019, and a new historical low. Although the cost of financing is estimated to have increased slightly in May, it remains substantially lower than the level seen in

mid-2014, when market expectations regarding the introduction of the public sector purchase programme began to emerge.

According to the latest Survey on the Access to Finance of Enterprises, SMEs in the euro area continued to signal support for accommodative financing conditions while indicating some concerns about past developments in their business environment. Fewer SMEs indicated increases in the availability of external sources of finance, despite a positive willingness of banks to extend credit. Furthermore, an increasing share of SMEs across most euro area countries perceived the macroeconomic outlook as an impediment to their access to external finance. Nevertheless, as in the previous survey, they ranked access to finance as their lowest concern, although significant cross-country differences still exist. The percentage of distressed SMEs in the euro area has remained broadly unchanged at around 3%, far from its historical peak of more than 14% in the second half of 2012. On balance, a declining but still sizeable share of SMEs reported higher turnover in a context of unchanged profits. Competition, difficulties in finding customers as well as growing labour and other costs (for material, energy and interest expenses) may have all weighed on profits.

6 Fiscal developments

The euro area fiscal stance is projected to continue to be mildly expansionary, thus providing support to economic activity. At the same time, countries where government debt is high need to continue rebuilding fiscal buffers. All countries should reinforce their efforts to achieve a more growth-friendly composition of public finances. Likewise, the transparent and consistent implementation of the European Union's fiscal and economic governance framework over time and across countries remains essential to bolster the resilience of the euro area economy.

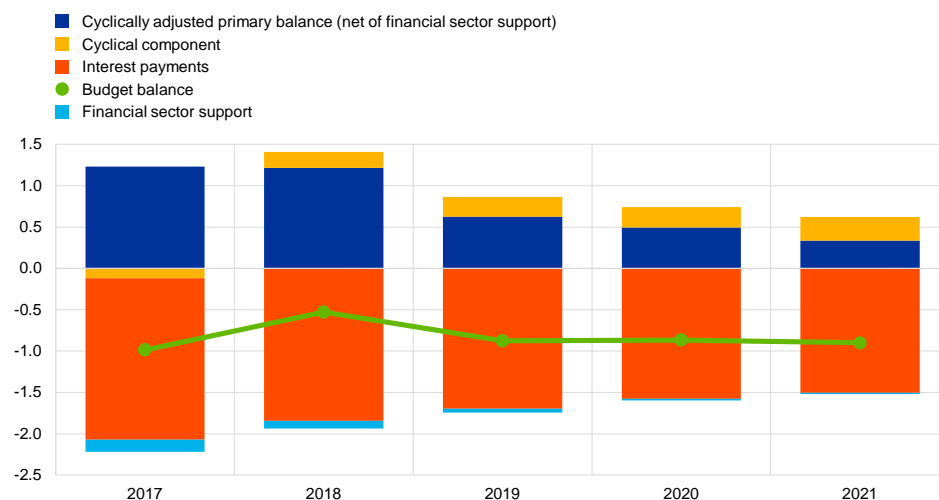
Following an improvement last year, the euro area general government budget deficit is projected to deteriorate in 2019 and remain stable in the following two years.⁴ The general government deficit ratio for the euro area stood at 0.5% of GDP in 2018, compared with 1.0% of GDP in 2017. The improvement in 2018 was mainly the result of favourable cyclical conditions and declining interest payments. The improvement is likely to be reversed this year on account of a significantly lower cyclically adjusted primary balance. The higher deficit is also expected to persist over the following two years (see Chart 27).

The outlook for the euro area general government deficit ratio has improved marginally over the whole projection horizon compared with the March 2019 ECB staff projections. The lower deficit mainly reflects a smaller deterioration in the cyclically adjusted primary balance.

Chart 27

Budget balance and its components

(percentage of GDP)



Sources: ECB and June 2019 Eurosystem staff macroeconomic projections.
Notes: The data refer to the aggregate general government sector of the euro area.

⁴ See the “Eurosystem staff macroeconomic projections for the euro area, June 2019”, published on the ECB’s website on 6 June 2019.

The aggregate fiscal stance for the euro area is assessed to have been neutral in 2018 but is projected to be mildly expansionary from 2019 onwards.⁵ This

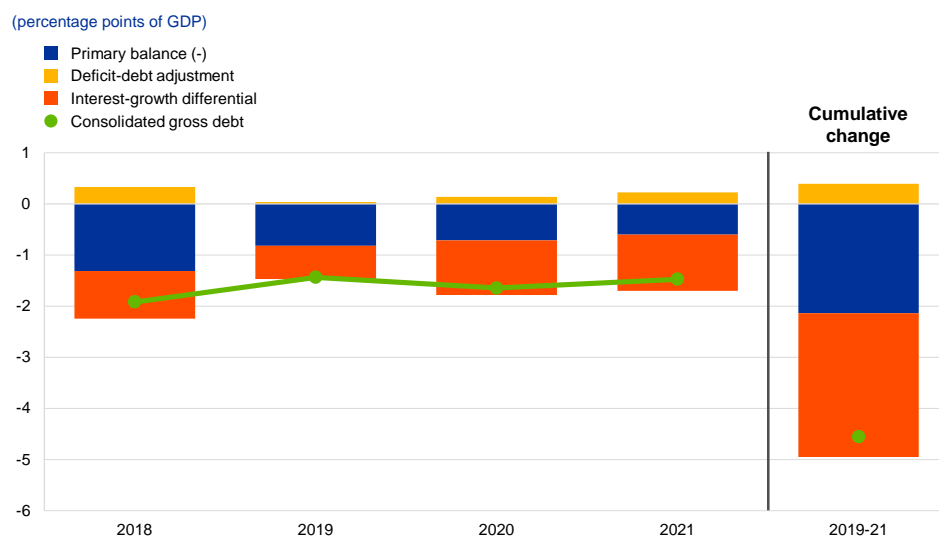
profile is mainly driven by cuts to direct taxes and social security contributions in both Germany and France but it is also a result of relatively dynamic expenditure growth in several other countries.

The decline in the euro area aggregate public debt-to-GDP ratio is projected to continue at a slower pace. According to the June 2019 Eurosystem staff

macroeconomic projections, the aggregate general government debt-to-GDP ratio in the euro area is expected to decline from 85.1% of GDP in 2018⁶ to 80.6% of GDP in 2021. The projected reduction in the government debt ratio is supported by both a negative interest rate-growth rate differential⁷ and continued primary surpluses (see Chart 28), although deficit-debt adjustments are expected to offset some of these effects. Over the projection horizon, the debt ratio is projected to fall or increase only slowly in all euro area countries but it will continue to far exceed the reference value of 60% of GDP in a number of countries. Compared with the March 2019 projections, the decline in the aggregate euro area debt-to-GDP ratio is expected to be somewhat more pronounced, with the projected ratio for 2021 being revised down by 0.5 percentage points. This is mainly due to slightly higher primary surplus projections coupled with small downward revisions to the deficit-debt adjustment.

Chart 28

Drivers of change in public debt



Sources: ECB and June 2019 Eurosystem staff macroeconomic projections.

Notes: The data refer to the aggregate general government sector of the euro area.

⁵ The fiscal stance reflects the direction and size of the stimulus from fiscal policies to the economy, beyond the automatic reaction of public finances to the business cycle. It is measured here as the change in the cyclically adjusted primary balance ratio net of government support to the financial sector. For more details on the concept of the euro area fiscal stance, see the article entitled "The euro area fiscal stance", *Economic Bulletin*, Issue 4, ECB, 2016.

⁶ As the projections usually take the most recent data revisions into account, there might be discrepancies compared with the latest validated Eurostat data.

⁷ For more information, see the box entitled "Interest rate-growth differential and government debt dynamics", *Economic Bulletin*, Issue 2, ECB, 2019.

Countries need to ensure that their fiscal policies fully comply with the Stability and Growth Pact. In particular, countries where government debt is high need to set their debt ratio on a declining path. At the same time, all countries should increase efforts to achieve a more growth-friendly composition of public finances.

Boxes

1 The decrease in euro area net financial outflows in 2018: foreign direct investment retrenchment and portfolio investment slowdown

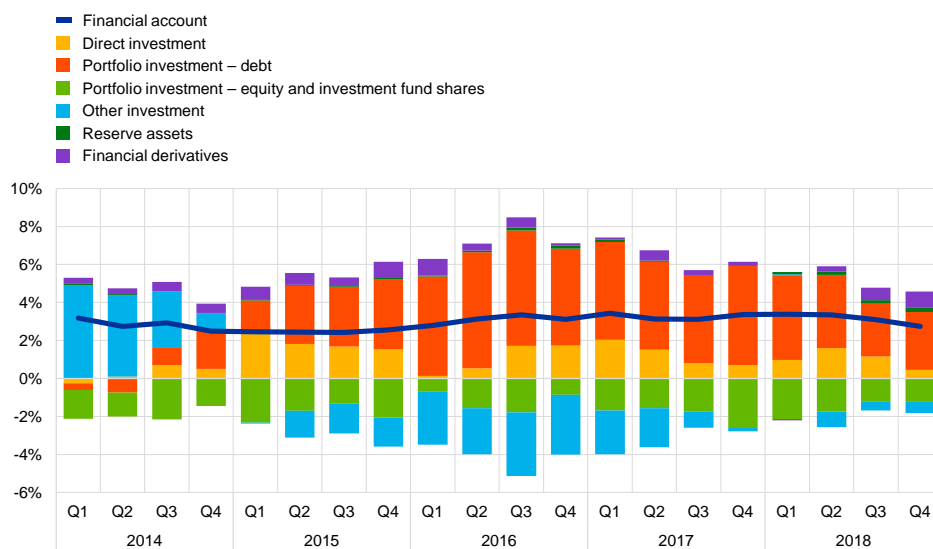
Prepared by Michael Fidora and Martin Schmitz

In 2018 the financial account of the euro area balance of payments recorded net outflows of 2.7% of euro area GDP (see Chart A). The decrease in net financial outflows, from 3.4% of GDP in 2017, is in line with the narrowing of the euro area current account surplus recorded in 2018 and partly reflects the stepwise reduction in the net purchases of the Eurosystem's asset purchase programme (APP). The net outflows continued to be driven by portfolio investment in debt securities as well as – to a lesser extent – financial derivatives, foreign direct investment (FDI) and reserve assets. At the same time, the euro area recorded net inflows of portfolio investment in equity and other investment (largely comprising currency, loans and deposits).

Chart A

Main items of the euro area financial account

(four-quarter moving sums, percentages of GDP)



Sources: ECB and Eurostat.

Notes: A positive (negative) number indicates net outflows (inflows) from (into) the euro area. The latest observation is for the fourth quarter of 2018.

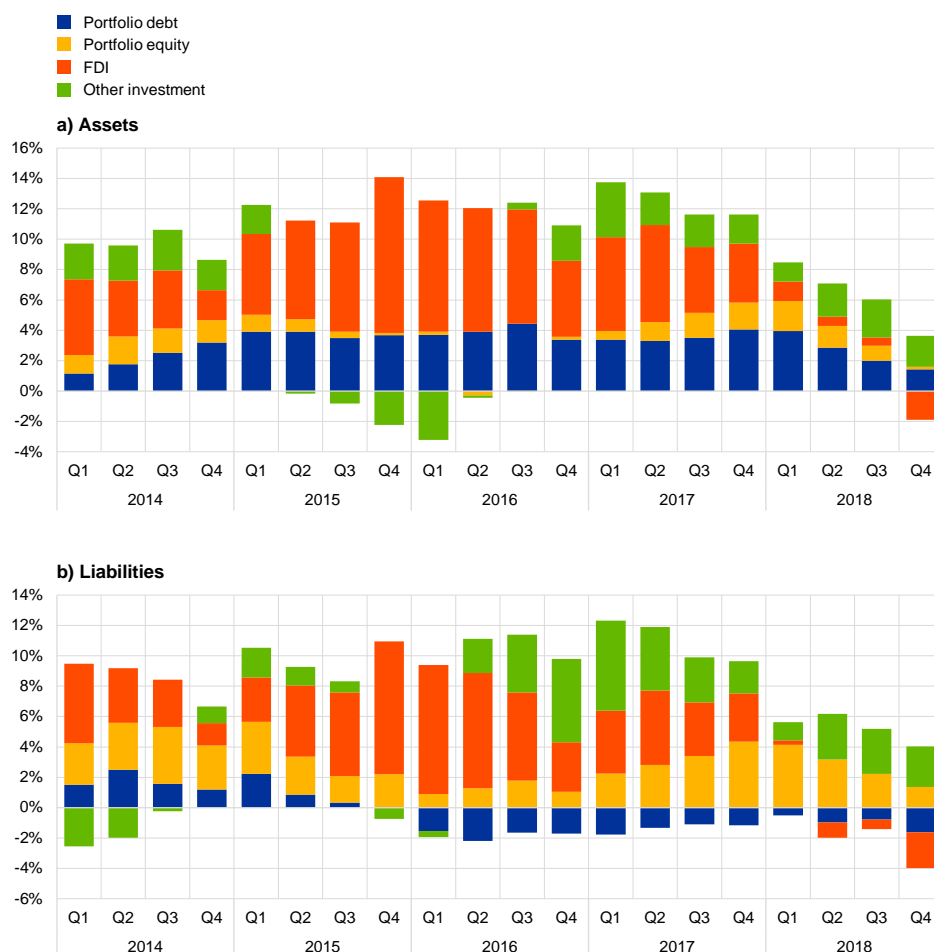
The decrease in the financial account balance coincided with a broad-based decline in cross-border financial flows in 2018 (see Chart B). On the assets side, euro area residents' net purchases of non-euro area portfolio debt securities more than halved in 2018, falling to 1.4% of GDP from 4.1% of GDP in 2017, while net purchases of non-euro area portfolio equity decreased to 0.2% of GDP (from 1.8% of GDP in 2017). The largest change was recorded in FDI, as euro area residents made

net disinvestments of 1.9% of GDP outside the euro area (compared with net investments of 3.9% of GDP in 2017). A similar development was also observed on the liabilities side, with non-residents making net disinvestments of 2.4% of euro area GDP (following net investments of 3.2% of GDP in the previous year). Moreover, non-euro area investors slightly increased their net sales of euro area portfolio debt securities to 1.6% of GDP, while their net purchases of euro area portfolio equity declined to 1.4% of GDP (from 4.3% of GDP in 2017).⁸ The declines in euro area portfolio investment and FDI transactions in 2018 are broadly in line with those observed for other advanced economies.⁹

Chart B

Selected items of the euro area financial account

(four-quarter moving sums, percentages of GDP)



Sources: ECB and Eurostat.

Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. For liabilities, a positive (negative) number indicates net purchases (sales) of euro area instruments by non-euro area investors. The latest observation is for the fourth quarter of 2018.

⁸ Other investment was relatively stable, as asset and liability flows increased to 2.0% and 2.7% of GDP respectively (from 1.9% and 2.1% of GDP in 2017).

⁹ According to the dataset compiled in McQuade, P. and Schmitz, M., "America First? A US-centric view of global capital flows", *Working Paper Series*, No 2238, ECB, February 2019.

Portfolio investment in non-euro area assets, particularly debt securities, continued to reflect the impact of the Eurosystem's asset purchase programme in 2018.¹⁰

Since the launch of the expanded APP in the first quarter of 2015, euro area residents have made persistent net purchases of foreign long-term debt securities in the light of the euro area's negative interest rate differentials vis-à-vis other advanced economies (see Chart B). In particular, they have rebalanced their portfolios towards sovereign bonds issued by other advanced economies, most notably US Treasuries, as these serve as the closest substitute for securities eligible under the public sector purchase programme. At the same time, they also continued to be net buyers of foreign equity.¹¹ In 2018 euro area investors' net purchases of US debt securities continued, while net acquisitions of debt securities issued by residents of Japan and the United Kingdom largely ceased, thereby contributing to an overall decline in net purchases of non-euro area debt securities. As in previous years, "financial corporations other than monetary financial institutions (MFIs)" – which include investment and pension funds, as well as insurance companies – accounted for the largest part of the euro area's net purchases of foreign portfolio debt securities in 2018, followed by MFIs excluding the Eurosystem (see Chart C).

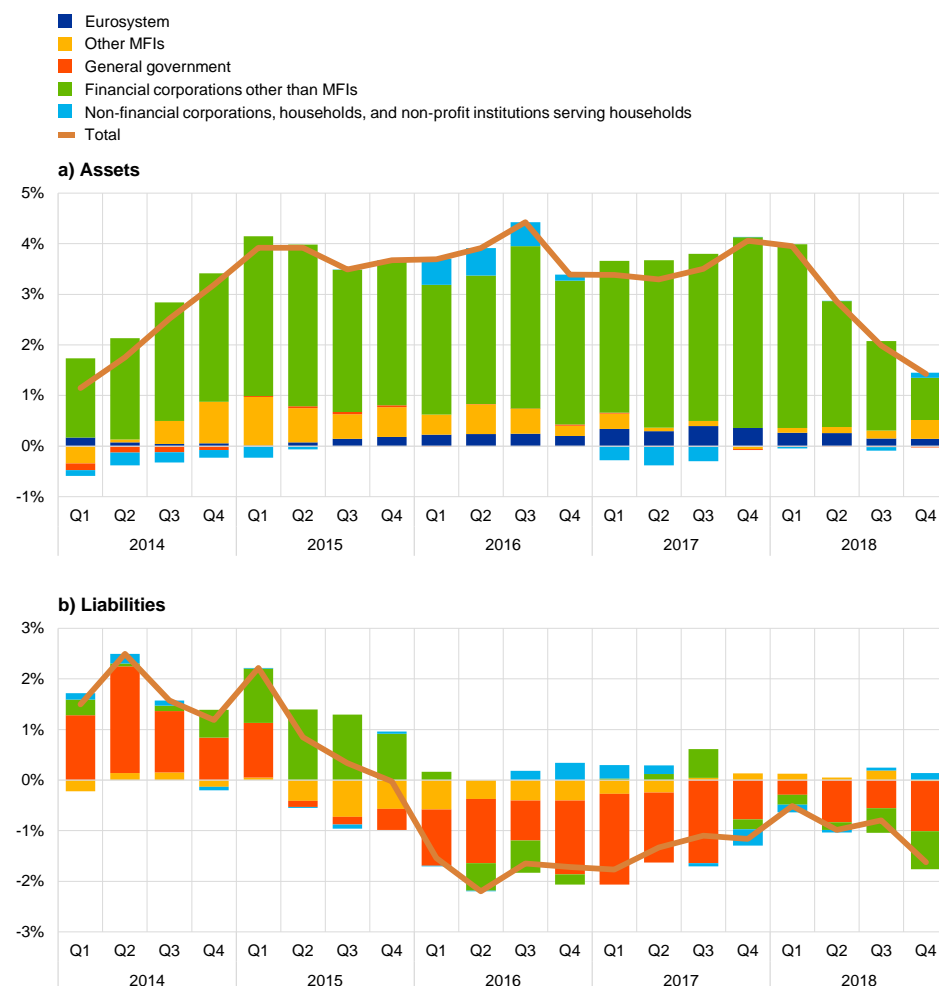
¹⁰ Between 9 March 2015 and 19 December 2018, the Eurosystem conducted net purchases of public sector securities under the public sector purchase programme, part of the expanded APP. See the [ECB's website](#) for further details.

¹¹ See Cœuré, B. "The international dimension of the ECB's asset purchase programme", speech given at the Foreign Exchange Contact Group meeting, 11 July 2017, and Bergant, K., Fidora, M. and Schmitz, M., "International capital flows at the security level – evidence from the ECB's asset purchase programme", *ECMI Working Papers*, No 7, Centre for European Policy Studies, 2018.

Chart C

Euro area portfolio debt securities transactions by main institutional sector

(four-quarter moving sums, percentages of GDP)



Sources: ECB and Eurostat.

Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. For liabilities, a positive (negative) number indicates net purchases (sales) of euro area instruments by non-euro area investors. The latest observation is for the fourth quarter of 2018.

As regards portfolio investment in the euro area, persistent net sales of euro area government debt securities by non-residents have been another key feature of euro area financial flows since the launch of the APP. This mainly reflects the important role of non-residents as counterparties to the Eurosystem in the implementation of the APP.¹² In line with this, non-resident investors' net sales of euro area government bonds were particularly high in the four quarters up to the first quarter of 2017 (Chart C), i.e. in the period when average Eurosystem monthly net asset purchases peaked at €80 billion. Subsequently, non-residents' net sales of euro area government debt securities gradually declined. In all likelihood, this fall was related to the stepwise reduction in the pace of Eurosystem net purchases until the

¹² See the box entitled "Which sectors sold the government securities purchased by the Eurosystem?", *Economic Bulletin*, Issue 4, ECB, 2017.

end of 2018.¹³ Non-euro area investors were also net sellers of euro area debt securities issued by financial corporations other than MFIs in 2018, while they became net buyers of debt securities issued by MFIs excluding the Eurosystem (see Chart C).

The retrenchment in FDI in 2018 mainly reflected transactions vis-à-vis the United States, linked in part to the US tax reform (see Chart D). The net FDI disinvestment in the euro area by US residents amounted to 2.3% of euro area GDP in 2018 and was particularly pronounced in the first half of 2018. This development is at least partly attributable to the impact of the Tax Cuts and Jobs Act passed by the US Federal Government in December 2017, which led to the repatriation of accumulated foreign earnings by US-based parent companies of multinational enterprises.¹⁴ In addition, residents of offshore financial centres accounted for net FDI disinvestments in the euro area of 1.2% of euro area GDP, possibly also due to the impact of the US tax reform via intermediary entities resident in these jurisdictions. Moreover, this may also reflect changes to international tax policies aimed at addressing profit shifting practices of multinational enterprises. The largest net FDI investments in the euro area (0.5% of euro area GDP), on the other hand, were made by residents of Switzerland in 2018. Regarding euro area FDI abroad, euro area residents disinvested mainly from the United States (1.5% of euro area GDP) and offshore financial centres (1.1% of euro area GDP). The aforementioned US tax reform may also have been a factor in these cases, as multinational enterprises frequently channel their internal financial transactions via special purpose entities, some of which are resident in the euro area.¹⁵ Moreover, for the first time since 2008, euro area residents made FDI disinvestments in the United Kingdom (1.1% of GDP) in 2018.

¹³ See Cœuré, B., “[The international dimension of the ECB’s asset purchase programme: an update](#)”, speech at a conference on “Exiting Unconventional Monetary Policies”, organised by the Euro 50 Group, the CF40 forum and CIGI, Paris, 26 October 2018.

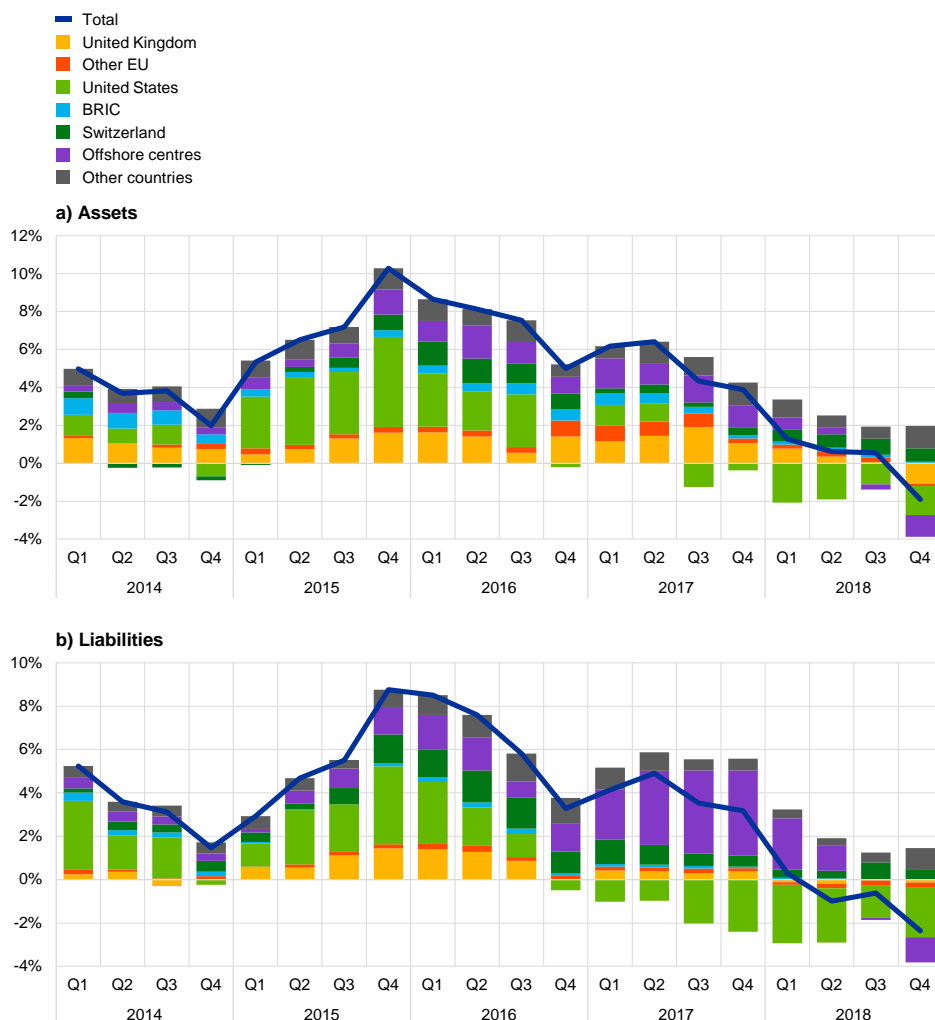
¹⁴ “[See FDI in Figures](#)”, OECD, April 2019, and Emter, L., Kennedy, B. and McQuade, P., “[US profit repatriations and Ireland’s Balance of Payments statistics](#)”, *Quarterly Bulletin*, Central Bank of Ireland, April 2019.

¹⁵ “[FDI in Figures](#)”, OECD, April 2019.

Chart D

Euro area foreign direct investment transactions by geographical counterparty

(four-quarter moving sums, percentages of GDP)



Sources: ECB and Eurostat.

Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area instruments by euro area investors. For liabilities, a positive (negative) number indicates net purchases (sales) of euro area instruments by non-euro area investors. "Other EU" comprises EU Member States and EU institutions outside the euro area, excluding the United Kingdom. The "BRIC" countries are Brazil, Russia, India and China. "Other countries" includes all countries and country groups not listed in the table as well as unallocated positions. The latest observation is for the fourth quarter of 2018.

2 Liquidity conditions and monetary policy operations in the period from 30 January to 16 April 2019

Prepared by Iwona Durka and Annette Kamps

This box describes the ECB's monetary policy operations during the first and second reserve maintenance periods of 2019, which ran from 30 January to 12 March 2019 and from 13 March to 16 April 2019 respectively. Throughout this period the interest rates on the main refinancing operations (MROs), the marginal lending facility and the deposit facility remained unchanged at 0.00%, 0.25% and -0.40% respectively. In parallel, the Eurosystem continued the reinvestment phase of its asset purchase programme (APP), reinvesting principal payments from maturing public sector securities, covered bonds, asset-backed securities and corporate sector securities.

Liquidity needs

In the period under review, the average daily liquidity needs of the banking system, defined as the sum of net autonomous factors and reserve requirements, stood at €1,496.4 billion, a decrease of €15.1 billion compared with the previous review period (i.e. the seventh and eighth maintenance periods of 2018). This slight reduction in liquidity needs was largely the result of a decrease in net autonomous factors, which declined by €16.2 billion to €1,368.3 billion during the review period.

The decline in net autonomous factors was due to an increase in liquidity-providing factors, which was stronger than the growth in liquidity-absorbing factors. The most significant contribution to the increase on the liquidity-providing side came from net assets denominated in euro, which grew on average by €43.2 billion to €196.6 billion. This means that net assets denominated in euro almost fully reversed their decline in the previous review period as a result of the seasonal pattern at year-end, when they decreased by €46.7 billion. The higher level of liquidity-providing factors was also caused by an increase in the value of net foreign assets, which grew on average by €32.2 billion. Among liquidity-absorbing factors, banknotes in circulation, government deposits and other autonomous factors rose on average by €2.2 billion to €1,212.2 billion, by €27.2 billion to €263.3 billion and by €29.9 billion to €760.6 billion respectively.

Table A
Eurosystem liquidity conditions

Liabilities – liquidity needs

(averages; EUR billions)

	Current review period: 30 January to 16 April 2019						Previous review period: 31 October 2018 to 29 January 2019	
	First and second maintenance periods		First maintenance period: 30 January to 12 March		Second maintenance period: 13 March to 16 April		Seventh and eighth maintenance periods	
Autonomous liquidity factors	2,236.1	(+59.3)	2,224.6	(+31.2)	2,249.9	(+25.3)	2,176.8	(+12.0)
Banknotes in circulation	1,212.2	(+2.2)	1,209.2	(-9.6)	1,215.8	(+6.6)	1,210.0	(+16.8)
Government deposits	263.3	(+27.2)	257.3	(+26.0)	270.5	(+13.2)	236.1	(-23.3)
Other autonomous factors	760.6	(+29.9)	758.1	(+14.8)	763.6	(+5.5)	730.7	(+18.5)
Current accounts	1,371.3	(+13.7)	1,364.8	(+32.7)	1,379.0	(+14.2)	1,357.6	(-0.5)
Monetary policy instruments	757.6	(-7.3)	765.5	(-1.8)	748.0	(-17.5)	764.9	(-14.8)
Minimum reserve requirements ¹	128.1	(+1.1)	127.9	(+0.5)	128.4	(+0.5)	127.1	(+0.4)
Deposit facility	629.4	(-8.4)	637.6	(-2.3)	619.6	(-18.0)	637.8	(-15.2)
Liquidity-absorbing fine-tuning operations	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)

Assets – liquidity supply

(averages; EUR billions)

	Current review period: 30 January to 16 April 2019						Previous review period: 31 October 2018 to 29 January 2019	
	First and second maintenance periods		First maintenance period: 30 January to 12 March		Second maintenance period: 13 March to 16 April		Seventh and eighth maintenance periods	
Autonomous liquidity factors	868.1	(+75.4)	852.4	(+71.2)	886.9	(+34.4)	792.7	(-39.2)
Net foreign assets	671.4	(+32.2)	665.5	(+9.7)	678.6	(+13.2)	639.2	(+7.4)
Net assets denominated in euro	196.6	(+43.2)	187.0	(+61.5)	208.2	(+21.3)	153.5	(-46.7)
Monetary policy instruments	3,369.1	(-10.8)	3,375.0	(-9.7)	3,362.0	(-13.0)	3,379.8	(+35.7)
Open market operations	3,369.0	(-10.7)	3,374.9	(-9.7)	3,361.9	(-13.0)	3,379.7	(+35.7)
Tender operations	727.7	(-4.9)	729.1	(-2.6)	726.0	(-3.1)	732.5	(-6.6)
MROs	5.9	(-1.5)	6.0	(-1.9)	5.7	(-0.3)	7.3	(+2.5)
Three-month LTROs	3.9	(-0.7)	4.3	(-0.7)	3.5	(-0.7)	4.7	(+0.1)
TLTRO-II operations	717.9	(-2.7)	718.8	(-0.0)	716.7	(-2.1)	720.5	(-3.7)
Outright portfolios	2,641.3	(-5.9)	2,645.8	(-7.1)	2,635.9	(-9.9)	2,647.2	(+42.2)
First covered bond purchase programme	4.1	(-0.2)	4.2	(-0.1)	3.9	(-0.3)	4.3	(-0.2)
Second covered bond purchase programme	3.9	(-0.1)	4.0	(-0.0)	3.8	(-0.2)	4.0	(-0.0)
Third covered bond purchase programme	262.2	(-0.1)	262.4	(-0.2)	261.9	(-0.5)	262.3	(+3.9)
Securities Markets Programme	65.3	(-7.7)	67.4	(-5.7)	62.8	(-4.7)	73.0	(-1.2)
Asset-backed securities purchase programme	26.2	(-1.5)	26.4	(-1.2)	25.9	(-0.5)	27.6	(+0.3)
Public sector purchase programme	2,101.6	(+2.9)	2,103.3	(+0.1)	2,099.7	(-3.6)	2,098.7	(+30.9)
Corporate sector purchase programme	178.0	(+0.9)	178.1	(-0.1)	177.9	(-0.2)	177.1	(+8.4)
Marginal lending facility	0.1	(-0.1)	0.1	(-0.0)	0.1	(-0.0)	0.1	(+0.0)

Other liquidity-based information

(averages; EUR billions)

	Current review period: 30 January to 16 April 2019						Previous review period: 31 October 2018 to 29 January 2019	
	First and second maintenance periods		First maintenance period: 30 January to 12 March		Second maintenance period: 13 March to 16 April		Seventh and eighth maintenance periods	
Aggregate liquidity needs	1,496.4	(-15.1)	1,500.4	(-39.6)	1,491.7	(-8.6)	1,511.5	(+51.8)
Autonomous factors ²	1,368.3	(-16.2)	1,372.5	(-40.1)	1,363.3	(-9.2)	1,384.5	(+51.4)
Excess liquidity	1,872.5	(+4.3)	1,874.5	(+29.9)	1,870.1	(-4.4)	1,868.2	(-16.1)

Interest rate developments

(averages; percentages)

	Current review period: 30 January to 16 April 2019						Previous review period: 31 October 2018 to 29 January 2019	
	First and second maintenance periods		First maintenance period: 30 January to 12 March		Second maintenance period: 13 March to 16 April		Seventh and eighth maintenance periods	
MRO	0.00	(+0.00)	0.00	(+0.00)	0.00	(+0.00)	0.00	(+0.00)
Marginal lending facility	0.25	(+0.00)	0.25	(+0.00)	0.25	(+0.00)	0.25	(+0.00)
Deposit facility	-0.40	(+0.00)	-0.40	(+0.00)	-0.40	(+0.00)	-0.40	(+0.00)
EOBIA	-0.367	(-0.00)	-0.367	(-0.00)	-0.367	(+0.00)	-0.363	(-0.00)

Source: ECB.

Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in brackets denote the change from the previous review or maintenance period.

1) "Minimum reserve requirements" is a memo item that does not appear on the Eurosystem balance sheet and therefore should not be included in the calculation of total liabilities.

2) The overall value of autonomous factors also includes "items in course of settlement".

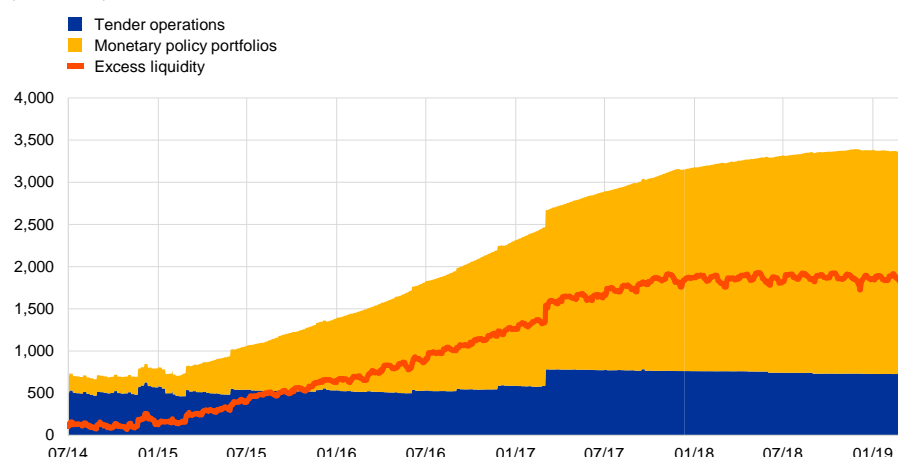
Liquidity provided through monetary policy instruments

The average amount of liquidity provided through open market operations – including both tender operations and monetary policy portfolios – decreased by €10.8 billion to €3,369.1 billion (see Chart A). This decrease was driven by lower demand in tender operations as well as a smaller liquidity injection stemming from monetary policy portfolios, due in particular to redemptions of securities purchased under the Securities Markets Programme.

Chart A

Evolution of liquidity provided through open market operations and excess liquidity

(EUR billions)



Source: ECB.

The average amount of liquidity provided through tender operations declined slightly over the review period, by €4.9 billion to €27.7 billion. This decrease was mainly attributable to lower liquidity provided through targeted longer-term

refinancing operations (TLTROs), which decreased on average by €2.7 billion as a result of voluntary early repayments. Lower demand also resulted in the provision of liquidity via MROs falling by €1.5 billion to €5.9 billion on average and the provision of liquidity via three-month longer-term refinancing operations (LTROs) falling by €0.7 billion to €3.9 billion on average.

Liquidity provided through the Eurosystem’s monetary policy portfolios decreased by €5.9 billion to €2,641.3 billion on average, mainly owing to redemptions of bonds held under the Securities Market Programme.

Redemptions of bonds held under the Securities Markets Programme and the first two covered bond purchase programmes totalled €8.0 billion. Regarding the APP portfolios, since 1 January 2019 the programme has been in the reinvestment phase. While net asset purchases have come to an end, reinvestments of principal payments from maturing securities purchased under the APP are intended to continue for an extended period of time past the date when the Governing Council starts raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation. The reinvestments adhere to the principle of market neutrality, via smooth and flexible implementation. Limited temporary deviations in the overall size and composition of the APP may occur during the reinvestment phase for operational reasons.¹⁶ The nominal value of the APP portfolio remains stable – in the review period it increased by only €2.1 billion to €2,567.9 billion on average.

Excess liquidity

As a consequence of the developments detailed above, average excess liquidity increased slightly compared with the previous review period, by €4.3 billion to €1,872.5 billion (see Chart A). This increase reflects lower net autonomous factors, which were partially offset by slightly lower liquidity provided through the Eurosystem’s tender operations and monetary policy portfolios. The APP portfolio remained stable as a consequence of the programme having entered the reinvestment phase on 1 January. Regarding the allocation of excess liquidity holdings between current accounts and the deposit facility, average current account holdings marginally increased, by €13.7 billion to €1,371.3 billion, while average recourse to the deposit facility declined by €8.4 billion to €629.4 billion.

Interest rate developments

Overnight unsecured and secured money market rates remained close to the ECB deposit facility rate. In the unsecured market, the euro overnight index average (EONIA) averaged -0.367%, slightly lower than in the previous review period. It fluctuated between a low of -0.372%, observed on 26 February and on 5 March, and a high of -0.356%, observed on 29 March (the end of the quarter). Regarding the

¹⁶ See the article entitled “[Taking stock of the Eurosystem’s asset purchase programme after the end of net asset purchases](#)”, *Economic Bulletin*, Issue 2, ECB, 2019.

secured money market, the spread between the average overnight repo rates for the standard and the extended collateral basket in the general collateral (GC) pooling market¹⁷ widened slightly. Compared with the previous period, the average overnight repo rate for the standard collateral basket decreased by around 1 basis point to -0.425%, while the average overnight repo rate for the extended collateral basket remained broadly stable at -0.408%.

