EUROPEAN CENTRAL BANK

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Contents

Economic and monetary developments

Overview

At its monetary policy meeting on 8 December 2016, based on the regular economic and monetary analyses, the Governing Council conducted a comprehensive assessment of the economic and inflation outlook and the monetary policy stance. The assessment confirmed the need to extend the asset purchase programme beyond March 2017 to preserve the very substantial amount of monetary support that is necessary to secure a sustained convergence of inflation rates towards levels below, but close to, 2% over the medium term.

Economic and monetary assessment at the time of the Governing Council meeting of 8 December 2016

Global activity has improved in the second half of the year and is expected to continue strengthening, although remaining below its pre-crisis pace. Continued accommodative policies and improving labour markets have supported activity in the United States, but uncertainty about the US and global outlook has increased since the US election. In Japan the pace of expansion is expected to remain moderate, while the medium-term growth prospects of the United Kingdom are likely to be restrained by heightened uncertainty related to the country's future relations with the EU. Moreover, while the ongoing gradual deceleration of Chinese growth is likely to weigh on other emerging market economies, the gradual easing of deep recessions in some of the larger commodity-exporting countries is increasingly supporting global growth. Oil prices have risen following the OPEC agreement of 30 November and the effects of past oil price declines on global headline inflation are slowly diminishing. However, the still abundant global spare capacity is restraining underlying inflation.

Euro area sovereign yields have risen recently and the EONIA forward curve has steepened. The increase in nominal yields that has taken place since early October in part reflects the global upward trend in longer-term interest rates, which was most pronounced in the United States. The increase in nominal yields translated into a rise in the level and steepness of the EONIA forward curve. Corporate bond spreads increased slightly, but remained lower than in early March 2016, when the Eurosystem's corporate sector purchase programme started. While broad equity prices rose marginally in the euro area, bank equity outperformed the broad index.

The economic recovery in the euro area is continuing. Euro area real GDP increased by 0.3%, quarter on quarter, in the third quarter of 2016, following similar growth in the second quarter. Incoming data, notably survey results, point to a continuation of the growth trend in the fourth quarter of 2016.

Looking further ahead, the Governing Council expects the economic expansion to proceed at a moderate but firming pace. The pass-through of the ECB's monetary policy measures to the real economy is supporting domestic demand and has facilitated deleveraging. Improvements in corporate profitability and very favourable financing conditions continue to promote a recovery in investment. Moreover, sustained employment gains, which are also benefiting from past structural reforms, provide support for households' real disposable income and private consumption. At the same time, there are indications of a somewhat stronger global recovery. However, economic growth in the euro area is expected to be dampened by a sluggish pace of implementation of structural reforms and remaining balance sheet adjustments in a number of sectors.

The December 2016 Eurosystem staff macroeconomic projections for the euro area foresee annual real GDP increasing by 1.7% in 2016 and 2017, and by 1.6% in 2018 and 2019. Compared with the September 2016 ECB staff macroeconomic projections, the outlook for real GDP growth is broadly unchanged. The risks surrounding the euro area growth outlook remain tilted to the downside.

According to Eurostat's flash estimate, euro area annual HICP inflation in November 2016 was 0.6%, up further from 0.5% in October and 0.4% in September. This reflected to a large extent an increase in annual energy inflation, while there are no signs yet of a convincing upward trend in underlying inflation.

Looking ahead, on the basis of current oil futures prices, headline inflation rates are likely to pick up significantly further at the turn of the year, to rates above 1%, mainly owing to base effects in the annual rate of change of energy prices. Supported by the ECB's monetary policy measures, the expected economic recovery and the corresponding gradual absorption of slack, inflation rates should increase further in 2018 and 2019.

The December 2016 Eurosystem staff macroeconomic projections for the euro area foresee annual HICP inflation at 0.2% in 2016, 1.3% in 2017, 1.5% in 2018 and 1.7% in 2019. By comparison with the September 2016 ECB staff macroeconomic projections, the outlook for headline HICP inflation is broadly unchanged.

Low interest rates and the effects of the ECB's non-standard monetary policy measures continue to support money and credit dynamics. Broad money growth remained stable in the third quarter of 2016 but declined somewhat in October. At the same time, loan growth to the private sector increased in October. Domestic sources of money creation remained the main driver of broad money growth. The effects of the ECB's monetary policy measures continue to support growth in money and credit. Banks have been passing on their favourable funding conditions, leading to lower lending rates and improved credit supply, thereby contributing to the gradual recovery in loan dynamics. The annual flow of total external financing to non-financial corporations is estimated to have continued to strengthen in the third quarter of 2016.

Monetary policy decisions

In the pursuit its price stability objective, the Governing Council took the following decisions:

- As regards non-standard monetary policy measures, the Eurosystem will continue to make purchases under the asset purchase programme (APP) at the current monthly pace of €80 billion until the end of March 2017. From April 2017, net asset purchases are intended to continue at a monthly pace of €60 billion until the end of December 2017, or beyond, if necessary, and in any case until the Governing Council sees a sustained adjustment in the path of inflation consistent with its inflation aim. If, in the meantime, the outlook becomes less favourable, or if financial conditions become inconsistent with further progress towards a sustained adjustment of the path of inflation, the Governing Council intends to increase the programme in terms of size and/or duration. The net purchases will be made alongside reinvestments of the principal payments from maturing securities purchased under the APP.

- To ensure the continued smooth implementation of the Eurosystem's asset purchases, the Governing Council decided to adjust the parameters of the APP as of January 2017 as follows. First, the maturity range of the public sector purchase programme will be broadened by decreasing the minimum remaining maturity for eligible securities from two years to one year. Second, purchases of securities under the APP with a yield to maturity below the interest rate on the ECB's deposit facility will be permitted to the extent necessary.

- The key ECB interest rates were kept unchanged and the Governing Council continues to expect them to remain at present or lower levels for an extended period of time, and well past the horizon of net asset purchases.

The extension of the APP has been calibrated to preserve the very substantial degree of monetary accommodation necessary to secure a sustained convergence of inflation rates towards levels below, but close to, 2% over the medium term. Together with the sizeable volume of past purchases and forthcoming reinvestments, it ensures that financial conditions in the euro area will remain very favourable, which continues to be crucial to achieve the ECB's objective. In particular, the extension of Eurosystem purchases over a longer horizon allows for a more sustained market presence and, therefore, a more lasting transmission of the ECB's stimulus measures. This calibration reflects the moderate but firming recovery of the euro area economy and still subdued underlying inflationary pressures. The Governing Council will closely monitor the evolution of the outlook for price stability and, if warranted to achieve its objective, will act by using all the instruments available within its mandate.

1 External environment

Global activity has improved in the second half of this year and is expected to continue strengthening, although remaining below its pre-crisis pace. Global inflation is still dampened by the effects of past oil price declines and the abundant global spare capacity is expected to weigh on underlying inflation over the medium term.

Global economic activity and trade

Global activity has improved in the second half of this year. Data released in the past few months suggest relatively stable expansion in advanced economies and a slight improvement in emerging market economies (EMEs). The medium-term outlook for global activity remains one of strengthening growth, albeit below its pre-crisis pace. The global outlook continues to be overshadowed by several factors, including the adverse effect of low commodity prices on commodity-exporting countries, the gradual rebalancing of the Chinese economy, and growing policy uncertainty in the United States.

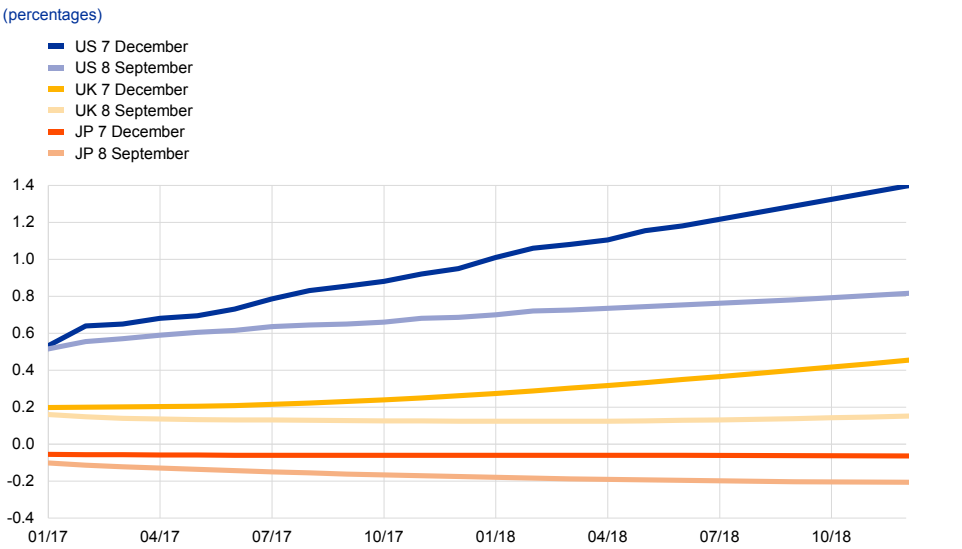
Financial markets have shown resilience in advanced economies, while signs of pressure seem to be emerging in some EMEs. US long-term bond yields have increased markedly owing partly to market expectations of higher inflation associated with possible fiscal stimulus. Volatility in stock markets has diminished in the last few weeks and stock markets in advanced economies have gained some momentum. Emerging market economies have benefited from an improvement in financing conditions in recent quarters, but since the US election in November the return of capital flows towards EMEs has started to unwind, EME government bond spreads have increased and pressures on EME currencies have intensified.

Monetary policies remain accommodative. The federal funds futures curve has shifted upwards in recent months, partly reflecting the anticipation of more expansionary fiscal policies in the United States (see Chart 1). By contrast, the Bank of England cut interest rates and announced further quantitative easing at its meeting in August, and the Bank of Japan introduced some changes to its monetary framework in September, i.e. yield curve control and commitment to overshoot its inflation target.

Recent data releases point to a strengthening in global economic activity in the second half of the year. Excluding the euro area, the global composite output Purchasing Managers' Index (PMI) remained unchanged in November, at 53.3, pointing to solid global growth in the last quarter of the year (see Chart 2). Developments in November were positive across most advanced and emerging market economies. Along the same lines, OECD coincident leading indicators point to stable growth momentum in advanced economies, but to improving growth momentum in major emerging economies. Overall, growth appears to be holding up in advanced economies and seems to have bottomed out in EMEs.

Chart 1

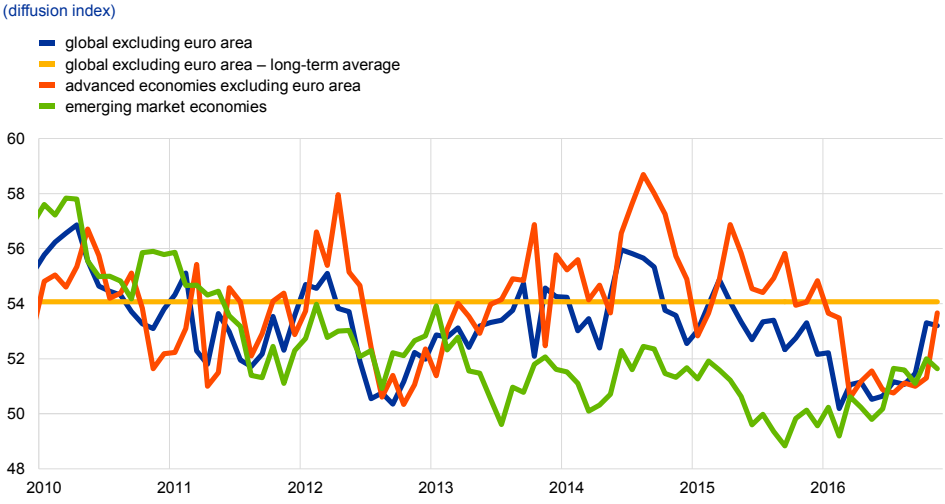
Policy rates expectations



Sources: Bloomberg and Bank of England.

Chart 2

Global composite output PMI



Sources: Haver Analytics and ECB staff calculations.
Notes: The latest observations are for November 2016. Emerging market economies is an aggregate of China, Russia, Brazil, India and Turkey. Advanced economies includes the United States, the United Kingdom and Japan. Long-term average refers to the period from January 1999 until November 2016.

Economic activity in the United States improved markedly in the third quarter of 2016, following modest growth in the first half of the year. Net exports and inventory investment rebounded strongly and made an important contribution to real GDP growth in the third quarter, while private fixed investment remained weak and consumer spending softened. Looking forward, growth is expected to expand at a moderate pace, supported by improved economic fundamentals. Policy uncertainty resulting from the US presidential election has increased. As expectations for fiscal

stimulus have risen, this led to some tightening in financial conditions, in particular long-term rates.

In the United Kingdom, despite heightened uncertainty in the immediate aftermath of the referendum on EU membership, economic activity in the third quarter was resilient. GDP growth in the third quarter was supported by robust consumption and a large contribution from net trade, while investment held up well. However, uncertainty about the future EU-UK trade relationship is projected to be a drag on investment, while the recent depreciation of the pound sterling will weigh on consumption.

In Japan, although real GDP grew at a robust pace in the third quarter, underlying economic activity continues to advance modestly. Headwinds from soft foreign demand and weak private consumption prevail. Looking ahead, accommodative financial conditions and positive corporate profits should spur investment. Exports are expected to pick up gradually as foreign demand increases despite the past appreciation of the yen. By contrast, private consumption is expected to continue at a modest pace. Fiscal stimulus measures are expected to support domestic demand over the next few years.

China's growth stabilised in the third quarter of the year, supported by strong consumption and infrastructure spending. While the near-term outlook is dominated by the extent of the policy stimulus, economic growth is expected to remain on a gradual downward trend in the medium term. Investment growth will continue to moderate as overcapacity is gradually cut back. Consumption is foreseen to be the main driver of growth.

Real economic activity in central and eastern Europe is projected to remain relatively resilient across most of the region. It is expected to benefit from strong investment supported by EU structural funds as well as dynamic private consumption driven by higher real disposable income and improving labour markets in a low inflation environment.

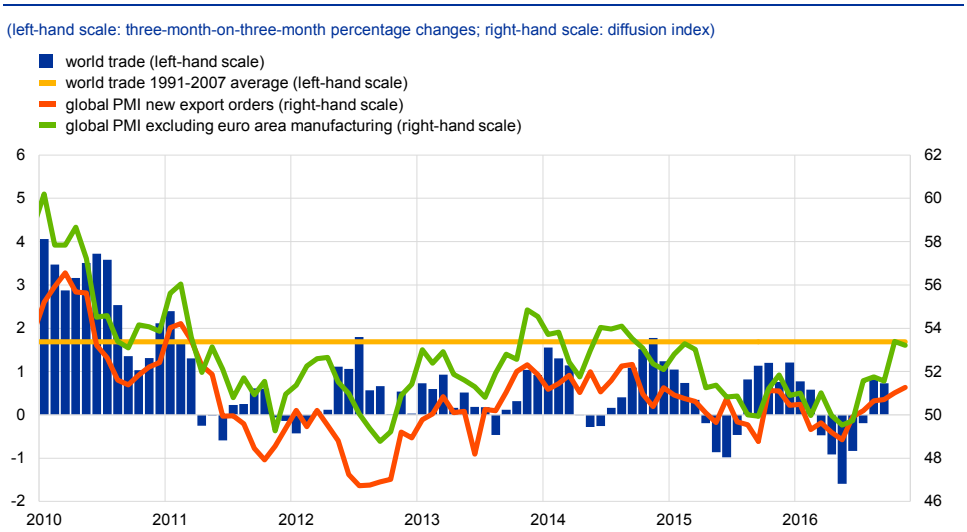
Output in large commodity exporters is showing signs of a rebound, following the deep recessions. Available data suggest some improvement in economic activity in Russia. Financial conditions have eased as the central bank has reduced policy rates due to the ongoing disinflation process, but uncertainty remains high and consumer confidence is weak. Although the rebound in oil prices will provide some respite, necessary fiscal consolidation will weigh on the business environment. In Brazil the deep and protracted recession is expected to slowly bottom out in the second half of the year, amid reduced political uncertainty and loosening financial conditions. On the other hand, large fiscal consolidation needs are expected to weigh on the medium-term outlook.

Global trade has gained some momentum in the second half of this year. Excluding the euro area, global imports were revised slightly upwards in the first half of 2016 and available indicators point to positive signals about short-term prospects. According to data from the Netherlands Bureau for Economic Policy Analysis (CPB), following two quarters of negative growth, the volume of world imports of goods

increased by 0.7% in the third quarter (see Chart 3). The global PMI for new export orders increased further in November, pointing to improving global trade momentum in the last quarter of the year. Looking further ahead, world trade is expected to expand in line with the recovery in global activity. The slowdown in trade in the past few years is mostly structural and likely to persist.[1] Therefore it is assumed that the medium-term elasticity of global imports to GDP growth remains significantly below pre-crisis levels.

Chart 3

World trade in goods



Sources: Markit, CPB and ECB calculations.
Note: The latest observations are for November 2016 (PMIs) and September 2016 (trade).

Overall, global growth is projected to increase gradually over 2016-19. According to the December 2016 Eurosystem staff macroeconomic projections, world real GDP growth excluding the euro area is projected to accelerate gradually from 3.0% in 2016 to 3.5% in 2017, 3.7% in 2018 and 3.8% in 2019. Euro area foreign demand growth is expected to increase from 1.5% in 2016 to 2.4% in 2017, 3.4% in 2018 and 3.6% in 2019. Compared to the September 2016 projections, global growth remains broadly unchanged, while euro area foreign demand growth has been revised slightly downwards, mainly owing to lower import growth in some advanced economies.

The uncertainty surrounding the baseline projections for global activity has increased recently but the balance of risks remains tilted to the downside, particularly for EMEs. On the upside, the possible adoption of a more expansionary US fiscal policy stance could provide support to the US and global economies. Downside risks include a possible rise in trade protectionism and a tightening in global financial conditions, which could expose countries with prevailing internal or external imbalances to intensified financial market pressures. An unwinding of excess leverage in EMEs, in particular in China, could also prompt slower domestic

[1] For more details see "Understanding the weakness in global trade. What is the new normal?" ECB Occasional Paper No 178, September 2016.

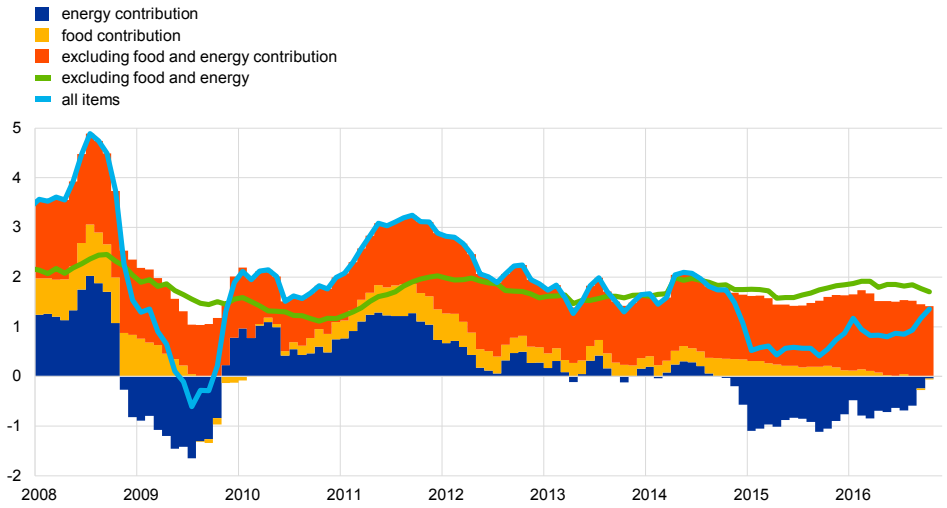
demand growth, raise financial stability concerns and trigger capital outflows. Finally, geopolitical risks continue to exist.

Global price developments

The effects of past oil price declines continue to weigh on global headline inflation, although the impact is slowly diminishing. In the OECD countries, annual consumer price index (CPI) inflation increased to 1.4% in October, from 1.2% the previous month, on the back of less negative growth in both energy and food prices. Although remaining at low levels, this represents a significant increase relative to the first half of the year, when CPI inflation was, on average, 0.9%. Excluding food and energy, OECD annual inflation declined slightly in October, to 1.7% (see Chart 4). Among advanced economies, headline inflation increased in the United States, Japan and Canada, while it decreased modestly in the United Kingdom. In major non-OECD economies, inflation declined in India, Brazil and Russia, while it increased in China.

Chart 4
OECD consumer price inflation

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



Source: OECD.
Note: The latest observation is for October 2016.