¹⁷ The GC Pooling market allows repurchase agreements to be traded on the Eurex platform against standardised baskets of collateral.

3 Definitions and characteristics of soft patches in the euro area

Prepared by Mattia Duma, Magnus Forsells and Neale Kennedy

Following an exceptionally strong performance in 2017, growth slowed in 2018, raising the question of whether this was just a temporary “soft patch” or should have been seen as pointing to a more prolonged period of weakness. The term “soft patch” is used widely in the media and elsewhere to describe a temporary period of slower growth during an expansionary phase characterised by higher trend growth rates.¹⁸ However, there appears to have been relatively little analysis of such periods, particularly for the euro area.

The euro area economy has experienced five peaks and troughs since the beginning of the 1970s.¹⁹ The concept of a “soft patch” is only relevant during expansions, i.e. the periods between troughs and peaks. Chart A plots the five expansionary periods in the euro area since the beginning of the 1970s, as identified by the CEPR Euro Area Business Cycle Dating Committee (where the trough is indexed to 100).²⁰ It is important to note that the latest expansionary phase, which started in the first quarter of 2013, has not as yet come to an end.²¹ Looking at these expansionary phases, including the current one, it becomes clear that they differ substantially in terms of both duration and strength. At the same time, a common feature across the various expansionary phases is that they have been characterised by relatively low volatility. Despite this, there are short periods within each of these expansionary phases when output growth has slowed temporarily.

¹⁸ See, for example, Draghi, M., “[Monetary policy in the euro area](#)”, speech at the conference “The ECB and Its Watchers XX”, Frankfurt am Main, 27 March 2019.

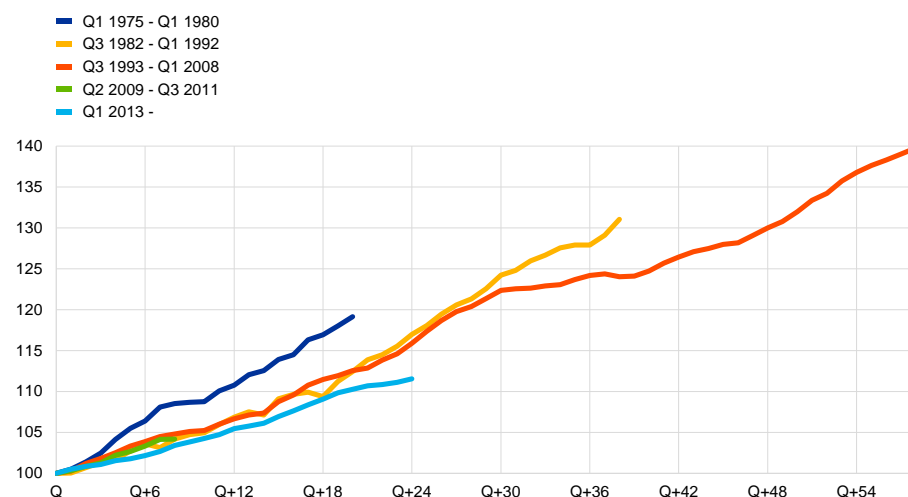
¹⁹ GDP data obtained from the area-wide model database. See Fagan, G., Henry, J. and Mestre, R., “[An area-wide model \(AWM\) for the euro area](#)”, *Working Paper Series*, No 42, ECB, January 2001.

²⁰ For further information on this committee, see the [website](#) of the Centre for Economic Policy Research (CEPR).

²¹ See, for instance, the box entitled “[The measurement and prediction of the euro area business cycle](#)”, *Monthly Bulletin*, ECB, May 2011.

Chart A Euro area recoveries

(trough = 100)



Sources: Eurostat, AWM database and ECB staff calculations.

Notes: The chart displays the five expansionary periods in the euro area since the beginning of the 1970s (as identified by the CEPR). The lines start with the trough (indexed to 100) and end with the peak. The latest expansionary phase, which started in the first quarter of 2013, has as yet not come to an end.

There is no precise definition of a soft patch. A soft patch is typically seen as one or more quarters of a slowdown in quarterly GDP growth. For the purpose of the analysis of this box, it is necessary to come up with a more precise definition. As presented in Table A, four alternative definitions of a soft patch are considered.²² These are when the GDP growth rates during two or three consecutive quarters are less than during the quarter that preceded these quarters (Definitions 1 and 2, respectively) or, to avoid that the identification of a soft patch is determined by what could be an exceptionally strong growth rate in any one quarter, when the GDP growth rates during two or three consecutive quarters are less than the average of the two quarters that preceded these quarters (Definitions 3 and 4, respectively).²³

The number of soft patches varies significantly depending on the precise definition. Table A shows the number of soft patches for every euro area business cycle expansion according to the different definitions applied. The figures reported are the number of quarters where a soft patch is identified according to the respective definition. This method implies that longer soft patches are recorded as a number of consecutive shorter soft patches (with the number varying depending on the definition). An alternative option, which is not considered here, would be to count consecutive soft patches as a single soft patch. This way of counting would lead to a lower number of soft patches for all definitions applied.²⁴

²² An exception is Anderson, R. G. and Liu, Y., "On the Road to Recovery, Soft Patches Turn Up Often", *The Regional Economist*, Federal Reserve Bank of St. Louis, January 2012. The first two definitions of a soft patch are in line with this earlier analysis.

²³ An alternative approach, not considered here, would be to consider the trend growth rate during the expansionary phase, and to look at consecutive quarterly growth rates that were below this trend. One disadvantage of this approach relates to the uncertainty surrounding the estimation of trend growth, particularly towards the end of the sample period.

²⁴ In order to make the identification of soft patches more robust and less sensitive to marginal differences, the computations are conducted on data rounded to one decimal place.

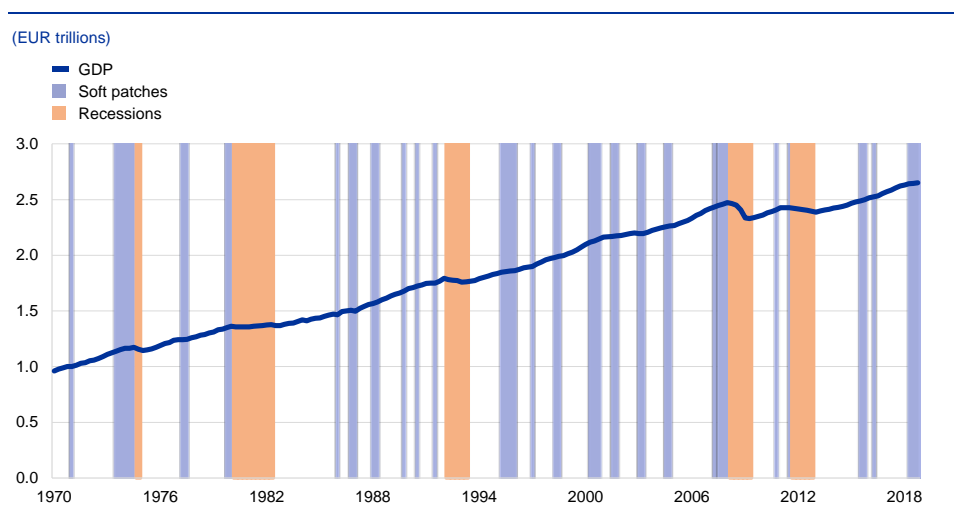
Table A**Number of soft patches according to different definitions**

(number of soft patches)				
Business cycle expansion dates	Definition 1	Definition 2	Definition 3	Definition 4
Q2 1970 – Q3 1974	7	5	6	6
Q1 1975 – Q1 1980	5	3	4	2
Q3 1982 – Q1 1992	12	8	8	3
Q3 1993 – Q1 2008	20	18	20	16
Q2 2009 – Q3 2011	2	1	2	0
Q1 2013 – Q1 2019	7	3	6	3
Cumulative	53	38	46	29

Sources: Eurostat, CEPR and ECB staff calculations.

Note: The first expansionary phase (Q2 1970 – Q3 1974) is incomplete due to data unavailability.

Soft patches during the expansionary phase of the business cycle are quite common and are not a reliable leading indicator of recessions. Chart B illustrates this by showing the level of euro area output alongside soft patches (according to Definition 3) and recession periods. This finding, which also holds true for the United States, suggests that it is not straightforward to draw any strong conclusions with regard to an imminent turning point. Although the analysis here identifies several soft patches that closely preceded a recession, many soft patches took place without the economy entering a recession in the following year.²⁵

Chart B**Soft patches and recessions since 1970**

Sources: Eurostat, CEPR and AWM database.

Note: Shaded areas indicate recessions/soft patches.

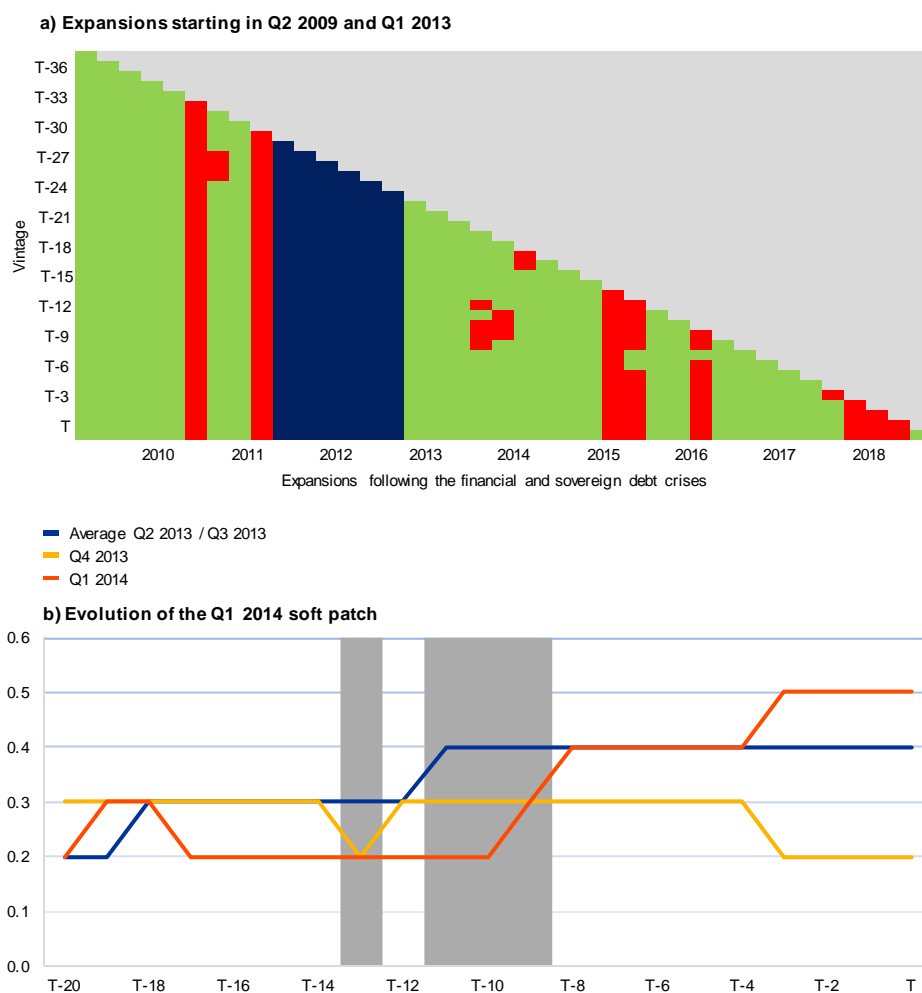
An important caveat relates to data revisions, which may change the identification of a soft patch over time. This is illustrated in Chart C, where the top

²⁵ Looking at the breakdown of GDP, all expenditure components tended in the past to contribute to soft patches. However, investment and private consumption have been the major contributors. The resilience of these two components during the recent soft patch in 2018 supported the assessment that this period was a temporary slowdown.

panel shows the two expansionary phases starting in the second quarter of 2009 and the first quarter of 2013 for different vintages of data releases (the green areas represent “normal” growth in an expansion, the red areas represent “soft patches” according to Definition 3, and the blue area represents the recession following the sovereign debt crisis between the third quarter of 2011 and the first quarter of 2013). The bottom row (T) represents the latest release with the publication of national accounts for the first quarter of 2019, whereas the rows above represent earlier data vintages. The bottom panel shows the impact of data revisions on the assessment of a soft patch occurring around the turn of the year 2013/2014 (according to Definition 3). In the first and latest releases, no soft patch is identified. However, with the data releases for GDP towards the end of 2015 and later with the releases during the latter part of 2016, a soft patch was indeed identified (as illustrated by the grey areas). This illustrates that revisions in later data releases are a factor that may change the real-time assessment of the latest cyclical position.

Chart C

Impact of data revisions on soft patches



Sources: Eurostat and ECB/Eurosystem staff macroeconomic projections.

Notes: In the top panel, the green areas represent "normal" growth in an expansion, the red areas represent "soft patches" according to Definition 3, and the blue area represents the recession following the sovereign debt crisis between the third quarter of 2011 and the first quarter of 2013. The bottom row (T) represents the latest release with the publication of national accounts for the first quarter of 2019, whereas the rows above represent earlier data vintages. The bottom panel shows the impact of data revisions on quarterly GDP growth for the first quarter of 2014, for the fourth quarter of 2013 and for the average of the second and third quarters of 2013. The grey areas represent periods when a soft patch was identified. The GDP growth rates are rounded to one decimal place.

Overall, soft patches are not a reliable indication of a forthcoming turning point in the business cycle. The slowdown in growth in 2018 serves as a good example, as growth picked up again in the first quarter of this year. This is consistent with the finding that soft patches are much more common than recessions. More generally, caution is warranted when analysing soft patches and their information content given that alternative definitions yield different results and data revisions may imply significant changes in the assessment of the current cyclical position of the economy.

4 Confidence and investment

Prepared by Malin Andersson and Benjamin Mosk

Economic agents' confidence and developments in the real economy are intrinsically linked.²⁶ Periods of high confidence could, per se, spur activity, while currently lower confidence could reinforce the magnitude and persistence of the ongoing economic slowdown in the euro area. In terms of the expenditure components of GDP, business investment is particularly affected by changes in confidence and uncertainty, as firms may postpone their investment plans and choose to “wait and see” in times of high uncertainty.²⁷ This box looks at the potential propagation effects of lower confidence on investment in recent times.

Following an extended period of improving sentiment, economic confidence in the euro area has worsened since the end of 2017. The deterioration in sentiment is not just a result of expectations of weaker economic fundamentals, but also reflects heightened uncertainty related to geopolitical factors, the threat of an escalation of protectionism, Brexit and vulnerabilities in emerging markets, including China. Confidence is illustrated, inter alia, by indicators such as the European Commission's Economic Sentiment Indicator (ESI). The ESI is a composite indicator measuring confidence in the industrial, services, construction and retail trade sectors, and among consumers.²⁸ Since the end of 2017 the ESI has declined significantly in the larger euro area countries and in the euro area as a whole, although it remains above its long-term average value of 100 (see Chart A). The decline in confidence in the euro area is common across sectors (see Chart B).

²⁶ See, for example, “[Confidence indicators and economic developments](#)”, *Monthly Bulletin*, ECB, January 2013.

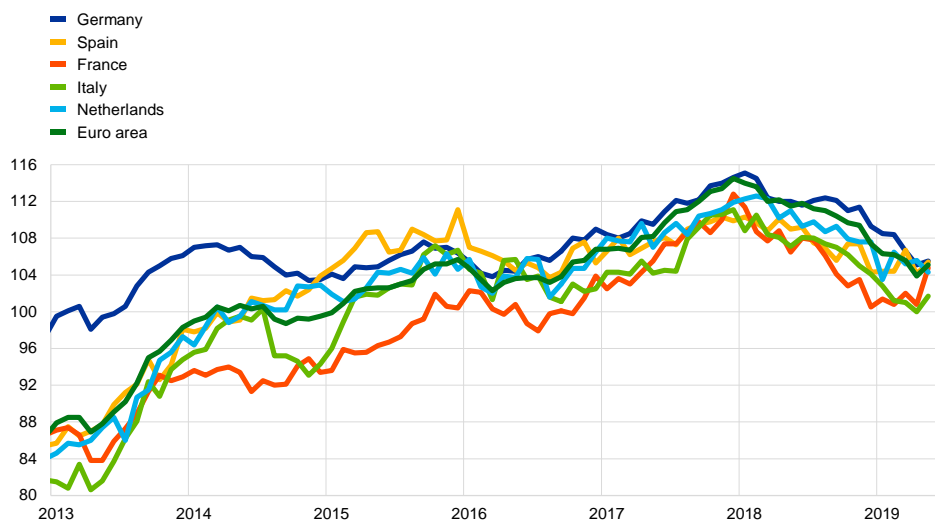
²⁷ To simplify, economic “confidence” captures expectations about the outlook (first moment) and economic “uncertainty” refers to the variance or dispersion of such expectations (second moment).

²⁸ The indicator is constructed to have a long-term mean of 100 and a standard deviation of 10, such that values greater than 100 indicate an above-average economic sentiment. See “[The Joint Harmonised EU Programme of Business and Consumer Surveys – User Guide](#)”, European Commission, 2016 (updated January 2019).

Chart A

Economic Sentiment Indicators for selected countries

(index: long-term average = 100)



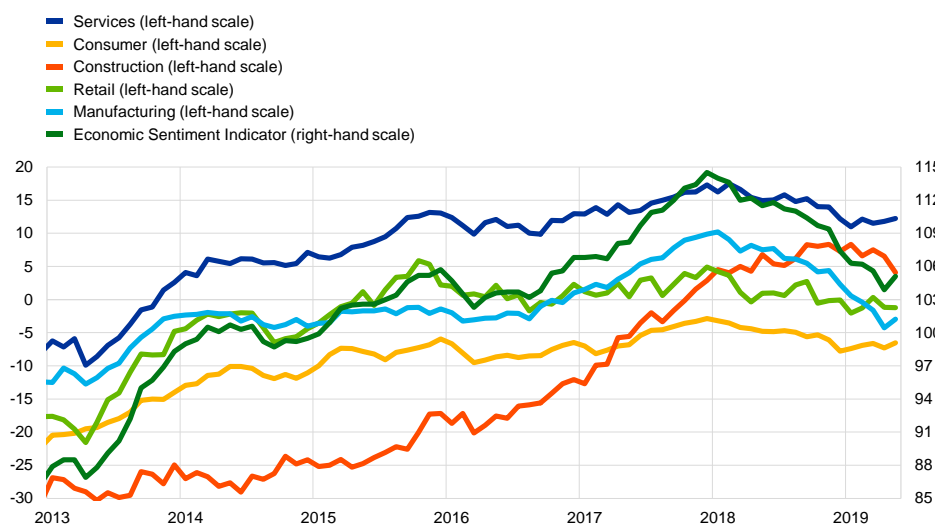
Source: European Commission.

Note: The latest observation is for May 2019.

Chart B

Euro area Economic Sentiment Indicator across sectors

(balances; index: long-term average = 100)



Source: European Commission.

Note: The latest observation is for May 2019.

Confidence largely reflects broad economic conditions but, at times, it may also become an autonomous source of business cycle fluctuations. Confidence indicators typically co-move with other economic statistics, as they represent expectations of underlying macroeconomic fundamentals. At the same time, those indicators might provide additional information not captured by other statistics, which

can be used to assess macroeconomic developments.²⁹ As an illustration, confidence may decline during a sharp economic downturn, but this may still correspond to a positive confidence shock if the underlying economic conditions justify an even lower confidence level. Such confidence shocks might be instrumental in supporting expert judgement in order to complement model-based projections.

Model evidence suggests that confidence shocks have had an overall positive impact on investment growth in the past two years and a negative impact in 2019. The New Multi-Country Model (NMCM),³⁰ the ECB's main model for macroeconomic projections,³¹ does not explicitly feature confidence but can be augmented with a mechanism to quantify the impact of structural confidence shocks. Confidence is introduced in the model in two steps. First, confidence shocks are identified using a structural vector autoregression model that includes the variables of the NMCM's investment equation.³² In the second step, those confidence shocks are introduced in the NMCM. The model residuals for the investment equation, which capture the difference between the model's output and economic outcomes, can partially be explained by the confidence shocks.^{33, 34} Based on these empirical results, the model is used to decompose historical investment growth into a confidence factor and other factors, which shows that investment growth was, overall, significantly and positively impacted by confidence in 2017 and 2018 (see Chart C). This analysis can be extended to the forecast after making assumptions about future confidence indicators and interpreting the Eurosystem staff forecast data through the lens of the NMCM.³⁵ Assuming that the euro area ESI remains at its May 2019 level, model simulations point towards a negative but modest contribution of confidence to investment growth in 2019, partially counteracting factors that support the euro area expansion, such as favourable financing conditions, further employment gains and rising wages, and the ongoing – albeit somewhat slower – expansion in global activity.

To conclude, the quantitative exercise shows that confidence shocks could have a sizeable impact on investment.

²⁹ See, for example, Angeletos, G.M. et al., “[Quantifying Confidence](#)”, *Econometrica*, Vol. 86, No 5, 2018, pp. 1689-1726.

³⁰ See Dieppe, A., González-Pandiella, A. and Willman, A., “[The ECB's New Multi-Country Model for the euro area: NMCM – Simulated with rational expectations](#)”, *Economic Modelling*, Vol. 29, Issue 6, 2012, pp. 2597-2614; and Dieppe, A., González-Pandiella, A., Hall, S. and Willman, A., “[Limited information minimal state variable learning in a medium-scale multi-country model](#)”, *Economic Modelling*, Vol. 33, 2013, pp. 808-825.

³¹ See “[A guide to the Eurosystem/ECB staff macroeconomic projection exercises](#)”, ECB, July 2016.

³² Confidence shocks are identified using a Cholesky scheme, where the euro area ESI is last in the Cholesky ordering. This reflects the conceptual assumption that confidence reacts contemporaneously (within a quarter) to developments of other economic statistics, while *confidence shocks* do not contemporaneously affect other variables (e.g. user cost of capital).

³³ A linear regression of the residuals of the investment equation from the NMCM on lagged structural confidence shocks yields statistically significant coefficients, whereby statistical measures indicate significant explanatory power for the structural confidence shocks.

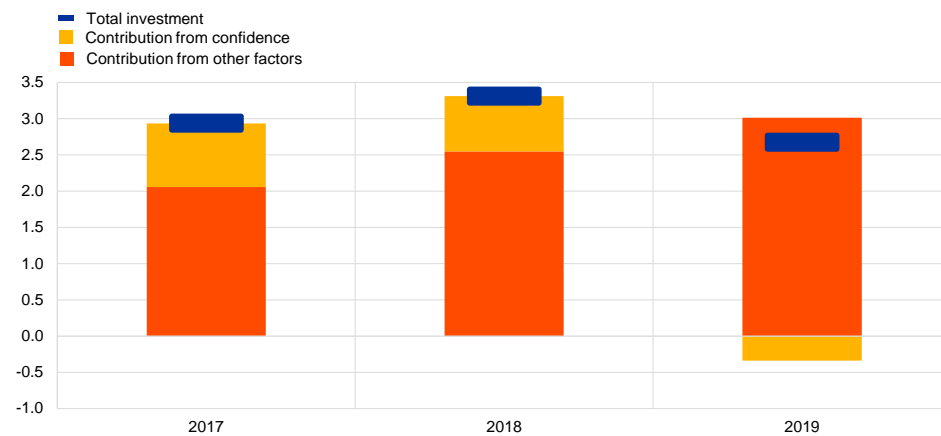
³⁴ In comparison, private consumption and employment residuals show a much weaker relationship to confidence. For the purposes here, only the investment equation is augmented to react to confidence shocks, and private consumption and employment are only affected indirectly through spillovers.

³⁵ The June 2019 staff macroeconomic projection exercise is a joint Eurosystem forecast. These forecast data are inverted using the NMCM to obtain a model-consistent decomposition of investment into a confidence factor and other factors.

Chart C

Total investment growth and the impact of confidence

(annual percentage change, percentage points)



Sources: Eurostat and the June 2019 Eurosystem staff macroeconomic projections for the euro area.

Notes: The ECB analysis is based on the New Multi-Country Model. Structural confidence shocks are constructed with a structural vector autoregression (SVAR) model that includes: (i) the euro area Economic Sentiment Indicator (ESI), and (ii) the variables that appear in the NCM's investment equation. Data for 2017 and 2018 refer to outcomes, while data for 2019 are projected. In the analysis, the ESI is assumed to remain at its May 2019 level for the remainder of 2019.

5 Rent inflation in the euro area since the crisis

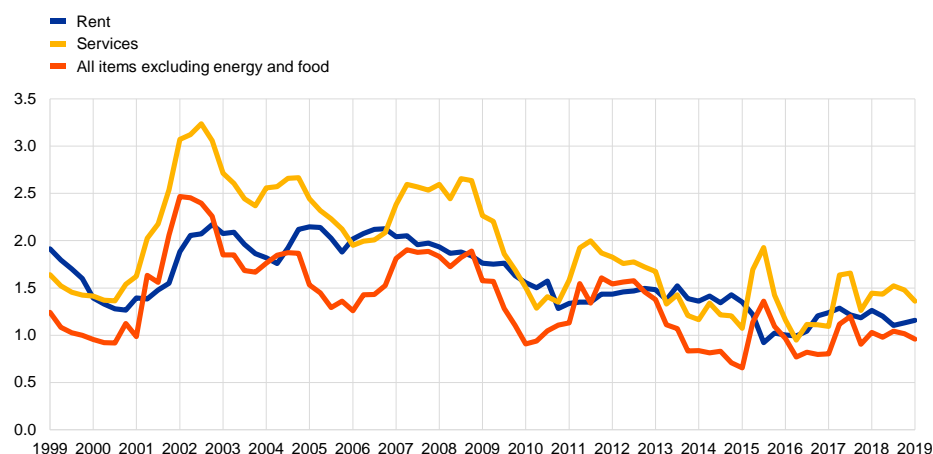
Prepared by Moreno Roma

Rent inflation has recently strengthened, rather than mitigated, the still relatively subdued developments in services and underlying inflation in the euro area. Having been hovering around 1¼% since January 2018, rent inflation has, on balance, stayed below the inflation rate for services as a whole (see Chart A). While this was the case for most of the pre-crisis period³⁶, it appears more striking now, as rent inflation is typically considered to be a more resilient inflation component that is relatively higher in periods when other components of HICP inflation tend to be low. These developments are also interesting in the context of public debates, in many euro area countries, about strong rent increases, and against the background of the sustained increases in euro area house prices over recent years. This box puts recent developments in euro area rent inflation into perspective. As housing and rental markets have remained heterogeneous, this box also looks at developments across euro area countries.

Chart A

Euro area HICP excluding energy and food, services and rent

(year-on-year percentage changes)



Source: Eurostat.

Notes: The latest observations are for the first quarter of 2019. Annual inflation rates for services in 2015 are distorted upwards owing to the introduction, since January 2019, of a new methodology for calculating the German package holiday price index.

In the post-crisis period, rent inflation and its contribution to euro area services inflation have been declining. Annual changes in the rent component of the euro area HICP were, on average, 1.8% in the pre-crisis period but have fallen to 1.4% in the post-crisis period (see Chart B, panel a). The low rent inflation has been associated with a progressive decline in the contribution of rent to HICP services in the euro area. This contribution declined by one-third between the pre- and post-crisis periods (see Chart B, panel b). The pattern was shared by all large euro area countries with the exception of Germany, where the contribution of rent to HICP services increased post-crisis. However, developments in individual episodes can reflect

³⁶ We use the term “pre-crisis period” to refer to the period between January 1999 and December 2007, and the term “post-crisis period” to refer to January 2008 onwards.

country-specific factors. For instance, in France, the negative contribution of rent to HICP services since January 2018 is accounted for by rent cuts for social housing implemented in the course of 2018.³⁷ In Germany, the relatively low rent inflation in recent years may partly reflect the higher weight of private households as landlords in the statistical sample since 2015, given that private landlords tended to raise their rent less than, for instance, local authorities, housing associations and private companies.³⁸

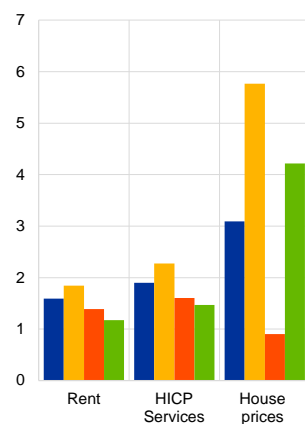
Chart B

House prices, rent and HICP services

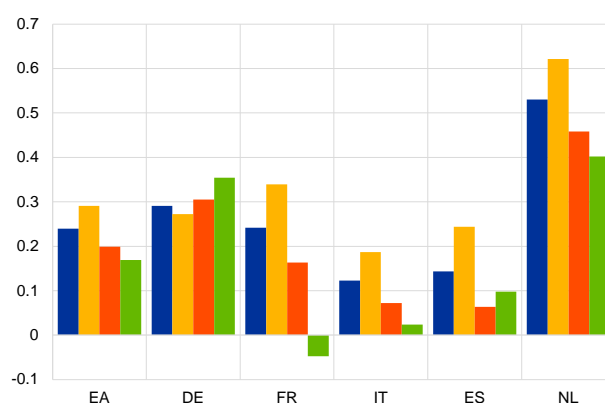
(panel a: year-on-year percentage changes; panel b: percentage points)

- Average since 1999
- Average pre-crisis (1999-2007)
- Average post-crisis (since 2008)
- Latest (since January 2018)

a) House prices, rent and HICP services in the euro area



b) Contribution of rent to HICP services inflation across countries



Sources: Eurostat, ECB and ECB calculations.

Note: The latest observations are for April 2019 for all variables, with the exception of house prices, for which the latest observation is for the fourth quarter of 2018.

The decline observed in the contribution of rent to HICP services inflation was mainly driven by the fall in rent inflation. The contribution of rent to HICP services inflation is affected not only by the level of rent inflation but also by the weight of rent in HICP services, which varies widely across euro area countries (see Chart C, panel a). Of the five largest euro area countries, in Germany and the Netherlands rent has a greater weight than the euro area average, while in Spain and Italy it has a lower weight. This reflects, inter alia, the respective degree of owner-occupiers versus tenants across countries (see Chart C, panel b), as owner-occupied housing is excluded from the HICP³⁹. At the euro area level, the weight of rent in HICP services has stood at 14.5% since January 2018, slightly down from an average of 15.1% for the period starting in 1999. This implies that changes over time in the weight of euro

³⁷ The rent cuts in social housing took place in June 2018 and amounted to €800 million. They coincided with a reduction in housing allowances to tenants. The share of rents at reduced prices or free in France in 2017 stood at 16.4%, above the euro area average of 10.3% (see Chart C, panel b).

³⁸ For a discussion, see “[Hintergrundpapier zur Revision des Verbraucherpreisindex für Deutschland 2019](#)”.

³⁹ For a discussion, see the box entitled “[Assessing the impact of housing costs on HICP inflation](#)”, *Economic Bulletin*, ECB, Issue 8, 2016.

area rent in HICP services have not materially affected the contribution of rent to HICP services.

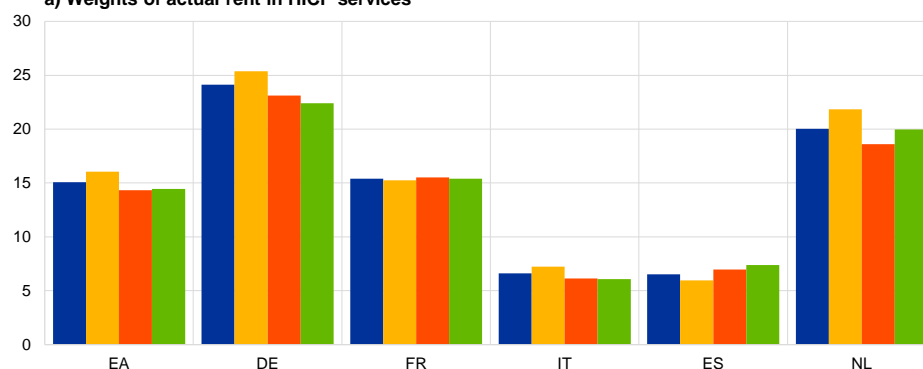
Chart C

Weights of actual rent in HICP services and tenant structure across euro area countries

(percentages)

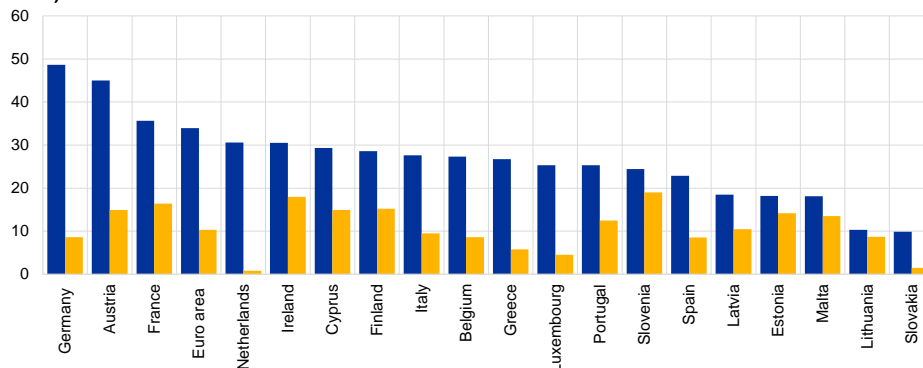
- Average since 1999
- Average 1999-2007
- Average since 2008
- Latest (since January 2018)

a) Weights of actual rent in HICP services



- Tenant
- Rent at reduced price or free

b) Tenant structure across euro area countries in 2017



Sources: Eurostat, EU-SILC, ECB and ECB calculations.

Strong house price developments are not necessarily associated with high rent inflation. There is generally a limited link between the two indicators⁴⁰, and this was observed also in the most recent period of subdued rent inflation associated with house price inflation exceeding 4% (see Chart B, panel a). When considering residential property as an asset, higher house prices should be the result, ceteris paribus, of a higher discounted value of future rent flows (viewed as a proxy of the corresponding dividends). However, several factors may explain a limited pass-through between house prices and rents, including rent regulation, fiscal policy measures related to housing, and changes in preferences and financing conditions. All

⁴⁰ For a discussion, see the boxes entitled “House prices and the rent component of the HICP in the euro area”, *Monthly Bulletin*, ECB, August 2014 and “Recent house price increases and housing affordability”, *Economic Bulletin*, ECB, Issue 1, 2018.

these factors may weaken the theoretical long-term relationship between house prices and rents.

Several factors can affect rent formation, including maintenance costs, mortgage rates and demand conditions. First, the costs that owners incur for the maintenance and repair of dwellings can normally be expected to be partially or fully passed on to tenants via higher rents. In practice, in most of the five largest euro area countries, rent inflation in the post-crisis period has been below the inflation rate in “maintenance and repair of the dwelling”⁴¹, suggesting only a partial recuperation of maintenance costs by owners. Second, mortgage rates also affect rent formation: if a buy-to-let purchase is financed by a mortgage, the higher the financing costs the higher the rent the owner will demand from the tenant. In this respect, lower financing costs in the post-crisis and most recent periods partly explain subdued rent developments. At the same time, the prevailing low-yield environment has made a given rental yield comparatively more attractive (even in cases of limited rent increases) vis-à-vis alternative investments in the equity or bond market.⁴² In addition, housing demand should, in principle, also be a factor affecting rent formation, especially in certain jurisdictions or in urban areas, where supply can be constrained. Higher housing demand could allow owners to increase rents and mitigate some of the risks related to the fact that the property may become vacant, should the tenant move out after a rent increase. However, there are a number of institutional features in rental markets that can prevent rents from responding freely to cost and demand conditions.

Indexation may impose limits for the evolution of rents. Some form of indexation prevails in many euro area countries. Among the largest, in Spain rent increases are – at least for an initial period – generally capped by the rate of increase in the consumer price index (CPI). In France and Italy, rent increases cannot usually exceed, respectively, a rent reference index published quarterly by the Institut national de la statistique et des études économiques and based on the CPI excluding tobacco and rent, and a consumer price index for employees’ households. In the Netherlands, the maximum yearly rent increase is based, inter alia, on the inflation rate and the income situation of households. In Germany, some rental contracts are indexed to the German CPI, others – “step-up” rental contracts – set out the increases applicable during the life of the contract, while a majority of contracts contain no explicit provision for rent increases. In the case of the latter, the rent can be increased, for instance, when the dwelling is modernised⁴³ or when the rent is below the local average rent for comparable properties. In general, private owners often refrain from raising the rent to minimise the risk of the dwelling standing vacant if the tenant moves out⁴⁴. All in all, some form of contractual indexation to the rate of inflation and a low turnover in rental contracts are important factors preventing rents from increasing freely.

⁴¹ “Maintenance and repair of the dwelling” covers expenditures on minor maintenance and repairs incurred by tenants and owner-occupiers.

⁴² For a corresponding comparison, see the article entitled “[The state of the housing market in the euro area](#)”, *Economic Bulletin*, ECB, Issue 7, 2018.

⁴³ Such nominal rent increases due to building modernisation may, however, not show in the official statistics to the extent that the rent index is quality-adjusted.

⁴⁴ For example, in Germany rents generally increase when tenants change, which occurs on average after a rental duration of approximately ten years. See “[Hintergrundpapier zur Revision des Verbraucherpreisindex für Deutschland 2019](#)”.

Relatively subdued rent inflation in the euro area is mainly due to low inflation and a limited turnover in rental contracts. These factors explain the fairly moderate contribution of rent to services and to underlying inflation in the euro area, and the apparent disconnect between rents and house price developments. Should these factors persist, rent inflation will likely continue to make a relatively moderate contribution to services and underlying inflation.

Articles

1 The euro area labour market through the lens of the Beveridge curve

Prepared by Agostino Consolo and António Dias da Silva

In this article we look at the euro area labour market using the framework underlying the Beveridge curve, which captures the negative relationship between the unemployment rate and the job vacancy rate. The Beveridge curve shows that, at a given moment in time, there are jobs vacant and people unemployed, while the shape and the position of the curve provide important information about the functioning of the labour market. There are two key concepts associated with the Beveridge curve: labour market tightness and matching efficiency. Labour market tightness is the number of vacant posts per each unemployed person and matching efficiency reflects the market's ability to match individuals to jobs. We analyse the importance of these two concepts for wage developments using a simple version of the search and matching model, where unemployment, wages and vacancies are jointly determined and the Beveridge curve features prominently.⁴⁵ First, we derive two aggregate measures that encapsulate the changes in the vacancy -unemployment space: labour market tightness and matching efficiency. Second, we look at the information content behind market tightness and job matching efficiency to analyse the euro area labour market and its cyclical conditions. Third, aggregate measures of labour market tightness and efficiency are used in a standard wage Phillips curve equation to measure their marginal impact. The results support the view that labour market tightness and labour market efficiency both play a role in explaining wage developments. However, the quantitative implications for wages differ only marginally from those of the standard Phillips curve approach. Overall, labour market efficiency provides an important qualitative margin of labour market functioning that is not captured in standard wage Phillips curve specifications.