The price of oil increased markedly after the OPEC meeting on 30 November. Earlier, the OPEC announcement of its intention to reinstate a production quota fostered uncertainty in the market. Following the coordinated decision by OPEC and some non-OPEC producers to cut production in the first half of 2017, by 1.2 and 0.6 million barrels per day respectively, the price of Brent crude oil soared by more than 10% to USD 52 per barrel on 7 December (from USD 46 on 29 November). Looking forward, record-high inventories still act as a buffer against large price increases, but the combined supply restriction will favour a smooth destocking of inventories. Box 1 reviews OPEC's new supply strategy and discusses the outlook for oil prices in the short to medium run under alternative supply patterns. Aggregate non-oil commodity

prices rose robustly driven by the reaction of metal prices to news of China's demand remaining strong and, more recently, to the announcement of new investments in infrastructure in the United States.

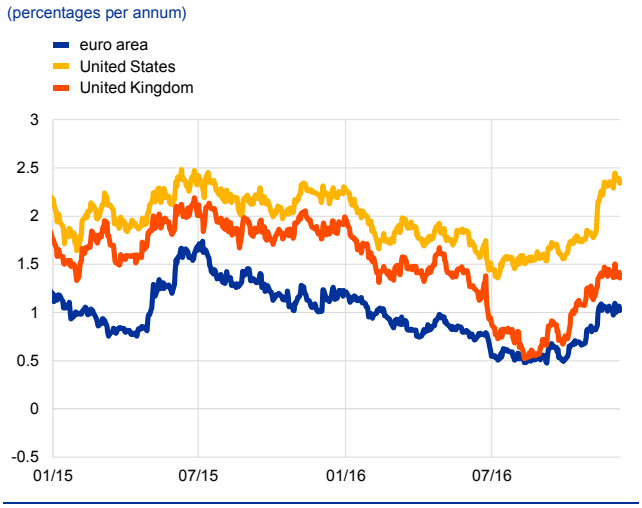
Global inflation is expected to rise slowly going forward. The effects of past falls in oil and other commodity prices are anticipated to continue diminishing, lessening the drag on headline inflation. Further ahead, the upward sloping oil futures curve anticipates increases in oil prices over the projection horizon. On the other hand, still abundant global spare capacity is expected to weigh on underlying inflation for some time to come.

2 Financial developments

Since the Governing Council monetary policy meeting in September, euro area sovereign yields have risen and the EONIA forward curve has steepened. The increase in nominal yields has taken place mainly on account of higher inflation expectations. Corporate bond spreads increased slightly, but remained lower than in early March 2016, when the corporate sector purchase programme (CSPP) was announced. Broad equity prices rose marginally in the euro area, while bank equity prices outperformed the broad index.

Chart 5

Ten-year sovereign bond yields in the euro area, the United States and the United Kingdom



Sources: Bloomberg and ECB.
Note: For the euro area, the GDP-weighted average of ten-year euro area sovereign bond yields is reported.

Long-term euro area government bond yields have risen since early September. During the review period (from 8 September to 7 December 2016), the euro area ten-year overnight index swap (OIS) rate rose by around 50 basis points to 0.35%. Over the same period, the GDP-weighted ten-year euro area sovereign bond yield also rose by 50 basis points, to just above 1% (see Chart 5). The increase in interest rates started in early October and reversed around half of the sizeable decline in euro area OIS yields that had taken place since the beginning of the year. This brought the ten-year OIS rate back to the level seen in mid-February. Across countries, ten-year sovereign yields also rose, by between 40 and 90 basis points, while sovereign spreads vis-à-vis the German Bund ten-year rate widened by between 5 and 50 basis points, with the exception of Greece, where spreads declined by over 200 basis points. The largest increase in sovereign spreads took place in Italy and was mainly associated with political uncertainty stemming from the country's constitutional referendum held on 4 December.

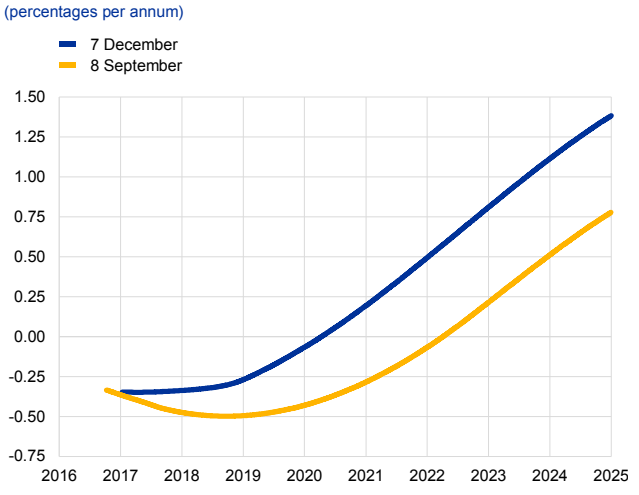
The increases in euro area OIS and sovereign yields since early October reflected in part the global upward trend in longer-term interest rates. This trend was most pronounced in the United States, where yields rose mainly on the back of increasing market expectations of higher inflation associated with possible fiscal stimulus and protectionism, with likely implications for the course of monetary policy. In the euro area, higher yields first mainly reflected a rise in real interest rates. After the US presidential election, however, inflation expectations played a leading role in the rise in nominal yields.

The increase in nominal yields translated into a significant rise in the level and steepness of the EONIA forward curve. A sizeable change has occurred in the shape and position of the EONIA forward curve since early October, with the steepness of the curve rising by around 60 basis points over the review period (see Chart 6). Changes in the shape of the curve suggest that the higher nominal yields over the review period also stemmed from reduced expectations of ECB policy accommodation. This can be seen from the disappearance of the downward-sloping

shorter segment of the curve, which turned flat, indicating that market participants do not expect further deposit facility rate cuts. The EONIA remained stable during the review period at around -35 basis points. In line with the usual pattern, the EONIA temporarily rose to -32 basis points around the end of the third quarter of 2016. During the review period, excess liquidity in the banking sector[2] increased by around €147 billion to €1,185 billion, driven mainly by purchases under the Eurosystem's expanded asset purchase programme. Box 2 contains more detailed information on developments in euro area liquidity conditions and monetary policy operations.

Chart 6

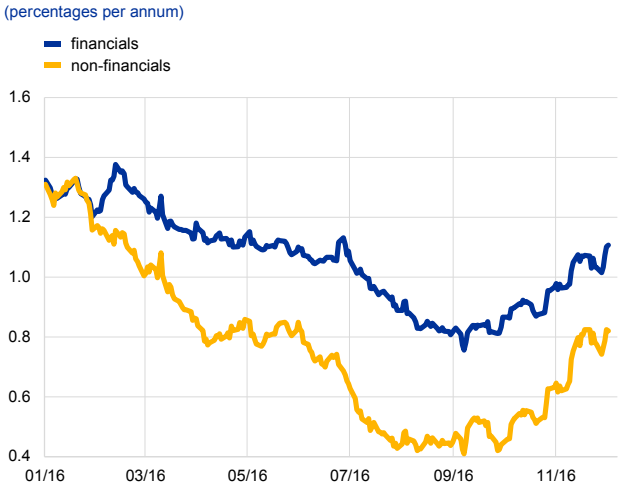
EONIA forward rates



Sources: Thomson Reuters and ECB calculations.

Chart 7

Euro area corporate bond yields



Source: Thomson Reuters.
Note: Average yield of the rating classes between AAA and BBB.

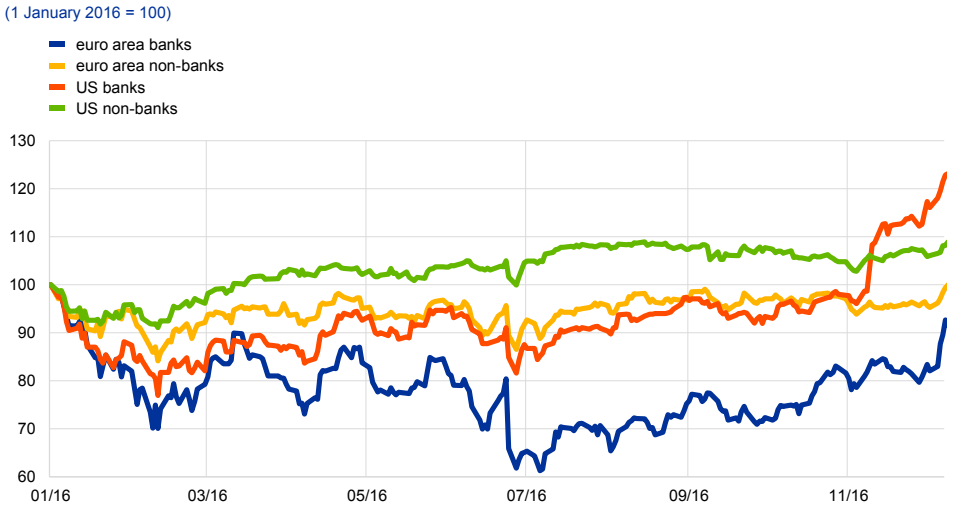
The downward trend in spreads on bonds issued by non-financial corporations (NFCs), which had prevailed since the Governing Council's announcement of the CSPP in March, stopped. After a phase of declining yields which started around mid-February – including a short-lived reversal in June attributable to the tensions sparked by the UK referendum – yields on bonds issued by euro area NFCs have risen across all rating classes since early September (see Chart 7). The increases, however, were mild overall – around 35 basis points on average across rating classes – and spreads over risk-free rates increased only slightly. As such, higher corporate bond yields do not currently indicate a strong increase in the market perception of corporate risks. Corporate bond spreads over the corresponding AAA-rated euro area curve widened by around 10-20 basis points depending on the NFC bond ratings. Despite the recent increases, on 7 December spreads on NFC bonds rated AA, A and BBB were still between 10 and 35 basis points lower than in early March 2016, when the Governing Council announced the launch of the CSPP. In the financial sector, bond spreads also rose slightly across all rating classes during the review period, by between 2 and 20 basis points.

[2] Excess liquidity is defined as deposits in the deposit facility net of the recourse to the marginal lending facility, plus current account holdings in excess of those contributing to the minimum reserve requirements.

Broad euro area equity prices have risen marginally since early September, while valuations surged in the banking sector. The broad EURO STOXX index increased by 1.3% during the review period, while euro area bank equities rose by around 16% (see Chart 8). After recording sideways movements in September, banks' equity prices have increased markedly. Such a development was mainly associated with two factors: a reported perception among market participants of a less stringent finalisation of the Basel III framework, which may have intensified after the outcome of the US election, and the steepening of the yield curve, reflecting improvements in the global growth and inflation outlook, supporting banks' expected earnings. Over a longer horizon, and relative to their lows in the aftermath of the outcome of the UK referendum on EU membership in late June, bank equity prices increased by around 35%. At the same time, market uncertainty – measured by expectations of equity price volatility – remained stable during the review period overall. In early December the implied equity market volatility in the euro area was 15% on an annualised basis, while in the United States it stood at just above 11%.

Chart 8

Euro area and US equity price indices



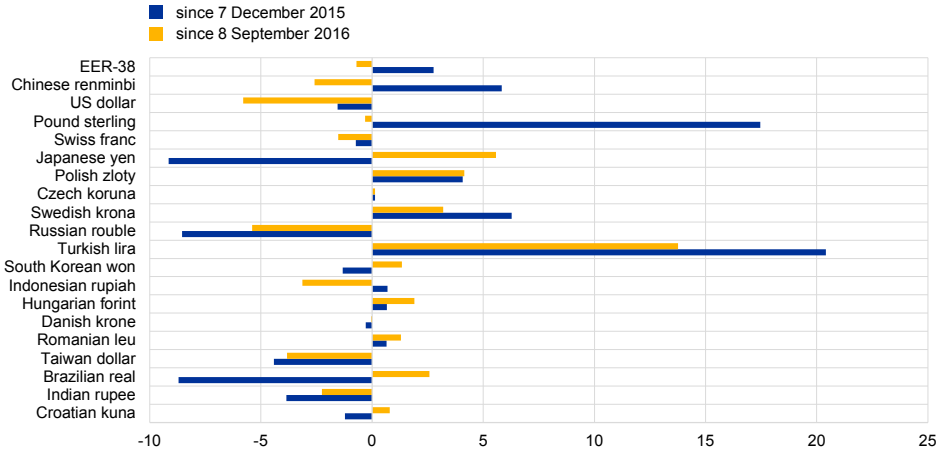
Sources: Thomson Reuters and ECB calculations.

In foreign exchange markets, the euro was broadly stable in trade-weighted terms. In bilateral terms, since 8 September the euro depreciated by 5% against the US dollar, reflecting a widening in yield differentials after early November. The euro also depreciated against the Chinese renminbi (by 1.9%), as well as against the currencies of other emerging economies in Asia. At the same time, the broad-based weakening of the Japanese yen was reflected in an appreciation of the euro by 6.6% against the Japanese currency. The euro remained broadly stable vis-à-vis other major currencies, including the pound sterling (+0.6%), amid continued uncertainty after the outcome of the UK referendum, as well as the Swiss franc (-0.8%), while it appreciated vis-à-vis the currencies of many other EU countries (see Chart 9).

Chart 9

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

(percentages)



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. Changes are computed relative to the exchange rates prevailing on 7 December 2016.

3 Economic activity

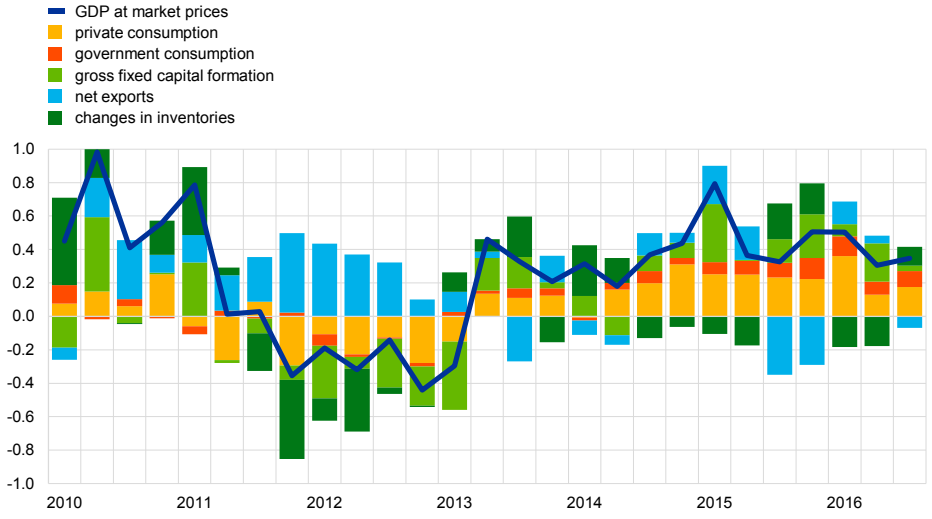
The ongoing economic expansion continues to be moderate, but is firming. The pass-through of the ECB's monetary policy measures to the real economy is supporting domestic demand and is facilitating deleveraging. Improvements in corporate profitability and very favourable credit conditions continue to promote a recovery in investment. Sustained employment gains, which are also benefiting from past structural reforms, and still relatively low oil prices should provide additional support for households' real disposable income and private consumption. The December 2016 Eurosystem staff macroeconomic projections foresee euro area real GDP growing by 1.7% in 2016 and 2017 and by 1.6% in 2018 and 2019. The risks surrounding the euro area growth outlook remain tilted to the downside.

Economic activity in the euro area continued to expand in the third quarter of 2016. Real GDP increased by 0.3%, quarter on quarter, in the third quarter of the year, in line with the growth dynamics seen over the past three and a half years. Overall, euro area real GDP growth was supported by improvements in domestic demand, while the net trade contribution was negative (see Chart 10).The growth momentum has thus proven rather resilient to the weakness in global trade and to recent spikes in measures of political uncertainty.[3]

Chart 10

Euro area real GDP and its components

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



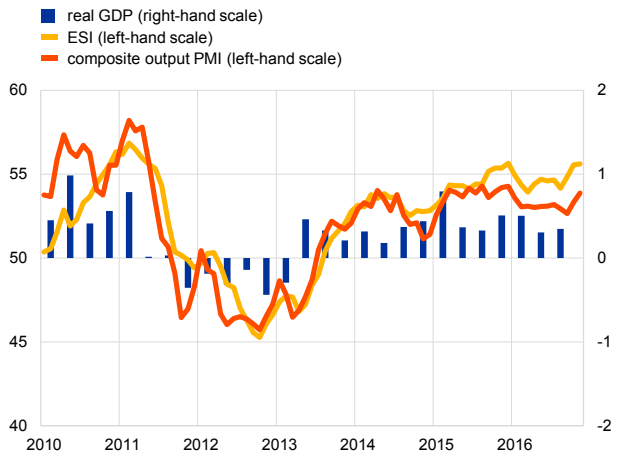
Source: Eurostat.
Note: The latest observations are for the third quarter of 2016.

[3] The article entitled "The impact of uncertainty on activity in the euro area" in this issue of the Economic Bulletin takes a closer look at various measures of uncertainty and their possible implications for euro area economic activity.

Chart 11

Euro area real GDP, the composite output PMI and the ESI

(quarterly growth rates; normalised percentage balances; diffusion indices)



Sources: Markit, European Commission and Eurostat.
Note: The latest observations are for the third quarter of 2016 and November 2016 for the ESI and the PMI respectively.

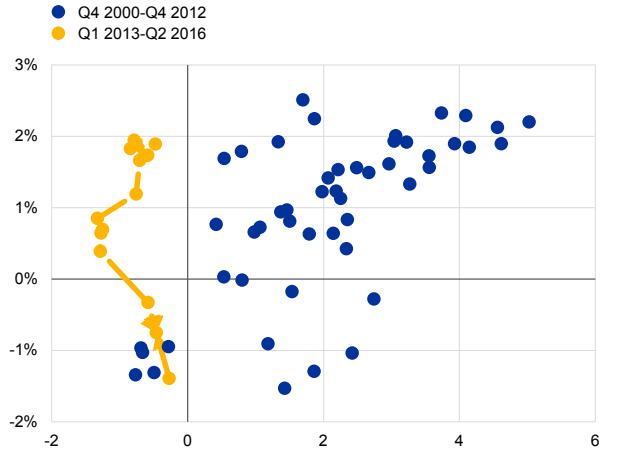
On the production side, value added expanded by 0.3%, quarter on quarter, in the third quarter of 2016 and was driven by industry (excluding construction) and services, as well as by construction. While value added in industry and services has been recovering since 2013, the construction sector has lagged behind and has only recently started to show signs of stabilisation and an emergent recovery. The broadening of the recovery is encouraging, as periods of low growth dispersion across sectors have typically been accompanied by higher growth overall.

Indicators point to a continuation of the growth trend in the fourth quarter of 2016. The European Commission's Economic Sentiment Indicator (ESI), as well as the composite output Purchasing Managers' Index (PMI), displayed broad-based improvements across sectors and countries in October and November. The rise in sentiment reflected an improved assessment of the current situation and higher expectations of economic activity. The average readings for both surveys over October and November stood at higher levels than in the third quarter and were above their respective long-term averages (see Chart 11).

Chart 12

Household indebtedness and private consumption

(x-axis: change in household indebtedness (percentage points, year on year); y-axis: consumption growth (percentages, year on year))



Sources: Eurostat and ECB.
Notes: Household indebtedness is defined as the share of loans relative to gross disposable income, adjusted for the change in net equity of households in pension fund reserves. The latest observations are for the second quarter of 2016.

The resilience of the economic expansion is still primarily supported by private consumption, which increased by 0.3%, quarter on quarter, in the third quarter of 2016. This slight uptick compared with the second quarter was fuelled by solid household income dynamics, which were supported by improving euro area labour markets. In contrast to the period before the crisis when consumption growth was usually associated with rising debt ratios, it has recently been coupled with a gradual decrease in the household debt ratio (see Chart 12). This further underscores the sustainability and resilience of private consumption as the main driver of the ongoing economic expansion, in particular as labour markets continue to recover and consumer confidence remains elevated.

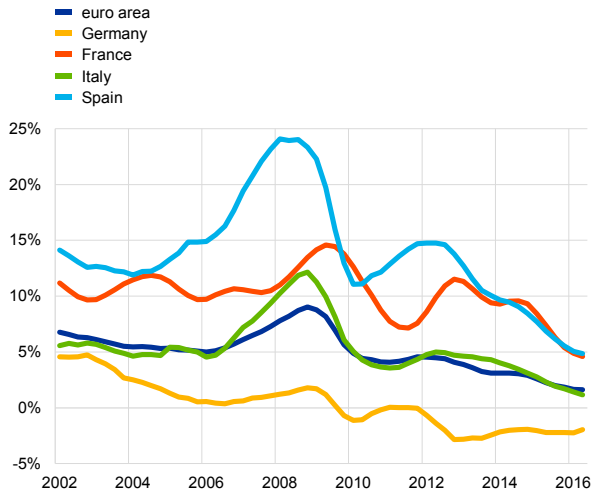
Improvements in euro area labour markets continue to support private consumption. Euro area unemployment has continued its trend decline that started at the beginning of 2013. The unemployment rate stood at 10% in the third quarter of 2016, the lowest rate since mid-2011, before continuing to fall in October, reaching 9.8%. Wider measures of labour market slack – which also take into account sections of the working age population involuntarily

working part-time or which have withdrawn from the labour market – remain high, and are declining at a slower rate than aggregate unemployment. Employment continued to expand in the second quarter and, as a result, the level of euro area employment recorded an increase of 2.3 million compared with one year earlier. The level of euro area employment is also less than 1% below the pre-crisis peak recorded in the second quarter of 2008. More timely information, such as that provided by surveys, continues to point to ongoing improvements in euro area labour markets in the period ahead.