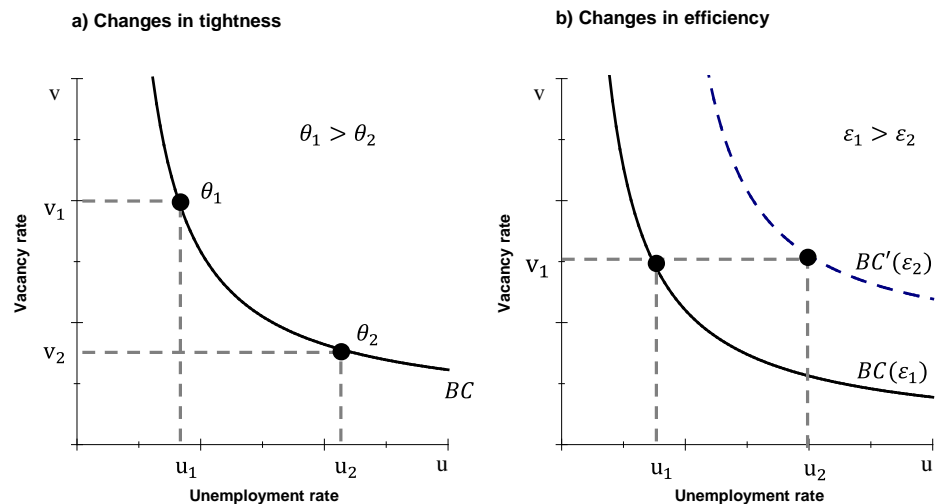
1 Introduction

The Beveridge curve captures the relationship between the unemployment rate and the job vacancy rate. The underlying intuition behind the negatively sloped curve is that as vacancies (vacant job positions) increase, the number of people unemployed decreases. Figure 1 illustrates the main concepts associated with the Beveridge curve. Movements in the vacancy-unemployment space are usually related to labour market tightness and labour market efficiency. Labour market tightness, θ , is defined as the ratio of vacancies to unemployment and captures movements along the

⁴⁵ A simple description of this framework is presented in Chapter 1 of Pissarides, C. A., *Equilibrium unemployment theory*, 2nd edn., The MIT Press, Cambridge, Massachusetts, 2000.

curve. Matching efficiency⁴⁶, ε , relates to the number of people that find jobs given a certain level of the vacancy-unemployment ratio. In this context, labour market efficiency is not directly observable and has to be estimated (see Section 3).

Figure 1
Beveridge curve – labour market tightness and efficiency



Source: Authors' elaboration.

Notes: This figure provides a visual example of movements along, and side-to-side shifts of, the Beveridge curve. The example in the right-hand panel also includes a change in market tightness, which is not described here for simplicity.

Movements along the Beveridge curve are usually associated with changes in market tightness, as measured by the vacancy-unemployment ratio. For instance, during an economic recession the vacancy rate decreases because firms post fewer job openings, which, in turn, is associated with higher unemployment rates. In Figure 1.a this is represented by a movement from θ_1 to θ_2 along the curve, which reflects a decrease in market tightness. Following the work by Blanchard and Diamond⁴⁷, movements along the Beveridge curve, BC , as depicted in Figure 1.a have usually been interpreted as business cycle fluctuations.

Shifts of the Beveridge curve are related to labour market efficiency. Figure 1.b shows an outward shift of the Beveridge curve, BC . This reflects a situation in which number of vacancies remains the same but the unemployment rate is higher. The Beveridge curves, BC and BC' , reflect two labour market situations in which the efficiency of the job matching process – allocating unemployed workers to job openings – differs. Therefore, the further away the Beveridge curve from the origin, the lower the labour market efficiency. The efficiency of the matching process, and thus the position of the Beveridge curve in relation to the origin, depends on a number of factors. For instance, an increase in the share of long-term unemployment has been found to lower the search effort and reduce the propensity of employers to fill their

⁴⁶ In this article two concepts of efficiency will be used, almost interchangeably. Matching efficiency is strictly related to the efficiency of the matching process (derived from the matching function – see Section 3 and Box 2). Labour market efficiency is a broader concept that includes matching efficiency and relates to side-to-side shifts of the Beveridge curve.

⁴⁷ Blanchard, O.J. and Diamond, P., "The Beveridge Curve", *Brookings Papers on Economic Activity*, Vol. 1989, No 1, 1989, Washington DC, pp. 1-76.

vacancies.⁴⁸ Another factor that can reduce efficiency is the geographical dispersion of unemployment and vacancies as result of idiosyncratic shocks within local labour markets.

A comprehensive analysis of the cyclical changes in the vacancy-unemployment space hinges on both labour market tightness and labour market efficiency. A common interpretation is that structural changes in the labour market are responsible for inward or outward shifts of the Beveridge curve. However, this interpretation may not always be accurate. First, it is normal for there to be an outward shift of the curve at the beginning of periods of recovery as the process of posting vacancies is faster than that of matching unemployed workers to jobs. Second, as pointed out by Elsby et al.⁴⁹, the distinction between business cycle shifts and structural shifts is only relevant for constant job separation rates, which is not the case for euro area data. Additionally, Barnichon and Figura⁵⁰ and Şahin et al.⁵¹ provide theoretical and empirical evidence on the cyclical nature of matching efficiency. In this article we take a broader view and do not rule out that efficiency may also have cyclical features.

The job finding rate can be described by a quantitative margin (tightness) and a qualitative margin (efficiency). The matching function is an important concept in search and matching models⁵² that determines the flow from unemployment to employment, i.e. the job finding rate.⁵³ The job finding rate is related to a quantitative margin and a qualitative margin. The quantitative margin is the level of market tightness (vacancy -unemployment ratio), while the qualitative margin is related to the efficiency of the matching process⁵⁴. For example, two labour markets with the same level of tightness may have different hiring rates owing to differences in the efficiency of the matching process (see also Figure 1.b).

The empirical information from the Beveridge curve complements standard measures of labour market slack based on the Phillips curve. The unemployment gap and the vacancy-unemployment ratio both tend to capture cyclical conditions in the labour market from a quantitative perspective by balancing out the effects of labour demand and supply. A measure of labour market efficiency extracted from the Beveridge curve analysis adds a qualitative margin to the labour market analysis. It provides an additional margin to describe how the labour market is functioning for any

⁴⁸ Bova, E., Jalles, J.T. and Kolerus, C., "Shifting the Beveridge curve: What affects labour market matching?", *International Labour Review*, Vol. 157, No 2, 2018, pp. 267-306.

⁴⁹ Elsby, M.W.L., Michaels, R. and Ratner, D., "The Beveridge curve: a survey", *Journal of Economic Literature*, Vol. 53, No 3, 2015, pp. 571-630.

⁵⁰ Barnichon, R. and Figura, A., "Labor Market Heterogeneity and the Aggregate Matching Function", *American Economic Journal: Macroeconomics*, Vol. 7, No 4, 2015, pp. 222-249.

⁵¹ Şahin, A., Song, J., Topa, G. and Violante, G.L., "Mismatch Unemployment", *American Economic Review*, Vol. 104, No 11, 2004, pp. 3529-3564.

⁵² See the work by Petrongolo, B. and Pissarides, C.A., "Looking into the Black Box: A Survey of the Matching Function", *Journal of Economic Literature*, Vol. 39, No 2, 2001, pp. 390-431.

⁵³ The counterbalancing flow to the job finding rate is the job separation rate, which measures the outflows from employment to unemployment.

⁵⁴ Here, the concept of job matching efficiency is similar to the concept of efficiency of the production function, as measured by total factor productivity.

given amount of slack and is consistent with the recent work by Crump et al. that compares both approaches⁵⁵.

2 A look into the data

One of the major challenges in analysing the euro area Beveridge curve is the quality of the data. Vacancy data series are relatively short and there is significant cross-country heterogeneity in the coverage of vacancies within small firms.⁵⁶ Moreover, if not corrected, statistical and measurement breaks in the series of some countries could lead to spurious conclusions. To this end, the job vacancy rates depicted here have been corrected for breaks in the job vacancy statistics using information provided by Eurostat.⁵⁷ As the heterogeneity across countries and the breaks in the time series could affect the euro area Beveridge curve, we re-compute the aggregated euro area job vacancy rate by aggregating the rates of the five largest euro area countries (EA-5) adjusted for breaks and scale.⁵⁸ The derived EA-5 Beveridge curve is displayed in Chart 1.⁵⁹ Correcting breaks helps to ensure that the conclusions drawn are based on movements in vacancies and not on changes in the measurement of vacancies or other statistical issues.

A look at the Beveridge curve aggregated over the five largest euro area countries shows a significant outward shift during the crisis. As mentioned earlier, distinguishing between cyclical and structural shifts of the Beveridge curve is not straightforward, especially as some cyclical episodes, such as an increase in job separation, can shift the Beveridge curve to the right. Therefore, this section provides a factual description of the Beveridge curve without characterising the nature of apparent shifts. The Beveridge curves in Chart 1 are robust for use as an indicator of labour market shortages as an alternative measure to job vacancies. In fact, the survey indicator “labour as a factor limiting production” gives scatterplots with similar shapes to those using job vacancy rates like in Chart 1. This occurs across countries and at the aggregate euro area level.⁶⁰ The same Beveridge curve patterns are also

⁵⁵ See Crump, R.K., Eusepi, S., Giannoni, M. and Şahin, A., “A Unified approach to measuring u^* ”, *Brookings Papers on Economic Activity*, BPEA conference drafts, 2019.

⁵⁶ The short length of the job vacancy rate series in the euro area means that a longer-term Beveridge curve, such as that for the US labour market in Box 1, cannot be produced.

⁵⁷ Eurostat provides information and the dates on which national statistics offices changed their statistical methodology for measuring vacancies.

⁵⁸ The job vacancy rates adjusted for statistical breaks were standardised by their respective historical average and standard deviation. The aggregation of the country series is weighted by the share of GDP. As a robustness check, the share of the labour force has also been considered, but it had no impact on the overall results of the EA-5 Beveridge curve.

⁵⁹ For presentational reasons we mainly focus on the five largest euro area countries. This is sufficient to illustrate some relevant heterogeneity in the aggregate euro area data.

⁶⁰ Similar data on labour shortages have been used for Beveridge curve analyses in other works, namely in Anderton, R. et al., “Comparisons and contrasts of the impact of the crisis on euro area labour markets”, *Occasional Paper Series*, No 159, ECB, Frankfurt am Main, February 2015; and Bonthuis, B., Jarvis, V. and Vanhala, J., “What’s going on behind the euro area Beveridge Curve?”, *Working Paper Series*, No 1586, ECB, Frankfurt am Main, September 2013.

observed if a broader measure of unemployment, such as the U6,⁶¹ or long-term unemployment are used instead of the unemployment rate.

The aggregated Beveridge curve is a combination of different country-specific dynamics. Outward shifts of the curve are more pronounced in France, Italy and Spain, although Spain features a quicker inward movement after a very significant outward shift. In these cases, it could also be the case that there is simply a medium-term loop around the Beveridge curve. However, in the case of Italy and France the curve has steepened significantly since 2016, indicating that more and more vacancies are needed for a small decrease in unemployment to occur. By contrast, in Germany the Beveridge curve was very flat between 2005 and 2013 and has since steepened. It is not clear if the Beveridge curve for Germany has shifted inward. The Beveridge curve for the Netherlands shows a typical anticlockwise movement characterised by an increase in vacancies that is faster than the decrease in the unemployment rate during the recovery phase.

The Beveridge curve for the United States has not shown large outward shifts such as those in the euro area. Diamond and Şahin⁶² analysed the behaviour of the US Beveridge curve since the 1950s and concluded that shifts in the Beveridge curve are common occurrences (see also Box 1). According to the data, the outward shift of the US Beveridge curve occurred towards the end of 2009 and since then there has been a steady improvement in labour market efficiency and reduced elasticity (flattening of the Beveridge curve) between unemployment and vacancies.

The main cause of the outward shift of the euro area Beveridge curve appears to be a decrease in the job finding rate. During the crisis the job separation rate increased and the job finding rate decreased. However, when the Beveridge curve shifted in 2011, the decrease in the job finding rate was more pronounced than the increase in the separation rate (see Chart 2), thus largely contributing to the outward shift of the Beveridge curve.⁶³ The weakness in the finding rate can be explained by lower matching efficiency (see Section 3). Overall, the analysis of job flows shows that inward or outward shifts of the Beveridge curve can have a business cycle component, as described in Elsby et al.⁶⁴

⁶¹ The U6 is a broader measure of unemployment that includes all individuals falling under one of the following categories: unemployed, available but not seeking work, seeking work but not available, and working part-time but would prefer more hours (underemployed workers).

⁶² Diamond, P. and Şahin, A., "Shifts in the Beveridge curve", *Research in Economics*, Vol. 69, No 1, 2015, pp. 18-25.

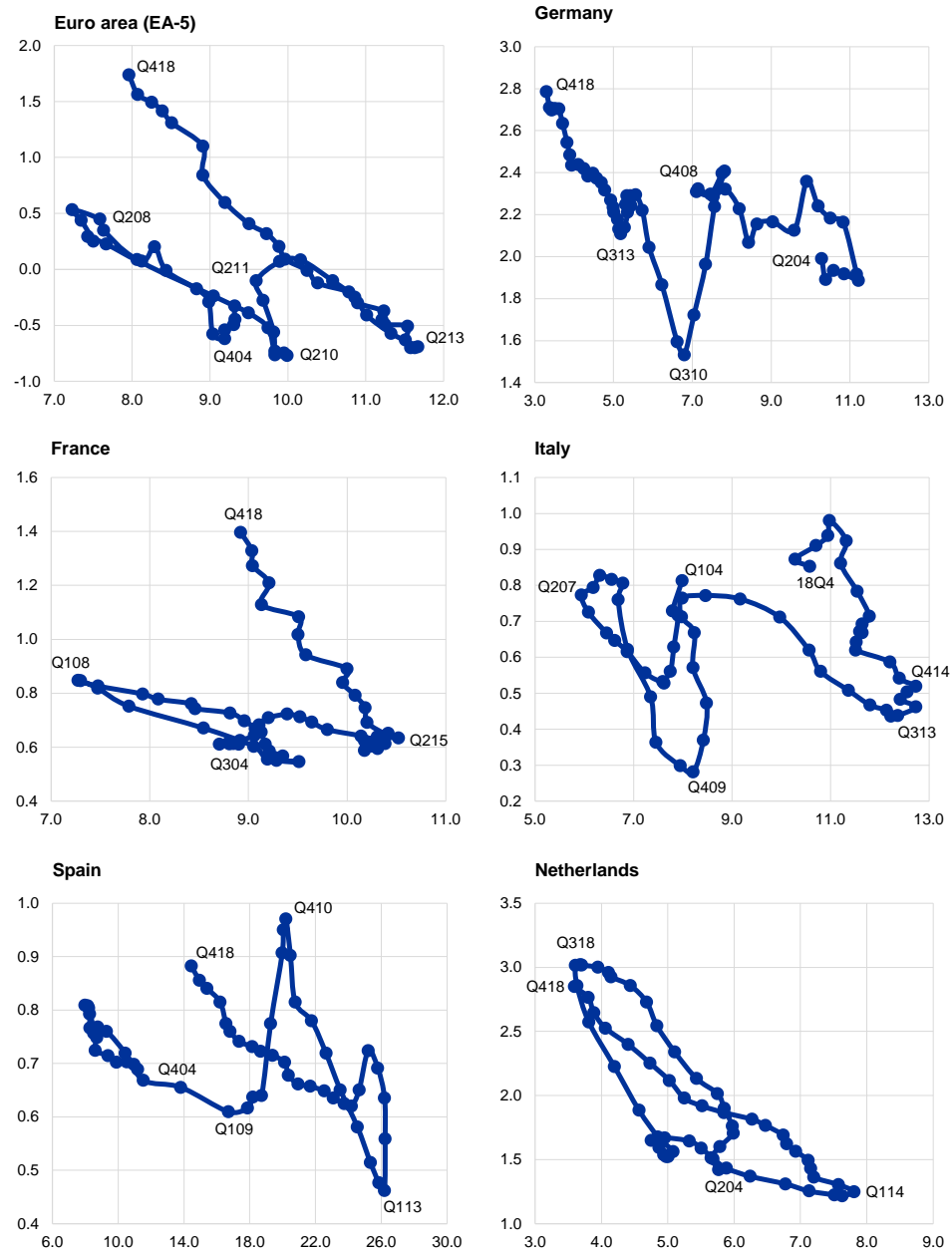
⁶³ Elsby, Hobijn and Şahin find that variation in the job finding rate explains 85% of the overall variation in the unemployment rate for Anglophone countries, while for continental European countries they estimate that only 55% of the overall variation in the unemployment rate is accounted for by the variation in the job finding probabilities – see Elsby, M.W.L., Hobijn, B. and Şahin, A., "Unemployment Dynamics in the OECD", *Review of Economics and Statistics*, Vol. 95, No 2, 2013, pp. 530–48. Robert Shimer instead finds that job finding probability accounted for three-quarters of the fluctuations in the unemployment rate in the United States during the period 1948-2010 – see Shimer, R., "Reassessing the ins and outs of unemployment", *Review of Economic Dynamics*, Vol 15, No 2, 2012, pp. 127-148.

⁶⁴ Elsby, M.W.L., Michaels, R. and Ratner, D., op. cit.

Chart 1

The Beveridge curve for the euro area and for the five largest euro area countries

(x-axis: unemployment rate; y-axis: job vacancy rate)

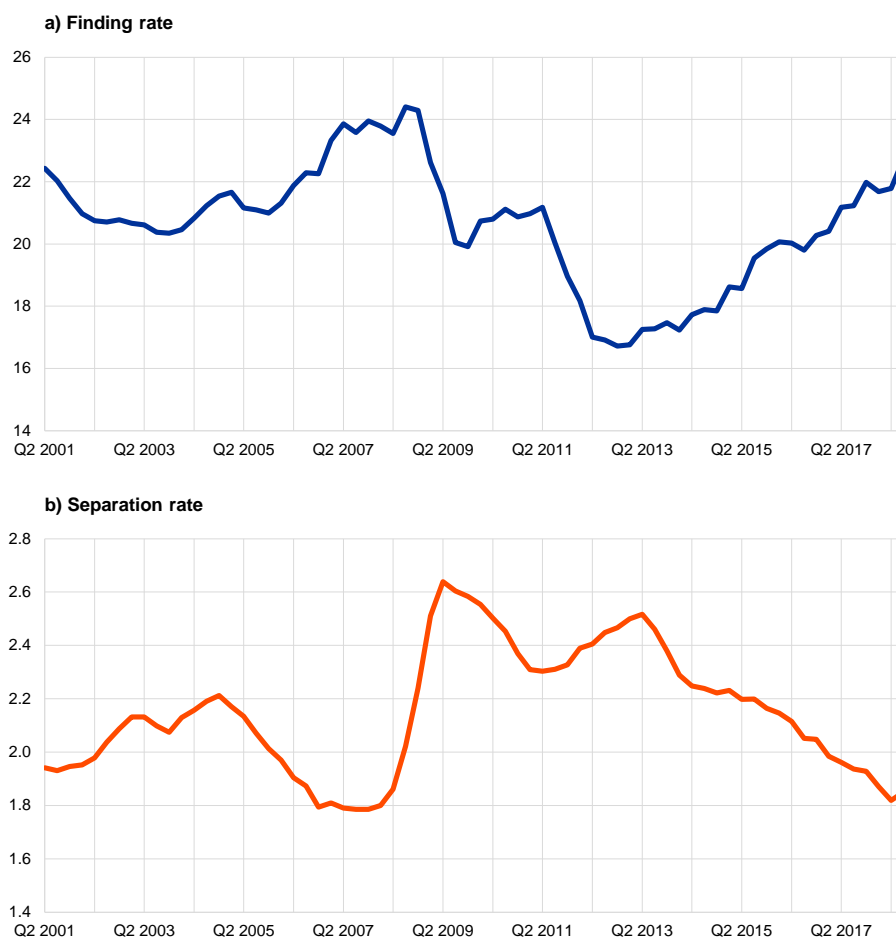


Sources: Eurostat and ECB staff calculations.

Notes: For the euro area the job vacancy rate series is standardised by its mean and standard deviation. For each of the countries the job vacancy rates are adjusted for statistical breaks. All six series are four-quarter moving averages.

Chart 2 Labour market flows

(finding rate: as a percentage of the unemployed; separation rate: as a percentage of the employed)



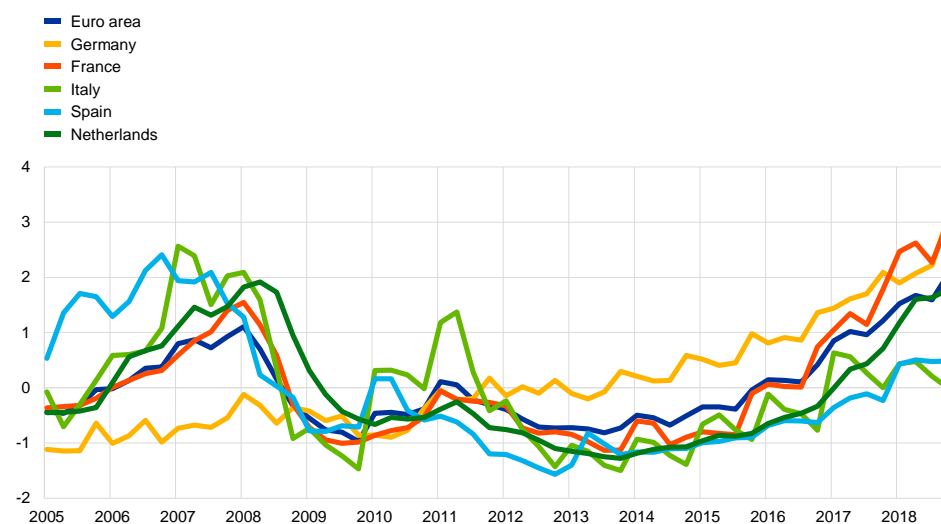
Sources: Eurostat and ECB staff calculations.

Notes: Labour market flows are computed based on Shimer in that movements to and from unemployment are estimated based on information on unemployment duration – see Shimer, R., "The Cyclical Behaviour of Equilibrium Unemployment and Vacancies", *American Economic Review*, Vol. 95, No 1, 2005, pp. 25-49. Flows to and from inactivity are assumed constant. The latest observations are for the third quarter of 2018. Eurostat has published data on flows since the second quarter of 2010 (data are available for the five the largest euro area countries except Germany). The analysis of these data shows that there have not been significant changes in the flows from unemployment to inactivity, while flows from inactivity to unemployment increased in Italy and France, but decreased in Spain.

Job vacancy rates are at a very high level, while the finding rate is yet to reach previous peaks and unemployment remains above previous lows. This suggests both increased tightness and lower efficiency in the labour market. Labour market tightness at the aggregate euro area level is substantially higher than before the crisis, but there is large heterogeneity across countries (Chart 3). In Germany, the vacancy-unemployment ratio has quadrupled since 2006 and is the major determinant of the labour market tightness observed at the aggregate euro area level. In addition, in France labour market tightness is higher than before the crisis and has increased rapidly in the last two years. On the contrary, in Spain and Italy labour market tightness is significantly below previous peaks. At the aggregate euro area level, labour market tightness has been above pre-crisis levels since the third quarter of 2017. Meanwhile, labour market tightness in the United States reached pre-crisis highs in the second quarter of 2015.

Chart 3 Labour market tightness

(standardised values of the ratio of vacant posts to unemployed persons)



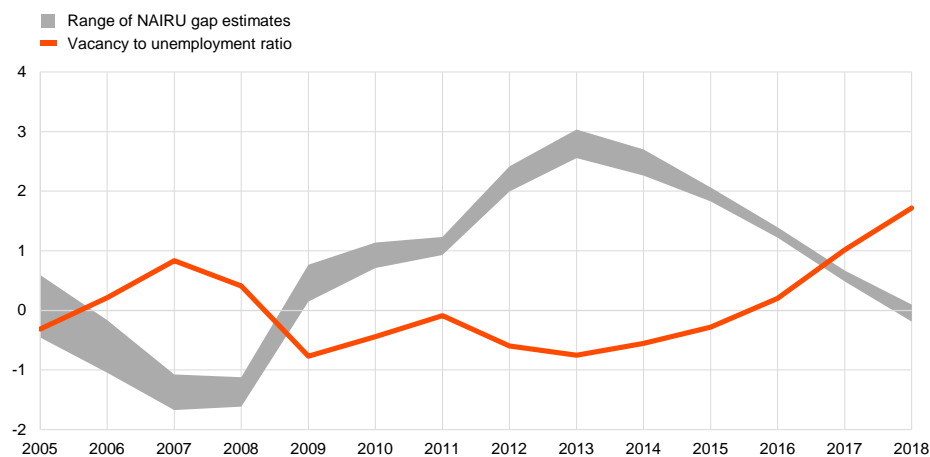
Sources: Eurostat and ECB staff calculations.
Note: The latest observation is for the fourth quarter of 2018.

The vacancy-unemployment ratio provides similar information to standard measures of labour market slack. The vacancy-unemployment ratio tends to capture cyclical conditions in the labour market from a quantitative perspective by balancing out the effects of labour demand and supply. This measure is similar to other commonly used measures of the unemployment gap derived using the Phillips curve framework (see Chart 4 for a comparison). In the wage Phillips curve, the derived non-accelerating wage rate of unemployment (NAWRU) is assumed to implicitly embed labour market mismatch. The information content extracted from the analysis of the Beveridge curve, on the other hand, can disentangle labour market tightness from efficiency. In doing so, job matching efficiency complements labour market tightness with a qualitative margin (see Section 3) and thus may provide richer information on the dynamics of wages.

Chart 4

Labour market tightness and the non-accelerating inflation rate of unemployment (NAIRU) gaps

(annual averages; range of NAIRU gap estimates are in percentage points; tightness is measured as the z-score)



Sources: Eurostat and ECB staff calculations.

Notes: Tightness refers to the aggregation of the five largest countries in the euro area. The NAIRU gap estimates used are those computed by the European Commission, the IMF and the OECD and are defined as the difference between the actual unemployment rate and the respective NAIRU estimates.

Box 1

The Beveridge curve for the US labour market

Prepared by Ramon Gomez Salvador

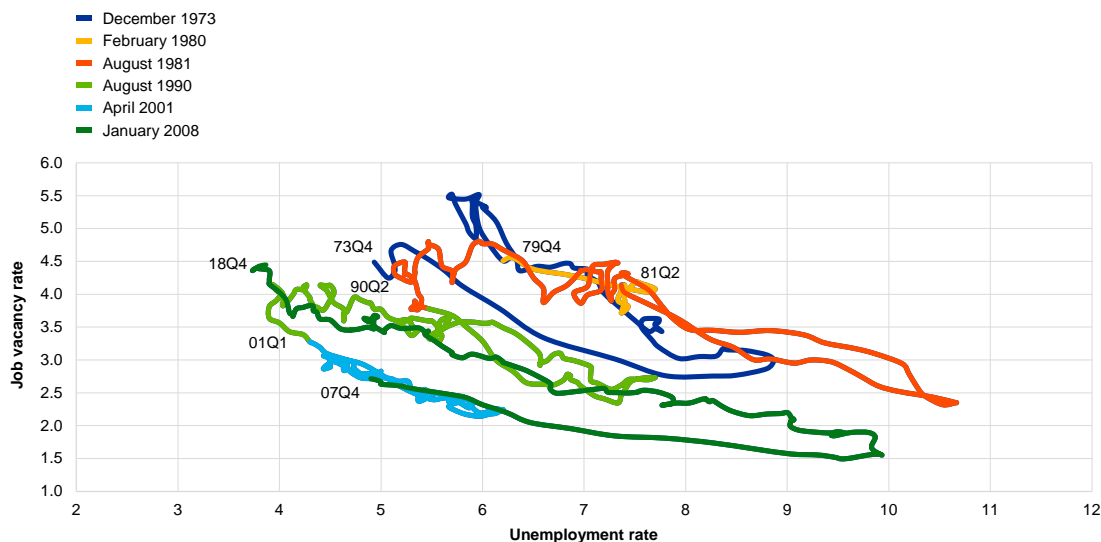
This box looks at unemployment rate developments in the United States from the perspective of the relationship between the unemployment rate and the vacancy rate, which is represented by the Beveridge curve. The unemployment-vacancy relationship appears to be an informative tool, given that it can give a broad indication of whether changes in the unemployment rate are caused solely by cyclical developments in economic activity or by more permanent or structural factors.

Developments in the US Beveridge curve since the 1970s point to efficiency gains as the dominant factor in the unemployment-vacancy relationship. Past developments in the US Beveridge curve illustrate the presence of both activity shocks and structural shocks (see Chart A). Anticlockwise loops reflecting activity shocks can be clearly identified starting (following the recessions) in 1973, 1981, 1990 and 2008, with much shorter ones in 1980 and 2001. In all cases, the vacancy rate followed a downward pattern in the recessionary part of the cycle, while the unemployment rate grew, with the reverse occurring in the expansionary phase. However, it is worth noting that, together with activity shocks, shifts in the unemployment-vacancy relationship have taken place since the 1970s. In particular, an initial outward shift between 1973 and 1980 was more than compensated for by an inward shift between the 1980s and the 2000s, which points to the dominant role of positive structural shocks in the US labour market, i.e. shocks leading to an increase in the effectiveness of the job matching process.

Chart A

The US Beveridge curve

(as a percentage of the civilian labour force; three-month moving averages)



Source: FRED database.

Notes: Different colours refer to different cycles, starting from NBER-dated recessions. JOLTS vacancy data are extended using the composite Help-Wanted Index constructed in Barnichon R., "Building a composite Help-Wanted Index", *Economics Letters*, Vol. 109, No 3, 2010, pp. 175 -178. The latest observation is for December 2018.

Developments since the global financial crisis point primarily to cyclical shocks. A very deep recession brought the unemployment rate to levels not seen since the early 1980s and the vacancy rate to historical lows. This was followed by a particularly long and slow expansion in historical terms. From the labour market perspective this implied less-smooth changes in both the unemployment rate and the vacancy rate compared with previous cycles, although the unemployment rate still reached record lows at the end of 2018 and the vacancy rate was close to historical highs. There has been some discussion as to whether the Beveridge curve has shifted slightly in the current business cycle, particularly at the early stages of the recovery, but there is a broad consensus that some friction in the matching process after recessions is visible in most recovery phases without implying a sustained rise in structural unemployment.⁶⁵ Indeed, most estimates point to a decline in structural unemployment in the United States over the last few years.⁶⁶

3 Measuring labour market efficiency

In this section we derive measures of labour market efficiency for the euro area to further the analysis of the labour market and wage dynamics. As discussed in the previous sections, the Beveridge curve framework requires labour market tightness to be complemented with a measure of efficiency to provide a more comprehensive picture of the euro area labour market. In this section the assessment of the cyclical position of the labour market will therefore require information derived from labour market tightness and labour market efficiency. These two measures are

⁶⁵ For a discussion on the interpretation of outward shifts of the Beveridge curve, see Diamond, P. and Şahin, A., *op. cit.*

⁶⁶ From 5.1% in 2011 to 4.6% in 2018 according to Congressional Budget Office estimates.

important for assessing the overall strength of the labour market and for understanding how they jointly affect wage developments.

Two empirical measures of labour market efficiency can be derived from the Beveridge curve and the job finding rate. In the simple theoretical framework presented in Box 2, the matching efficiency affecting the job finding rate is the only underlying factor generating a shift of the Beveridge curve. In practice, the Beveridge curve may also shift for reasons other than matching efficiency. Therefore, measures of efficiency based on the Beveridge curve and measures of efficiency based on the finding rate (matching function) may ultimately differ. Comparing these two approaches helps to increase the robustness of the exercise. This empirical exercise comes with a number of caveats as data on vacancies and job flows have a relatively short time span and, in the context of the euro area, there are no micro data available for a more granular analysis of the labour market (as in Şahin et al.⁶⁷). Nevertheless, this is a useful exercise as it may provide a more comprehensive view of labour market adjustment in the euro area and highlight new implications for euro area wage dynamics.

A first measure of matching efficiency can be derived by recalling the aggregate matching function and using the job finding rate. Following the work of Petrongolo and Pissarides⁶⁸, the matching function is specified as a constant returns to scale Cobb-Douglas function of the vacancy rate and the unemployment rate. The aggregate matching function can be estimated by looking at the quarterly job finding probabilities (JFP_t) and the vacancy-unemployment ratio (market tightness).⁶⁹ The outflows from unemployment (JFP_t) are measured following Shimer⁷⁰, while market tightness is derived using the break-adjusted vacancy rate.⁷¹ The matching efficiency (ε_t) is therefore defined as the residual from estimating a reduced-form matching function⁷²

$$JFP_t = \alpha + \beta \left(\frac{v_t}{u_t} \right) + \varepsilon_t^{MF} \quad (1)$$

where the vacancy-unemployment ratio is usually defined as labour market tightness, (θ_t).

An alternative measure of job matching efficiency can be derived by estimating the elasticity between vacancies and unemployment. Such a measure directly reflects the shifts in the Beveridge curve while also accounting for the negative relationship implied by the vacancy to unemployment ratio (i.e. market tightness), specified as follows:

⁶⁷ Şahin, A., Song, J., Topa, G. and Violante, G.L., op. cit.

⁶⁸ Petrongolo, B. and Pissarides, C.A., op. cit.

⁶⁹ See also Arpaia, A., Kiss, A. and Turrini, A., "Is unemployment structural or cyclical? Main features of job matching in the EU after the crisis", *European Economy – Economic Papers*, No 527, European Commission, September 2014.

⁷⁰ See Shimer, R., *The Cyclical Behaviour of Equilibrium Unemployment and Vacancies*, op. cit.

⁷¹ In the same way as for the vacancy rate, job vacancies have also been adjusted following the description of structural breaks related to statistical changes in the measurement of job vacancies provided by Eurostat.

⁷² The estimation has been performed using the ordinary least squares (OLS) and generalised method of moments (GMM) methods on the logs of the Cobb-Douglas matching function. For the GMM method, lags of the vacancy and unemployment rate have been used as instruments.

$$v_t = \kappa + \gamma u_t + \varepsilon_t^{BC} \quad (2)$$

Empirically, such a crude measure of labour market efficiency features both an outward shift and a steepening of the slope. As shown in Chart 1, the euro area Beveridge curve has also become steeper following the post-2011 outward shift.⁷³ The derived residual after estimating a constrained regression⁷⁴ between the vacancy rate and the unemployment rate provides a time series for labour market efficiency which can proxy the side-shifts of the Beveridge curve between the second quarter of 2004 and the first quarter of 2018.

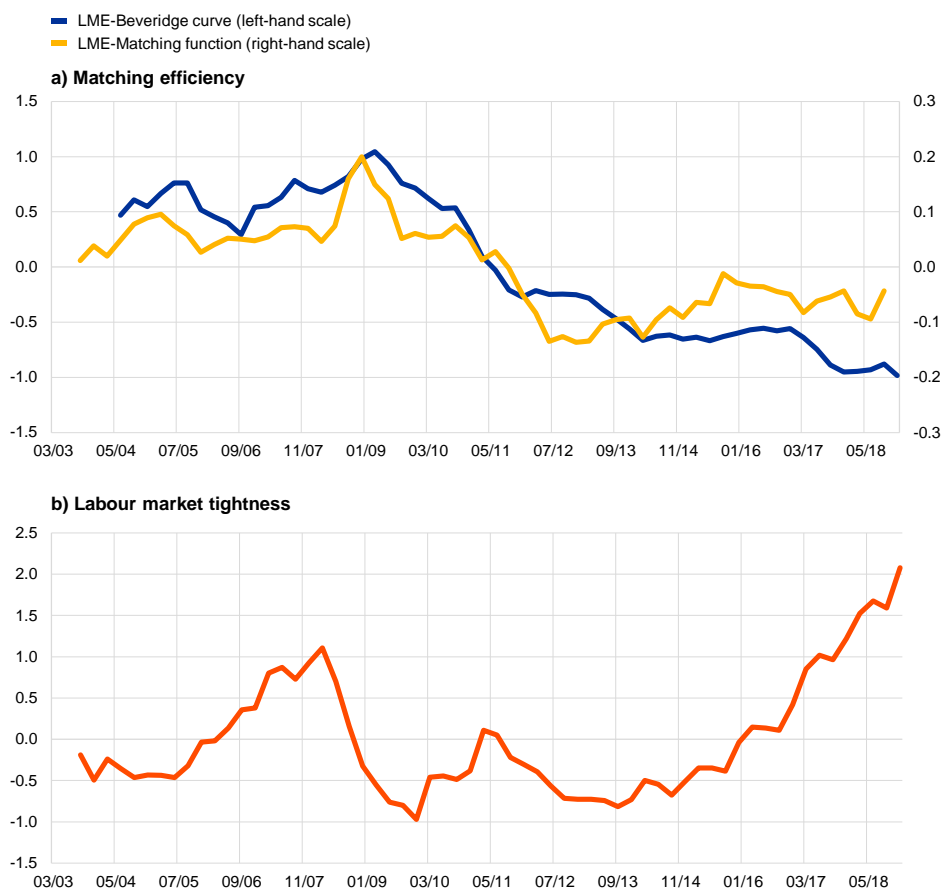
According to these measures, matching efficiency deteriorated during the crisis (see Chart 5). These two efficiency measures are closely related but they do display some differences. The matching efficiency derived from the Beveridge curve (equation 2) tends to be more comprehensive than that derived using the matching function (equation 1). While the method based on the matching function directly captures the matching process, the Beveridge curve efficiency measure also captures the dynamics of job separations as well as potential labour force movements from inactivity to the labour market. Overall, the correlation between these two measures is relatively high and the information content is consistent. These two measures indicate that labour market efficiency has not fully recovered compared with pre-crisis times. According to the search and matching model sketched in Box 2, the information on the functioning of the labour market (efficiency) complements the purely quantitative indicator of labour market tightness. In the pre-2008 period matching efficiency and tightness were positively correlated (see Chart 5), a situation which, all other things being equal, can lead to higher wages. By contrast, more recently efficiency and tightness have been moving in opposite directions, leading to counterbalancing effects on wages.