Chart 13

Non-financial corporations' net interest payments

(as a percentage of gross operating surplus)



Sources: Eurostat and ECB.
Notes: Percentages are based on four-quarter moving averages. The latest observation is for the second quarter of 2016.

Investment continued to grow in the third quarter, owing primarily to a pick-up in construction activity. While capital goods production grew only modestly in the third quarter of 2016, construction output grew more strongly. The increase in construction investment was mainly driven by improving euro area housing markets and was broad-based across countries. According to the European Commission survey conducted in the fourth quarter of 2016, demand as a perceived constraint on the production of capital goods has fallen to its lowest level since the onset of the Great Recession. Improving financial conditions, higher confidence in the construction sector and an increasing number of building permits issued also point to a pick-up in investment growth in the fourth quarter.

As demand recovers further, supported by the ECB's very accommodative monetary policy, both business and construction investment should further strengthen. Non-financial corporations' net interest payments have continuously declined since 2013 (see Chart 13) and the resulting increase in profits should encourage investment, also in the light of the need to replace capital after years of subdued fixed capital formation. However, the slow pace of reform implementation, particularly in some countries, as well as subdued potential growth prospects, may dampen investment growth. In this respect, the business environment in a number of countries remains relatively unfriendly and steps should be taken to address this issue (see also Box 3, entitled "Structural indicators of the euro area business environment", for more details).

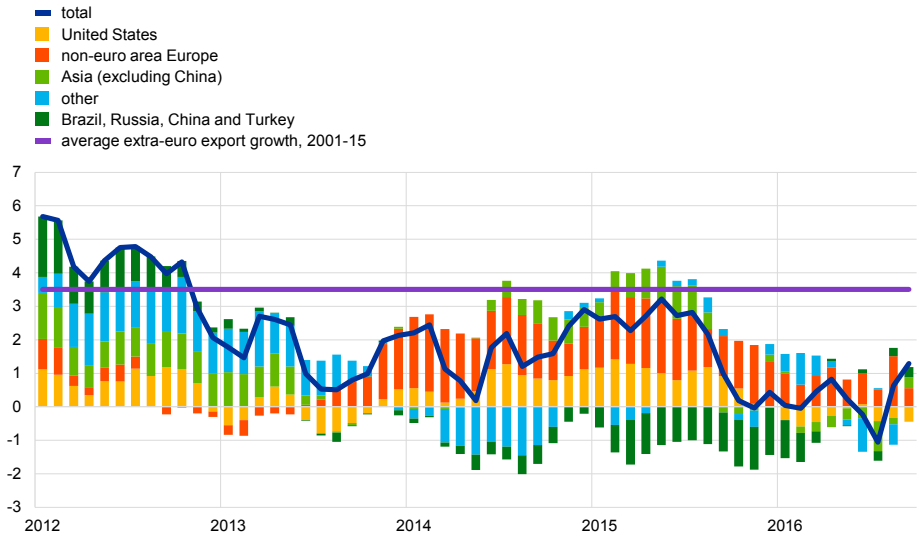
The external environment continued to weigh on euro area activity in the third quarter of 2016 and total export growth remained subdued. Although it has picked up somewhat in recent months, extra-euro area export growth remained subdued (see Chart 14). The weak export momentum in the third quarter was mainly attributable to declining exports to the United States and OPEC countries. Both Russia and Latin America made broadly neutral contributions to goods export growth, whereas Asia (including China) and non-euro area Europe contributed positively. Euro area goods export market shares have been broadly stable in the third quarter which suggests that the lagged positive impacts of the depreciation of the effective exchange rate of the euro are fading. Surveys covering the fourth

quarter of 2016 and extra-euro area export orders point to subdued, albeit improving, export momentum in the near term. Looking further ahead, extra-euro area exports are expected to expand following the gradual rebound in global trade. Risks to the trade outlook, however, relate to possible adverse effects stemming from increased uncertainty relating to trade policies.

Chart 14

Extra-euro area goods exports

(year-on-year percentage changes in the three-month moving average; percentage point contributions)



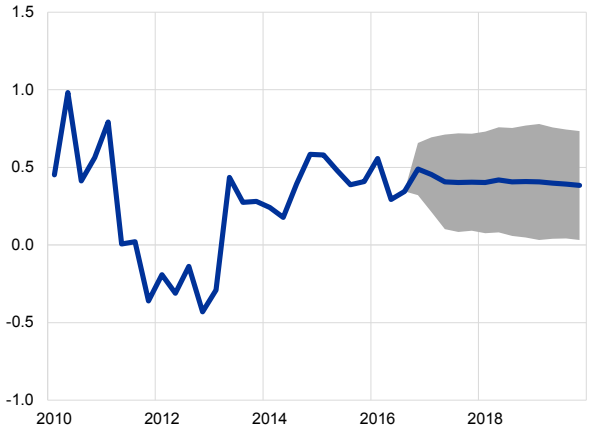
Sources: Eurostat and ECB calculations.
Notes: The latest observations are for September 2016, except for "non-euro area Europe" and "other", where the latest data refer to August 2016. Extra-euro area goods exports are in volumes.

Overall, the economic expansion in the euro area is expected to proceed at a moderate but firming pace. The monetary policy measures continue to be passed through to the real economy, thus supporting domestic demand and facilitating deleveraging. Improvements in corporate profitability and very favourable financing conditions continue to promote a recovery in investment. Sustained employment gains, which are also benefiting from past structural reforms, provide support for households' real disposable income and private consumption. At the same time, there are indications of a somewhat stronger global recovery. However, economic growth in the euro area is expected to be dampened by a sluggish pace of implementation of structural reforms and remaining balance sheet adjustments in a number of sectors.

Chart 15

Euro area real GDP (including projections)

(quarter-on-quarter percentage changes)



Sources: Eurostat and December 2016 Eurosystem staff macroeconomic projections.
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 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 "New procedure for constructing Eurosystem and ECB staff projection ranges", ECB, December 2009, available on the ECB's website.

The December 2016 Eurosystem staff macroeconomic projections for the euro area foresee annual real GDP increasing by 1.7% in 2016 and 2017 and by 1.6% in 2018 and 2019 (see Chart 15). Compared with the September 2016 ECB staff macroeconomic projections, the outlook for real GDP growth is broadly unchanged. The risks surrounding the euro area growth outlook remain tilted to the downside.

4 Prices and costs

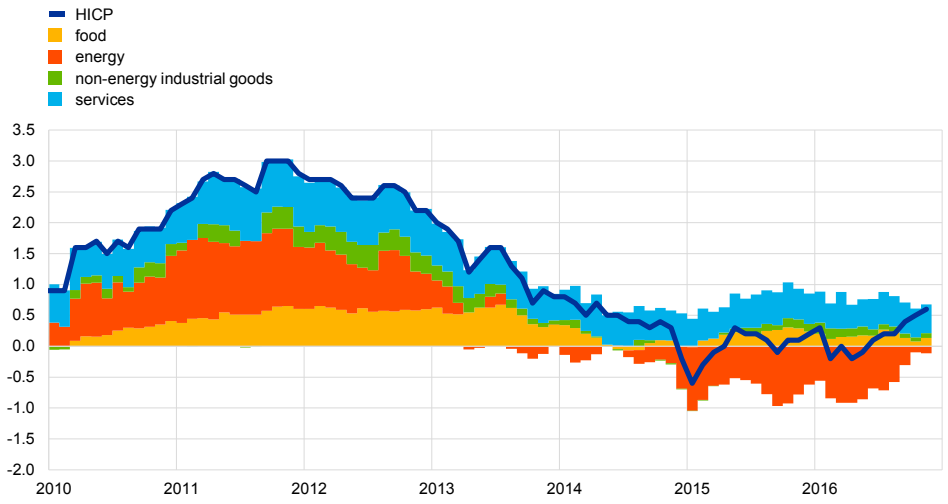
According to Eurostat's flash estimate, euro area annual HICP inflation in November 2016 was 0.6%, up from the recent low of -0.2% in April. Meanwhile, underlying price dynamics continue to show no clear signs of an upward trend. Looking ahead, inflation rates are likely to pick up further at the turn of the year to above 1% owing, to a large extent, to base effects in the annual rate of change in energy prices. Supported by the ECB's monetary policy measures and the expected economic recovery, inflation rates should increase further in 2017, 2018 and 2019. This pattern is also reflected in the December 2016 Eurosystem staff macroeconomic projections for the euro area, which foresee annual HICP inflation at 0.2% in 2016, 1.3% in 2017, 1.5% in 2018 and 1.7% in 2019.

Headline inflation continued its upward movement in November. According to Eurostat's flash estimate, HICP inflation increased further to 0.6% in November, up from 0.5% in October and 0.4% in September (see Chart 16). The increase in November was driven mainly by stronger food inflation, while in previous months the upward momentum mainly came from higher energy inflation. However, the contribution of food prices to headline inflation remained at a relatively low level by historical standards.

Chart 16

Contributions of components to euro area headline HICP inflation

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for November 2016.