⁷³ Such an equation is also estimated by imposing a coefficient restriction which finds the average of the slope of the Beveridge curve before and after 2011.

⁷⁴ For robustness, the average elasticity between vacancies and unemployment before and after 2011 is used. The derived matching efficiency measure is on the whole robust to statistically small changes.

Chart 5 Measures of matching efficiency

(a) measures of labour market efficiency (LME) are in percentage points; b) labour market tightness is the z-score of the vacancy-unemployment ratio)



Sources: Eurostat and ECB staff calculations.

Notes: Measures of labour market efficiency are based on equations (1) and (2) respectively. Labour market tightness is the ratio of the GDP-weighted aggregate vacancies for the five largest euro area countries to the respective seasonally adjusted unemployment rate. Vacancies are break-adjusted and standardised by their country-specific mean and standard deviation.

The heterogeneity of the unemployment pool and the dispersion of unemployment across countries may have had a negative impact on matching efficiency. During the crisis the unemployment pool became more heterogeneous. The unemployment rate of low-skilled workers also grew significantly and still remains far above the unemployment rate of medium and high-skilled workers (see panel (a) of Chart 6). This type of imbalance between skill supply and skill demand causes the unemployment rate and the job vacancy rate to rise simultaneously, shifting the Beveridge curve to the right. At the same time, the dispersion of the unemployment rate increased across countries (see panel (b) of Chart 6). The geographical dispersion in unemployment and vacancies has led to a situation in which there is a high number of vacancies in some local labour markets at the same time as high unemployment in other labour market segments, which reduces the response of unemployment to vacancies. Barnichon and Figura⁷⁵ show that matching efficiency declines when the average characteristics of the unemployed deteriorate

⁷⁵ Barnichon, R. and Figura, A., op. cit.

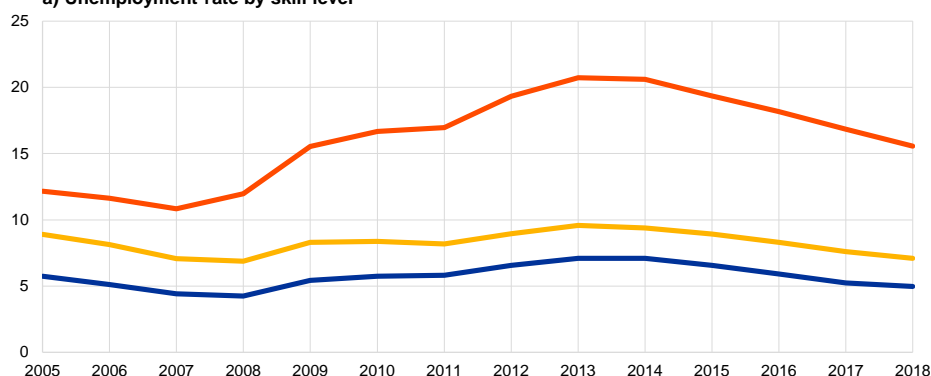
substantially, or when dispersion in labour market conditions increases markedly. These two factors occurred in the euro area during the crisis: not only did low-skilled unemployment rates increase substantially, the dispersion of the unemployment rate also increased.⁷⁶

Chart 6
Composition and dispersion of the unemployment rate

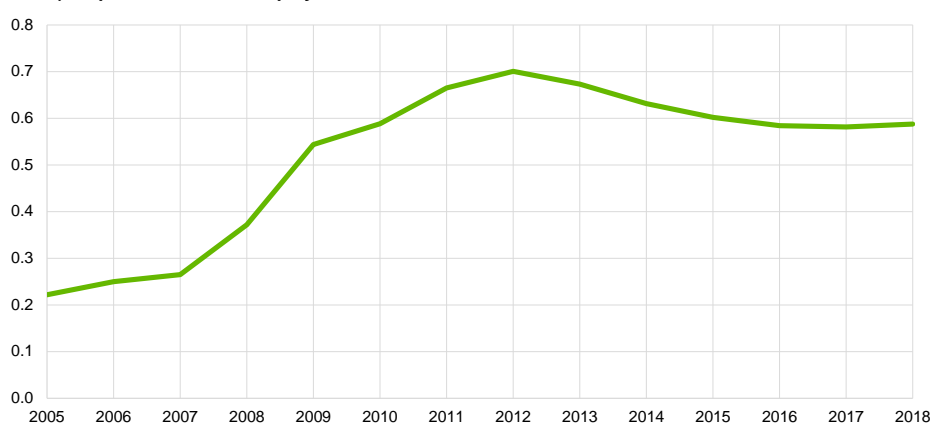
(a) percentages; b) coefficient of variation

■ High-skilled
■ Medium-skilled
■ Low-skilled

a) Unemployment rate by skill level



b) Dispersion of the unemployment rate



Sources: Eurostat and ECB staff calculations.

Notes: The unemployment rate by skill level is based on the aggregation of unemployment rates across the five largest euro area countries. The coefficient of variation is computed for the five largest euro area countries.

Box 2

Labour market efficiency in a search and matching model

Prepared by Agostino Consolo

This box provides an overview of the Beveridge curve and how it is derived from a simple search and matching model. This framework allows for the joint determination of an unemployment

⁷⁶ Beyer and Smets show that labour mobility is a less important adjustment channel in response to shocks, with the unemployment rate playing a more persistent role – see Beyer, R.C.M. and Smets, F., “Labour market adjustments in Europe and the US: How different?”, *Economic Policy*, Vol. 30, No 84, 2015, pp. 643-682.

rate, a vacancy rate and a real wage that are mutually consistent. In fact, an analysis of the Beveridge space (the vacancy-unemployment diagram) in itself does not provide enough information to pin down the dynamics of wages, productivity and labour demand and has to be enriched with (i) a firm job creation condition and (ii) a wage setting mechanism. We therefore follow a simpler version of the model developed by Mortensen and Pissarides⁷⁷ to provide a coherent narrative of the fluctuations in unemployment, vacancies and wages.⁷⁸

This framework offers a simple yet coherent tool to analyse possible movements in the Beveridge space. Changes in the Beveridge space can reflect movements in market tightness and shifts in job matching efficiency. Market tightness movements are characterised by a negative relationship between vacancies and unemployment, and shifts in job market efficiency by a positive relationship. Both market tightness and matching efficiency can play an important role in the determination of wages. The framework introduced in this box can account for the driving forces behind changes in the Beveridge curve and can also be helpful in rationalising the effects on wages.⁷⁹

Equilibrium conditions from a search and matching model

A simple description of the search and matching model with constant (exogenous) job destruction rates – following Pissarides⁸⁰ – can be summarised by three equilibrium conditions for the main variables of interest: unemployment rate, u , vacancy rate, v , and real wages, w :

$$(BC): \quad u = \frac{\delta}{\delta + \theta q(\theta, \varepsilon)}$$

$$(JC): \quad w = p - \frac{(r + \delta)pc}{q(\theta, \varepsilon)}$$

$$(NW): \quad w = (1 - \beta)b + \beta p(1 + c\theta)$$

with exogenous destruction rates, δ , search costs, c , bargaining power of the worker, β , unemployment benefits, b , productivity, p , and the discount rate, r . The variable $\theta = v/u$ is usually defined as market tightness as it reflects the relative strength between labour demand and labour supply factors, which are proxied by the number of vacancies and the number of people searching for a job, respectively. The function $q(\theta)$ is a transformation of the matching function.⁸¹

The first equation (BC) is the Beveridge curve, which describes the relationship between the vacancy rate and the unemployment rate and is derived from a steady-state condition on job flows in and out of the unemployment pool.⁸² The second equation (JC) refers to the job creation condition based on the assumption that firms will keep posting vacancies as long as the marginal job has a non-negative present discount value. The third equation (NW) refers to the Nash solution to the wage bargaining problem of sharing the surplus generated by the job match between a worker and a

⁷⁷ Mortensen, D.T. and Pissarides, C.A., “Job Creation and Job Destruction in the Theory of Unemployment”, *The Review of Economic Studies*, Vol. 61, No 3, 1994, pp. 397-415.

⁷⁸ For a theoretical overview, see Pissarides, C.A., *Equilibrium Unemployment Theory*, op. cit.

⁷⁹ See Elsby, M.W.L., Michaels, R. and Ratner, D., op. cit.; and Shimer, R., “Mismatch”, *American Economic Review*, Vol. 97, No 4, 2007, pp. 1074-1101.

⁸⁰ Pissarides, C. A., op. cit.

⁸¹ The matching function is defined as $m(\theta) = v^\alpha u^{1-\alpha} + \epsilon$ where ϵ is matching efficiency and $\theta = v/u$, $\theta q(\theta) = m/u$ and $q(\theta) = m/v$.

⁸² The current model specification does not account for flows in and out the inactivity pool of the working age population.

firm. Both BC and JC depend on the matching function $m(\theta)$, which is not the case for the NW equation.⁸³

Figure A.1 and A.2 display these three equations to provide a visual representation of the behaviour of θ, v, u and w . These three equations jointly provide a simple yet consistent framework for analysing the dynamics of the Beveridge curve and wages. As these equations show, all three theoretical relationships are needed and it is not possible to consider the implications for wages using the Beveridge space alone. Figure A.1 shows the $w - \theta$ space and the equilibrium arising from the intersection between the job creation condition, JC , and the Nash wage equation, NW , point A. Figure A.2 shows the $v - u$ space and the equilibrium arising from the intersection between the Beveridge curve BC and market tightness line $v = \theta_A u$ where θ_A is derived from Figure A.1.

The model can account for the following possible exogenous drivers of labour market fluctuations: (i) productivity, (ii) job matching efficiency, (iii) worker's outside option and bargaining power, and (iv) job-posting search costs.

Job matching efficiency

In view of the empirical analysis undertaken in Section 3 of this article, the focus will be on providing a theoretical description of a job matching efficiency shock under the search and matching framework. Such a diagrammatical description can also be viewed as a simple description of an impulse response function in a theoretical macro model of equilibrium unemployment.

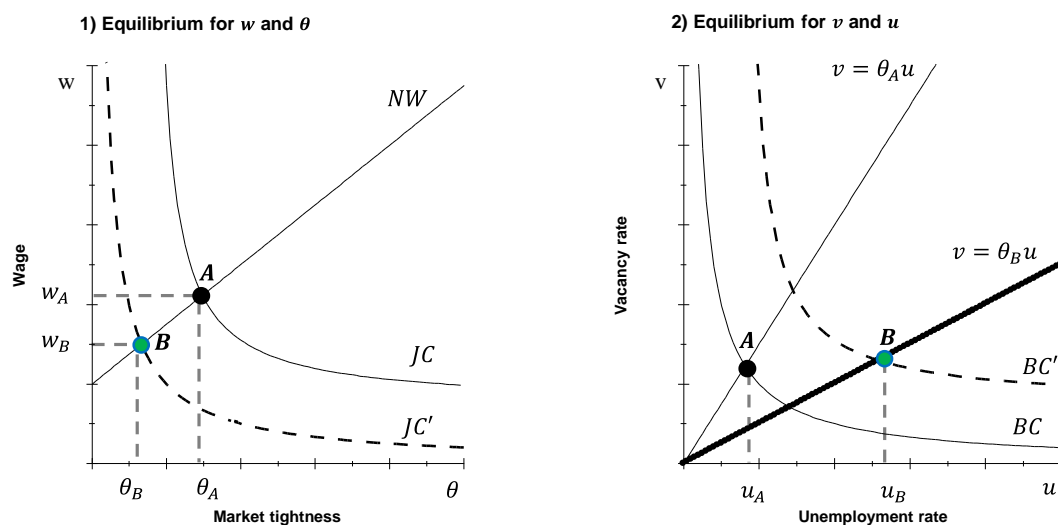
In this framework, a job matching efficiency shock affects the JC curve and the BC curve via the matching function. Figure A.1 shows the $w - \theta$ space that includes the job creation condition JC and the Nash wage equation NW . The intersection point A is the equilibrium (w_A, θ_A) . An exogenous shift in efficiency generates a downward translation of the job creation conditions curve JC' . For instance, if efficiency were to decrease, both $m(\theta)$ and $q(\theta)$ would decrease and the ratio $\frac{(r+\delta)pc}{q(\theta)}$ would increase. All other things equal, wages and θ would decrease.⁸⁴ An extension of the model with endogenous job destruction rates – in which δ depends on the level of productivity of the job match – would suggest an even larger increase in this ratio as lower productivity matches will feature higher destruction rates. This would further compress the wage offered in the job creation condition. This discussion highlights that there may be an important labour demand channel when accounting for the effects of job matching efficiency. In a more general set-up, a higher skills mismatch in the labour market could affect the productivity of a job match and drive down the wages firms are willing to offer.

⁸³ This means that the NW curve does not shift following a job matching efficiency shock.

⁸⁴ This ratio can be interpreted as the average expected search cost of posting a vacancy. If firms keep posting vacancies and the market (the matching function) does not make enough job matches, firms will have to bear higher search costs or increase the search effort to fill their vacancies. In net present value terms, these higher costs from search and matching will negatively affect the strength of labour demand and the wage offered.

Figure A

A basic search and matching model



Source: Author's elaboration.
 Note: Based on Pissarides, C.A., op. cit.

Turning to Figure A.2, the upward linear curve follows the definition of tightness $v = \theta_A u$ and has the slope θ_A which is determined in Figure A.1. The downward-sloping curve is the BC equation. A shift in job matching efficiency will affect both curves. The Beveridge curve will shift outward because of the lower job finding probability. The linear curve will flatten following the reduction in the tightness from θ_A to θ_B shown in Figure A.1. This implies that the change in the unemployment rate is amplified by the change in θ .

To conclude, a negative efficiency shock will lead to lower market tightness, θ , lower wages and higher unemployment. The effect on the vacancy rate remains undefined and depends on the final parameterisation of the full model.

Box 3

Labour market tightness and efficiency in the wage Phillips curve

Prepared by Mario Porqueddu

This box aims to clarify whether the combination of labour market tightness and matching efficiency can help to explain wage growth in the euro area in an augmented Phillips curve. It is still unclear as to why wages grew only moderately from 2013 to 2017 despite a notable reduction in the unemployment rate of the euro area. The original Phillips curve suggested a simple inverse relationship between wage growth and the unemployment rate, i.e. the lower the unemployment rate, the higher the rate of wage growth.⁸⁵ More recent specifications of the wage Phillips curve, as, for

⁸⁵ Phillips, A.W., "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957", *Economica*, New Series, Vol. 25, No 100, 1958, pp. 283-299.

example, in Galí⁸⁶, are more complex; they suggest that nominal wage growth is determined by the cyclical stance of the economy, inflation expectations and productivity growth developments. The equilibrium conditions of a simple version of the search and matching model suggest that an additional factor is necessary to fully describe the changes in the vacancy-unemployment space. Job market efficiency measures should therefore be included in the wage Phillips curve given that, empirically, labour market tightness and efficiency may produce different information over the business cycle.

The precise functional form of the wage Phillips curve (for example in terms of lag structure or linearity vs non-linearity) and the chosen determinants remain subject to discussion. One way to hedge against such model uncertainty is to use a large set of proxies for the labour market cycle, inflation expectations and productivity growth.⁸⁷ This box shows the results for a set of wage Phillips curves that alternate 18 slack measures (including unemployment rate, unemployment gap from various institutions (ECB, IMF, OECD), and job market tightness), 16 inflation expectations measures (including those collected by Consensus Economics and in the ECB Survey of Professional Forecasters (SPF), and lagged headline inflation) and the measures of job market efficiency.⁸⁸ One-third of the specifications are standard, without a job market efficiency measure, one-third include the job market efficiency measure derived from the Beveridge curve and one-third include the measure derived from the matching function.

Measures of matching efficiency help to explain past moderate wage developments in the euro area. According to a measure of fit (Schwarz info criterion) some of the best specifications include the job market efficiency measures. Chart A shows the range of the paths of compensation per employee obtained using the wage Phillips curve models and conditioning on the path of slack, productivity, and past or expected inflation starting in 2012. When job market efficiency measures are added to the wage Phillips curves there is a marginal downward shift of the range of projections compared to the baseline models that do not include these measures. This suggests that the job market efficiency measures may be useful in explaining the moderate wage growth in the euro area over the last eight years, albeit to a rather limited extent.

⁸⁶ Galí, J., “The Return of the Wage Phillips Curve”, NBER Working Papers, No 15758, 2010. The standard New Keynesian model with staggered wage setting implies a simple dynamic relation between wage inflation and unemployment. Galí finds that, even under the strong assumption of a constant natural rate of unemployment, this simple relation accounts reasonably well for the co-movement of wage inflation and the unemployment rate in the United States.

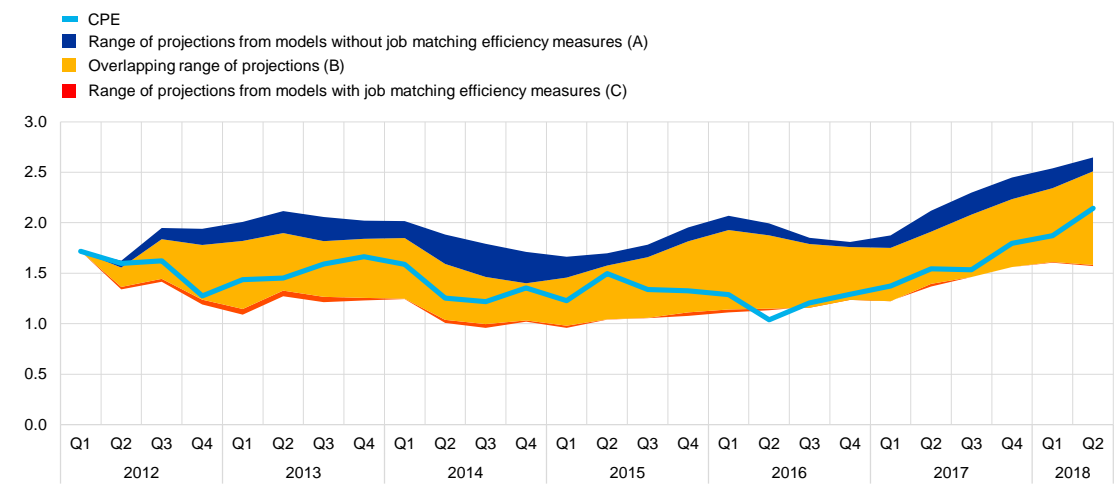
⁸⁷ This thick modelling approach is similar to the one applied for the price Phillips curve in Ciccarelli, M. and Osbat, C., “Low inflation in the euro area: Causes and consequences”, *Occasional Paper Series*, No 181, ECB, Frankfurt am Main, January 2017, and in the article entitled “Drivers of underlying inflation in the euro area over time: a Phillips curve perspective” in this issue of the Economic Bulletin.

⁸⁸ Wage Phillips curves are specified as a regression of nominal compensation per employee (expressed in terms of annualised quarter-on-quarter growth) on its own lag, the first lag of a measure of labour market slack, productivity growth, a measure of expected inflation, the intercept, and the measures of job market efficiency. We estimate a total of 864 specifications.

Chart A

Euro area: conditional forecast of annual growth of compensation per employee (CPE)

(year-on-year changes)



Source: ECB calculations based on data from Eurostat, the IMF, Consensus Economics and the SPF.

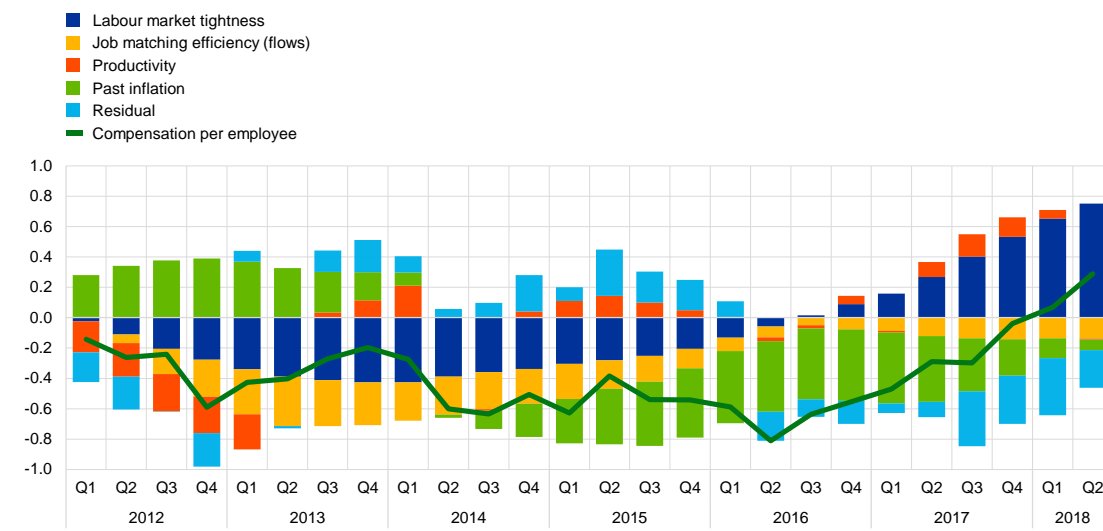
Notes: Results are based on a thick modelling approach that includes a broad range of fixed coefficient specifications of the Phillips curve including or excluding job market inefficiency measures. The parameters are estimated over the sample period 2005Q1-2018Q2. The conditional out-of-sample forecast is carried out for the period 2012Q1-2018Q2. The ranges depict forecasts for the growth of compensation per employee coming from differently specified Phillips curves. The specifications include permutations across the expectation formation (backward or forward-looking), the variables representing slack and the job matching efficiency (JME) measures. In the chart the range of projections of the models without JME measures is represented by the blue and yellow area (A+B) while the range of projections from models that include JME measures is represented by the yellow and red area (B+C).

The decomposition of the contribution of the exogenous variables confirms that a decline in job market efficiency has a dampening effect on wages. Chart B shows the contribution of the exogenous variables to wage growth (as a deviation from the long-run mean) for a specification that includes job market tightness and matching efficiency. From 2012 to 2015 cyclical developments measured by job market tightness explain most of the lower-than-average developments in wages, while in 2017 and 2018 the contribution becomes positive. Job market inefficiency has a dampening effect on wages over the full period, and in particular in 2013 and 2014. A very important additional driver of low wage growth is low inflation, particularly in 2016. Similar results can be obtained using only the unemployment rate, with the contribution of this variable corresponding to the combined impact of job market tightness and matching efficiency.

Chart B

Euro area: contribution of different exogenous variables according to a wage Phillips curve

(percentage points)



Source: ECB staff calculations.

Notes: The green line shows deviations of year-on-year growth of compensation per employee from its long-run mean. Contributions (including residuals) are also shown as deviations from their long-run mean. Contributions are calculated based on an equation in which compensation per employee (the annualised quarterly growth rate) is regressed against its own lag, a measure of slack (job market tightness), the job matching efficiency measure derived from the residuals of the job market matching function, productivity growth, the four-quarter moving average of headline inflation and a constant. Past developments of these variables impact current compensation per employee through lagged compensation per employee. In the chart these contributions are associated with the single exogenous variables despite showing a generic contribution of lagged compensation per employee.

The results suggest that, despite some caveats, job market efficiency measures help to explain past moderate wage growth in the euro area. The caveats relate to the fact that the analysis does not allow for a structural interpretation of shocks that would explain wage developments, i.e. there is not necessarily a causal relationship between the explanatory variables depicted in Chart B and low wages, as they could simply be reacting to the same common shocks. Also, the reliability of these results is affected by the low number of observations available for these measures and, therefore, the length of the estimation sample. Although this framework provides a useful and complementary perspective for understanding wage developments, and may help to partially explain past moderate wage developments in the euro area, the overall quantitative implications for wages are largely consistent with those of the standard Phillips curve approach.

4 Concluding remarks

The article analyses the main patterns of the Beveridge curve and highlights the importance of both labour market tightness and labour market efficiency.

The Beveridge curve seems to have significantly shifted outwards in the euro area, with the unemployment rate approximately similar to the pre-crisis period and the job vacancy rate currently significantly higher. Our empirical findings show that there has been a significant deterioration in aggregate matching efficiency since the start of the crisis. The deterioration in matching efficiency is not necessarily structural and contains useful cyclical information that can be used to assess the state of the labour market and possible implications for wage developments. We show that lower matching efficiency may have marginally contributed to weaker wage dynamics. This framework therefore helps to enhance our understanding of unemployment and wage

fluctuations. However, the quantitative implications for wages presented in this article differ only marginally from those of the standard Phillips curve approach.

The reasons behind the sharp decline in matching efficiency require further investigation into the heterogeneity and composition of the labour market.

According to recent studies, the two main factors driving the decline in matching efficiency are the increased heterogeneity of the unemployment pool and the increased dispersion of unemployment rates across countries. However, other factors may be at play. First, the dynamics of the labour force and its composition may also affect labour market efficiency. The euro area labour force participation rate has increased steadily since the early 2000s but has grown at a lower than average rate since the crisis. Therefore, in the context of the euro area Beveridge curve analysis, the outward shift in 2011 cannot be linked to the movements of the participation rate. Second, the role of sectoral reallocations may also have contributed marginally to the outward shift of the Beveridge curve as reallocations are usually associated with a significant spike in job separation rates. However, the timing of the outward shift of the Beveridge curve cannot really be linked to the slight change in the euro area job separation rate in 2011.

2 Drivers of underlying inflation in the euro area over time: a Phillips curve perspective

Prepared by Elena Bobeica and Andrej Sokol

In this article we review the evolution of euro area HICP inflation excluding energy and food since the Great Financial Crisis through the lens of the Phillips curve. This period is particularly interesting, as the euro area experienced two recessions (in 2008-2009 and 2011-2014) and a protracted episode of low inflation from 2013 onwards. We estimate a large set of Phillips curve models for the euro area and review the interpretation of inflation developments that they provide over time. We find that our models can account for much of the weakness in underlying inflation between 2013 and mid-2017, but that they cannot account for the weakness in underlying inflation towards the end of our sample.

1 Motivation and overview

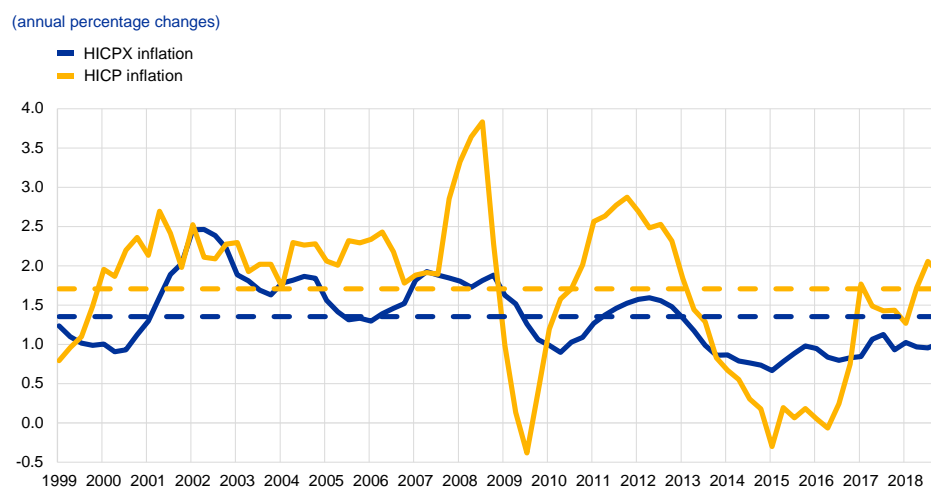
The decade since the onset of the Great Financial Crisis in 2008 is known for a “twin puzzle” in inflation developments across advanced economies. The first years following the crisis are associated with a *missing disinflation* episode, as inflation appeared to fall by less than the ensuing recessions would have led us to expect.⁸⁹ More recently, as most economies gradually recovered, economists have puzzled over *missing inflation*,⁹⁰ with the latter episode being much more prolonged. Taking averages since the launch of the euro as benchmarks, in the euro area both headline HICP inflation and HICP inflation excluding energy and food (HICPX, henceforth “underlying inflation”) dropped below their respective averages after 2009 (see Chart 1), but the *missing disinflation* view would have predicted an even more marked fall. After a short-lived recovery, inflation rates again fell from 2013 onwards, initiating a protracted period of below-average inflation, which in the case of underlying inflation persists to the present day. The *missing inflation* view finds the latter episode hard to square with a gradual recovery in economic activity in the euro area that has brought the unemployment rate back to pre-crisis levels (see Chart 2).

⁸⁹ Coibion, O. and Gorodnichenko, Y., “Is the Phillips Curve Alive and Well after All? Inflation Expectations and the Missing Disinflation”, *American Economic Journal: Macroeconomics*, Vol. 7(1), 2015, pp. 197-232; Ciccarelli, M. and Osbat, C. (eds.), “Low inflation in the euro area: Causes and consequences”, *Occasional Paper Series*, No 181, ECB, 2017.

⁹⁰ Constâncio, V., “Understanding Inflation Dynamics and Monetary Policy”, panel remarks at the Jackson Hole Economic Policy Symposium, Federal Reserve Bank of Kansas City, 29 August 2015; Bobeica, E. and Jarociński, M., “Missing Disinflation and Missing Inflation: A VAR Perspective”, *International Journal of Central Banking*, Vol. 15(1), 2019, pp. 199-232.

Chart 1

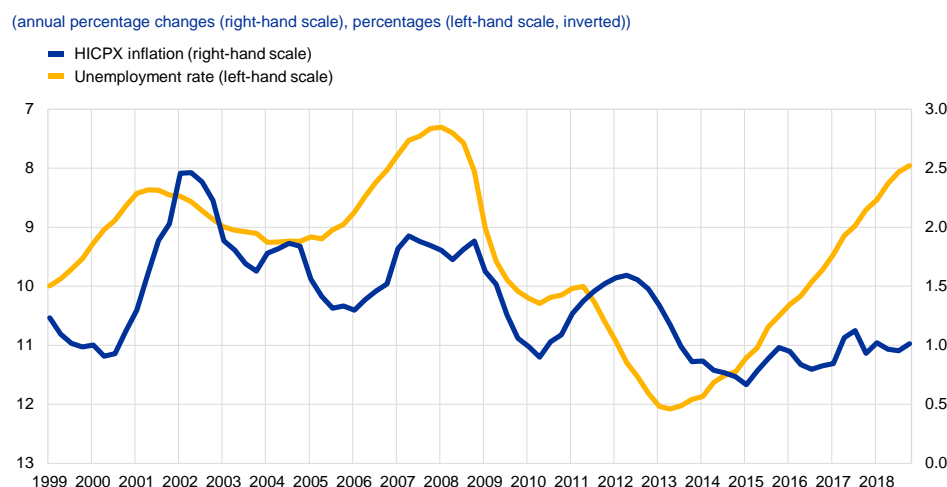
HICP inflation and HICP inflation excluding energy and food in the euro area



Sources: Eurostat and ECB calculations.
Note: The dotted lines represent historical averages since 1999.

Chart 2

HICP inflation excluding energy and food and the unemployment rate in the euro area



Source: Eurostat.

Both academics and practitioners use versions of the Phillips curve to understand and communicate inflation developments. In the broadest sense, the Phillips curve is an expression of the notion in economic theory that economic activity, and more precisely the degree of excess demand or supply, should have a bearing on price and inflation developments. The relationship is grounded in many popular economic theories, such as the New Keynesian framework, where inflation is primarily linked to firms' marginal costs (often proxied with a measure of economic slack) and forward-looking inflation expectations. Phillips curves have long enjoyed great popularity as an empirical tool, but for that very reason the *missing disinflation* and *missing inflation* episodes have stirred intense debates about the relationship, including whether it is alive or dead (i.e. steep or flat), and linear or non-linear.

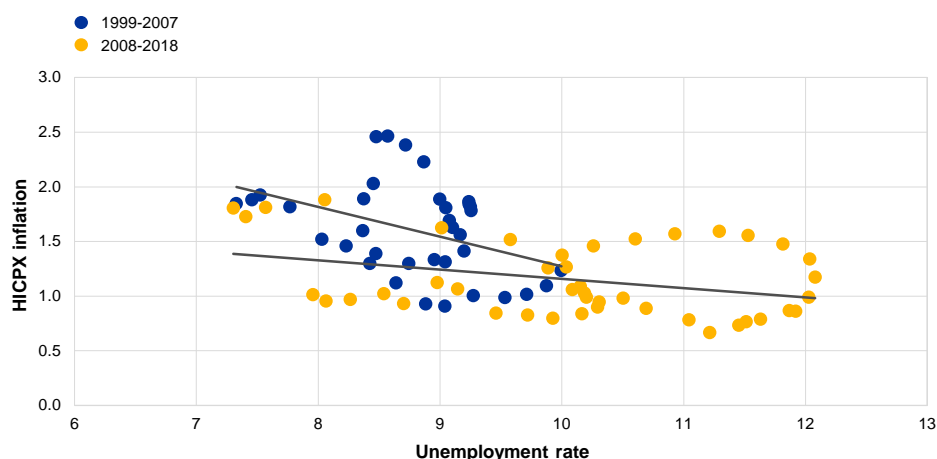
Attempts to simply link the behaviour of inflation to the level of economic activity raise some important questions.

For instance, a naïve look at the stability of such a relationship (see Chart 3) would suggest that, compared with the pre-crisis period, the link between real activity and inflation might have “flattened” in the following period, which includes the two puzzling episodes. But many economic factors can shift the level of inflation for a given amount of economic slack, blurring the underlying economic relationship when viewed in a scatterplot. For example, inflation expectations and the cost of imported inputs are important elements of price-setting decisions, and their changes can lead to shifts in the Phillips curve relationship without necessarily changing its slope. On the other hand, the behaviour of economic agents could change over time, for example depending on whether the economy is in recession or not, meaning that the slope could vary over different periods. Without appropriately taking into account such considerations, there is a risk of drawing the wrong conclusions about the strength of the link between inflation and economic activity.

Chart 3

HICPX inflation and the unemployment rate in the euro area

(x-axis: percentages; y-axis: annual percentage changes)



Sources: Eurostat and ECB calculations.

Note: Linear regression lines for the two samples are shown in grey.

The ECB has also relied on Phillips curve models to understand and communicate inflation developments since the Great Financial Crisis.

The Phillips curve is an intuitive yet powerful way of conveying the link between inflation and economic activity, which lies at the heart of monetary policy. Thus, as in other central banks and policy institutions (see Box 1 for some case studies), Phillips curves are one element of the analytical toolkit routinely deployed by the ECB to analyse and communicate inflation (and wage growth)⁹¹ developments. Reduced-form estimates of this relationship remain popular due to their simplicity and transparency. However, they require regular review and scrutiny in order to remain useful for analytical, decision-making and communication purposes. This includes all the important choices that have to be made for their empirical set-up: for instance, whether to focus on

⁹¹ See Box 3 in the article entitled “The euro area labour market through the lens of the Beveridge curve” in this issue of the Economic Bulletin.

headline inflation, which is more exposed to commodity prices and other external shocks, or on measures of underlying inflation; what is the most appropriate measure of economic activity to use; what other global and/or domestic drivers of inflation besides economy activity should be included; and whether the relationship should be allowed to change in more complex ways, for example depending on the stage of the economic cycle. Section 2 and Box 2 focus on some of these important issues. In Section 3, we then revisit the recent history of inflation in the euro area through the lens of a large set of reduced-form Phillips curve models, and find that estimated Phillips curves can account for much of the weakness in underlying inflation since 2013, imputing the bulk of it to its key determinants, except for the last few outturns, which cannot be explained well by our models.

Box 1

Other countries' experiences with Phillips curves

Prepared by Alexander Al-Haschimi

Major central banks use the Phillips curve to assess and communicate inflation developments. For instance, the Federal Reserve System tracks closely how well Phillips curves estimated using a variety of approaches can explain data on the US economy.⁹² Some results suggest that in the United States, the link between unemployment and inflation has weakened over time. Indeed, in recent years the United States has been experiencing both low unemployment and low inflation concurrently, which is consistent with a flatter Phillips curve. Federal Reserve Chair Jerome Powell has argued that a number of factors have weakened the effect of labour market tightness on inflation.⁹³ One factor cited was a more effective conduct of monetary policy, resulting in a stronger anchoring of inflation expectations. Other factors potentially relate to the internationalisation of production structures and the higher import content of goods consumed, which give exchange rates and global prices a greater role in price determination.⁹⁴

A related question, particularly relevant given the very tight labour markets in some advanced economies, including the United States and Japan, is to what extent the Phillips curve is non-linear. In his remarks at the 2019 US Monetary Policy Forum, John Williams also discussed the possibility that the employment-inflation relationship becomes strong only when unemployment is very low, as suggested by Hooper, Mishkin and Sufi (2019).⁹⁵ This finding would be highly policy-relevant, as it suggests that while thus far a tight labour market has co-existed with low inflation, a further tightening in the US labour market may lead to inflation rising above target. Williams pointed out that the results

⁹² See Yellen, J.L., "Inflation Dynamics and Monetary Policy", speech at the Philip Gamble Memorial Lecture, University of Massachusetts, Amherst, 24 September 2015.

Yellen, J.L., "Inflation, Uncertainty and Monetary Policy", speech at the 59th Annual Meeting of the National Association for Business Economics, Cleveland, Ohio, 26 September 2017.

⁹³ Powell, J., "Monetary Policy and Risk Management at a Time of Low Inflation and Low Unemployment", speech at the 60th Annual Meeting of the National Association for Business Economics, 2 October 2018.

⁹⁴ Williams, J.C., "Discussion of 'Prospects for Inflation in a High Pressure Economy: Is the Phillips Curve Dead or Is It Just Hibernating?' by Peter Hooper, Frederic S. Mishkin, and Amir Sufi", remarks at the 2019 US Monetary Policy Forum, Federal Reserve Bank of New York, 22 February 2019.

⁹⁵ Williams (2019), op. cit.; and Hooper, P., Mishkin, F.S. and Sufi, A., "Prospects for Inflation in a High Pressure Economy: Is the Phillips Curve Dead or is It Just Hibernating?", paper presented at the 2019 US Monetary Policy Forum, February 2019. For a theoretical derivation of a non-linear Phillips curve, see Benigno, P. and Ricci, L., "The Inflation-Output Trade-Off with Downward Wage Rigidities", *American Economic Review*, Vol. 101(4), 2011, pp. 1436-1466; for an empirical review of the evidence, see, e.g., Albuquerque, B. and Baumann, U., "Will US inflation awake from the dead? The role of slack and non-linearities in the Phillips curve", *Journal of Policy Modeling*, Vol. 39(2), 2017, pp. 247-271.

for this type of non-linearity in the Phillips curve are often not robust, but their existence would significantly alter the policy trade-offs a central bank is facing.⁹⁶

In Japan, the linearity of the Phillips curve has also been questioned.⁹⁷ Japan has also been experiencing a tight labour market and low inflation, which could be an indication of a flatter Phillips curve. There are a number of potential explanations for why the country's low unemployment rate does not feed through more strongly to wage and price inflation. Some factors cited are structural, and relate in part to worker preferences for employment stability over wage increases, as well as hidden labour market slack arising from involuntary part-time workers who are not fully captured by the unemployment rate. However, as in the United States, there is a debate as to when the low and falling unemployment rate should lead to stronger increases in wages and prices. Harada (2018) recently discussed this issue within a Phillips curve framework. He showed estimates suggesting that inflation becomes more responsive to the labour market when the unemployment rate falls below 3%, and concluded that this could imply that the unemployment rate needed to decline further for inflation to reach its target of 2% (see Chart A).⁹⁸

⁹⁶ This result, and the accompanying caveat, parallels some of the findings on the potential non-linearity of the Phillips curve relationship in the euro area discussed in Box 2.

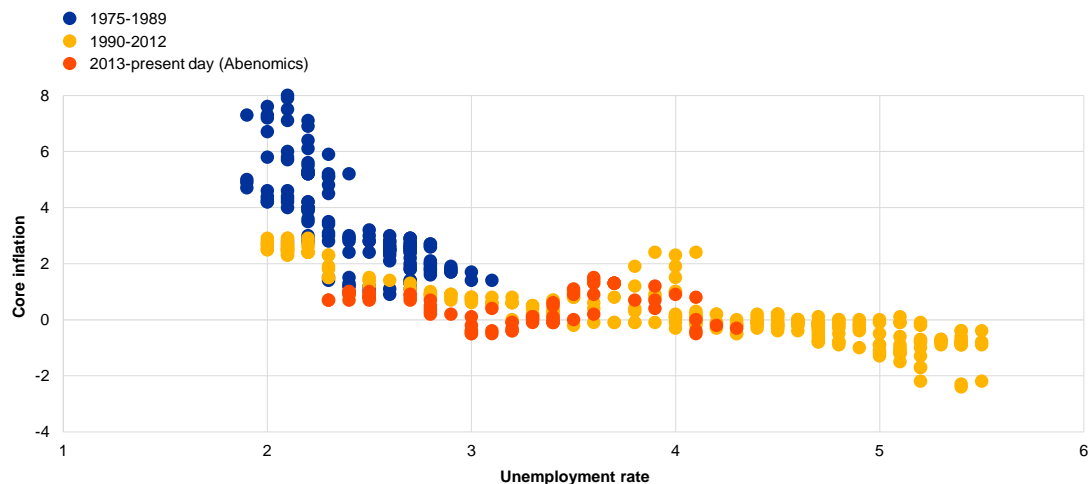
⁹⁷ See, for example, Iwasaki, Y., Muto, I. and Shintani, M., "Missing Wage Inflation? Downward Wage Rigidity and the Natural Rate of Unemployment", *Bank of Japan Research Laboratory Series*, No 18-E-3, 2018; Hara, N., Kazuhiro, H. and Ichise, Y., "Changing Exchange Rate Pass-Through in Japan: Does It Indicate Changing Pricing Behavior?", *Bank of Japan Working Paper Series*, No 15-E-4, 2015.

⁹⁸ Harada, Y., "Economic Activity, Prices and Monetary Policy in Japan," speech, Ishikawa, Japan, 4 July 2018.

Chart A

Phillips curve for Japan

(x-axis: percentages; y-axis: annual percentage changes)



Sources: Japanese Ministry of Internal Affairs and Communications and Haver Analytics.

Notes: Core inflation in year-on-year percentage changes, measured as the consumer price index for all items excluding fresh food, non-alcoholic beverages, and energy and adjusted for changes in consumption tax. “Abenomics” refers to the economic policies of Japanese Prime Minister Shinzō Abe.

2 Phillips curve models for euro area underlying inflation: what are the choices?

We follow a “thick modelling” approach and bring a large number of reduced-form single-equation Phillips curve models to the data. As emphasised in ECB (2014),⁹⁹ there are countless – similarly plausible – empirical specifications of the Phillips curve, reflecting various choices, such as the variables to be included, the functional form and the estimation strategy. One way to mitigate some of this model uncertainty is to choose a generic specification, and estimate different versions of it, changing how we measure each variable – an approach referred to as “thick modelling”.¹⁰⁰ The general specification is the following:

$$\pi_t = c + \gamma \cdot \pi_{t-1} + \alpha \cdot \pi_t^e + \beta \cdot x_{t-1} + \gamma \cdot Z_{t-l} + \varepsilon_t$$

where π_t is inflation, π_t^e is a measure of inflation expectations, x_t is a measure of economic activity or “slack” and Z_{t-l} captures external price shocks, which in some specifications are allowed to enter the equation with a longer lag l to allow for a slower pass-through to domestic prices. The choice of functional form and estimation strategy addresses tractability and simplicity concerns, but also reflects the proven ability of such models to fit euro area data reasonably well.¹⁰¹ Effectively, the model is an empirical version of a hybrid New Keynesian Phillips curve, where inflation is driven by forward-looking inflation expectations (proxied here by survey measures), past

⁹⁹ “The Phillips curve relationship in the euro area”, *Monthly Bulletin*, ECB, July 2014.

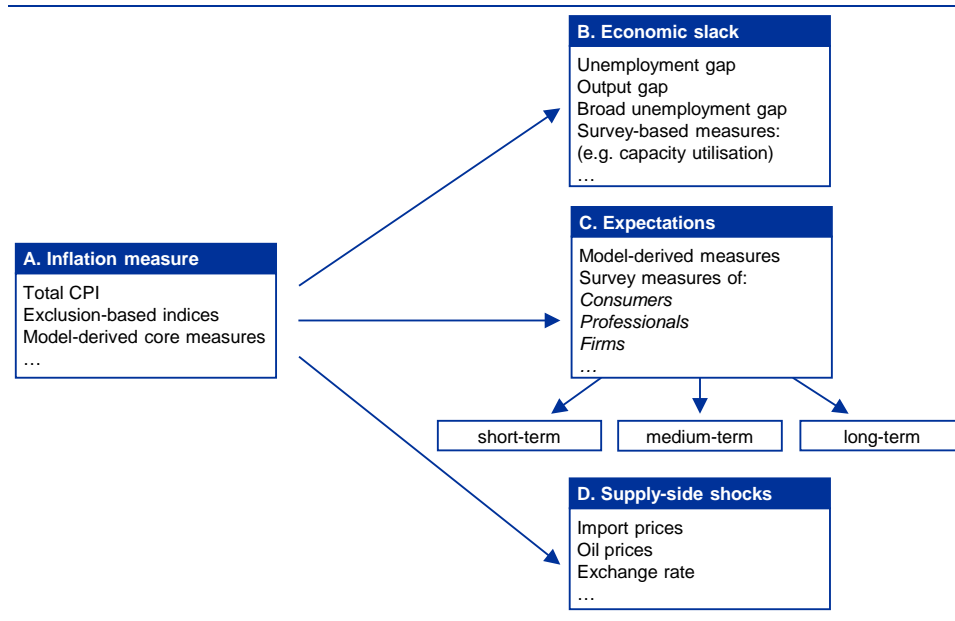
¹⁰⁰ Granger, C.W.J. and Jeon, Y., “Thick modeling”, *Economic Modelling*, Vol. 21(2), 2004, pp. 323-343.

¹⁰¹ For a discussion of this specification, see Ciccarelli and Osbat, eds. (2017), op. cit. Phillips curve relationships are also part of richer structural models; in this article we focus on reduced-form evidence, mainly for the sake of simplicity of exposition.

inflation is allowed to play a role as well (to capture backward-looking expectations and other sources of persistence in price setting) and firms' marginal costs are proxied by measures of slack or economic activity. External variables are included to control for an important source of supply-side shocks. Figure 1 offers a synopsis of the main specification choices, without aiming to be exhaustive on all possible counts.

Figure 1

Stylised decision tree for the specification of a reduced-form Phillips curve model



Source: ECB.

While the objective of the ECB is unambiguously defined in terms of headline HICP inflation, in this article we focus on measures of underlying inflation, which are less volatile and can help to identify and illustrate the key drivers of price developments (see Figure 1, panel A). Developments in total consumer price index (CPI) inflation may be temporarily influenced by factors that are of a short-term nature, such as swings in commodity prices. In order to focus on the more persistent factors driving inflation, in many empirical applications of the Phillips curve model (and beyond), underlying inflation measures are used instead. However, there are many available measures of underlying inflation. Popular choices include: permanent exclusion measures (such as HICP inflation excluding energy and food), temporary exclusion measures and model-based measures.¹⁰²

We use several measures of economic slack or activity to capture the impact of firms' costs on inflation (see Figure 1, panel B).¹⁰³ Most empirical approaches assume that marginal costs are proportional to economic slack,¹⁰⁴ proxied by the output gap or the unemployment gap. Such unobservable gaps can be obtained by

¹⁰² All three types of measure are explained and discussed in Ehrmann, M., Ferrucci, G., Lenza, M. and O'Brien, D., "Measures of underlying inflation for the euro area", *Economic Bulletin*, Issue 4, ECB, 2018.

¹⁰³ See the notes to Chart 4 for the list of measures of slack considered.

¹⁰⁴ One exception, where instead the labour share of income is used as a measure of real marginal costs, is Galí, J. and Gertler, M., "Inflation dynamics: A structural econometric analysis", *Journal of Monetary Economics*, Vol. 44(2), 1999, pp. 195-222.

applying statistical filtering techniques, via estimates of potential output based on a production function (e.g. OECD or IMF methodologies), or endogenously, in a manner consistent with inflation developments, as in Blanchard et al. (2015), Jarociński and Lenza (2018) and Chan et al. (2016).¹⁰⁵ Using multiple measures is one way of mitigating the model uncertainty inevitably surrounding estimates of economic slack. Another approach is to directly use observable measures of economic activity, such as the unemployment rate or GDP growth, which, however, has the significant downside of blurring demand and supply factors. More recently, several studies have recommended using the short-term unemployment rate or gap instead of total unemployment measures.¹⁰⁶ Regardless of the reference measure, additional complications arise from estimating slack in real time, partly related to the potentially large revisions to some of the macro data used to proxy slack.¹⁰⁷

We use available survey measures to proxy inflation expectations (see Figure 1, panel C).¹⁰⁸ The inflation expectations of firms and workers/consumers are not available for most countries, so several strategies have been adopted to address the issue. Backward-looking expectations, i.e. assuming that they are based on past inflation, are the simplest one, and the inclusion of a lagged inflation term in equation (1) is partly motivated by this. To measure forward-looking expectations, survey measures are a convenient way to proxy the beliefs of economic agents regarding future price movements. Their main caveat is that such surveys usually reflect expectations of professional forecasters, which could differ markedly from those of price setters or consumers.¹⁰⁹

We also control for external supply-side shocks that might hit domestic prices (see Figure 1, panel D).¹¹⁰ In an increasingly globalised world, both domestic headline and underlying inflation can be sensitive to various external supply-side shocks, such as those coming from commodity and other import prices. There is some empirical evidence for the United States and other countries that import prices do affect inflation in a Phillips curve framework.¹¹¹ On the other hand, there is less

¹⁰⁵ Blanchard, O., Cerutti, E. and Summers, L.H., "Inflation and Activity: Two Explorations and Their Monetary Policy Implications", *Working Paper Series*, No WP 15-19, Peterson Institute for International Economics, 2015; Jarociński, M. and Lenza, M., "An Inflation-Predicting Measure of the Output Gap in the Euro Area", *Journal of Money, Credit and Banking*, Vol. 50(6), 2018, pp. 1189-1224; Chan, J.C.C., Koop, G. and Potter, S.M., "A Bounded Model of Time Variation in Trend Inflation, Nairu and the Phillips Curve", *Journal of Applied Econometrics*, Vol. 31(3), 2016, pp. 551-565.

¹⁰⁶ See Ball, L. and Mazumder, S., "A Phillips Curve with Anchored Expectations and Short-Term Unemployment", *Journal of Money, Credit and Banking*, Vol. 51(1), 2019, pp. 111-137, and the references therein.

¹⁰⁷ See Szörfi, B. and Tóth, M., "Measures of slack in the euro area", *Economic Bulletin*, Issue 3, ECB, 2018.

¹⁰⁸ We consider the following inflation expectation measures: (1-7) Consensus Economics measures with a horizon of two to seven quarters ahead and interpolated long-term Consensus Economics expectations; (8-11) ECB Survey of Professional Forecasters measures, one year ahead, two years ahead and five years ahead.

¹⁰⁹ Coibion and Gorodnichenko (2015), op. cit., point to the difference between the inflation expectations of professional forecasters and of firms, arguing that the latter are better approximated by the expectations of consumers.

¹¹⁰ As external variables, we employ: (1) annual change in the prices of imports from outside the euro area; (2) annual change in oil prices in euro; (3) a longer-term average of past oil price changes; (4-5) annual global headline and underlying inflation, all with appropriately long lags.

¹¹¹ Matheson, T. and Stavrev, E., "The Great Recession and the inflation puzzle", *Economics Letters*, Vol. 120(3), 2013, pp. 468-472; Forbes, K.J., "How Have Shanghai, Saudi Arabia, and Supply Chains Affected U.S. Inflation Dynamics?", *Federal Reserve Bank of St. Louis Review*, Vol. 101(1), First Quarter 2019, pp. 27-43.

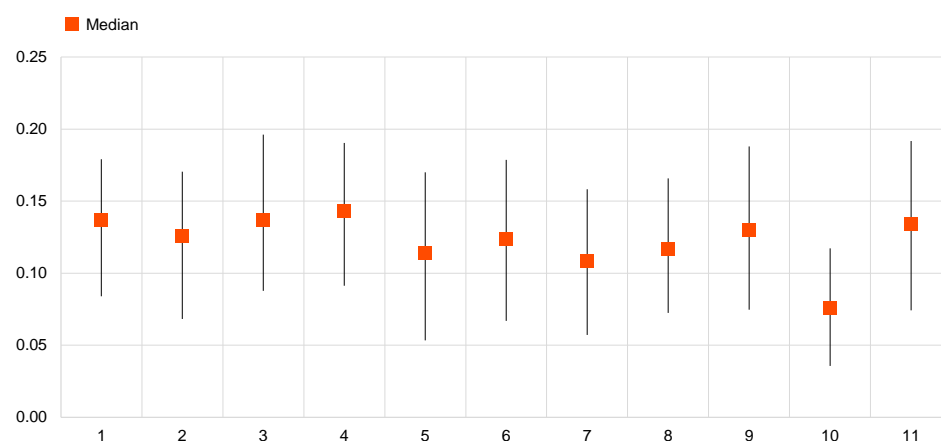
empirical support when it comes to an independent influence of the global business cycle on domestic inflation.¹¹²

The relevant variables to include are not the only source of uncertainty in the Phillips curve; the functional form matters as well. The choice of specification is often driven by the scope and purpose of the analysis; for example, if a linear specification turns out not to offer a satisfactory explanation of outcomes, non-linear specifications can be deployed. Box 2 discusses some important departures from the linear benchmark model in equation (1) in the context of recent ECB work on Phillips curves.

We estimate 550 versions of the baseline model and find the euro area Phillips curve to be alive, but we also find evidence pointing to the importance of inflation drivers other than domestic real activity. Estimation results point to a statistically significant and economically plausible link between euro area inflation and its key drivers. Focusing on the relationship with real activity, Chart 4 shows the Phillips curve slope across specifications for each measure of slack or economic activity. In virtually all 550 models under review, the real activity measure is statistically significant with the theoretically implied sign, confirming the visual impression given in Chart 2 regarding the co-movement between underlying inflation and economic activity in the euro area. However, the slope is generally not very steep and the coefficients of other relevant drivers, such as inertia, expectations and external shocks, are often also significant, pointing to the importance of factors beyond slack for adequately explaining inflation developments. In other words, not only movements *along* the Phillips curve, but also *shifts* in the curve, need to be taken into account.

Chart 4
Estimated Phillips curve slope across all specifications

(regression coefficients on standardised measures of economic slack/tightness)



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

Notes: We consider the following measures of slack: (1) output gap – model-based estimate; (2) output gap – IMF; (3) output gap – European Commission; (4) output gap – OECD; (5) unemployment rate; (6) unemployment gap – model-based estimate; (7) unemployment gap – IMF; (8) unemployment gap – European Commission; (9) unemployment gap – OECD; (10) short-term unemployment rate; (11) the U6 measure. The unemployment rates/gaps have been inverted. Sample: Q1 1995 to Q3 2018. All measures of slack/tightness are standardised for the coefficients to be comparable across specifications. The vertical bars show the range of coefficients across all specifications including a particular measure of economic slack/tightness or activity.

¹¹² “Domestic and global drivers of inflation in the euro area”, *Economic Bulletin*, Issue 4, ECB, 2017.

Box 2

Linear and non-linear Phillips curves

Prepared by Andrej Sokol

Empirical Phillips curve models are often linear. Equation (1) in Section 2 is a fairly standard specification of a single-equation linear Phillips curve, where lagged inflation, a measure of slack, a measure of inflation expectations and a measure of import prices are included. Linearity refers both to linearity of the parameters (the right-hand-side term is a linear function) and of the variables (i.e. variables enter the equation with the units they are measured in). Both assumptions can be relaxed in a number of ways.

There are several possible non-linear specifications of the Phillips curve. The most common forms of non-linearity include transformations of the independent variables, such as square (or even higher-order) slack terms, which can introduce both convexity and concavity in Phillips curves. Similar and more sophisticated relationships can be fitted by weighting the slack measure with another variable that captures the state of the economy; for example, a simple dummy variable can achieve several forms of “piecewise linearity”, which can approximate different regimes, such as booms and deep recessions, as opposed to “normal times”. More sophisticated devices, such as non-linear splines or Markov switching, are sometimes also used in the estimation of non-linear Phillips curves.¹¹³

Behind the notion of a non-linear Phillips curve often lies the idea that pricing behaviour could be different at different stages of the economic cycle. This in turn might be due to psychological, institutional or technological considerations and their interplay in a modern market economy. One argument with a long history relates to downward nominal wage rigidities; i.e. workers being reluctant to accept (or firms to impose) cuts in nominal wages in a downturn. This could be due to collective bargaining arrangements, or a psychological reluctance to see one’s pay cut in nominal terms. The implication is that in the presence of a large amount of economic slack, wages (and therefore prices) will change at a different rate than during more normal periods, thus potentially bending the Phillips curve into a more convex shape. A similar phenomenon can occur if firms experience short-run capacity constraints that make it difficult to immediately satisfy further increases in demand. One example would be mothballed equipment that can only be put back into use with a time lag and at some cost. In such a situation, firms might increase prices before increasing their capacity to fully satisfy the additional demand, whereas in more normal times they would adjust inputs to production first, thus again making the Phillips curve more convex. Another source of convexity is the idea that price changes could be more frequent in periods of high inflation.

Some theories predict a concave rather than a convex Phillips curve, i.e. inflation being more responsive to slack when there is a large amount of it than in normal times or booms. For example, this is consistent with firms operating in market structures where they can make different pricing decisions depending on market conditions. When there is a large amount of slack, firms may be more willing to cut prices in order not to lose market share to rival firms. Conversely, firms might be reluctant to increase prices in periods when output is close to or above potential to avoid losing market share.

¹¹³ See, for example, Leduc, S., Marti, C. and Wilson, D.J., “Does Ultra-Low Unemployment Spur Rapid Wage Growth?”, *FRBSF Economic Letter*, No 2019-02, Federal Reserve Bank of San Francisco, 2019.

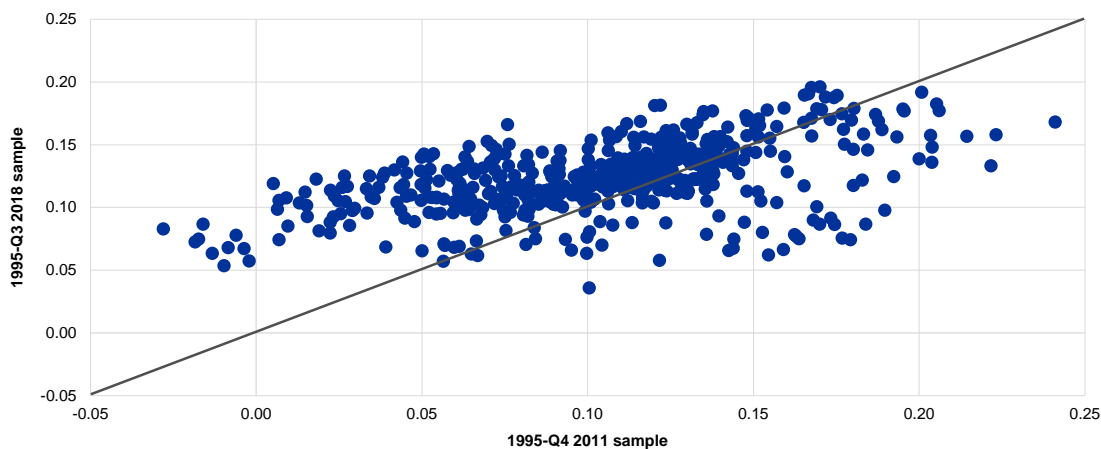
Convexity and concavity do not need to be mutually exclusive. One way to reconcile the presence of both are “threshold effects”, namely a steeper relationship between inflation and slack only for extreme values of the slack variable (e.g. during deep recessions and/or after prolonged periods of above-trend growth). One microeconomic notion consistent with such a set-up is that prices are more responsive when there is a lot of slack (because firms do not want to lose market share) or when firms are operating way above potential (because of higher costs), and less responsive in between (when adjusting factor utilisation is preferred to changing prices). In such a case, the Phillips curve is concave when there is a lot of slack and convex when the economy is operating considerably above potential.

Other microeconomic arguments for non-linearity do not fit the convexity-concavity dichotomy as neatly, but may nonetheless be important. This may either be because they only operate during upturns or downturns, or because they depend on the rate at which slack is closing. Menu costs are one example: when firms face costs to change their prices, typically only a fraction of them will adjust prices in a given period, but it is likely that the larger the demand shock they face, the greater the share of firms adjusting their prices will be. In such a case, the rate at which slack closes (or opens up) will determine the slope of the Phillips curve for any given level of slack.

Chart B

Euro area Phillips curve slopes in two samples across a range of specifications

(regression coefficients on standardised measures of economic slack/tightness)



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

Note: Slack measures are as in Chart 4, standardised (and inverted where appropriate) for comparability.

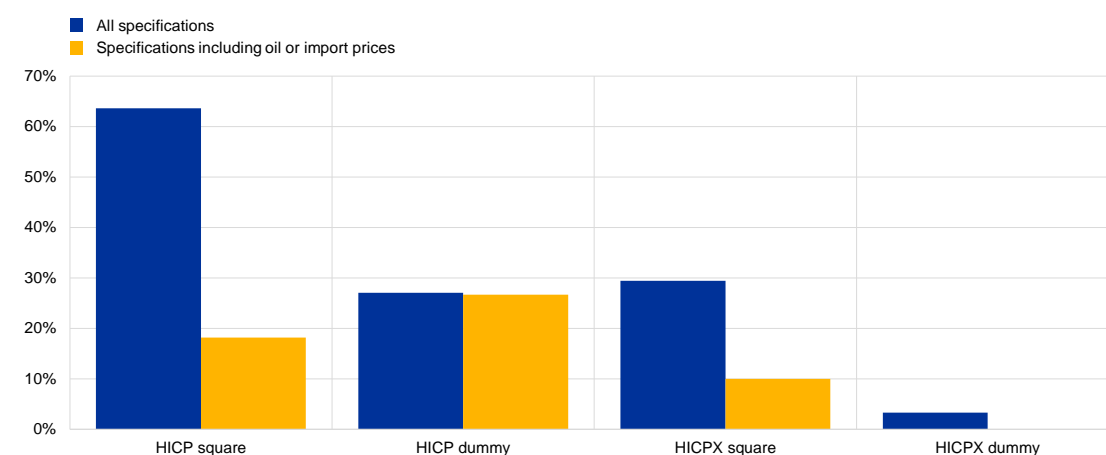
Time variation in the coefficients of an otherwise linear Phillips curve is sometimes taken as first-pass evidence of non-linearity in the relationship between slack and inflation. That is because, if the pattern of variation coincides with the economic cycle, then time-varying parameters might be a better fit for outturns that would otherwise look non-linear when viewed in slack/inflation space. Time variation in the coefficients is in itself a form of non-linearity, because the parameters in the equation effectively become variables that depend on time and multiply the independent variables. Broadly speaking, time variation has been tested in two ways: either by simply splitting the sample and comparing fixed parameter estimates, or by estimating models with time-varying parameters. Both approaches provide some evidence of an increase in the slope of the euro area Phillips curve in recent years, although with a high degree of uncertainty. Chart B illustrates the results from the first approach: the same models are estimated over two different samples, and changes in slope across the two samples are illustrated by means of deviations from a 45 degree line.

Quadratic slack terms and other forms of non-linearity have been tested extensively, with mixed results. In an empirical exercise featuring a large number of different specifications, quadratic slack terms (which seek to introduce convexity in the relationship between slack and inflation) were statistically significant in some of the specifications, but, in models that controlled for imported inflation, that significance largely disappeared, consistent with the view that linear models with suitably chosen control variables are even able to fit data well that appear non-linear in a reduced-form relationship (see Chart C). In the same exercise, a dummy variable for positive values of the output gap (in principle able to fit both convex and concave relationships) turned out to be significant only in a fraction of the models.

Chart C

Share of instances in which the non-linear variables in euro area Phillips curve specifications are statistically significant

(percentages)



Sources: Eurostat and ECB staff calculations.

Notes: For two measures of inflation (HICP and HICPX inflation), versions of equation (1) including and excluding external variables and a different form of non-linearity (quadratic terms for economic slack or 0/1 dummy variables for economic slack above/below a certain threshold) are estimated for various measures of slack (see the notes to Chart 4). The bars denote the share of models in which the coefficients on the non-linear terms are statistically significant at the 10% level.

Some evidence in favour of non-linearity comes from considering more sophisticated threshold effects. Models allowing for a steeper slope of the Phillips curve when slack is outside certain bounds help fit the data even when including expectations and imported inflation in the specification. This is the case both when the output gap and when the unemployment gap are used as measures of slack. Using regime-switching Phillips curves, where the slope is allowed to change with the level of the output gap, some evidence of non-linearity was found for the euro area.¹¹⁴

3 The drivers of euro area underlying inflation implied by Phillips curve models

Phillips curve models can provide a historical perspective on the relative importance of the main drivers of underlying inflation. Chart 5 summarises the lessons that can be drawn from the thick modelling approach presented in the previous section by showing the average contributions to inflation (all in terms of

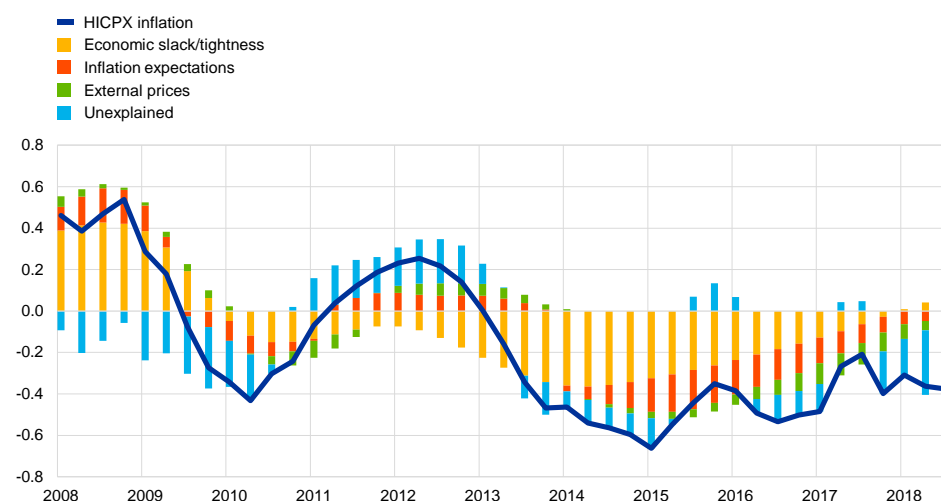
¹¹⁴ Gross, M. and Semmler, W., "Mind the output gap: the disconnect of growth and inflation during recessions and convex Phillips curves in the euro area", *Working Paper Series*, No 2004, ECB, 2017.

deviations from their historical averages) of its three main drivers across all models considered.¹¹⁵ At the onset of the Great Financial Crisis, underlying inflation was well above its historical average, largely explained by the economy running at above normal capacity (see the large contributions from economic tightness). However, as early as the second half of 2009, the inflation gap – the deviation of inflation from its mean – turned negative. To a certain extent, this was due to increasing levels of slack with the unfolding of the ensuing recession, and also to a slight softening of inflation expectations, but part of the weakness cannot be accounted for by our explanatory variables.

Chart 5

Phillips curve-based decomposition of underlying inflation

(annual percentage changes and percentage point contributions; all values in terms of deviations from their averages since 1999)



Source: ECB calculations.

Notes: The bars show average contributions across all the models considered in Section 2. Contributions are derived as in Yellen, J.L., "Inflation Dynamics and Monetary Policy", speech at the Philip Gamble Memorial Lecture, University of Massachusetts, Amherst, 24 September 2015.

The missing disinflation and missing inflation episodes are partly reflected in Phillips curve estimates. The evidence presented in Chart 5 supports the missing disinflation narrative from 2011 onwards, when a large unexplained positive contribution to underlying inflation begins to appear. One explanation put forward for this pointed to a larger impact from external factors during the recovery phase than simple Phillips curve models could capture.¹¹⁶ In the course of 2013, underlying inflation fell well below its historical average, where it has remained until the present day. The Phillips curve models lend some support to this missing inflation puzzle, as the negative contributions from the residuals indicate the models' inability to fully account for the weakness in inflation over almost the entire period. One explanation is related to "pent-up restraints": while declines in prices and wages during the recession were limited due to downward nominal rigidities, in the early phases of the recovery,

¹¹⁵ This is an ex post analysis involving the full sample, but a real-time one would have painted a similar picture for the low-inflation period.

¹¹⁶ Constâncio (2015), op. cit.; Ciccarelli and Osbat, eds. (2017), op. cit.; and Bobeica and Jarociński (2019), op. cit. Increases in VAT in some euro area countries over the period could also account for part of this unexplained contribution, but only to a limited extent.

price and wage inflation may have been correspondingly subdued.¹¹⁷ In other words, the missing inflation could have been a consequence of the missing disinflation period, at least in the initial stages of the economic recovery.

Nevertheless, except for the last year or so, estimated Phillips curves can account for much of the weakness in underlying inflation since 2013, imputing the bulk of it to its key determinants rather than to unexplained residuals. The relative importance of the three key inflation drivers has changed throughout this period. Based on the average contributions across models in Chart 5, the drag coming from economic slack dominated the picture in the early part of the period, and continued to play a (diminishing) role until spare capacity in the euro area was largely absorbed. As underlying inflation continued to turn out well below its historical average, some of its weakness began being attributed to lower short-to-medium-term inflation expectations, which exerted a mild drag up to recent quarters. External developments, in the form of lower oil, commodity and other import prices, also began gradually to feed through to underlying inflation. While the negative contributions of these factors had largely faded by early 2018, underlying inflation remained weak throughout 2018.

The more recent weakness in underlying inflation is difficult to explain within the Phillips curve framework. Even within our thick modelling framework, the narrative summarised in Chart 5 is subject to a large degree of uncertainty, as different models impute inflation developments to different factors at any given point in time. In the following subsections, we provide a quantification of the uncertainty around the contributions of slack, inflation expectations and external prices to inflation, and also review some of the economic sources of such uncertainty. The overall picture that emerges is that uncertainty surrounding individual drivers could potentially account for some of the unexplained residuals in Chart 5 until mid-2017, but given the fading contributions of all three main drivers, the more recent weakness in underlying inflation cannot be accounted for by standard Phillips curve models.

3.1 Slack

Slack played a leading role in explaining underlying inflation from 2013 until 2016. Given the euro area sovereign debt crisis in 2010 and the ensuing recession (2011-2014), it is understandable that explanations of inflation over that period focus on the role of domestic drivers, especially slack, in the euro area.¹¹⁸ Nevertheless, Phillips curve models do not paint the full picture; the initial *fall* in underlying inflation after mid-2012 was unexpected, and although slack can account for the bulk of it in Chart 5, unexplained factors also played a major role.¹¹⁹ Furthermore, the range of contributions of slack to inflation across the 550 models that we estimate is particularly wide over that period (see Chart 6). Two explanations for the difficulty in explaining

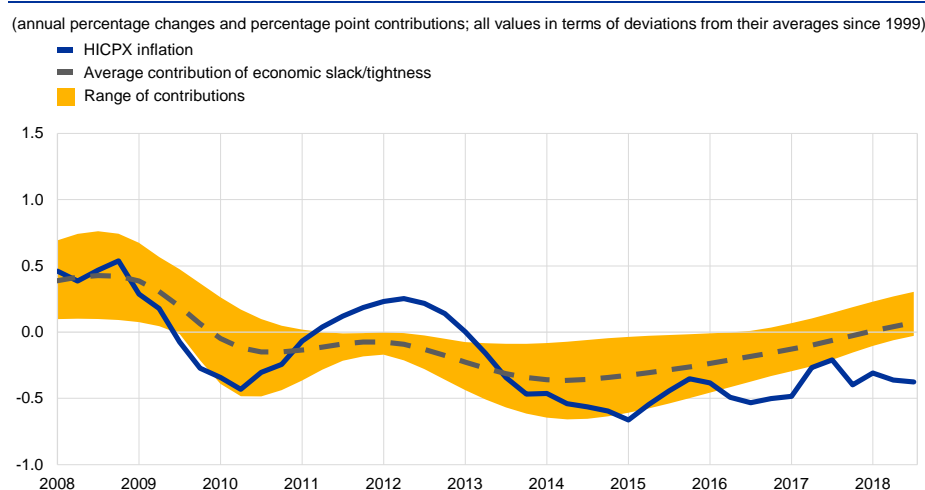
¹¹⁷ Praet, P., "Price stability: a sinking will-o'-the-wisp?", IMF Spring Meetings Seminar, Washington, D.C., 16 April 2015.

¹¹⁸ Ciccarelli and Osbat, eds. (2017), op. cit.

¹¹⁹ This is a point about *changes in*, rather than the *level of*, inflation: the main contributor to the peak-to-trough *fall* in inflation is the change in the contribution from the residual rather than that from slack.

inflation over that period using simple Phillips curve models are a steepening of the euro area Phillips curve (whereby inflation would follow the business cycle much more closely) and/or a mismeasurement of slack (namely more slack than captured by standard measures).

Chart 6
Range of contributions of slack to underlying inflation



Source: ECB calculations.

Notes: The shaded area shows the range of contributions of measures of economic slack/tightness to underlying inflation across the 550 models that we estimate (see Section 2); the broken grey line shows the average contribution, which corresponds to the yellow bars in Chart 5. Contributions are derived as in Yellen, J.L., "Inflation Dynamics and Monetary Policy", speech at the Philip Gamble Memorial Lecture, University of Massachusetts, Amherst, 24 September 2015.

Changes in Phillips curve slopes and potential mismeasurement of slack add to the uncertainty surrounding the contribution of slack to inflation. As early as 2014,¹²⁰ the ECB discussed the possibility of a stronger relationship between inflation and slack, and lower nominal rigidities in some euro area countries due to structural reforms¹²¹ being implemented are consistent with such a view. Nevertheless, it is challenging to distinguish a change in the Phillips curve slope from a mismeasurement of slack. Alternative estimates of slack, where the output gap is required to be consistent with inflation dynamics within a stable Phillips curve relationship, would have to have been much larger over the missing inflation period.¹²² Also, the legacy of the prolonged euro area sovereign debt crisis suggested that the full extent of slack in the labour market could be better captured by broadening the range of labour market indicators, also taking into account workers who became discouraged or worked part-time for economic reasons, but Phillips curves estimated with such measures would still show negative residuals in the more recent period.¹²³ Moreover, real-time estimates of economic slack can be subject to large measurement error, and revisions are common.¹²⁴ Notwithstanding all these sources of uncertainty, Chart 6 suggests

¹²⁰ ECB (2014), op. cit.

¹²¹ Izquierdo, M., Jimeno, J.F., Kosma, T., Lamo, A., Millard, S., Rööm, T. and Viviano, E., "Labour market adjustment in Europe during the crisis: microeconomic evidence from the Wage Dynamics Network survey", *Occasional Paper Series*, No 192, ECB, June 2017.

¹²² Jarociński and Lenza (2018), op. cit.

¹²³ Cœuré, B., "Scars or scratches? Hysteresis in the euro area", speech at the International Center for Monetary and Banking Studies, Geneva, 19 May 2017. This argument is one of the reasons for including broad unemployment measures in our estimates (see the notes to Chart 4).

¹²⁴ See Szörfi and Tóth (2018), op. cit.

that, over the most recent period, the drag from slack has dissipated, making it difficult to look to this factor to account for the unexplained negative residuals in Chart 5 in the last year of the sample.

3.2 Inflation expectations

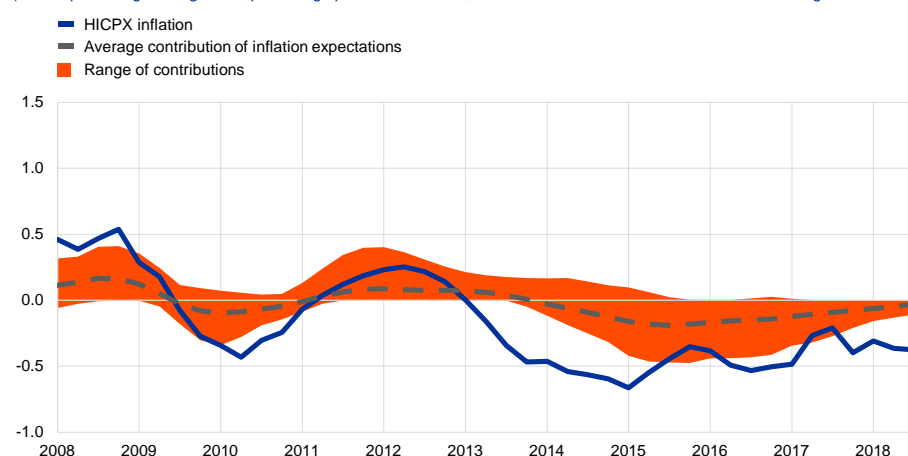
The decline in survey-based measures of inflation expectations after 2013 raised some concerns that the Phillips curve had shifted downwards, but the message from our estimates is mixed. Over the period from 2014 to mid-2017, Chart 5 shows that inflation expectations might have contributed to the drag on underlying inflation. Nevertheless, as discussed in Section 2, available measures of expectations are imperfect and it is sometimes difficult to interpret the signal they provide for inflation. Chart 7 highlights this uncertainty within our thick modelling framework. The range of the contributions of expectations over the 2014-2017 period can be wide at times, reflecting the fact that it covers measures with various forecast horizons, including both short-to-medium-term survey-based inflation expectations (which can be noisier and more closely trail developments in past inflation) and long-term measures of survey inflation expectations (which, by comparison, have been more stable).