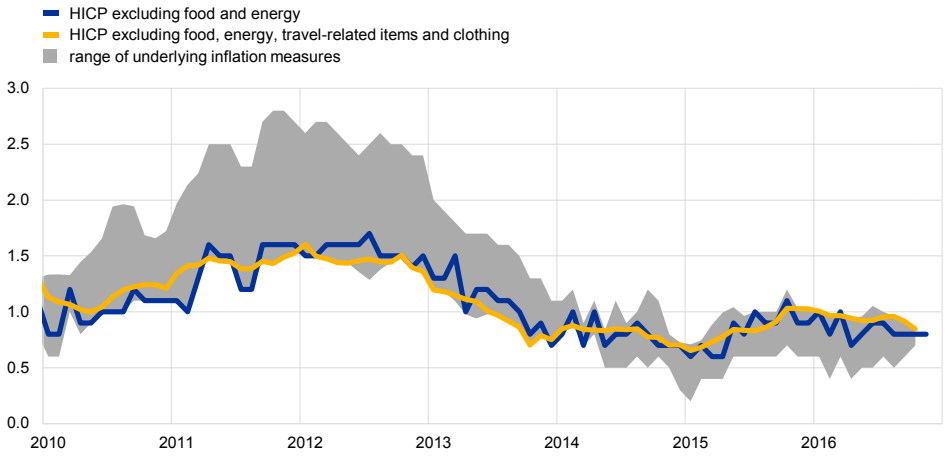
The path of energy inflation continued to shape the profile of headline inflation. Renewed oil price declines in December 2015 and January 2016, which affect energy inflation especially via transport and heating fuel prices, caused HICP energy inflation to fall to a low of -8.7% in April 2016. Afterwards, the year-on-year HICP energy inflation rate showed a strong upward movement and recovered to -0.9% in October 2016, owing mainly to upward base effects, before decreasing slightly again to -1.1% in November. Despite this small decrease, on the basis of current oil futures prices HICP energy inflation is likely to increase strongly further

over the next couple of months. The upward trend in energy inflation since April 2016 accounted for most of the recovery in headline HICP inflation by 0.8 percentage point from April to November 2016.

Most measures of underlying inflation continue to show no signs of an upward trend. Annual HICP inflation excluding food and energy has hovered between 0.7% and 1.0% since the beginning of 2016 and has remained unchanged at 0.8% since August. Similarly, other measures of underlying inflation have shown no clear signs of upward momentum (see Chart 17). The lack of any upward momentum in underlying inflation might, in part, have been due to the indirect downward effects of past sharp declines in oil prices and other commodities, which materialise with a lag. More fundamentally, domestic cost pressures – in particular wage growth – have also remained subdued. Low growth in rents, which are an important part of the HICP services component, is also a drag on underlying inflation, as rental inflation continues to be well below its historical mean (see discussion in Box 4).

Chart 17
Measures of underlying inflation

(annual percentage changes; percentage point contributions)



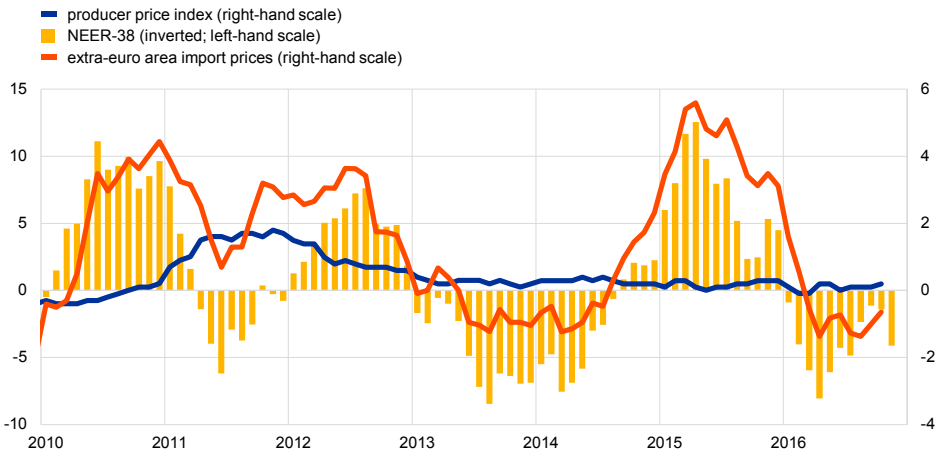
Sources: Eurostat and ECB calculations.
Notes: The range of underlying measures includes the following: HICP excluding energy; HICP excluding unprocessed food and energy; HICP excluding food and energy; HICP excluding food, energy, travel-related items and clothing; the 10% trimmed mean; the 30% trimmed mean; the median of the HICP; and a measure based on a dynamic factor model. The latest observations are for November 2016 (HICP excluding food and energy) and October 2016 (all other measures).

Import price inflation remained negative, while producer price inflation continued to be quite stable. The annual growth rate of import prices for non-food consumer goods recovered somewhat from -1.4% in August to -1.0% in September and -0.6% in October. Since March 2016 import prices have not contributed to upward price pressures, mainly reflecting the impact of the appreciation of the euro effective exchange rate since the start of the year (see Chart 18). Further down the pricing chain, producer prices for domestic sales of non-food consumer goods remained broadly stable, with their annual growth rate standing at 0.2% in October. While the improvements seen in economic conditions are likely to have exerted upward pressure on producer prices, this may have been offset by low commodity-related input prices and global disinflationary pressures more generally.

Chart 18

Producer prices and import prices

(annual percentage changes)



Sources: Eurostat and ECB calculations.
Notes: Monthly data. The latest observations are for October 2016 for import prices and for the PPI and November 2016 for the NEER-38 (nominal effective exchange rate of the euro). The NEER-38 is inverted. Negative/positive values in the chart reflect an appreciation/depreciation of the euro.

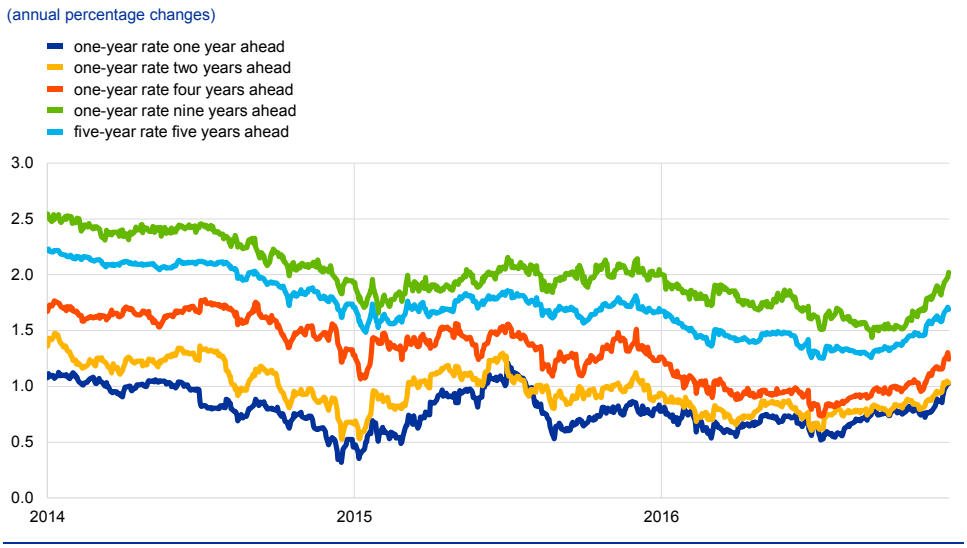
Wage growth has remained subdued. Annual growth in compensation per employee stood at 1.1% in the second quarter of 2016, down from 1.2% in the previous quarter. In the third quarter of 2016, year-on-year growth in negotiated wages was 1.4%, broadly unchanged compared to the previous two quarters. Still significant slack in the labour market, weak productivity growth, low inflation and the ongoing impact of labour market reforms implemented in some countries during the crisis have continued to weigh on wage growth.[4]

Longer-term market-based inflation expectations increased slightly, but remain at low levels and substantially below survey-based measures. Since mid-October some recovery in market-based measures of inflation expectations has been observed across maturities, albeit from record low levels (see Chart 19). The low level of market-based measures of inflation expectations partly reflects low demand for inflation protection in a low-inflation environment. In contrast to market-based measures, the latest survey-based measures for long-term inflation expectations for the euro area from October remained broadly stable at around 1.8%.

[4] See the box entitled “Recent wage trends in the euro area”, Economic Bulletin, Issue 3, ECB, 2016.

Chart 19

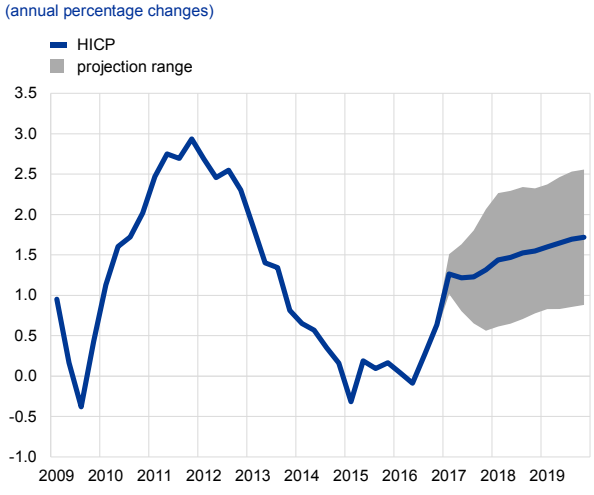
Market-based measures of inflation expectations



Sources: Thomson Reuters and ECB calculations.
Note: The latest observations are for 7 December 2016.

Chart 20

Euro area HICP inflation (including projections)



Sources: Eurostat and the article entitled "December 2016 Eurosystem staff macroeconomic projections for the euro area", published on the ECB's website on 8 December 2016.
Note: The latest observations are for the third quarter of 2016 (actual data) and the fourth quarter of 2019 (projection).

Looking ahead, HICP inflation in the euro area is projected to pick up significantly at the turn of the year and to continue on an upward trend over 2017-19. On the basis of current oil futures prices, headline inflation is likely to pick up to above 1% at the turn of the year driven to a large extent by base effects in the annual rate of change in energy prices. Supported by the ECB's monetary policy measures and the expected economic recovery, inflation rates should increase further in 2017, 2018 and 2019. On the basis of the information available in mid-November, the December 2016 Eurosystem staff macroeconomic projections for the euro area foresee HICP inflation standing at 0.2% in 2016, before rising to 1.3% in 2017, 1.5% in 2018 and 1.7% in 2019 (see Chart 20).[5] Compared with the September 2016 ECB staff macroeconomic projections, the outlook for HICP inflation is broadly unchanged.

Underlying inflation is expected to rise gradually over the projection horizon as upward pressures stemming from fading economic slack slowly build up. Improvements in labour market conditions, as reflected in a marked decline in the unemployment rate, are expected to bolster a gradual pick-up in wage growth and underlying inflation over the projection horizon. Amid the ongoing economic recovery, some further upward pressure on underlying inflation is also expected to materialise via improvements in

[5] See the article entitled "December 2016 Eurosystem staff macroeconomic projections for the euro area", published on the ECB's website on 8 December 2016.

corporations' price-setting power and a related cyclical pick-up in profit margins. The fading of the indirect dampening effects of energy and non-energy commodity price developments should also contribute to the expected increase in underlying inflation. Upward effects can also be expected as a result of rising global price pressures more generally. Overall, a gradual pick-up in underlying inflation should support increases in headline inflation over 2017-19.