The most recent weakness in underlying inflation does not appear to be explained by developments in inflation expectations. Not only has the average contribution gradually faded towards zero, but the range of contributions across models has also become remarkably small, reflecting the gradual pick-up in the available survey-based measures of inflation expectations.

Chart 7

Range of contributions of inflation expectations to underlying inflation

(annual percentage changes and percentage point contributions; all values in terms of deviations from their averages since 1999)



Source: ECB calculations.

Notes: The shaded area shows the range of contributions of measures of inflation expectations to underlying inflation across the 550 models that we estimate (see Section 2); the broken grey line shows the average contribution, which corresponds to the red bars in Chart 5. Contributions are derived as in Yellen, J.L., "Inflation Dynamics and Monetary Policy", speech at the Philip Gamble Memorial Lecture, University of Massachusetts, Amherst, 24 September 2015.

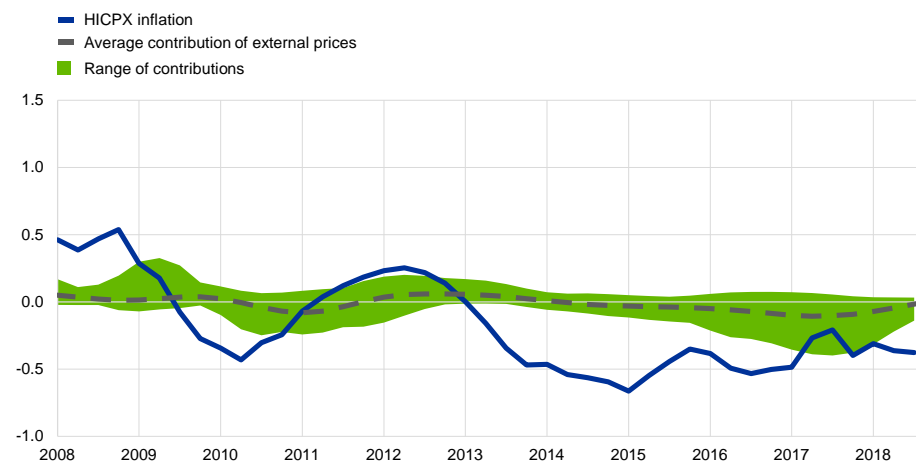
3.3 External factors

Global factors in general, and low oil and other commodity prices in particular, have featured prominently in inflation narratives over recent years.¹²⁵ Chart 5 highlights the increasing drag on underlying inflation associated with external price developments from 2015 onwards. Underlying inflation is affected by external price movements through two main channels: a direct one, via the price of imported final consumption goods; and an indirect one, via the price of imported intermediate goods used in production within the euro area. The drop in oil prices starting in mid-2014 was one of the largest since the inception of Economic and Monetary Union (EMU) and left its mark on the headline inflation profile for the subsequent years. For underlying inflation, however, the negative contributions from external price developments were relatively modest when looking at the average contribution across models, but for part of this period could have been substantially larger, according to our range of estimates (see Chart 8). However, over the last few quarters, both the average contribution and the range around it have shrunk substantially.

Chart 8

Range of contributions of external prices to underlying inflation

(annual percentage changes and percentage point contributions; all values in terms of deviations from their averages since 1999)



Source: ECB calculations.

Notes: The shaded area shows the range of contributions of measures of external prices to underlying inflation across the 550 models that we estimate (see Section 2); the broken grey line shows the average contribution, which corresponds to the green bars in Chart 5. Contributions are derived as in Yellen, J.L., "Inflation Dynamics and Monetary Policy", speech at the Philip Gamble Memorial Lecture, University of Massachusetts, Amherst, 24 September 2015.

Global influences on domestic inflation could extend beyond what can be captured by import and commodity prices alone, but the empirical evidence on additional channels is mixed. In a globalising world, the inflation process might reflect increased trade flows, the integration of emerging economies into the world economy and the rise of global value chains shifting parts of production abroad. All these phenomena can affect inflation via numerous channels, potentially with long lags, and capturing their influence within a traditional Phillips curve model can be empirically challenging. ECB (2017) finds some support for including global measures of slack in a thick modelling Phillips curve framework, but overall the explanatory gains

¹²⁵ For example, "External environment", *Economic Bulletin*, Issue 8, ECB, 2015, noted that "global inflation has remained very low, reflecting the fall in oil prices".

appear to be limited.¹²⁶ However, despite the mixed empirical results, the relatively low dispersion of inflation rates across different economies, including in the case of underlying inflation (see Chart 9), suggests that broader structural drivers may be shaping inflation worldwide in ways that are yet to be fully grasped.¹²⁷

Chart 9

Dispersion of underlying inflation rates in OECD countries since 1999



Sources: Haver Analytics, ECB and Eurostat.
 Note: The line shows the standard deviation across OECD countries excluding Turkey and Slovenia.

4 Conclusions

Phillips curve models provide a useful and intuitive framework for understanding and communicating inflation developments. We employ a parsimonious, yet not overly simplistic specification that spans the key determinants of inflation beyond the level of economic activity. We combine it with a thick modelling approach that mitigates some of the pervasive model uncertainty, allowing us to draw a more robust inference about the strength of the relationship between inflation and its drivers. Our results provide a plausible narrative for the evolution of underlying inflation in the euro area since the onset of the Great Financial Crisis.

Estimated Phillips curves can account for much of the weakness in underlying inflation between 2013 and mid-2017, while the more recent weakness in underlying inflation remains largely unexplained. The average contributions of slack, inflation expectations and external prices across all estimated models can account for the bulk of the deviations of underlying inflation from its historical average over large spans of the period we consider. However, given the fading contributions of all three factors and the narrowing of uncertainty ranges around them over the most recent period, the persistent weakness in underlying inflation highlights the need for other, complementary, approaches.

¹²⁶ See “Domestic and global drivers of inflation in the euro area”, *Economic Bulletin*, Issue 4, ECB, 2017; and Nickel, C., “The role of foreign slack in domestic inflation in the Eurozone”, VOX, CEPR Policy Portal, 28 July 2017.

¹²⁷ See also Forbes (2019), op. cit.

Like any other analytical tool, Phillips curves also have limitations and shortcomings. For example, while being intuitive and transparent, reduced-form estimates are, by nature, partial-equilibrium and thus open to both theoretical and empirical objections. Furthermore, to remain tractable, they inevitably miss many aspects (for example, fiscal policy and financial factors) that could nonetheless be important for explaining underlying inflation but require more sophisticated modelling approaches. Finally, statistical and measurement issues can also cause instability in Phillips curve relationships over specific periods of time. Despite these shortcomings, Phillips curve models are an integral part of a much broader analytical toolkit deployed by central banks to understand the inflation process. They have often provided relevant insights, at times leading the way for more sophisticated approaches and at other times offering a cross-check for analyses or forecasts originating elsewhere. The very lively debate surrounding them bears testimony to their usefulness.

Statistics

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6 Fiscal developments	S 23

Further information

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

Conventions used in the tables

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

1 External environment

1.1 Main trading partners, GDP and CPI

	GDP ¹⁾ (period-on-period percentage changes)						CPI (annual percentage changes)							
	G20	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area ²⁾ (HICP)	
							Total	excluding food and energy						
	1	2	3	4	5	6	7	8	9	10	11	12	13	
2016	3.3	1.6	1.8	0.6	6.7	1.9	1.1	1.8	1.3	0.7	-0.1	2.0	0.2	
2017	3.8	2.2	1.8	1.9	6.8	2.4	2.2	1.8	2.1	2.7	0.5	1.6	1.5	
2018	3.7	3.0	1.4	0.8	6.6	1.9	2.6	2.1	2.4	2.5	1.0	2.1	1.8	
2018 Q2	0.9	1.0	0.4	0.5	1.7	0.4	2.5	2.0	2.7	2.4	0.7	1.8	1.7	
Q3	0.8	0.8	0.7	-0.6	1.6	0.1	2.9	2.2	2.6	2.5	1.1	2.3	2.1	
Q4	0.8	0.5	0.2	0.4	1.5	0.2	2.7	2.3	2.2	2.3	0.8	2.2	1.9	
2019 Q1	.	0.8	0.5	0.5	1.4	0.4	2.1	2.1	1.6	.	0.3	1.8	1.4	
2018 Dec.	.	.	.	.	.	.	2.4	2.2	1.9	2.1	0.3	1.9	1.5
2019 Jan.	.	.	.	.	.	.	2.1	2.2	1.6	1.8	0.2	1.7	1.4
Feb.	.	.	.	.	.	.	2.1	2.1	1.5	1.9	0.2	1.5	1.5
Mar.	.	.	.	.	.	.	2.3	2.1	1.9	1.9	0.5	2.3	1.4
Apr.	.	.	.	.	.	.	2.5	2.2	2.0	2.1	0.9	2.5	1.7
May ³⁾	1.2	

Sources: Eurostat (col. 3, 6, 10, 13); BIS (col. 9, 11, 12); OECD (col. 1, 2, 4, 5, 7, 8).

1) Quarterly data seasonally adjusted; annual data unadjusted.

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

3) The figure for the euro area is an estimate based on provisional national data, as well as on early information on energy prices.

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

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports ¹⁾		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index ²⁾			Global	Advanced economies	Emerging market economies
	Global ²⁾	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders			
	1	2	3	4	5	6	7	8	9	10	11	12
2016	51.6	52.4	53.4	50.5	51.4	53.3	51.7	52.0	50.1	1.2	1.4	1.0
2017	53.2	54.3	54.7	52.5	51.8	56.4	53.8	53.8	52.8	5.9	3.2	7.7
2018	53.4	55.0	53.3	52.1	52.3	54.6	53.1	53.8	50.9	4.3	3.1	5.1
2018 Q2	53.9	55.9	54.3	52.3	52.5	54.7	53.1	54.2	50.3	-0.3	-0.7	0.0
Q3	53.1	54.8	53.9	51.5	52.1	54.3	52.6	53.2	49.8	1.8	0.7	2.5
Q4	53.1	54.7	51.4	52.3	51.5	52.3	52.0	53.5	49.9	-1.0	1.4	-2.5
2019 Q1	52.8	54.8	50.6	50.6	51.5	51.5	50.9	53.4	49.6	-0.6	-0.2	-0.8
2018 Dec.	53.1	54.4	51.4	52.0	52.2	51.1	52.1	53.4	50.0	-1.0	1.4	-2.5
2019 Jan.	52.4	54.4	50.3	50.9	50.9	51.0	50.9	52.9	49.6	-2.2	0.6	-4.0
Feb.	52.8	55.5	51.5	50.7	50.7	51.9	50.9	53.5	49.5	-1.7	0.7	-3.3
Mar.	53.1	54.6	50.0	50.4	52.9	51.6	50.9	53.8	49.7	-0.6	-0.2	-0.8
Apr.	52.3	53.0	50.9	50.8	52.7	51.5	51.1	52.7	49.6	.	.	.
May	.	50.9	.	50.7	51.5	51.8	50.3	.	49.4	.	.	.

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

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

2) Excluding the euro area.

2 Financial developments

2.1 Money market interest rates

(percentages per annum; period averages)

	Euro area ¹⁾					United States	Japan
	Overnight deposits (EONIA)	1-month deposits (EURIBOR)	3-month deposits (EURIBOR)	6-month deposits (EURIBOR)	12-month deposits (EURIBOR)	3-month deposits (LIBOR)	3-month deposits (LIBOR)
	1	2	3	4	5	6	7
2016	-0.32	-0.34	-0.26	-0.17	-0.03	0.74	-0.02
2017	-0.35	-0.37	-0.33	-0.26	-0.15	1.26	-0.02
2018	-0.36	-0.37	-0.32	-0.27	-0.17	2.31	-0.05
2018 Nov.	-0.36	-0.37	-0.32	-0.26	-0.15	2.65	-0.10
Dec.	-0.36	-0.37	-0.31	-0.24	-0.13	2.79	-0.10
2019 Jan.	-0.37	-0.37	-0.31	-0.24	-0.12	2.77	-0.08
Feb.	-0.37	-0.37	-0.31	-0.23	-0.11	2.68	-0.08
Mar.	-0.37	-0.37	-0.31	-0.23	-0.11	2.61	-0.07
Apr.	-0.37	-0.37	-0.31	-0.23	-0.11	2.59	-0.06
May	-0.37	-0.37	-0.31	-0.24	-0.13	2.53	-0.07

Source: ECB.

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

2.2 Yield curves

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

	Spot rates					Spreads			Instantaneous forward rates			
	Euro area ^{1), 2)}					Euro area ^{1), 2)}	United States	United Kingdom	Euro area ^{1), 2)}			
	3 months	1 year	2 years	5 years	10 years	10 years - 1 year	10 years - 1 year	10 years - 1 year	1 year	2 years	5 years	10 years
	1	2	3	4	5	6	7	8	9	10	11	12
2016	-0.93	-0.82	-0.80	-0.47	0.26	1.08	1.63	1.17	-0.78	-0.75	0.35	1.35
2017	-0.78	-0.74	-0.64	-0.17	0.52	1.26	0.67	0.83	-0.66	-0.39	0.66	1.56
2018	-0.80	-0.75	-0.66	-0.26	0.32	1.07	0.08	0.51	-0.67	-0.45	0.44	1.17
2018 Nov.	-0.67	-0.70	-0.64	-0.23	0.37	1.06	0.30	0.57	-0.68	-0.45	0.50	1.28
Dec.	-0.80	-0.75	-0.66	-0.26	0.32	1.07	0.08	0.51	-0.67	-0.45	0.44	1.17
2019 Jan.	-0.58	-0.60	-0.58	-0.32	0.19	0.79	0.08	0.45	-0.61	-0.50	0.24	1.00
Feb.	-0.57	-0.57	-0.54	-0.28	0.23	0.80	0.17	0.49	-0.56	-0.44	0.27	1.06
Mar.	-0.57	-0.61	-0.62	-0.45	-0.01	0.60	0.00	0.35	-0.64	-0.59	-0.02	0.75
Apr.	-0.56	-0.60	-0.59	-0.39	0.08	0.67	0.12	0.43	-0.62	-0.54	0.08	0.88
May	-0.57	-0.64	-0.69	-0.56	-0.13	0.51	-0.08	0.24	-0.72	-0.72	-0.17	0.64

Source: ECB.

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

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

2.3 Stock market indices

(index levels in points; period averages)

	Dow Jones EURO STOXX indices												United States	Japan
	Benchmark		Main industry indices										Standard & Poor's 500	Nikkei 225
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2016	321.6	3,003.7	620.7	250.9	600.1	278.9	148.7	496.0	375.8	248.6	326.9	770.9	2,094.7	16,920.5
2017	376.9	3,491.0	757.3	268.6	690.4	307.9	182.3	605.5	468.4	272.7	339.2	876.3	2,449.1	20,209.0
2018	375.5	3,386.6	766.3	264.9	697.3	336.0	173.1	629.5	502.5	278.8	292.9	800.5	2,746.2	22,310.7
2018 Nov.	351.3	3,186.4	692.3	258.1	649.3	328.6	157.2	589.4	459.6	277.1	293.9	757.5	2,723.2	21,967.9
Dec.	335.2	3,057.8	646.7	247.8	624.8	311.8	146.9	556.0	441.5	283.5	296.3	719.4	2,567.3	21,032.4
2019 Jan.	340.5	3,088.7	662.2	252.1	630.4	315.4	150.2	570.3	448.1	293.2	288.0	718.3	2,607.4	20,460.5
Feb.	355.0	3,223.1	699.4	266.4	667.5	329.9	152.9	598.9	480.6	301.7	285.8	743.0	2,754.9	21,123.6
Mar.	365.7	3,332.9	718.3	272.1	692.2	339.9	157.6	621.0	493.4	307.8	297.0	755.1	2,804.0	21,414.9
Apr.	379.0	3,458.8	750.9	277.8	731.0	341.6	163.8	652.7	522.5	311.9	296.9	749.6	2,903.8	21,964.9
May	369.4	3,385.4	710.2	267.4	721.6	324.7	157.0	643.9	519.6	312.0	290.9	732.7	2,854.7	21,218.4

Source: ECB.

2 Financial developments

2.4 MFI interest rates on loans to and deposits from households (new business) ^{1), 2)}

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

	Deposits				Revolving loans and overdrafts	Extended credit card credit	Loans for consumption			Loans to sole proprietors and unincorporated partnerships	Loans for house purchase				Composite cost-of-borrowing indicator	
	Over-night	Redeemable at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation	APRC ³⁾	By initial period of rate fixation				APRC ³⁾			
			Up to 2 years	Over 2 years					Floating rate and up to 1 year		Over 1 year	Floating rate and up to 1 year		Over 1 and up to 5 years		Over 5 and up to 10 years	Over 10 years
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
2018 May	0.04	0.46	0.34	0.57	6.09	16.86	4.83	5.88	6.39	2.38	1.58	1.85	1.97	1.90	2.13	1.83
June	0.03	0.46	0.34	0.63	6.04	16.84	4.51	5.64	6.11	2.27	1.60	1.81	1.97	1.88	2.12	1.82
July	0.03	0.46	0.33	0.64	6.00	16.80	4.85	5.75	6.22	2.40	1.63	1.83	1.93	1.85	2.12	1.81
Aug.	0.03	0.45	0.30	0.64	6.01	16.78	5.44	5.88	6.41	2.38	1.63	1.82	1.92	1.85	2.11	1.81
Sep.	0.03	0.45	0.30	0.69	6.04	16.71	5.30	5.74	6.27	2.33	1.60	1.81	1.91	1.85	2.08	1.79
Oct.	0.03	0.45	0.29	0.73	5.97	16.73	5.06	5.71	6.23	2.45	1.60	1.80	1.91	1.86	2.09	1.80
Nov.	0.04	0.44	0.29	0.73	5.93	16.67	4.93	5.68	6.18	2.37	1.61	1.85	1.94	1.88	2.11	1.81
Dec.	0.03	0.43	0.30	0.78	5.87	16.68	4.92	5.47	5.98	2.27	1.61	1.80	1.91	1.84	2.10	1.80
2019 Jan.	0.03	0.42	0.33	0.75	5.92	16.63	5.32	5.83	6.34	2.36	1.61	1.81	1.89	1.86	2.09	1.82
Feb.	0.03	0.42	0.32	0.71	5.97	16.61	5.28	5.71	6.28	2.41	1.59	1.84	1.87	1.84	2.09	1.80
Mar.	0.03	0.41	0.30	0.78	5.90	16.65	5.41	5.61	6.18	2.36	1.60	1.80	1.83	1.81	2.06	1.78
Apr. ^(p)	0.03	0.40	0.32	0.77	5.88	16.66	5.56	5.63	6.19	2.36	1.60	1.77	1.77	1.77	2.02	1.75

Source: ECB.

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

2) Including non-profit institutions serving households.

3) Annual percentage rate of charge (APRC).

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

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

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Over-night	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
2018 May	0.03	0.08	0.44	2.29	2.30	2.48	2.37	1.66	1.61	1.73	1.08	1.22	1.65	1.62
June	0.04	0.07	0.74	2.29	2.26	2.45	2.30	1.64	1.56	1.69	1.21	1.33	1.70	1.68
July	0.03	0.08	0.39	2.27	2.15	2.42	2.25	1.68	1.59	1.66	1.14	1.30	1.65	1.63
Aug.	0.03	0.08	0.61	2.25	2.19	2.43	2.32	1.67	1.63	1.73	1.10	1.27	1.69	1.63
Sep.	0.03	0.08	0.44	2.22	2.21	2.35	2.31	1.65	1.54	1.67	1.13	1.40	1.69	1.65
Oct.	0.03	0.06	0.52	2.22	2.13	2.43	2.33	1.66	1.60	1.69	1.23	1.10	1.66	1.64
Nov.	0.03	0.06	0.63	2.19	2.19	2.40	2.34	1.67	1.60	1.67	1.20	1.35	1.69	1.66
Dec.	0.03	0.07	0.53	2.18	2.20	2.29	2.25	1.60	1.59	1.67	1.21	1.39	1.59	1.63
2019 Jan.	0.03	0.08	0.55	2.22	2.15	2.40	2.32	1.67	1.62	1.72	1.13	1.30	1.61	1.63
Feb.	0.03	0.07	0.52	2.21	2.15	2.41	2.33	1.65	1.63	1.70	1.13	1.38	1.56	1.64
Mar.	0.03	0.12	0.62	2.17	2.17	2.38	2.30	1.66	1.58	1.68	1.19	1.36	1.57	1.65
Apr. ^(p)	0.03	0.09	0.55	2.19	2.19	2.36	2.26	1.68	1.60	1.64	1.16	1.33	1.41	1.62

Source: ECB.

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

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

2 Financial developments

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

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

	Outstanding amounts							Gross issues ¹⁾						
	Total	MFIs (including Euro- system)	Non-MFI corporations			General government		Total	MFIs (including Euro- system)	Non-MFI corporations			General government	
			Financial corporations other than MFIs	FVCs	Non- financial corporations	Central govern- ment	Other general govern- ment			Financial corporations other than MFIs	FVCs	Non- financial corporations	Central govern- ment	Other general govern- ment
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Short-term														
2016	1,241	518	135	.	59	466	62	349	161	45	.	31	79	33
2017	1,240	519	155	.	70	438	57	367	167	54	.	37	79	31
2018	1,219	505	171	.	72	424	47	388	171	64	.	41	76	35
2018 Oct.	1,285	529	172	.	92	439	54	426	185	80	.	46	77	38
Nov.	1,278	523	169	.	89	445	52	361	155	65	.	37	74	31
Dec.	1,219	505	171	.	72	424	47	283	107	71	.	36	44	26
2019 Jan.	1,288	541	166	.	88	435	58	473	221	66	.	50	98	38
Feb.	1,268	539	161	.	94	419	55	377	189	59	.	42	63	24
Mar.	1,308	564	156	.	98	435	55	407	186	58	.	45	79	40
Long-term														
2016	15,379	3,695	3,175	.	1,184	6,684	641	220	62	53	.	19	78	8
2017	15,360	3,560	3,049	.	1,243	6,865	642	247	66	73	.	18	83	7
2018	15,750	3,688	3,150	.	1,265	7,020	626	229	64	68	.	16	75	6
2018 Oct.	15,718	3,665	3,135	.	1,264	7,026	628	223	60	70	.	14	69	10
Nov.	15,798	3,689	3,164	.	1,262	7,054	629	230	66	79	.	7	72	7
Dec.	15,750	3,688	3,150	.	1,265	7,020	626	193	60	95	.	15	20	3
2019 Jan.	15,817	3,712	3,150	.	1,263	7,067	625	282	106	41	.	16	109	9
Feb.	15,936	3,744	3,164	.	1,274	7,121	632	289	99	50	.	14	115	11
Mar.	15,987	3,747	3,186	.	1,288	7,124	641	262	76	56	.	25	88	17

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												
2016	16,620.1	4,213.3	3,310.0	.	1,243.3	7,149.9	703.7	7,089.5	537.6	1,080.2	5,471.6	
2017	16,599.9	4,079.6	3,204.2	.	1,312.6	7,303.6	699.9	7,954.7	612.5	1,249.6	6,092.6	
2018	16,968.7	4,192.6	3,321.1	.	1,337.8	7,444.5	672.7	7,027.1	465.1	1,099.4	5,462.6	
2018 Oct.	17,003.0	4,194.0	3,306.7	.	1,355.5	7,464.7	682.0	7,546.6	515.4	1,202.1	5,829.2	
Nov.	17,075.9	4,211.7	3,333.4	.	1,351.0	7,498.8	681.0	7,475.0	512.1	1,179.4	5,783.4	
Dec.	16,968.7	4,192.6	3,321.1	.	1,337.8	7,444.5	672.7	7,027.1	465.1	1,099.4	5,462.6	
2019 Jan.	17,105.0	4,253.3	3,315.9	.	1,350.7	7,502.1	683.1	7,482.9	487.0	1,185.1	5,810.9	
Feb.	17,203.9	4,282.9	3,325.7	.	1,367.9	7,540.9	686.5	7,715.8	518.7	1,225.1	5,972.0	
Mar.	17,294.5	4,311.1	3,341.9	.	1,386.4	7,559.4	695.7	7,764.2	495.8	1,230.8	6,037.6	
Growth rate												
2016	0.3	-3.0	-1.2	.	6.2	2.2	-0.1	0.5	1.2	0.9	0.4	
2017	1.3	-0.5	0.1	.	5.9	2.2	0.5	1.0	6.1	2.8	0.2	
2018	2.0	1.7	3.3	.	3.3	1.9	-4.3	0.8	-0.1	2.8	0.4	
2018 Oct.	2.1	0.9	3.0	.	4.7	2.4	-3.1	0.9	0.5	3.1	0.5	
Nov.	2.2	1.3	3.6	.	3.5	2.4	-3.6	0.9	0.4	2.9	0.5	
Dec.	2.0	1.7	3.3	.	3.3	1.9	-4.3	0.8	-0.1	2.8	0.4	
2019 Jan.	2.1	2.1	2.3	.	3.5	2.3	-2.7	0.7	-0.1	2.7	0.4	
Feb.	2.6	2.9	2.4	.	4.6	2.5	-1.6	0.6	-0.1	2.6	0.3	
Mar.	2.4	2.9	2.4	.	3.7	2.1	0.0	0.4	-0.2	1.7	0.2	

Source: ECB.

2 Financial developments

2.8 Effective exchange rates ¹⁾

(period averages; index: 1999 Q1=100)

	EER-19						EER-38	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM ²⁾	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2016	94.4	89.5	90.9	85.1	79.1	89.3	109.7	88.9
2017	96.6	91.4	92.0	86.0	78.5	89.8	112.0	90.0
2018	98.9	93.4	93.5	87.6	79.6	91.0	117.9	93.8
2018 Q2	98.4	93.1	93.1	87.2	79.1	90.5	117.0	93.4
Q3	99.2	93.7	93.5	87.8	79.6	91.3	119.2	94.8
Q4	98.5	93.0	93.0	87.2	79.2	90.6	118.4	93.8
2019 Q1	97.4	91.6	92.3	.	.	.	116.7	92.1
2018 Dec.	98.4	92.7	93.0	-	-	-	118.0	93.3
2019 Jan.	97.8	92.1	92.8	-	-	-	117.3	92.7
Feb.	97.4	91.7	92.4	-	-	-	116.6	92.0
Mar.	96.9	91.1	91.7	-	-	-	116.2	91.5
Apr.	96.7	91.0	91.2	-	-	-	116.1	91.5
May	97.4	91.6	91.7	-	-	-	117.0	92.1
	<i>Percentage change versus previous month</i>							
2019 May	0.7	0.7	0.5	-	-	-	0.8	0.8
	<i>Percentage change versus previous year</i>							
2019 May	-0.7	-1.2	-1.1	-	-	-	0.3	-1.1

Source: ECB.

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

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

2.9 Bilateral exchange rates

(period averages; units of national currency per euro)

	Chinese renminbi	Croatian kuna	Czech koruna	Danish krone	Hungarian forint	Japanese yen	Polish zloty	Pound sterling	Romanian leu	Swedish krona	Swiss franc	US Dollar
	1	2	3	4	5	6	7	8	9	10	11	12
2016	7.352	7.533	27.034	7.445	311.438	120.197	4.363	0.819	4.4904	9.469	1.090	1.107
2017	7.629	7.464	26.326	7.439	309.193	126.711	4.257	0.877	4.5688	9.635	1.112	1.130
2018	7.808	7.418	25.647	7.453	318.890	130.396	4.261	0.885	4.6540	10.258	1.155	1.181
2018 Q2	7.602	7.398	25.599	7.448	317.199	130.045	4.262	0.876	4.6532	10.330	1.174	1.191
Q3	7.915	7.417	25.718	7.455	324.107	129.606	4.303	0.892	4.6471	10.405	1.144	1.163
Q4	7.895	7.420	25.864	7.462	322.995	128.816	4.299	0.887	4.6605	10.320	1.137	1.141
2019 Q1	7.663	7.422	25.683	7.464	317.907	125.083	4.302	0.873	4.7358	10.419	1.132	1.136
2018 Dec.	7.840	7.404	25.835	7.465	322.738	127.878	4.290	0.898	4.6536	10.277	1.129	1.138
2019 Jan.	7.750	7.429	25.650	7.466	319.800	124.341	4.292	0.886	4.7062	10.269	1.130	1.142
Feb.	7.649	7.415	25.726	7.463	317.908	125.280	4.318	0.873	4.7486	10.499	1.137	1.135
Mar.	7.587	7.421	25.676	7.462	315.924	125.674	4.297	0.858	4.7546	10.500	1.131	1.130
Apr.	7.549	7.428	25.677	7.465	321.181	125.436	4.286	0.862	4.7584	10.482	1.132	1.124
May	7.674	7.419	25.768	7.468	324.978	122.948	4.296	0.872	4.7594	10.737	1.130	1.118
	<i>Percentage change versus previous month</i>											
2019 May	1.7	-0.1	0.4	0.0	1.2	-2.0	0.2	1.2	0.0	2.4	-0.1	-0.5
	<i>Percentage change versus previous year</i>											
2019 May	1.9	0.4	0.5	0.3	2.5	-5.1	0.3	-0.6	2.6	3.8	-4.0	-5.3

Source: ECB.

2 Financial developments

2.10 Euro area balance of payments, financial account

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

	Total ¹⁾			Direct investment		Portfolio investment		Net financial derivatives	Other investment		Reserve assets	Memo: Gross external debt
	Assets	Liabilities	Net	Assets	Liabilities	Assets	Liabilities		Assets	Liabilities		
	1	2	3	4	5	6	7	8	9	10	11	12
<i>Outstanding amounts (international investment position)</i>												
2018 Q1	25,012.2	25,790.4	-778.2	10,751.0	8,857.7	8,530.2	10,921.1	-75.7	5,133.5	6,011.6	673.2	14,172.3
Q2	25,656.6	26,284.2	-627.5	10,965.4	9,014.8	8,742.7	10,986.3	-83.3	5,341.8	6,283.1	690.0	14,410.2
Q3	25,805.4	26,314.1	-508.7	10,913.3	8,916.3	8,886.5	11,069.5	-64.4	5,396.1	6,328.3	673.9	14,463.0
Q4	25,023.4	25,460.8	-437.4	10,562.7	8,777.2	8,467.0	10,424.1	-79.1	5,353.8	6,259.5	719.1	14,185.2
<i>Outstanding amounts as a percentage of GDP</i>												
2018 Q4	216.2	220.0	-3.8	91.3	75.8	73.2	90.1	-0.7	46.3	54.1	6.2	122.6
<i>Transactions</i>												
2018 Q2	197.6	154.6	43.0	39.2	21.2	0.5	-51.2	38.4	112.9	184.7	6.6	-
Q3	27.1	-60.0	87.1	-116.2	-102.3	43.9	-0.5	35.4	62.8	42.7	1.2	-
Q4	-338.0	-423.6	85.5	-208.3	-134.6	-55.6	-161.5	29.5	-109.5	-127.5	5.8	-
2019 Q1	264.4	211.0	53.4	37.1	20.7	56.2	112.1	15.7	152.2	78.2	3.2	-
2018 Oct.	62.4	89.9	-27.5	33.6	14.6	-30.2	-14.9	7.0	52.8	90.2	-0.7	-
Nov.	-45.0	-97.0	51.9	-106.1	-70.5	1.9	-12.3	16.0	39.8	-14.2	3.5	-
Dec.	-355.4	-416.5	61.1	-135.7	-78.8	-27.2	-134.3	6.6	-202.1	-203.4	3.1	-
2019 Jan.	219.4	216.8	2.6	-4.4	15.6	37.8	36.7	5.8	182.8	164.4	-2.7	-
Feb.	-8.4	-21.5	13.1	18.5	6.5	4.2	21.2	4.6	-36.4	-49.1	0.7	-
Mar.	53.3	15.7	37.6	22.9	-1.3	14.1	54.1	5.3	5.8	-37.1	5.2	-
<i>12-month cumulated transactions</i>												
2019 Mar.	151.0	-117.9	269.0	-248.1	-195.0	44.9	-101.1	119.1	218.3	178.1	16.8	-
<i>12-month cumulated transactions as a percentage of GDP</i>												
2019 Mar.	1.3	-1.0	2.3	-2.1	-1.7	0.4	-0.9	1.0	1.9	1.5	0.1	-

Source: ECB.

1) Net financial derivatives are included in total assets.

3 Economic activity

3.1 GDP and expenditure components

(quarterly data seasonally adjusted; annual data unadjusted)

	GDP											
	Total	Domestic demand							External balance ¹⁾			
		Total	Private consumption	Government consumption	Gross fixed capital formation			Changes in inventories ²⁾	Total	Exports ¹⁾	Imports ¹⁾	
					Total construction	Total machinery	Intellectual property products					
1	2	3	4	5	6	7	8	9	10	11	12	
<i>Current prices (EUR billions)</i>												
2016	10,833.2	10,350.7	5,878.0	2,223.9	2,210.2	1,052.9	679.1	472.1	38.5	482.5	4,946.4	4,463.9
2017	11,212.0	10,689.7	6,058.8	2,286.2	2,302.9	1,121.5	716.3	459.3	41.8	522.3	5,295.7	4,773.3
2018	11,581.0	11,076.9	6,227.5	2,350.0	2,429.9	1,195.0	753.0	476.3	69.4	504.1	5,541.8	5,037.7
2018 Q2	2,890.4	2,757.6	1,551.3	586.4	603.4	297.3	187.9	116.8	16.4	132.9	1,380.5	1,247.6
Q3	2,904.9	2,787.0	1,560.7	588.2	612.7	301.7	190.1	119.4	25.4	117.9	1,395.4	1,277.5
Q4	2,923.5	2,807.0	1,573.8	595.2	624.9	306.6	192.3	124.6	13.1	116.4	1,412.9	1,296.5
2019 Q1	2,946.9	2,820.4	1,583.0	597.7	634.0	313.2	194.5	124.9	5.8	126.5	1,420.3	1,293.8
<i>as a percentage of GDP</i>												
2018	100.0	95.6	53.8	20.3	21.0	10.3	6.5	4.1	0.6	4.4	-	-
<i>Chain-linked volumes (prices for the previous year)</i>												
<i>quarter-on-quarter percentage changes</i>												
2018 Q2	0.4	0.3	0.1	0.4	1.6	1.5	2.2	0.9	-	-	1.2	1.1
Q3	0.1	0.6	0.1	0.0	0.5	0.3	0.3	1.6	-	-	0.2	1.2
Q4	0.2	0.2	0.3	0.6	1.4	0.9	0.9	3.7	-	-	1.2	1.2
2019 Q1	0.4	0.3	0.5	0.1	1.1	1.5	1.2	-0.1	-	-	0.6	0.4
<i>annual percentage changes</i>												
2016	1.9	2.4	1.9	1.8	3.9	2.7	5.8	4.3	-	-	3.0	4.2
2017	2.4	1.8	1.7	1.2	2.7	3.9	5.1	-3.5	-	-	5.1	3.9
2018	1.9	1.8	1.3	1.0	3.4	3.2	4.4	2.2	-	-	3.2	3.2
2018 Q2	2.2	1.6	1.4	1.1	2.8	3.9	5.6	-3.9	-	-	4.0	2.8
Q3	1.7	1.9	1.0	0.7	3.4	2.2	4.3	4.9	-	-	3.0	3.7
Q4	1.2	1.8	1.1	1.1	3.7	3.1	2.6	7.1	-	-	2.0	3.4
2019 Q1	1.2	1.4	1.1	1.1	4.8	4.3	4.7	6.2	-	-	3.2	4.0
<i>contributions to quarter-on-quarter percentage changes in GDP; percentage points</i>												
2018 Q2	0.4	0.3	0.1	0.1	0.3	0.2	0.1	0.0	-0.2	0.1	-	-
Q3	0.1	0.5	0.1	0.0	0.1	0.0	0.0	0.1	0.4	-0.4	-	-
Q4	0.2	0.2	0.2	0.1	0.3	0.1	0.1	0.2	-0.4	0.0	-	-
2019 Q1	0.4	0.3	0.3	0.0	0.2	0.2	0.1	0.0	-0.3	0.1	-	-
<i>contributions to annual percentage changes in GDP; percentage points</i>												
2016	1.9	2.3	1.0	0.4	0.8	0.3	0.4	0.2	0.1	-0.3	-	-
2017	2.4	1.7	0.9	0.3	0.5	0.4	0.3	-0.1	0.0	0.7	-	-
2018	1.9	1.7	0.7	0.2	0.7	0.3	0.3	0.1	0.1	0.2	-	-
2018 Q2	2.2	1.5	0.8	0.2	0.6	0.4	0.4	-0.2	-0.1	0.7	-	-
Q3	1.7	1.8	0.5	0.1	0.7	0.2	0.3	0.2	0.5	-0.2	-	-
Q4	1.2	1.7	0.6	0.2	0.8	0.3	0.2	0.3	0.1	-0.5	-	-
2019 Q1	1.2	1.4	0.6	0.2	1.0	0.4	0.3	0.2	-0.5	-0.2	-	-

Sources: Eurostat and ECB calculations.

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

2) Including acquisitions less disposals of valuables.

3 Economic activity

3.2 Value added by economic activity

(quarterly data seasonally adjusted; annual data unadjusted)

	Gross value added (basic prices)											Taxes less subsidies on products
	Total	Agriculture, forestry and fishing	Manufacturing energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
Current prices (EUR billions)												
2016	9,721.5	158.4	1,960.6	486.8	1,840.3	451.5	469.8	1,100.5	1,067.9	1,849.7	336.1	1,111.7
2017	10,052.4	172.4	2,026.7	515.5	1,921.0	469.3	462.2	1,129.4	1,115.4	1,897.5	343.2	1,159.6
2018	10,376.7	174.0	2,072.7	553.1	1,982.5	491.5	464.7	1,162.3	1,168.2	1,958.0	349.8	1,204.3
2018 Q2	2,589.6	43.1	519.7	137.1	495.3	122.5	115.4	289.6	291.6	488.1	87.2	300.8
Q3	2,602.5	43.8	519.7	139.7	496.4	123.6	116.4	291.5	293.0	491.0	87.5	302.3
Q4	2,619.8	44.0	519.6	142.4	500.4	124.5	116.6	293.5	295.7	495.0	87.9	303.7
2019 Q1	2,639.7	44.6	521.5	145.6	503.7	125.0	117.5	295.9	298.5	498.8	88.5	307.2
<i>as a percentage of value added</i>												
2018	100.0	1.7	20.0	5.3	19.1	4.7	4.5	11.2	11.3	18.9	3.4	-
Chain-linked volumes (prices for the previous year)												
<i>quarter-on-quarter percentage changes</i>												
2018 Q2	0.4	0.0	0.2	1.0	0.4	1.6	0.3	0.1	0.7	0.1	-0.1	0.6
Q3	0.2	-1.0	-0.1	0.6	0.0	0.7	0.7	0.4	-0.1	0.3	0.4	-0.1
Q4	0.3	0.6	-0.5	1.1	0.4	0.6	0.2	0.3	0.6	0.3	0.2	0.0
2019 Q1	0.4	0.7	0.1	1.1	0.7	0.3	-0.4	0.3	0.5	0.4	0.4	0.4
<i>annual percentage changes</i>												
2016	1.8	-1.4	3.3	1.6	1.9	3.8	0.5	0.5	2.4	1.2	0.5	2.8
2017	2.4	1.7	3.0	3.3	3.1	4.6	0.4	1.0	3.9	1.1	0.9	2.5
2018	1.9	1.0	1.2	3.4	2.3	4.8	1.1	1.4	3.3	1.2	0.8	1.6
2018 Q2	2.2	1.8	2.3	3.3	2.5	5.5	1.0	1.3	3.7	1.2	0.6	1.9
Q3	1.7	0.2	0.7	3.3	2.0	4.4	1.6	1.3	2.9	1.1	0.5	1.7
Q4	1.2	-0.1	-1.2	3.4	1.7	4.4	0.9	1.4	2.8	1.2	0.5	1.0
2019 Q1	1.2	0.3	-0.3	4.0	1.6	3.2	0.8	1.1	1.8	1.2	0.9	0.9
<i>contributions to quarter-on-quarter percentage changes in value added; percentage points</i>												
2018 Q2	0.4	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	-
Q3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-
Q4	0.3	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	-
2019 Q1	0.4	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	-
<i>contributions to annual percentage changes in value added; percentage points</i>												
2016	1.8	0.0	0.7	0.1	0.4	0.2	0.0	0.1	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	-
2018	1.9	0.0	0.2	0.2	0.4	0.2	0.1	0.2	0.4	0.2	0.0	-
2018 Q2	2.2	0.0	0.5	0.2	0.5	0.3	0.0	0.1	0.4	0.2	0.0	-
Q3	1.7	0.0	0.1	0.2	0.4	0.2	0.1	0.1	0.3	0.2	0.0	-
Q4	1.2	0.0	-0.2	0.2	0.3	0.2	0.0	0.2	0.3	0.2	0.0	-
2019 Q1	1.2	0.0	-0.1	0.2	0.3	0.1	0.0	0.1	0.2	0.2	0.0	-

Sources: Eurostat and ECB calculations.

3 Economic activity

3.3 Employment ¹⁾

(quarterly data seasonally adjusted; annual data unadjusted)

	Total	By employment status		By economic activity									
		Employees	Self-employed	Agriculture, forestry and fishing	Manufacturing, energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12	13
Persons employed													
<i>as a percentage of total persons employed</i>													
2016	100.0	85.5	14.5	3.2	14.8	5.9	24.9	2.8	2.6	1.0	13.5	24.2	7.0
2017	100.0	85.8	14.2	3.2	14.8	6.0	24.9	2.8	2.5	1.0	13.7	24.2	7.0
2018	100.0	86.0	14.0	3.1	14.8	6.0	24.9	2.9	2.4	1.0	13.8	24.1	6.9
<i>annual percentage changes</i>													
2016	1.4	1.7	-0.3	-0.5	0.8	0.2	1.6	3.0	-0.3	2.1	2.9	1.3	0.7
2017	1.6	2.0	-0.5	-0.5	1.3	1.9	1.7	3.3	-1.2	1.9	3.1	1.3	1.2
2018	1.5	1.8	-0.4	-0.4	1.5	2.6	1.5	3.1	-0.9	2.0	2.6	1.2	0.5
2018 Q2	1.6	1.9	-0.3	-0.4	1.7	2.5	1.4	2.6	-0.9	2.3	3.0	1.3	1.3
Q3	1.4	1.7	-0.3	0.0	1.3	2.6	1.5	3.5	-1.2	1.9	2.4	1.2	0.0
Q4	1.4	1.7	-0.3	-0.3	1.3	3.1	1.5	3.5	-0.7	1.5	1.9	1.2	-0.3
2019 Q1	1.3	1.5	-0.1	0.3	1.3	2.5	1.2	3.8	-0.3	2.1	1.7	1.2	0.0
Hours worked													
<i>as a percentage of total hours worked</i>													
2016	100.0	80.6	19.4	4.3	15.4	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	15.4	6.7	25.8	3.0	2.6	1.0	13.4	21.8	6.2
2018	100.0	81.4	18.6	4.2	15.3	6.8	25.7	3.1	2.5	1.0	13.6	21.7	6.1
<i>annual percentage changes</i>													
2016	1.4	1.8	-0.4	-0.3	0.9	0.4	1.6	3.0	0.1	2.7	3.0	1.3	0.7
2017	1.2	1.7	-0.9	-1.1	1.1	1.9	1.2	3.0	-1.7	2.1	2.7	0.8	0.5
2018	1.6	2.0	-0.4	0.6	1.4	2.9	1.2	3.1	-0.8	2.1	2.9	1.4	0.6
2018 Q2	1.9	2.4	-0.3	1.0	1.7	2.9	1.2	3.1	-0.4	2.3	3.7	1.6	1.9
Q3	1.8	2.2	0.1	1.1	1.3	3.6	1.5	3.8	-0.9	2.3	3.2	1.4	0.8
Q4	1.6	2.0	0.0	0.4	1.4	3.5	1.4	3.7	-0.2	1.2	2.4	1.5	0.6
2019 Q1	1.6	1.9	0.5	1.6	1.4	3.7	1.5	4.0	0.1	2.0	2.1	1.2	0.5
Hours worked per person employed													
<i>annual percentage changes</i>													
2016	0.0	0.2	-0.1	0.2	0.1	0.2	0.1	0.0	0.4	0.6	0.2	-0.1	0.0
2017	-0.4	-0.2	-0.4	-0.6	-0.1	0.0	-0.5	-0.2	-0.5	0.2	-0.4	-0.5	-0.7
2018	0.1	0.2	0.0	0.9	-0.1	0.3	-0.3	0.0	0.1	0.1	0.3	0.1	0.1
2018 Q2	0.2	0.4	0.1	1.5	0.0	0.4	-0.2	0.4	0.5	0.0	0.7	0.3	0.6
Q3	0.4	0.4	0.5	1.1	0.0	0.9	0.1	0.3	0.3	0.5	0.8	0.2	0.8
Q4	0.3	0.4	0.3	0.7	0.0	0.4	-0.1	0.2	0.5	-0.3	0.5	0.3	1.0
2019 Q1	0.3	0.3	0.7	1.3	0.1	1.2	0.3	0.2	0.4	-0.2	0.4	0.0	0.4

Sources: Eurostat and ECB calculations.

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

3 Economic activity

3.4 Labour force, unemployment and job vacancies

(seasonally adjusted, unless otherwise indicated)

	Labour force, millions ¹⁾	Under-employment, % of labour force ¹⁾	Unemployment											Job vacancy rate ²⁾
			Total		Long-term unemployment, % of labour force ¹⁾	By age				By gender				
			Millions	% of labour force		Adult		Youth		Male		Female		
						Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
% of total in 2016			100.0		81.7		18.3		52.2		47.8			
2016	162.028	4.3	16.258	10.0	5.0	13.293	9.0	2.964	20.9	8.484	9.7	7.774	10.4	1.7
2017	162.659	4.1	14.761	9.1	4.4	12.095	8.1	2.666	18.8	7.637	8.7	7.124	9.5	1.9
2018	163.301	3.8	13.392	8.2	3.8	10.963	7.4	2.429	17.0	6.899	7.9	6.493	8.6	2.1
2018 Q2	163.180	3.9	13.512	8.3	3.9	11.078	7.4	2.434	17.0	6.962	7.9	6.550	8.7	2.1
Q3	163.730	3.6	13.150	8.1	3.6	10.754	7.2	2.396	16.7	6.794	7.7	6.357	8.4	2.1
Q4	163.702	3.7	12.988	7.9	3.6	10.612	7.1	2.376	16.5	6.648	7.6	6.340	8.4	2.3
2019 Q1	.	.	12.724	7.8	.	10.401	7.0	2.323	16.0	6.486	7.4	6.238	8.2	2.4
2018 Nov.	-	-	12.976	7.9	-	10.614	7.1	2.362	16.4	6.648	7.6	6.328	8.3	-
Dec.	-	-	12.874	7.9	-	10.521	7.1	2.353	16.3	6.567	7.5	6.307	8.3	-
2019 Jan.	-	-	12.829	7.8	-	10.491	7.0	2.338	16.2	6.540	7.4	6.289	8.3	-
Feb.	-	-	12.750	7.8	-	10.426	7.0	2.324	16.1	6.504	7.4	6.246	8.2	-
Mar.	-	-	12.593	7.7	-	10.286	6.9	2.307	15.9	6.413	7.3	6.180	8.1	-
Apr.	-	-	12.529	7.6	-	10.221	6.8	2.308	15.8	6.372	7.2	6.157	8.1	-

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						Con- struction produc- tion	ECB indicator on industrial new orders	Retail sales				New passenger car regis- trations
	Total (excluding construction)		Main Industrial Groupings						Total	Food, beverages, tobacco	Non-food	Fuel	
	Manu- facturing	Inter- mediate goods	Capital goods	Consumer goods	Energy								
1	2	3	4	5	6	7	8	9	10	11	12	13	
% of total in 2015	100.0	88.7	32.1	34.5	21.8	11.6	100.0	100.0	100.0	40.4	52.5	7.1	100.0
annual percentage changes													
2016	1.6	1.8	1.8	1.9	1.8	0.5	3.0	0.7	1.6	1.0	2.2	1.4	7.2
2017	2.9	3.2	3.4	3.9	1.4	1.2	2.9	7.9	2.5	1.6	3.4	1.0	5.7
2018	0.9	1.2	0.6	1.8	1.3	-1.5	2.1	2.7	1.6	1.3	2.0	0.6	0.8
2018 Q2	2.2	2.6	1.7	4.1	2.0	-1.9	1.6	4.0	1.8	1.2	2.6	0.7	3.3
Q3	0.5	0.7	-0.3	1.5	1.0	-1.2	2.4	1.6	1.2	1.1	1.5	0.0	3.4
Q4	-1.9	-1.7	-2.1	-2.1	-0.4	-3.6	1.8	-1.0	1.7	1.4	1.9	1.6	-9.4
2019 Q1	-0.3	0.0	-0.8	0.0	1.3	-2.5	4.9	-3.1	2.4	0.9	3.4	2.6	-3.6
2018 Nov.	-2.9	-2.8	-2.9	-4.4	0.4	-3.7	1.0	1.6	2.0	0.8	2.7	2.0	-8.9
Dec.	-4.1	-3.9	-3.6	-5.0	-2.9	-4.4	3.0	-4.4	0.6	0.9	0.2	1.5	-7.5
2019 Jan.	-0.4	-1.2	-1.5	-2.4	1.1	5.6	1.1	-2.8	2.2	1.6	2.3	3.9	-2.5
Feb.	0.0	0.8	-0.8	1.0	3.2	-5.9	7.6	-3.7	3.0	0.9	4.6	2.5	-2.3
Mar.	-0.6	0.3	-0.4	1.3	-0.1	-7.3	6.3	-2.7	2.0	0.4	3.4	1.5	-5.5
Apr.	.	.	.	.	.	.	.	.	1.5	1.5	1.2	1.3	-0.2
month-on-month percentage changes (s.a.)													
2018 Nov.	-1.3	-1.3	-1.2	-2.3	0.1	0.5	0.4	3.2	0.8	-0.4	1.4	0.5	6.7
Dec.	-0.9	-0.9	0.3	-1.2	-2.0	-0.5	1.5	-4.1	-1.3	0.2	-2.2	-0.4	2.5
2019 Jan.	2.0	1.7	0.6	1.8	2.7	3.0	-1.0	-0.4	0.9	0.0	1.6	1.4	4.8
Feb.	-0.1	0.4	0.0	-0.1	0.4	-3.4	3.0	-1.4	0.6	0.2	1.1	-0.5	-0.1
Mar.	-0.3	-0.2	0.1	0.4	-0.8	-0.3	-0.3	0.3	0.0	0.4	-0.2	-0.7	-3.6
Apr.	.	.	.	.	.	.	.	.	-0.4	-0.4	-0.4	0.1	4.7

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

3 Economic activity

3.6 Opinion surveys (seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances, unless otherwise indicated)								Purchasing Managers' Surveys (diffusion indices)			
	Economic sentiment indicator (long-term average = 100)	Manufacturing industry		Consumer confidence indicator	Construction confidence indicator	Retail trade confidence indicator	Service industries		Purchasing Managers' Index (PMI) for manufacturing	Manufacturing output	Business activity for services	Composite output
		Industrial confidence indicator	Capacity utilisation (%)				Services confidence indicator	Capacity utilisation (%)				
	1	2	3	4	5	6	7	8	9	10	11	12
1999-15	99.2	-5.3	80.7	-11.7	-15.0	-8.7	7.2	-	51.2	52.5	53.0	52.8
2016	104.1	-1.8	81.7	-8.1	-16.4	0.6	11.3	88.9	52.5	53.6	53.1	53.3
2017	110.1	5.5	83.2	-5.4	-4.2	2.3	14.6	89.8	57.4	58.5	55.6	56.4
2018	111.2	6.6	83.8	-4.9	6.1	1.3	15.2	90.3	54.9	54.7	54.5	54.6
2018 Q2	111.8	7.8	83.9	-4.7	5.5	0.5	15.1	90.4	55.6	55.1	54.5	54.7
Q3	110.9	5.9	83.7	-5.1	6.6	1.9	15.3	90.3	54.3	54.0	54.4	54.3
Q4	108.8	3.6	83.6	-6.4	7.9	-0.3	13.4	90.4	51.7	51.0	52.8	52.3
2019 Q1	106.0	-0.5	83.2	-7.0	7.5	-1.0	11.6	90.7	49.1	49.0	52.4	51.5
2018 Dec.	107.4	2.3	-	-7.8	7.3	-0.1	12.2	-	51.4	51.0	51.2	51.1
2019 Jan.	106.3	0.6	83.6	-7.4	8.4	-2.1	11.0	90.8	50.5	50.5	51.2	51.0
Feb.	106.2	-0.4	-	-6.9	6.6	-1.3	12.1	-	49.3	49.4	52.8	51.9
Mar.	105.6	-1.6	-	-6.6	7.5	0.3	11.5	-	47.5	47.2	53.3	51.6
Apr.	103.9	-4.3	82.8	-7.3	6.5	-1.1	11.8	90.7	47.9	48.0	52.8	51.5
May	105.1	-2.9	-	-6.5	4.1	-1.2	12.2	-	47.7	48.9	52.9	51.8

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

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

	Households							Non-financial corporations					
	Saving ratio (gross) ¹⁾	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth ²⁾	Housing wealth	Profit share ³⁾	Saving ratio (net)	Debt ratio ⁴⁾	Financial investment	Non-financial investment (gross)	Financing
	Percentage of gross disposable income (adjusted)	Annual percentage changes					Percentage of net value added	Percentage of GDP	Annual percentage changes				
	1	2	3	4	5	6	7	8	9	10	11	12	13
2015	12.2	94.0	1.5	1.9	1.2	3.1	2.0	34.7	5.9	138.0	5.1	7.8	3.0
2016	12.1	94.3	1.8	2.0	6.1	3.3	2.7	35.4	7.5	138.0	5.0	6.1	3.0
2017	11.8	94.0	1.4	2.1	6.8	4.2	4.2	34.8	7.0	136.5	3.8	4.7	2.3
2018 Q1	11.8	93.7	1.8	2.0	5.1	3.8	4.7	34.8	7.0	136.1	3.1	-0.4	1.8
Q2	11.9	93.7	2.1	2.0	8.0	3.9	4.8	35.0	7.0	136.7	3.2	1.7	1.9
Q3	12.0	93.6	1.4	2.0	8.3	3.8	5.0	34.7	7.0	136.5	2.9	8.7	1.7
Q4	12.1	93.5	1.5	2.0	8.3	2.7	4.9	34.6	6.6	135.6	2.2	12.6	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 ¹⁾	
	Total			Goods		Services		Primary income		Secondary income		Credit	Debit
	Credit	Debit	Net	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit		
1	2	3	4	5	6	7	8	9	10	11	12	13	
2018 Q2	1,025.1	938.9	86.3	576.4	508.4	223.1	195.4	197.8	171.0	28.0	64.1	8.3	8.8
Q3	1,032.8	960.9	71.9	585.8	525.0	228.7	202.8	189.7	164.7	28.5	68.4	8.7	5.8
Q4	1,045.3	965.8	79.6	598.6	528.9	230.9	205.8	186.2	157.5	29.7	73.6	21.9	33.6
2019 Q1	1,045.1	954.8	90.2	602.5	525.4	229.4	206.6	185.1	158.8	28.1	64.0	10.0	7.5
2018 Oct.	351.2	323.1	28.1	201.7	180.1	75.7	67.5	64.2	52.0	9.6	23.6	3.3	9.6
Nov.	350.1	324.0	26.2	198.0	175.0	78.6	69.2	63.3	54.8	10.2	24.9	4.1	10.6
Dec.	344.0	318.6	25.4	198.9	173.8	76.6	69.1	58.7	50.6	9.8	25.1	14.5	13.4
2019 Jan.	356.8	319.2	37.6	200.3	173.4	77.9	69.8	68.6	54.1	10.1	22.0	3.9	2.1
Feb.	340.2	312.3	27.9	199.2	173.5	75.4	68.4	57.1	49.1	8.5	21.3	3.5	1.9
Mar.	348.0	323.3	24.7	203.0	178.5	76.2	68.5	59.3	55.6	9.5	20.7	2.6	3.5
<i>12-month cumulated transactions</i>													
2019 Mar.	4,148.4	3,820.4	328.0	2,363.3	2,087.7	912.1	810.6	758.8	652.0	114.2	270.0	48.9	55.7
<i>12-month cumulated transactions as a percentage of GDP</i>													
2019 Mar.	35.8	33.0	2.8	20.4	18.0	7.9	7.0	6.6	5.6	1.0	2.3	0.4	0.5

1) The capital account is not seasonally adjusted.

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

(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)					Imports (c.i.f.)					
	Exports	Imports	Total			Memo item: Manu- facturing	Total			Memo items:			
			Intermediate goods	Capital goods	Consumption goods		Intermediate goods	Capital goods	Consumption goods	Manu- facturing	Oil		
1	2	3	4	5	6	7	8	9	10	11	12	13	
<i>Values (EUR billions; annual percentage changes for columns 1 and 2)</i>													
2018 Q2	4.4	6.2	566.3	271.4	118.1	166.7	474.6	515.6	300.9	80.2	127.0	364.9	65.5
Q3	4.7	10.3	572.8	278.2	117.4	166.8	478.7	531.0	309.9	86.3	126.9	373.8	68.5
Q4	3.9	7.8	580.1	278.1	123.2	168.3	485.1	535.8	309.4	87.9	130.5	379.6	66.4
2019 Q1	3.9	4.8	587.2	.	.	.	492.3	531.4	.	.	.	379.5	.
2018 Oct.	11.1	15.0	194.1	93.7	40.5	56.2	161.2	181.0	105.9	29.3	44.1	127.1	24.2
Nov.	2.3	5.5	192.8	92.8	40.5	55.8	162.2	177.6	102.1	28.8	43.6	126.5	21.1
Dec.	-2.0	2.6	193.2	91.6	42.2	56.2	161.7	177.3	101.4	29.7	42.8	125.9	21.1
2019 Jan.	2.5	3.3	194.8	95.0	40.4	56.9	164.4	177.6	102.4	28.9	43.5	126.7	20.9
Feb.	6.2	5.2	195.3	94.4	39.8	57.2	164.2	174.7	100.6	27.5	43.7	126.1	21.0
Mar.	3.1	6.0	197.0	.	.	.	163.7	179.1	.	.	.	126.7	.
<i>Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)</i>													
2018 Q2	3.1	2.9	125.7	124.4	127.0	129.4	126.4	115.4	115.6	112.6	118.4	119.7	101.4
Q3	1.1	2.0	125.3	125.7	124.9	127.6	126.1	115.4	115.0	118.1	115.5	120.1	99.4
Q4	0.1	1.7	126.0	124.9	129.7	127.7	126.6	116.0	115.1	117.8	117.6	120.4	100.7
2019 Q1	.	.	.	.	.	.	.	.	.	.	.	.	.
2018 Sep.	-4.7	-1.2	124.5	124.9	124.8	126.4	126.0	114.7	113.9	118.4	114.9	119.6	95.6
Oct.	7.0	5.3	127.0	126.4	129.0	128.6	127.2	116.7	116.0	119.7	119.5	122.0	98.2
Nov.	-1.6	-0.6	125.5	124.9	128.1	127.0	127.0	114.7	113.4	115.0	117.5	119.9	94.6
Dec.	-5.2	0.1	125.7	123.5	132.2	127.7	125.5	116.5	115.8	118.6	115.8	119.4	109.3
2019 Jan.	-1.1	1.7	126.2	127.3	127.4	128.2	126.9	117.2	117.9	117.0	116.5	120.0	111.5
Feb.	2.0	1.2	126.5	126.6	125.4	128.5	126.9	115.1	115.0	111.2	118.3	120.2	105.7

Sources: ECB and Eurostat.

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

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

4 Prices and costs

4.1 Harmonised Index of Consumer Prices ¹⁾

(annual percentage changes, unless otherwise indicated)

	Total					Total (s.a.; percentage change vis-à-vis previous period) ²⁾						Administered prices	
	Index: 2015 = 100	Total		Goods	Services	Total	Processed food	Unprocessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Administered prices
		Total excluding food and energy											
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2019	100.0	100.0	70.9	55.5	44.5	100.0	14.5	4.5	26.4	10.1	44.5	83.6	16.4
2016	100.2	0.2	0.8	-0.4	1.1	-	-	-	-	-	-	0.2	0.3
2017	101.8	1.5	1.0	1.6	1.4	-	-	-	-	-	-	1.6	1.0
2018	103.6	1.8	1.0	2.0	1.5	-	-	-	-	-	-	1.7	2.1
2018 Q2	103.8	1.7	1.0	2.0	1.4	0.6	0.7	1.0	0.0	1.9	0.5	1.7	1.6
Q3	104.1	2.1	1.0	2.6	1.5	0.5	0.4	0.5	0.1	2.7	0.3	2.1	2.4
Q4	104.3	1.9	1.0	2.3	1.5	0.3	0.3	0.3	0.1	1.6	0.2	1.8	2.8
2019 Q1	103.5	1.4	1.0	1.5	1.4	0.0	0.6	0.2	0.1	-2.4	0.3	1.3	2.3
2018 Dec.	104.1	1.5	0.9	1.7	1.3	-0.3	0.0	0.2	0.0	-3.3	0.1	1.3	2.7
2019 Jan.	103.0	1.4	1.1	1.2	1.6	0.0	0.3	0.0	0.1	-0.9	0.1	1.2	2.4
Feb.	103.3	1.5	1.0	1.6	1.4	0.2	0.2	0.9	0.0	0.6	0.1	1.3	2.3
Mar.	104.4	1.4	0.8	1.6	1.1	0.1	0.4	-1.3	-0.2	0.8	0.2	1.3	2.2
Apr.	105.1	1.7	1.3	1.5	1.9	0.4	0.1	0.0	0.1	0.7	0.6	1.7	2.1
May ³⁾	105.3	1.2	0.8	.	1.1	0.1	0.2	0.4	0.1	0.9	-0.2	.	.

	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 2019	19.0	14.5	4.5	36.5	26.4	10.1	11.0	6.5	7.2	2.6	15.3	8.4	
2016	0.9	0.6	1.4	-1.1	0.4	-5.1	1.1	1.1	0.8	0.0	1.3	1.2	
2017	1.8	1.5	2.4	1.5	0.3	4.9	1.3	1.2	2.1	-1.1	2.1	0.8	
2018	2.2	2.1	2.3	1.9	0.3	6.4	1.2	1.2	1.5	-0.1	2.0	1.4	
2018 Q2	2.6	2.3	3.3	1.6	0.2	5.6	1.2	1.2	1.3	0.1	1.9	1.3	
Q3	2.5	2.1	3.8	2.7	0.2	9.5	1.1	1.1	1.4	0.2	2.2	1.3	
Q4	2.0	1.9	2.0	2.4	0.2	8.4	1.2	1.1	1.5	-0.3	1.9	1.7	
2019 Q1	2.0	1.9	1.9	1.3	0.3	3.9	1.2	1.2	1.3	-0.6	1.7	1.5	
2018 Dec.	1.8	1.7	1.8	1.6	0.2	5.5	1.2	1.1	1.2	-0.3	1.6	1.7	
2019 Jan.	1.8	1.8	1.8	1.0	0.3	2.7	1.2	1.1	1.6	-0.4	2.2	1.5	
Feb.	2.3	2.1	2.9	1.3	0.4	3.6	1.2	1.2	1.3	-0.8	1.8	1.5	
Mar.	1.8	2.0	1.1	1.5	0.1	5.3	1.2	1.2	1.1	-0.7	1.2	1.5	
Apr.	1.5	1.7	0.8	1.6	0.2	5.3	1.3	1.2	2.5	-1.2	2.8	1.6	
May ³⁾	1.6	1.9	0.4	.	0.3	3.8	.	.	.	.	.	.

Sources: Eurostat and ECB calculations.

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

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

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

4 Prices and costs

4.2 Industry, construction and property prices

(annual percentage changes, unless otherwise indicated)

	Industrial producer prices excluding construction ¹⁾										Con- struction ²⁾	Residential property prices ³⁾	Experimental indicator of commercial property prices ³⁾
	Total (index: 2015 = 100)	Total	Industry excluding construction and energy						Energy				
			Manu- facturing	Total	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			
2016	97.9	-2.1	-1.4	-0.5	-1.6	0.5	0.0	0.0	0.0	-6.9	0.7	3.4	4.9
2017	100.8	3.0	3.0	2.1	3.2	0.9	1.9	2.8	0.2	5.6	2.0	3.7	5.0
2018	104.0	3.2	2.4	1.5	2.6	1.0	0.4	0.2	0.6	8.1	2.4	4.2	3.2
2018 Q2	103.1	2.8	2.6	1.3	2.5	1.0	0.3	0.1	0.6	6.7	2.2	4.2	3.4
Q3	104.9	4.3	3.2	1.5	3.1	1.1	0.1	-0.3	0.7	12.5	2.9	4.3	2.6
Q4	105.7	4.0	2.3	1.4	2.5	1.1	0.3	-0.2	0.8	11.1	2.3	4.2	2.5
2019 Q1	105.4	3.0	1.3	1.1	1.4	1.5	0.4	-0.1	1.0	7.7	.	.	.
2018 Nov.	105.9	4.0	2.3	1.5	2.6	1.2	0.3	-0.2	0.8	11.0	-	-	-
Dec.	105.1	3.0	1.5	1.3	2.2	1.1	0.4	0.0	0.8	7.8	-	-	-
2019 Jan.	105.4	2.9	0.9	1.1	1.6	1.4	0.4	0.0	0.9	7.4	-	-	-
Feb.	105.5	3.0	1.5	1.2	1.3	1.6	0.5	0.0	1.0	8.0	-	-	-
Mar.	105.4	2.9	1.7	1.1	1.3	1.6	0.2	-0.3	1.0	7.7	-	-	-
Apr.	105.1	2.6	1.6	1.2	1.2	1.5	0.8	0.6	0.9	6.6	-	-	-

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

1) Domestic sales only.

2) Input prices for residential buildings.

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

4.3 Commodity prices and GDP deflators

(annual percentage changes, unless otherwise indicated)

	GDP deflators						Oil prices (EUR per barrel)	Non-energy commodity prices (EUR)							
	Total (s.a.; index: 2010 = 100)	Total	Domestic demand					Exports ¹⁾	Imports ¹⁾	Import-weighted ²⁾			Use-weighted ²⁾		
			Total	Private consump- tion	Govern- ment consump- tion	Gross fixed capital formation				Total	Food	Non-food	Total	Food	Non-food
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
% of total								100.0	45.4	54.6	100.0	50.4	49.6		
2016	106.9	0.9	0.5	0.4	0.6	0.7	-1.4	-2.4	39.9	-2.0	-1.4	-2.8	-3.1	-3.7	-2.3
2017	108.0	1.1	1.5	1.3	1.5	1.5	1.9	3.0	48.1	5.8	-3.5	16.6	6.7	-1.6	17.8
2018	109.5	1.4	1.8	1.4	1.8	2.1	1.4	2.3	60.4	-0.9	-6.3	4.3	-0.2	-5.5	5.7
2018 Q2	109.3	1.3	1.7	1.3	1.8	1.8	1.0	1.9	62.6	2.1	-6.0	10.3	1.9	-6.3	11.7
Q3	109.7	1.3	2.0	1.7	1.9	2.4	2.3	3.9	64.8	2.0	-3.4	7.1	3.1	-2.2	8.8
Q4	110.2	1.5	2.0	1.7	1.8	2.5	1.8	2.9	59.5	1.9	0.1	3.6	2.3	0.2	4.4
2019 Q1	110.6	1.6	1.9	1.5	1.9	2.4	1.3	2.0	55.6	3.2	3.7	2.8	3.9	5.2	2.7
2018 Dec.	-	-	-	-	-	-	-	-	49.8	1.5	2.0	1.1	2.2	2.4	2.1
2019 Jan.	-	-	-	-	-	-	-	-	51.9	1.2	3.9	-1.1	1.5	3.8	-0.7
Feb.	-	-	-	-	-	-	-	-	56.5	4.1	4.9	3.5	4.4	5.6	3.3
Mar.	-	-	-	-	-	-	-	-	58.8	4.3	2.4	6.0	5.9	6.3	5.5
Apr.	-	-	-	-	-	-	-	-	63.4	2.2	1.6	2.8	4.4	7.7	1.0
May	-	-	-	-	-	-	-	-	63.1	-4.1	-3.0	-5.0	-2.2	2.7	-7.1

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

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

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

4 Prices and costs

4.4 Price-related opinion surveys

(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances)					Purchasing Managers' Surveys (diffusion indices)			
	Selling price expectations (for next three months)				Consumer price trends over past 12 months	Input prices		Prices charged	
	Manu- facturing	Retail trade	Services	Construction		Manu- facturing	Services	Manu- facturing	Services
	1	2	3	4	5	6	7	8	9
1999-15	4.2	-	-	-3.6	32.0	56.7	56.3	-	49.7
2016	-0.4	2.3	4.4	-7.1	0.6	49.8	53.9	49.3	49.6
2017	9.2	5.1	6.9	2.5	12.7	64.6	56.3	55.1	51.6
2018	11.5	7.4	9.4	12.1	20.3	65.4	57.9	56.1	52.7
2018 Q2	10.3	6.9	9.4	12.1	18.7	65.6	57.6	56.5	52.3
Q3	11.1	7.5	9.0	12.4	21.2	65.2	58.4	55.5	52.8
Q4	11.9	8.5	10.0	13.0	23.9	62.6	58.4	54.5	52.7
2019 Q1	8.9	8.2	10.4	11.4	20.4	53.9	57.7	53.0	53.1
2018 Dec.	13.0	9.2	11.1	13.6	23.1	59.1	57.9	54.1	52.5
2019 Jan.	10.7	8.8	11.5	12.9	19.2	55.7	58.3	53.8	53.2
Feb.	9.0	8.1	9.2	12.4	20.4	53.9	58.1	52.7	52.7
Mar.	6.9	7.8	10.4	8.9	21.5	52.3	56.8	52.3	53.3
Apr.	5.2	8.3	10.1	7.8	15.6	52.7	57.7	51.4	53.1
May	5.3	6.9	8.4	6.7	22.6	51.2	57.5	51.6	51.6

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

4.5 Labour cost indices

(annual percentage changes, unless otherwise indicated)

	Total (index: 2012 = 100)	Total	By component		For selected economic activities		Memo item: Indicator of negotiated wages ¹⁾
			Wages and salaries	Employers' social contributions	Business economy	Mainly non-business economy	
	1	2	3	4	5	6	7
% of total in 2012	100.0	100.0	74.6	25.4	69.3	30.7	
2016	105.5	1.3	1.4	1.1	1.3	1.5	1.4
2017	107.4	1.8	1.8	1.8	1.9	1.6	1.5
2018	109.8	2.2	2.1	2.8	2.4	1.9	2.0
2018 Q2	113.7	2.2	1.9	2.9	2.6	1.5	2.1
Q3	106.4	2.5	2.4	3.0	2.6	2.2	2.1
Q4	116.6	2.3	2.4	2.4	2.2	2.5	2.2
2019 Q1	.	.	.	.	.	.	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 for further details).

4 Prices and costs

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

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

	Total (index: 2010 =100)	Total	By economic activity									
			Agriculture, forestry and fishing	Manu- facturing, energy and utilities	Con- struction	Trade, transport, accom- modation and food services	Information and commu- nication	Finance and insurance	Real estate	Professional, business and support services	Public ad- ministration, education, health and social work	Arts, enter- tainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12
Unit labour costs												
2016	105.3	0.7	1.3	-1.2	0.6	1.1	-0.6	1.5	3.5	0.7	1.5	2.0
2017	106.1	0.8	-0.8	-0.3	-0.3	0.2	0.3	-1.4	4.5	2.4	1.7	1.7
2018	108.1	1.9	0.6	2.2	0.9	1.4	0.8	0.0	3.9	2.4	2.2	2.4
2018 Q2	107.6	1.6	0.0	1.5	0.7	1.1	0.1	0.1	3.6	2.4	2.1	2.5
Q3	108.5	2.3	1.9	2.9	1.7	2.0	1.6	-0.3	4.1	2.9	2.4	2.8
Q4	109.0	2.4	1.2	4.1	1.4	1.9	0.9	0.3	3.8	2.5	2.4	2.6
2019 Q1	109.4	2.3	1.1	3.8	1.6	2.1	2.6	-0.4	5.6	1.4	2.1	2.4
Compensation per employee												
2016	109.4	1.2	0.3	1.3	1.9	1.4	0.2	2.3	1.8	0.2	1.4	1.7
2017	111.1	1.6	1.4	1.4	1.1	1.7	1.6	0.2	3.6	3.2	1.5	1.5
2018	113.6	2.2	2.0	1.9	1.7	2.2	2.5	2.1	3.2	3.2	2.2	2.6
2018 Q2	113.3	2.2	2.2	2.1	1.5	2.2	2.8	2.1	2.5	3.1	2.1	1.8
Q3	114.2	2.5	2.1	2.3	2.4	2.5	2.5	2.5	3.5	3.4	2.3	3.3
Q4	114.6	2.2	1.4	1.5	1.7	2.1	1.9	1.9	3.6	3.3	2.3	3.5
2019 Q1	115.1	2.2	1.1	2.2	3.0	2.5	2.0	0.6	4.5	1.4	2.0	3.2
Labour productivity per person employed												
2016	103.9	0.6	-1.0	2.5	1.4	0.3	0.7	0.8	-1.6	-0.5	-0.1	-0.2
2017	104.7	0.8	2.2	1.7	1.4	1.4	1.3	1.6	-0.8	0.8	-0.2	-0.2
2018	105.1	0.4	1.4	-0.3	0.8	0.8	1.7	2.1	-0.6	0.7	0.0	0.3
2018 Q2	105.3	0.6	2.2	0.6	0.8	1.1	2.7	1.9	-1.0	0.7	0.0	-0.7
Q3	105.2	0.2	0.2	-0.6	0.7	0.5	0.8	2.8	-0.6	0.5	-0.1	0.5
Q4	105.1	-0.2	0.2	-2.4	0.3	0.2	0.9	1.6	-0.2	0.9	0.0	0.9
2019 Q1	105.2	-0.1	0.0	-1.6	1.4	0.4	-0.6	1.1	-1.1	0.0	-0.1	0.8
Compensation per hour worked												
2016	110.9	1.0	-0.4	1.1	1.9	0.9	0.1	2.0	1.5	-0.1	1.4	1.6
2017	112.9	1.8	1.4	1.4	1.0	2.0	1.7	0.6	3.4	3.2	1.9	2.1
2018	115.2	2.0	1.5	1.8	1.2	2.3	2.3	2.0	2.7	2.8	2.0	2.1
2018 Q2	114.4	1.8	0.6	2.0	0.8	2.1	2.1	1.6	2.0	2.3	1.7	0.6
Q3	115.1	2.1	1.9	2.1	1.6	2.1	2.1	2.3	2.6	2.6	2.1	2.0
Q4	115.5	1.9	0.9	1.4	1.1	2.1	1.4	1.5	3.5	2.7	2.0	2.2
2019 Q1	116.1	1.8	-0.3	2.1	2.1	2.0	1.6	0.3	4.4	1.1	2.0	2.8
Hourly labour productivity												
2016	105.8	0.5	-1.2	2.4	1.2	0.2	0.7	0.4	-2.2	-0.6	0.0	-0.2
2017	107.0	1.2	2.8	1.8	1.4	1.9	1.6	2.1	-1.0	1.1	0.3	0.5
2018	107.4	0.3	0.5	-0.2	0.5	1.0	1.7	2.0	-0.7	0.4	-0.1	0.2
2018 Q2	107.1	0.3	0.7	0.6	0.4	1.3	2.3	1.4	-1.0	0.0	-0.3	-1.3
Q3	106.8	-0.1	-0.9	-0.6	-0.2	0.4	0.6	2.5	-1.0	-0.3	-0.3	-0.3
Q4	106.8	-0.4	-0.5	-2.5	-0.1	0.2	0.7	1.1	0.1	0.3	-0.3	-0.1
2019 Q1	106.9	-0.5	-1.3	-1.7	0.2	0.1	-0.8	0.7	-0.9	-0.3	-0.1	0.4

Sources: Eurostat and ECB calculations.