5 Money and credit

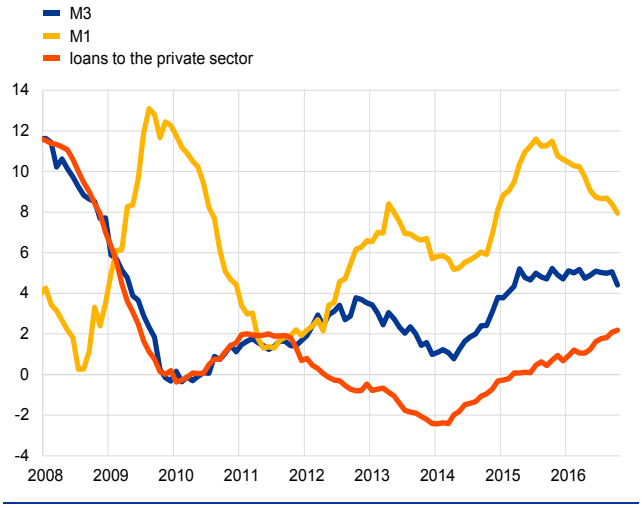
Broad money growth remained stable in the third quarter of 2016 but declined somewhat in October. At the same time, loan growth to the private sector increased in October. Low interest rates and the effects of the ECB's non-standard monetary policy measures continue to support money and credit dynamics. The annual flow of total external financing to non-financial corporations (NFCs) is estimated to have continued to strengthen in the third quarter of 2016.

Growth in broad money moderated in October, following a period of broad stability. The annual growth rate of M3 decreased to 4.4% in October 2016, having previously hovered around 5.0% since April 2015 (see Chart 21). The low opportunity cost of holding the most liquid instruments in an environment of very low interest rates and a flat yield curve, as well as the impact of the ECB's monetary policy measures, continued to support money growth. In addition, annual M1 growth moderated during the third quarter of 2016 and declined further in October.

Chart 21

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 October 2016.

Despite a slowdown in annual growth in overnight deposits in the third quarter of 2016, overnight deposits continued to be the main driver of M3 growth. Specifically, while the annual growth rate of overnight deposits held by households remained broadly unchanged in the third quarter and in October, annual growth in the overnight deposits of non-financial corporations (NFCs) declined over these periods. The growth rate of currency in circulation remained contained, indicating no general tendency by the money-holding sector to substitute deposits with cash in an environment of very low or negative interest rates. Short-term deposits other than overnight deposits (i.e. M2 minus M1) continued to contract in the third quarter of 2016 and in October. The growth rate of marketable instruments (i.e. M3 minus M2), a small component of M3, strengthened in the third quarter, supported mainly by solid growth in money market fund shares/units, but slowed in October.

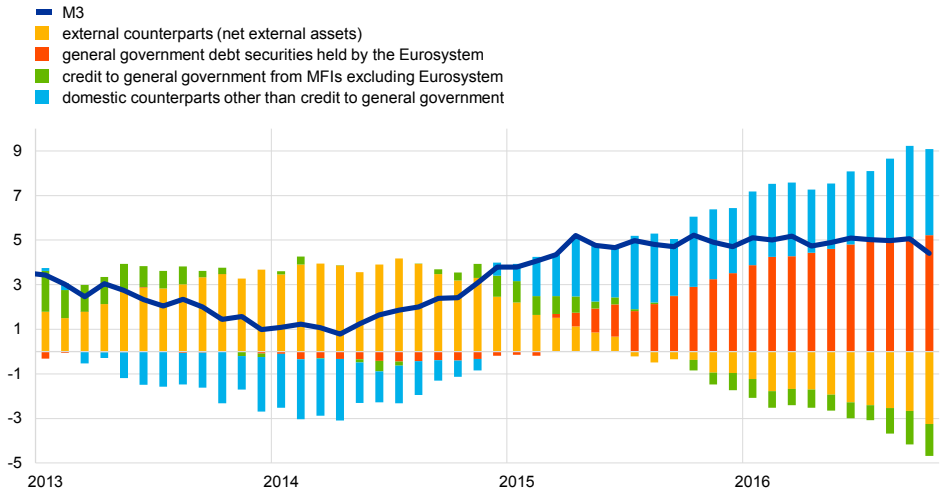
Domestic sources of money creation continued to be the main driver of broad money growth (see Chart 22). Among the counterparts contributing positively to M3 growth were the Eurosystem's purchases of general government debt securities (see the red portion of the bars in Chart 22), mainly in the context of the ECB's public sector purchase programme (PSPP). In addition, M3 growth continues to be supported by domestic counterparts other than credit to general government (see the blue portion of the bars in Chart 22). This is driven by the ongoing recovery in credit to the private sector, together with the persistent contraction in MFIs' longer-term financial liabilities. These longer-term financial liabilities (excluding capital and reserves), whose annual rate of change has been negative since the second quarter of 2012, decreased further in the third quarter of 2016 and in October, notably due to

the impact of the ECB's targeted longer-term refinancing operations (TLTRO-II). The TLTROs act as a substitute for longer-term market-based bank funding and reduce the attractiveness for investors to hold long-term deposits and bank bonds.

Chart 22

M3 and its counterparts

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



Source: ECB.
Note: The latest observation is for October 2016.

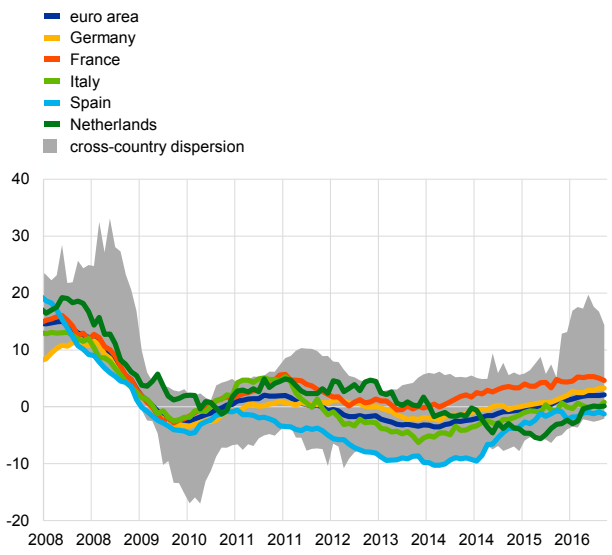
By contrast, MFIs' net external assets continued to exert strong downward pressure on annual M3 growth, owing to continued capital outflows from the euro area (see the yellow portion of the bars in Chart 22). PSPP-related sales of euro area government bonds by non-residents make an important contribution to this trend, as their proceeds are invested mainly in non-euro area instruments. In addition, MFIs excluding the Eurosystem increased their sales of general government debt securities, which dampened M3 growth (see the green portion of the bars in Chart 22).

Loan growth continued its gradual recovery. The annual growth rate of MFI loans to the private sector (adjusted for loan sales, securitisation and notional cash pooling) increased in the third quarter of 2016 and in October (see Chart 21). Across sectors, the recovery in loans to NFCs, after having lost some momentum in the third quarter, resumed its increase in October (see Chart 23). Overall, growth in loans to NFCs has recovered significantly from the trough in the first quarter of 2014. This development is broad-based across the largest countries, although loan growth rates are still negative in some jurisdictions. The annual growth rate of loans to households remained unchanged in the third quarter of 2016 and in October (see Chart 24). The significant decrease in bank lending rates seen across the euro area since summer 2014 (owing notably to the ECB's non-standard monetary policy measures) and improvements in the supply of, and demand for, bank loans have supported these trends. In addition, banks have made progress in consolidating their balance sheets, although the level of non-performing loans remains high in some countries and may constrain credit origination.

Chart 23

MFI loans to NFCs in selected euro area countries

(annual percentage changes)

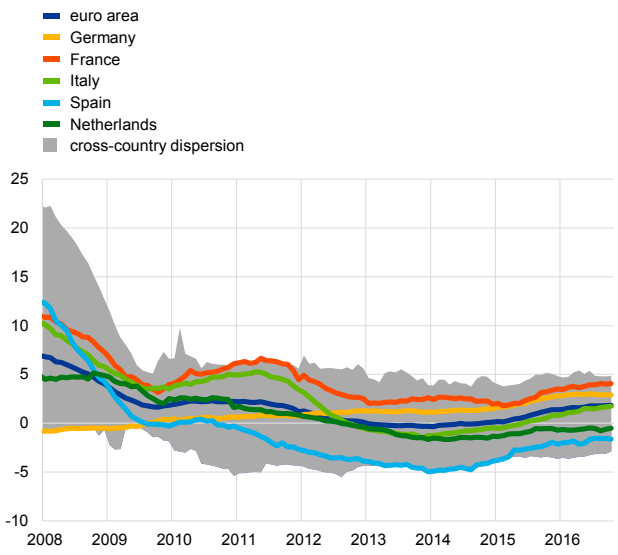


Source: ECB.
Notes: Adjusted for loan sales, securitisation and notional cash pooling. The cross-country dispersion is calculated on the basis of minimum and maximum values using a fixed sample of 12 euro area countries. The latest observation is for October 2016.

Chart 24

MFI loans to households in selected euro area countries

(annual percentage changes)



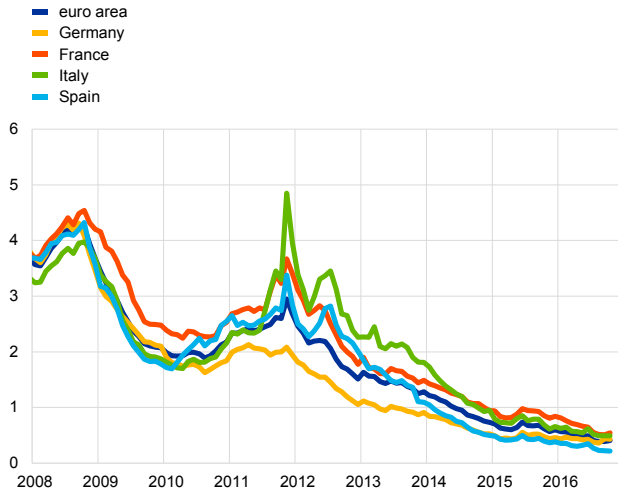
Source: ECB.
Notes: Adjusted for loan sales, securitisation and notional cash pooling. The cross-country dispersion is calculated on the basis of minimum and maximum values using a fixed sample of 12 euro area countries. The latest observation is for October 2016.