5 Money and credit

5.1 Monetary aggregates ¹⁾

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

	M3											
	M2						M3-M2					
	M1		M2-M1				Repos	Money market fund shares	Debt securities with a maturity of up to 2 years			
	Currency in circulation	Overnight deposits	Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months								
1	2	3	4	5	6	7	8	9	10	11	12	
Outstanding amounts												
2016	1,075.3	6,082.8	7,158.1	1,330.6	2,221.0	3,551.5	10,709.7	69.6	523.1	86.6	679.2	11,388.9
2017	1,111.6	6,637.3	7,748.9	1,197.0	2,260.9	3,457.9	11,206.8	74.7	512.0	71.6	658.4	11,865.1
2018	1,162.7	7,121.0	8,283.7	1,125.7	2,294.1	3,419.9	11,703.5	74.6	523.3	73.1	670.9	12,374.5
2018 Q2	1,133.6	6,892.0	8,025.6	1,178.1	2,270.5	3,448.6	11,474.2	73.7	507.8	65.5	647.1	12,121.3
Q3	1,150.6	7,009.8	8,160.3	1,126.6	2,284.6	3,411.2	11,571.5	71.4	495.4	60.4	627.3	12,198.8
Q4	1,162.7	7,121.0	8,283.7	1,125.7	2,294.1	3,419.9	11,703.5	74.6	523.3	73.1	670.9	12,374.5
2019 Q1	1,180.7	7,289.6	8,470.3	1,113.0	2,313.9	3,427.0	11,897.3	74.4	509.6	31.5	615.5	12,512.8
2018 Nov.	1,158.2	7,091.4	8,249.6	1,125.8	2,294.9	3,420.8	11,670.4	73.8	503.5	59.1	636.3	12,306.7
Dec.	1,162.7	7,121.0	8,283.7	1,125.7	2,294.1	3,419.9	11,703.5	74.6	523.3	73.1	670.9	12,374.5
2019 Jan.	1,167.7	7,126.3	8,293.9	1,123.7	2,298.6	3,422.4	11,716.3	74.9	508.5	63.5	646.9	12,363.2
Feb.	1,172.8	7,194.3	8,367.1	1,125.1	2,304.7	3,429.8	11,796.8	70.7	505.1	57.6	633.4	12,430.2
Mar.	1,180.7	7,289.6	8,470.3	1,113.0	2,313.9	3,427.0	11,897.3	74.4	509.6	31.5	615.5	12,512.8
Apr. ^(p)	1,182.2	7,309.6	8,491.8	1,125.2	2,326.8	3,452.0	11,943.8	73.9	510.5	37.6	622.0	12,565.8
Transactions												
2016	38.1	541.7	579.8	-106.1	16.1	-90.0	489.8	-4.3	34.3	18.3	48.3	538.0
2017	36.4	591.8	628.1	-110.5	34.3	-76.2	551.9	6.6	-10.9	-18.4	-22.7	529.2
2018	50.0	464.3	514.3	-74.0	45.0	-29.0	485.3	-3.5	11.3	-2.3	5.5	490.8
2018 Q2	16.6	137.7	154.4	4.8	9.9	14.7	169.0	-0.9	-3.2	2.3	-1.8	167.2
Q3	16.0	116.1	132.1	-51.8	14.1	-37.7	94.4	-2.4	-12.6	-4.8	-19.7	74.7
Q4	12.1	107.7	119.8	-2.2	13.4	11.2	131.0	2.9	27.7	9.3	39.8	170.8
2019 Q1	18.1	166.0	184.1	-15.0	20.3	5.3	189.3	-0.5	-16.8	-38.3	-55.5	133.8
2018 Nov.	3.8	47.8	51.5	-11.8	4.8	-7.0	44.5	1.8	-2.2	-0.8	-1.2	43.3
Dec.	4.5	28.6	33.0	0.4	3.1	3.5	36.6	0.9	19.6	12.5	32.9	69.5
2019 Jan.	5.0	8.6	13.6	-2.2	5.1	2.8	16.5	0.3	-15.7	-9.3	-24.7	-8.2
Feb.	5.1	66.4	71.5	0.7	6.0	6.7	78.2	-4.3	-3.5	-5.0	-12.8	65.4
Mar.	8.0	90.9	98.9	-13.5	9.2	-4.2	94.7	3.5	2.5	-24.0	-18.0	76.7
Apr. ^(p)	1.4	24.7	26.1	11.8	8.3	20.1	46.1	-0.5	2.7	5.4	7.7	53.9
Growth rates												
2016	3.7	9.7	8.8	-7.4	0.7	-2.5	4.8	-5.8	7.0	26.1	7.6	5.0
2017	3.4	9.8	8.8	-8.4	1.5	-2.1	5.2	9.5	-2.1	-21.4	-3.3	4.7
2018	4.5	7.0	6.6	-6.2	2.0	-0.8	4.3	-4.6	2.2	-3.4	0.8	4.1
2018 Q2	3.5	8.1	7.4	-5.5	1.7	-0.9	4.7	5.3	-1.4	-16.3	-2.4	4.3
Q3	4.1	7.3	6.9	-7.4	1.8	-1.4	4.3	2.0	-6.7	-26.1	-8.1	3.6
Q4	4.5	7.0	6.6	-6.2	2.0	-0.8	4.3	-4.6	2.2	-3.4	0.8	4.1
2019 Q1	5.6	7.8	7.5	-5.5	2.6	-0.2	5.2	-1.1	-1.0	-48.7	-5.7	4.6
2018 Nov.	4.3	7.1	6.7	-6.7	2.0	-1.0	4.3	-8.2	-3.1	-22.0	-5.8	3.7
Dec.	4.5	7.0	6.6	-6.2	2.0	-0.8	4.3	-4.6	2.2	-3.4	0.8	4.1
2019 Jan.	4.7	6.4	6.2	-6.3	2.0	-0.8	4.0	-4.0	-1.7	3.7	-1.5	3.7
Feb.	5.0	6.9	6.6	-4.9	2.2	-0.2	4.5	-7.1	-1.0	-4.7	-2.1	4.2
Mar.	5.6	7.8	7.5	-5.5	2.6	-0.2	5.2	-1.1	-1.0	-48.7	-5.7	4.6
Apr. ^(p)	5.2	7.8	7.4	-3.9	2.7	0.5	5.3	-4.6	-0.5	-46.2	-5.9	4.7

Source: ECB.

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

5 Money and credit

5.2 Deposits in M3 1)

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

	Non-financial corporations ²⁾					Households ³⁾					Financial corporations other than MFIs and ICPFs ²⁾	Insurance corporations and pension funds	Other general government ⁴⁾
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Outstanding amounts													
2016	2,093.2	1,630.3	295.1	159.6	8.2	6,055.5	3,402.3	644.9	2,006.3	2.1	972.0	199.5	383.8
2017	2,237.7	1,794.2	285.7	148.8	9.1	6,316.5	3,702.0	562.0	2,051.9	0.7	998.6	204.4	412.6
2018	2,336.5	1,902.7	278.4	147.5	7.8	6,642.9	4,038.5	517.3	2,086.0	1.2	1,004.6	200.2	431.2
2018 Q2	2,283.5	1,850.8	277.7	148.0	7.0	6,469.7	3,870.8	535.3	2,062.5	1.1	1,014.3	220.1	426.7
Q3	2,309.7	1,886.3	267.9	148.7	6.8	6,545.8	3,946.3	524.6	2,073.8	1.1	986.4	212.2	438.3
Q4	2,336.5	1,902.7	278.4	147.5	7.8	6,642.9	4,038.5	517.3	2,086.0	1.2	1,004.6	200.2	431.2
2019 Q1	2,384.6	1,960.5	269.6	147.9	6.6	6,753.7	4,130.7	515.0	2,106.7	1.3	977.1	213.3	462.3
2018 Nov.	2,322.1	1,890.4	275.4	148.1	8.1	6,607.9	4,004.3	517.8	2,084.6	1.2	1,003.7	208.3	443.9
Dec.	2,336.5	1,902.7	278.4	147.5	7.8	6,642.9	4,038.5	517.3	2,086.0	1.2	1,004.6	200.2	431.2
2019 Jan.	2,325.3	1,898.9	271.4	147.3	7.7	6,678.2	4,068.2	517.3	2,091.1	1.7	977.9	204.0	438.1
Feb.	2,348.4	1,918.9	275.8	147.0	6.7	6,723.6	4,107.3	516.9	2,097.8	1.5	964.6	206.0	452.1
Mar.	2,384.6	1,960.5	269.6	147.9	6.6	6,753.7	4,130.7	515.0	2,106.7	1.3	977.1	213.3	462.3
Apr. ^(p)	2,391.9	1,964.6	270.7	148.6	7.9	6,789.4	4,156.1	513.6	2,118.1	1.7	982.3	211.8	460.1
Transactions													
2016	131.8	156.6	-25.2	0.3	0.1	300.7	334.2	-46.5	13.9	-0.9	24.2	-28.4	19.1
2017	178.5	181.4	-3.1	-0.8	1.0	255.5	304.9	-81.6	33.5	-1.3	55.1	6.3	26.9
2018	94.9	106.7	-9.3	-1.1	-1.4	325.7	324.5	-45.1	45.9	0.5	-1.9	-4.9	17.8
2018 Q2	29.2	29.2	1.1	-0.4	-0.7	83.3	81.7	-8.9	11.0	-0.5	20.2	8.9	10.0
Q3	25.9	35.4	-9.9	0.6	-0.2	76.0	75.5	-10.7	11.3	0.0	-29.2	-8.0	11.4
Q4	27.3	16.6	10.5	-0.7	0.9	96.6	88.3	-7.5	15.7	0.1	17.2	-12.5	-6.8
2019 Q1	50.1	59.5	-9.0	0.8	-1.2	109.6	91.5	-2.7	20.7	0.1	-31.8	12.4	30.4
2018 Nov.	7.0	0.2	5.0	-0.3	2.2	23.1	20.9	-3.0	5.2	0.0	9.0	-0.4	3.8
Dec.	16.4	13.9	3.4	-0.6	-0.3	35.5	30.6	-0.4	5.2	0.0	1.8	-8.1	-12.6
2019 Jan.	-6.5	-0.2	-6.7	0.4	-0.1	35.3	29.6	0.0	5.2	0.5	-27.1	3.4	6.8
Feb.	22.5	19.6	4.4	-0.3	-1.1	44.9	39.0	-0.5	6.6	-0.1	-14.3	2.1	13.7
Mar.	34.2	40.1	-6.6	0.8	-0.1	29.5	22.9	-2.2	8.9	-0.3	9.7	7.0	9.9
Apr. ^(p)	7.3	4.2	1.1	0.8	1.3	35.0	29.7	-1.8	6.8	0.4	5.6	-1.5	-2.2
Growth rates													
2016	6.8	10.4	-7.9	0.3	1.4	5.2	10.9	-6.7	0.7	-29.3	2.5	-12.5	5.2
2017	8.5	11.2	-1.1	-0.5	12.5	4.2	9.0	-12.7	1.7	-65.5	5.7	3.2	7.0
2018	4.2	5.9	-3.3	-0.7	-16.0	5.2	8.7	-8.0	2.2	65.1	-0.2	-2.4	4.3
2018 Q2	5.1	7.3	-5.5	-0.3	7.0	4.4	8.5	-10.8	1.7	-53.9	5.7	12.8	5.6
Q3	4.8	7.0	-6.8	0.3	27.4	4.5	8.4	-10.0	1.9	-45.8	1.0	5.2	4.8
Q4	4.2	5.9	-3.3	-0.7	-16.0	5.2	8.7	-8.0	2.2	65.1	-0.2	-2.4	4.3
2019 Q1	5.9	7.7	-2.7	0.2	-15.7	5.7	8.9	-5.5	2.9	-18.1	-2.4	0.4	10.8
2018 Nov.	4.0	5.6	-3.5	-0.3	-1.2	4.8	8.5	-9.0	2.1	-42.4	0.3	1.5	6.8
Dec.	4.2	5.9	-3.3	-0.7	-16.0	5.2	8.7	-8.0	2.2	65.1	-0.2	-2.4	4.3
2019 Jan.	2.6	4.5	-7.0	-0.1	-23.1	5.3	8.8	-7.1	2.3	-6.4	-1.7	-1.4	5.3
Feb.	4.4	6.0	-2.8	-0.1	-25.7	5.6	8.9	-6.0	2.5	-13.6	-3.7	-1.3	8.4
Mar.	5.9	7.7	-2.7	0.2	-15.7	5.7	8.9	-5.5	2.9	-18.1	-2.4	0.4	10.8
Apr. ^(p)	5.8	7.2	-1.0	1.5	0.9	5.8	8.9	-5.2	2.9	1.3	0.0	-0.5	9.5

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

5.3 Credit to euro area residents ¹⁾

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

	Credit to general government			Credit to other euro area residents								
	Total	Loans	Debt securities	Total	Loans					Debt securities	Equity and non-money market fund investment fund shares	
					Total	To non-financial corporations ³⁾	To households ⁴⁾	To financial corporations other than MFIs and ICPFs ³⁾	To insurance corporations and pension funds			
												Adjusted loans ²⁾
1	2	3	4	5	6	7	8	9	10	11	12	
Outstanding amounts												
2016	4,389.3	1,084.0	3,292.1	12,881.4	10,711.1	10,982.1	4,311.4	5,449.3	836.7	113.5	1,387.4	782.9
2017	4,625.9	1,033.3	3,578.7	13,116.4	10,874.1	11,167.4	4,325.4	5,600.0	839.1	109.6	1,442.4	799.8
2018	4,687.0	1,007.4	3,668.2	13,418.0	11,127.0	11,483.8	4,408.8	5,741.5	848.8	127.9	1,520.0	771.0
2018 Q2	4,602.9	1,017.7	3,571.0	13,276.2	10,990.8	11,324.3	4,357.5	5,660.3	853.2	119.8	1,496.6	788.7
Q3	4,627.4	1,003.5	3,609.9	13,363.1	11,064.5	11,394.1	4,396.2	5,702.0	841.9	124.4	1,513.8	784.8
Q4	4,687.0	1,007.4	3,668.2	13,418.0	11,127.0	11,483.8	4,408.8	5,741.5	848.8	127.9	1,520.0	771.0
2019 Q1	4,662.8	1,001.3	3,650.1	13,526.9	11,196.1	11,546.6	4,422.4	5,788.2	854.2	131.4	1,527.4	803.3
2018 Nov.	4,612.6	1,003.4	3,594.3	13,411.9	11,112.4	11,442.1	4,421.2	5,731.8	838.7	120.7	1,516.8	782.8
Dec.	4,687.0	1,007.4	3,668.2	13,418.0	11,127.0	11,483.8	4,408.8	5,741.5	848.8	127.9	1,520.0	771.0
2019 Jan.	4,685.8	1,006.7	3,667.7	13,452.1	11,156.4	11,498.5	4,409.0	5,758.7	861.0	127.7	1,523.0	772.7
Feb.	4,684.7	1,000.8	3,672.0	13,502.1	11,179.3	11,525.9	4,425.1	5,770.4	857.4	126.3	1,533.1	789.8
Mar.	4,662.8	1,001.3	3,650.1	13,526.9	11,196.1	11,546.6	4,422.4	5,788.2	854.2	131.4	1,527.4	803.3
Apr. ^(p)	4,639.6	998.2	3,629.9	13,570.2	11,233.9	11,588.7	4,442.3	5,801.9	863.9	125.7	1,523.5	812.8
Transactions												
2016	485.9	-34.5	520.3	319.7	235.8	259.9	82.5	121.1	43.2	-11.0	80.3	3.6
2017	289.7	-43.2	332.3	361.8	273.9	314.7	82.7	173.7	21.1	-3.5	64.3	23.6
2018	92.4	-28.4	120.8	372.6	304.7	377.3	124.0	166.2	-3.6	18.1	89.4	-21.4
2018 Q2	34.7	-6.0	40.3	85.6	55.5	104.0	17.1	34.9	-3.5	6.9	29.7	0.4
Q3	48.0	-16.2	64.5	105.3	91.0	88.0	48.7	49.9	-12.1	4.5	18.6	-4.2
Q4	40.7	3.9	36.8	65.9	60.1	91.5	16.5	42.0	-1.8	3.4	13.6	-7.7
2019 Q1	-40.4	-6.8	-33.6	107.5	82.9	78.4	25.0	50.1	6.0	1.8	-1.5	26.0
2018 Nov.	-8.3	2.8	-12.1	27.4	30.3	32.8	22.6	18.3	-10.6	0.0	-6.0	3.2
Dec.	57.9	4.1	54.8	6.5	8.4	38.9	-12.8	8.8	5.1	7.2	7.5	-9.3
2019 Jan.	-12.5	-2.3	-10.2	34.8	35.0	18.7	4.3	18.4	12.4	-0.2	0.1	-0.3
Feb.	10.9	-4.8	15.3	46.2	24.8	32.1	17.5	12.9	-4.1	-1.4	7.1	14.3
Mar.	-38.8	0.4	-38.7	26.4	23.1	27.6	3.2	18.8	-2.4	3.5	-8.7	12.0
Apr. ^(p)	-22.6	-3.2	-19.5	40.1	41.5	48.7	24.6	14.0	8.6	-5.7	-6.4	5.0
Growth rates												
2016	12.4	-3.1	18.7	2.5	2.3	2.4	1.9	2.3	5.5	-8.9	6.1	0.5
2017	6.6	-4.0	10.2	2.8	2.6	2.9	1.9	3.2	2.5	-3.1	4.6	3.0
2018	2.0	-2.7	3.4	2.8	2.8	3.4	2.9	3.0	-0.4	16.5	6.2	-2.7
2018 Q2	4.0	-3.9	6.5	2.8	2.9	3.5	2.6	3.0	3.0	6.9	4.8	-1.4
Q3	3.1	-4.4	5.3	3.0	3.0	3.4	3.2	3.1	-0.4	11.7	5.9	-1.1
Q4	2.0	-2.7	3.4	2.8	2.8	3.4	2.9	3.0	-0.4	16.5	6.2	-2.7
2019 Q1	1.8	-2.4	3.1	2.8	2.6	3.2	2.5	3.1	-1.3	14.8	4.1	1.9
2018 Nov.	2.1	-3.8	3.8	2.9	2.8	3.2	3.1	3.2	-1.9	5.2	6.6	-1.8
Dec.	2.0	-2.7	3.4	2.8	2.8	3.4	2.9	3.0	-0.4	16.5	6.2	-2.7
2019 Jan.	2.4	-2.9	3.9	2.5	2.5	3.0	2.3	3.2	-1.8	13.0	5.3	-2.6
Feb.	2.5	-2.6	4.0	2.8	2.7	3.3	2.6	3.2	-1.4	10.6	5.3	-0.3
Mar.	1.8	-2.4	3.1	2.8	2.6	3.2	2.5	3.1	-1.3	14.8	4.1	1.9
Apr. ^(p)	1.3	-2.7	2.5	2.7	2.8	3.4	2.7	3.2	0.6	5.4	2.6	1.2

Source: ECB.

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

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

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

4) Including non-profit institutions serving households.

5 Money and credit

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

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

	Non-financial corporations ²⁾					Households ³⁾				
	Total	Adjusted loans ⁴⁾	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total	Adjusted loans ⁴⁾	Loans for consumption	Loans for house purchase	Other loans
	1					2					3	4	5	6	7	8	9	10
Outstanding amounts										
2016	4,311.4	4,309.1	1,013.3	795.7	2,502.4	5,449.3	5,728.7	615.9	4,084.1	749.3
2017	4,325.4	4,360.1	987.3	820.2	2,517.9	5,600.0	5,866.6	654.4	4,217.0	728.6
2018	4,408.8	4,493.1	995.7	844.3	2,568.7	5,741.5	6,023.3	683.5	4,353.9	704.1
2018 Q2	4,357.5	4,420.5	985.7	828.1	2,543.7	5,660.3	5,941.0	670.1	4,273.3	716.9
Q3	4,396.2	4,459.8	999.7	836.2	2,560.4	5,702.0	5,979.1	678.6	4,311.7	711.7
Q4	4,408.8	4,493.1	995.7	844.3	2,568.7	5,741.5	6,023.3	683.5	4,353.9	704.1
2019 Q1	4,422.4	4,507.6	980.0	852.1	2,590.3	5,788.2	6,065.6	694.2	4,392.0	702.0
2018 Nov.	4,421.2	4,482.7	989.2	850.9	2,581.0	5,731.8	6,010.5	685.6	4,336.4	709.8
Dec.	4,408.8	4,493.1	995.7	844.3	2,568.7	5,741.5	6,023.3	683.5	4,353.9	704.1
2019 Jan.	4,409.0	4,488.9	980.0	846.5	2,582.6	5,758.7	6,037.2	687.5	4,367.2	703.9
Feb.	4,425.1	4,504.8	980.5	851.2	2,593.4	5,770.4	6,051.7	690.7	4,375.6	704.1
Mar.	4,422.4	4,507.6	980.0	852.1	2,590.3	5,788.2	6,065.6	694.2	4,392.0	702.0
Apr. ^(p)	4,442.3	4,524.4	986.1	858.3	2,597.9	5,801.9	6,084.4	695.3	4,405.2	701.4
Transactions										
2016	82.5	100.4	-14.7	43.2	54.0	121.1	113.8	24.1	105.4	-8.4
2017	82.7	131.7	-0.3	38.0	45.0	173.7	165.5	45.1	134.3	-5.8
2018	124.0	174.9	19.6	33.5	70.8	166.2	188.6	39.6	136.4	-9.8
2018 Q2	17.1	48.1	-12.1	10.3	18.9	34.9	44.3	10.4	29.1	-4.6
Q3	48.7	47.8	16.4	9.7	22.6	49.9	48.6	10.3	40.5	-0.9
Q4	16.5	39.8	-2.3	7.4	11.3	42.0	50.8	7.7	39.2	-4.9
2019 Q1	25.0	23.4	-14.4	10.3	29.1	50.1	49.0	11.5	38.9	-0.3
2018 Nov.	22.6	23.0	5.7	8.3	8.6	18.3	18.2	4.2	14.1	0.0
Dec.	-12.8	12.7	8.3	-9.2	-12.0	8.8	14.1	0.1	13.1	-4.4
2019 Jan.	4.3	-2.1	-13.8	2.5	15.6	18.4	15.3	4.4	13.8	0.2
Feb.	17.5	17.2	0.7	5.4	11.4	12.9	17.5	3.3	9.1	0.5
Mar.	3.2	8.2	-1.2	2.4	2.1	18.8	16.1	3.8	16.0	-1.0
Apr. ^(p)	24.6	23.8	7.5	6.7	10.4	14.0	19.4	2.8	10.5	0.8
Growth rates										
2016	1.9	2.4	-1.4	5.7	2.2	2.3	2.0	4.1	2.7	-1.1
2017	1.9	3.1	0.0	4.8	1.8	3.2	2.9	7.3	3.3	-0.8
2018	2.9	4.0	2.0	4.1	2.8	3.0	3.2	6.1	3.2	-1.4
2018 Q2	2.6	4.1	1.4	5.5	2.2	3.0	2.9	7.2	3.1	-1.2
Q3	3.2	4.3	3.3	4.6	2.8	3.1	3.1	6.9	3.2	-0.9
Q4	2.9	4.0	2.0	4.1	2.8	3.0	3.2	6.1	3.2	-1.4
2019 Q1	2.5	3.6	-1.2	4.6	3.3	3.1	3.3	6.0	3.5	-1.5
2018 Nov.	3.1	4.0	1.4	5.3	3.0	3.2	3.3	6.7	3.3	-0.9
Dec.	2.9	4.0	2.0	4.1	2.8	3.0	3.2	6.1	3.2	-1.4
2019 Jan.	2.3	3.4	-0.4	3.6	2.9	3.2	3.2	6.1	3.5	-1.2
Feb.	2.6	3.8	0.1	4.5	3.0	3.2	3.3	6.0	3.5	-1.2
Mar.	2.5	3.6	-1.2	4.6	3.3	3.1	3.3	6.0	3.5	-1.5
Apr. ^(p)	2.7	3.9	-0.8	5.2	3.3	3.2	3.4	5.8	3.5	-1.2

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

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

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

	MFI liabilities						MFI assets			
	Central government holdings ²⁾	Longer-term financial liabilities vis-à-vis other euro area residents					Net external assets	Other		
		Total	Deposits with an agreed maturity of over 2 years	Deposits redeemable at notice of over 3 months	Debt securities with a maturity of over 2 years	Capital and reserves		Total		
								Repos with central counterparties ³⁾	Reverse repos to central counterparties ³⁾	
1	2	3	4	5	6	7	8	9	10	
Outstanding amounts										
2016	307.7	6,955.9	2,089.5	70.9	2,145.9	2,649.6	1,124.8	257.0	205.9	121.6
2017	343.9	6,768.4	1,968.3	59.7	2,014.1	2,726.2	935.5	299.8	143.5	92.5
2018	378.9	6,808.4	1,941.4	56.0	2,090.6	2,720.4	1,028.6	428.0	187.0	194.9
2018 Q2	330.7	6,708.6	1,950.7	58.4	2,025.6	2,673.9	858.8	422.8	174.1	183.8
Q3	403.7	6,693.6	1,934.8	56.9	2,048.5	2,653.5	881.1	424.5	177.3	183.0
Q4	378.9	6,808.4	1,941.4	56.0	2,090.6	2,720.4	1,028.6	428.0	187.0	194.9
2019 Q1	367.8	6,903.7	1,937.7	55.6	2,145.7	2,764.6	1,175.7	418.9	199.0	212.3
2018 Nov.	390.6	6,784.9	1,929.9	55.8	2,098.7	2,700.5	1,039.3	418.4	196.1	204.4
Dec.	378.9	6,808.4	1,941.4	56.0	2,090.6	2,720.4	1,028.6	428.0	187.0	194.9
2019 Jan.	377.3	6,855.5	1,939.7	55.6	2,111.2	2,749.0	1,066.0	392.1	199.0	208.4
Feb.	408.9	6,874.1	1,936.6	55.6	2,141.4	2,740.5	1,110.2	416.2	198.1	210.5
Mar.	367.8	6,903.7	1,937.7	55.6	2,145.7	2,764.6	1,175.7	418.9	199.0	212.3
Apr. ^(p)	362.3	6,887.5	1,933.5	56.0	2,129.4	2,768.6	1,189.0	416.9	218.5	232.1
Transactions										
2016	22.0	-122.9	-71.3	-8.6	-118.7	75.7	-278.3	-90.2	12.8	-12.0
2017	39.1	-74.9	-83.7	-6.6	-72.0	87.4	-92.5	-65.6	-60.9	-27.6
2018	39.0	44.7	-37.8	-4.9	17.0	70.4	64.6	44.9	21.8	24.2
2018 Q2	-10.4	-10.0	-4.8	-1.1	-15.0	11.0	-62.2	88.7	16.4	19.4
Q3	76.4	29.8	-16.2	-1.5	19.2	28.4	38.9	-11.3	3.2	-0.8
Q4	-24.1	16.0	-0.4	-0.9	3.4	13.9	34.7	21.4	9.7	11.9
2019 Q1	-11.1	51.2	-10.7	-0.3	45.2	17.0	111.7	-4.9	2.7	5.5
2018 Nov.	-7.9	-4.5	-6.1	-0.9	-2.3	4.7	48.8	-37.1	29.0	30.0
Dec.	-10.9	6.3	5.7	0.2	1.2	-0.8	-27.6	28.2	-9.1	-9.5
2019 Jan.	-1.6	20.1	-6.0	-0.4	20.5	5.9	20.6	-32.6	12.0	13.5
Feb.	31.5	21.0	-3.2	0.0	26.3	-2.2	42.0	18.7	-0.9	2.1
Mar.	-41.0	10.2	-1.5	0.0	-1.6	13.2	49.2	9.0	-8.4	-10.2
Apr. ^(p)	-5.5	-11.1	-3.6	0.4	-15.4	7.6	19.8	0.0	19.5	19.8
Growth rates										
2016	7.8	-1.7	-3.4	-10.9	-5.3	2.9	-	-	6.3	-9.0
2017	12.6	-1.1	-4.0	-9.7	-3.4	3.3	-	-	-29.7	-22.7
2018	11.3	0.7	-1.9	-8.1	0.8	2.7	-	-	11.0	2.2
2018 Q2	6.5	-0.9	-3.2	-10.8	-2.5	2.4	-	-	-3.6	-18.0
Q3	14.3	0.0	-2.8	-9.3	0.0	2.3	-	-	7.7	4.9
Q4	11.3	0.7	-1.9	-8.1	0.8	2.7	-	-	11.0	2.2
2019 Q1	8.9	1.3	-1.6	-6.4	2.5	2.6	-	-	18.9	12.7
2018 Nov.	24.7	0.6	-2.1	-9.1	0.8	2.6	-	-	-0.1	-24.6
Dec.	11.3	0.7	-1.9	-8.1	0.8	2.7	-	-	11.0	2.2
2019 Jan.	18.9	0.8	-1.9	-7.7	1.0	2.8	-	-	28.0	22.7
Feb.	19.6	1.3	-1.8	-7.1	2.9	2.7	-	-	35.9	27.9
Mar.	8.9	1.3	-1.6	-6.4	2.5	2.6	-	-	18.9	12.7
Apr. ^(p)	4.6	1.0	-1.9	-5.2	2.1	2.5	-	-	41.6	44.3

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
2015	-2.0	-1.9	-0.2	0.1	-0.1	0.3
2016	-1.6	-1.7	-0.1	0.2	0.1	0.6
2017	-1.0	-1.3	0.0	0.2	0.1	1.0
2018	-0.5	-1.1	0.1	0.2	0.3	1.3
2018 Q1	-0.8	.	.	.	.	1.1
Q2	-0.5	.	.	.	.	1.3
Q3	-0.4	.	.	.	.	1.4
Q4	-0.5	.	.	.	.	1.3

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
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	12.5	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	5.2	2.0	22.4	3.8
2018	46.3	45.9	13.0	13.0	15.2	0.4	46.8	43.1	9.8	5.1	1.8	22.3	3.7
2018 Q1	46.1	45.7	12.9	12.9	15.2	0.4	46.9	43.1	9.8	5.2	1.9	22.4	3.8
Q2	46.2	45.8	12.9	13.0	15.2	0.4	46.7	43.0	9.8	5.2	1.9	22.3	3.7
Q3	46.3	45.9	13.0	13.0	15.2	0.4	46.7	43.1	9.8	5.2	1.9	22.3	3.7
Q4	46.3	45.9	13.0	13.0	15.2	0.4	46.8	43.1	9.8	5.2	1.8	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
2015	90.1	2.8	16.4	70.9	44.3	27.5	45.7	9.1	81.0	17.5	31.3	41.3	88.0	2.1
2016	89.2	2.7	15.6	70.9	46.8	30.7	42.5	8.8	80.5	17.2	29.8	42.2	87.2	2.1
2017	87.1	2.6	14.5	70.0	47.6	32.1	39.5	8.0	79.0	15.8	28.9	42.3	85.2	1.8
2018	85.1	2.6	13.7	68.9	47.3	32.3	37.8	7.5	77.7	15.6	28.2	41.3	83.7	1.5
2018 Q1	87.2	2.6	14.2	70.3	.	.	.	.	.	.	.	.	.	.
Q2	86.6	2.6	14.0	70.1	.	.	.	.	.	.	.	.	.	.
Q3	86.5	2.6	13.8	70.0	.	.	.	.	.	.	.	.	.	.
Q4	85.2	2.6	13.7	68.9	.	.	.	.	.	.	.	.	.	.

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

6 Fiscal developments

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

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

	Change in debt-to-GDP ratio ²⁾	Primary deficit (+)/surplus (-)	Deficit-debt adjustment							Interest-growth differential	Memo item: Borrowing requirement	
			Total	Transactions in main financial assets				Revaluation effects and other changes in volume	Other			
				Total	Currency and deposits	Loans	Debt securities					Equity and investment fund shares
	1	2	3	4	5	6	7	8	9	10	11	12
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	-0.4	1.6
2017	-2.2	-1.0	-0.1	0.3	0.5	0.0	-0.2	0.1	-0.1	-0.4	-1.1	0.9
2018	-1.9	-1.3	0.3	0.3	0.4	-0.1	0.0	0.1	0.0	0.0	-0.9	0.8
2018 Q1	-2.4	-1.1	-0.1	0.5	0.5	0.0	-0.1	0.1	-0.1	-0.5	-1.1	0.8
Q2	-2.8	-1.3	-0.2	0.3	0.2	-0.1	0.0	0.2	-0.1	-0.4	-1.3	0.5
Q3	-2.1	-1.4	0.5	0.7	0.6	0.0	0.0	0.2	-0.1	-0.1	-1.1	1.0
Q4	-1.9	-1.3	0.3	0.5	0.4	-0.1	0.0	0.1	0.0	-0.2	-0.9	0.8

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

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

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

6.5 Government debt securities ¹⁾

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

	Debt service due within 1 year ²⁾					Average residual maturity in years ³⁾	Average nominal yields ⁴⁾						
	Total	Principal		Interest			Outstanding amounts				Transactions		
		Maturities of up to 3 months	Maturities of up to 3 months	Total	Floating rate		Zero coupon	Fixed rate	Maturities of up to 1 year	Issuance	Redemption		
	1											2	3	4	5	6	7	8	9	10	11	12	13
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
2018	12.6	11.1	3.7	1.5	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	0.9
2018 Q1	12.6	11.0	4.1	1.6	0.4	7.2	2.4	1.1	-0.2	2.8	2.5	0.4	1.1
Q2	12.5	10.9	3.4	1.6	0.4	7.3	2.4	1.1	-0.2	2.8	2.5	0.4	0.9
Q3	12.7	11.1	3.7	1.6	0.4	7.3	2.3	1.1	-0.1	2.7	2.6	0.4	0.9
Q4	12.6	11.1	3.7	1.5	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	0.9
2018 Nov.	13.0	11.5	3.6	1.6	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.5	1.0
Dec.	12.6	11.1	3.7	1.5	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	0.9
2019 Jan.	12.9	11.3	3.9	1.5	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	0.9
Feb.	12.7	11.2	4.0	1.5	0.4	7.3	2.3	1.1	0.0	2.7	2.4	0.4	0.9
Mar.	12.7	11.2	3.8	1.5	0.4	7.4	2.3	1.1	0.0	2.6	2.5	0.5	1.0
Apr.	13.0	11.5	3.8	1.5	0.4	7.4	2.3	1.1	0.0	2.6	2.5	0.5	1.1

Source: ECB.

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

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

3) Residual maturity at the end of the period.

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

6 Fiscal developments

6.6 Fiscal developments in euro area countries

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

	Belgium	Germany	Estonia	Ireland	Greece	Spain	France	Italy	Cyprus	
	1	2	3	4	5	6	7	8	9	
Government deficit (-)/surplus (+)										
2015	-2.4	0.8	0.1	-1.9	-5.6	-5.3	-3.6	-2.6	-1.3	
2016	-2.4	0.9	-0.3	-0.7	0.5	-4.5	-3.5	-2.5	0.3	
2017	-0.8	1.0	-0.4	-0.3	0.7	-3.1	-2.8	-2.4	1.8	
2018	-0.7	1.7	-0.6	0.0	1.1	-2.5	-2.5	-2.1	-4.8	
2018 Q1	-0.9	1.3	-0.3	-0.4	1.0	-2.9	-2.7	-2.4	2.6	
Q2	-0.4	1.9	0.0	-0.6	0.8	-2.7	-2.8	-2.0	3.5	
Q3	-0.3	2.0	0.0	-0.5	0.8	-2.6	-2.6	-2.1	-4.9	
Q4	-0.7	1.7	-0.6	0.0	1.1	-2.5	-2.5	-2.1	-4.8	
Government debt										
2015	106.4	71.6	9.9	76.8	175.9	99.3	95.6	131.6	108.0	
2016	106.1	68.5	9.2	73.5	178.5	99.0	98.0	131.4	105.5	
2017	103.4	64.5	9.2	68.5	176.2	98.1	98.4	131.4	95.8	
2018	102.0	60.9	8.4	64.8	181.1	97.1	98.4	132.2	102.5	
2018 Q1	106.4	63.4	9.0	69.3	177.9	98.7	99.5	133.1	92.9	
Q2	105.9	62.2	8.7	69.2	177.5	98.2	99.2	133.5	102.9	
Q3	105.3	61.8	8.5	68.7	182.3	98.3	99.5	133.5	110.1	
Q4	102.0	60.9	8.4	64.8	181.1	97.1	98.5	132.2	102.5	
	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Austria	Portugal	Slovenia	Slovakia	Finland
	10	11	12	13	14	15	16	17	18	19
Government deficit (-)/surplus (+)										
2015	-1.4	-0.3	1.4	-1.0	-2.0	-1.0	-4.4	-2.8	-2.6	-2.8
2016	0.1	0.2	1.9	0.9	0.0	-1.6	-2.0	-1.9	-2.2	-1.7
2017	-0.6	0.5	1.4	3.4	1.2	-0.8	-3.0	0.0	-0.8	-0.8
2018	-1.0	0.7	2.4	2.0	1.5	0.1	-0.5	0.7	-0.7	-0.7
2018 Q1	-0.4	0.4	1.6	3.0	1.6	-0.6	-0.7	0.4	-0.6	-0.5
Q2	-0.2	0.7	1.6	3.8	1.8	0.1	-1.1	0.5	-0.6	-0.6
Q3	-0.5	0.6	2.0	3.4	2.0	0.2	-0.2	0.5	-0.5	-0.4
Q4	-1.0	0.7	2.4	2.0	1.5	0.1	-0.5	0.7	-0.7	-0.7
Government debt										
2015	36.8	42.6	22.2	57.9	64.6	84.7	128.8	82.6	52.2	63.4
2016	40.3	40.0	20.7	55.5	61.9	83.0	129.2	78.7	51.8	63.0
2017	40.0	39.4	23.0	50.2	57.0	78.2	124.8	74.1	50.9	61.3
2018	35.9	34.2	21.4	46.0	52.4	73.8	121.5	70.1	48.9	58.9
2018 Q1	35.5	36.0	22.3	49.8	55.1	77.0	125.4	75.5	50.9	59.9
Q2	36.9	35.0	22.0	49.0	53.9	76.3	124.9	72.6	51.9	59.5
Q3	37.0	35.0	21.7	46.0	52.9	75.4	124.8	71.1	51.5	58.8
Q4	35.9	34.2	21.4	46.0	52.4	73.8	121.5	70.1	48.9	58.9

Source: Eurostat.

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Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

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