In the third quarter of 2016 loan growth continued to be supported by increasing demand across all loan categories, while credit standards remained unchanged for loans to enterprises (following a net easing over the past two years) and eased for loans to households. According to the October 2016 euro area bank lending survey, competitive pressure and, to a lesser extent, lower risk perceptions continued to have an easing impact on credit standards for loans to enterprises and households. In addition, increasing loan demand was driven mainly by the low general level of interest rates, rising financing needs for mergers and acquisitions and favourable housing market prospects (see survey). In this context, the ECB's negative deposit facility rate is exerting a positive impact on loan volumes while having a negative impact on banks' net interest income and loan margins. Moreover, the ECB's asset purchase programme had a positive impact on credit supply through an easing of credit terms and conditions, but a negative impact on banks' net interest margin according to reporting banks.

Chart 25

Banks' composite cost of debt financing

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



Sources: ECB, Merrill Lynch Global Index 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 October 2016.

Banks' funding conditions remained favourable. Banks' composite cost of debt financing increased slightly in October, after remaining broadly stable in the third quarter of 2016 (see Chart 25). The slight increase in October was driven by a rise in bank bond yields, while the cost of deposits continued to decline marginally. The ECB's accommodative monetary policy stance, the net redemption of MFIs' longer-term financial liabilities, the strengthening of bank balance sheets and receding fragmentation across financial markets have contributed to banks' composite cost of debt financing falling to very low levels. Broadly in line with these developments, banks reported in the October 2016 euro area bank lending survey an improvement in access to funding via debt securities in the third quarter, but expect roughly unchanged access in the fourth quarter.

Bank lending rates for NFCs and households remained at very favourable levels in the third quarter of 2016 and in October (see Charts 26 and 27). The composite lending rate for households for house purchase continued to decline in the third quarter of 2016 and in October, falling to a new historical low. Over the same period, the composite bank lending rate for NFC loans hovered around the low levels previously reached. Since the announcement of the ECB's credit easing measures in June 2014, composite bank lending rates for loans to NFCs and households have decreased by significantly more than market reference rates, signalling an improvement in the pass-through of monetary policy measures to bank lending rates. The decrease in banks' composite funding costs has supported the decline in composite lending rates. Between May 2014 and October 2016, composite lending rates on loans to both NFCs and households fell by 110 basis points. The reduction in bank lending rates was especially strong in vulnerable countries, thereby contributing to mitigating previous asymmetries in the monetary policy transmission across countries. Over the same period, the spread between interest rates charged on very small loans (loans of up to €0.25 million) and those charged on large loans (loans of above €1 million) in the euro area narrowed considerably and broadly stabilised in the third quarter of 2016 and in October. This indicates that small and medium-sized enterprises have generally been benefiting to a greater extent from the decline in lending rates than large companies.

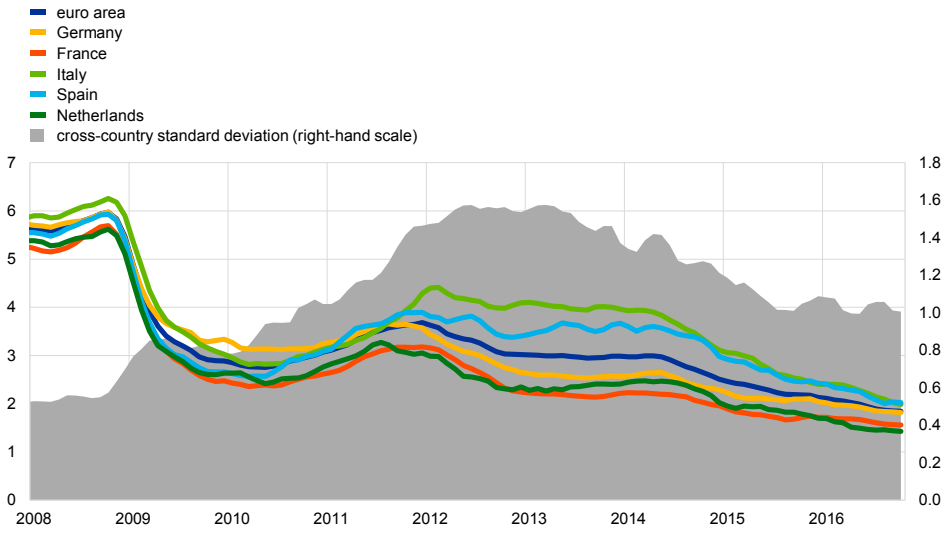
The annual flow of total external financing to euro area NFCs is estimated to have continued to strengthen in the third quarter of 2016. NFCs' external financing now stands at levels seen at the beginning of 2005 (before the period of excessive credit growth started). The recovery in NFCs' external financing observed since early 2014 has been supported by the strengthening of economic activity, further declines in the cost of bank lending, the easing of bank lending conditions, the very low cost of market-based debt and, more recently, larger numbers of mergers and acquisitions. At the same time, NFCs' record high cash holdings, as

well as concerns about the strength of the global recovery and the associated perceived scarcity of profitable fixed investment opportunities, have dampened external financing.

Chart 26

Composite lending rates for NFCs

(percentage change per annum; three-month moving averages)

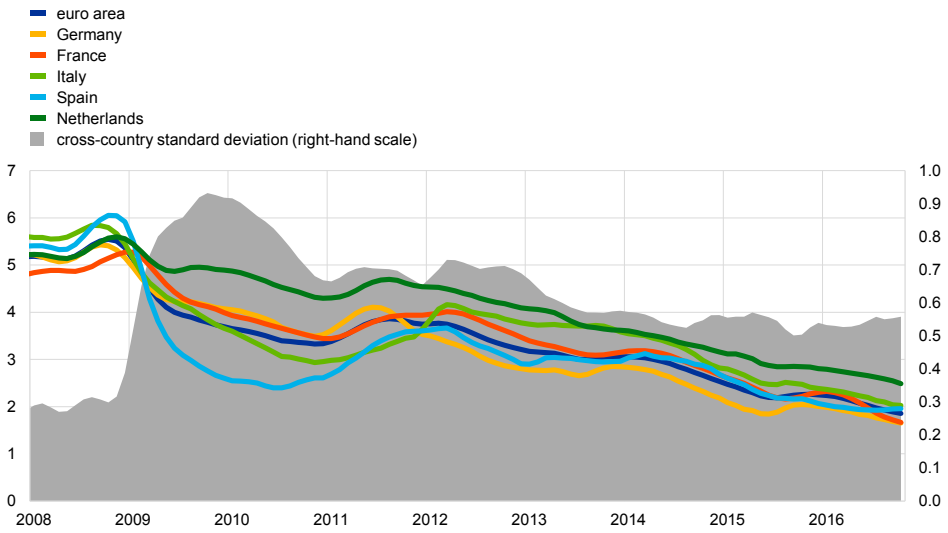


Source: ECB.
Notes: The indicator for the total cost of bank borrowing is calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observation is for October 2016.

Chart 27

Composite lending rates for house purchase

(percentage change 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 October 2016.

Net issuance of debt securities by euro area NFCs remained vigorous in October 2016, before slowing in November. The latest official ECB data show that issuance activity strengthened markedly in September. This rise was broadly based across countries and was supported, among other factors, by the ECB's corporate bond purchases. Preliminary data suggest that issuance activity remained robust in October, before moderating in November. The November moderation may have reflected issuers postponing planned issuance. The net issuance of quoted shares by NFCs has remained fairly modest in recent months.

Financing costs for euro area NFCs remain very favourable. The overall nominal cost of external financing for NFCs declined slightly in September and October 2016, after increasing modestly in August from the historically low level reached in July. More recently, the cost of debt financing has shown signs of a possible turnaround amid a rise in global bond yields. At the same time, the cost of equity financing remains elevated on account of high equity risk premia.

6 Fiscal developments

Over the period 2016-19, the general government budget deficit and debt ratios for the euro area are both projected to remain on a downward path. The euro area fiscal stance is expected to be expansionary in 2016 and to turn broadly neutral in 2017-19. Debt reduction will mainly be supported by a favourable interest rate growth differential in the light of better cyclical conditions and low interest rates. Some countries have fiscal space, which could be used to support growth. In the case of high-debt countries, additional consolidation efforts in line with the requirements of the Stability and Growth Pact (SGP) are needed to set their public debt ratios firmly on a downward path.

The euro area general government budget deficit is projected to gradually decline further over the projection horizon. Based on the December 2016 Eurosystem staff macroeconomic projections,[6] the budget deficit is expected to decline from 2.1% of GDP in 2015 to 1.2% of GDP in 2019 (see the table). Estimates for 2016 point to lower interest payments and a favourable cyclical component as the main drivers of the deficit reduction. Lower interest payments, positive cyclical conditions and a primary surplus will continue to contribute to a further deficit reduction over the period 2017-19. Compared with the September 2016 projections, the fiscal outlook is broadly unchanged.[7]

The euro area fiscal stance is projected to be expansionary in 2016 and to turn broadly neutral in 2017-19.[8] The expansionary fiscal stance in 2016 is mostly the result of discretionary fiscal measures on the revenue side, such as cuts in direct taxes in a number of euro area countries. For the period 2017-19, the fiscal stance is projected to be broadly neutral, as deficit-increasing measures on the revenue side are likely to be offset by less dynamically growing government spending items. The latter include, in particular, compensation of employees and intermediate consumption, which are projected to grow below nominal trend GDP growth rates, while other items, such as government investment, are projected to grow above potential. Given the need to balance economic stabilisation needs on the one hand and necessary consolidation to ensure fiscal sustainability in several euro area countries on the other hand, the neutral fiscal stance in 2017 and thereafter can be regarded as broadly appropriate. Revisions to the September 2016 projections are limited. However, for 2016 the fiscal stance is projected to be slightly less expansionary than previously expected, mainly due to revisions to pre-announced tax cuts and revenue windfalls in several countries.

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6 See the December 2016 Eurosystem staff macroeconomic projections for the euro area, available at ecbstaffprojections201612

7 While the draft budgetary plans for 2017, which the euro area countries submitted in mid-October, foresee additional consolidation efforts for some countries, these are not necessarily fully reflected in the staff projections, as the projections include only those measures that have already been adopted or are at least close to being adopted by parliament. The updated draft budgetary plan of Spain was published after the cut-off date.

8 The fiscal stance is measured as the change in the structural primary balance, i.e. the cyclically adjusted primary balance net of temporary measures, such as government support to the financial sector. For a discussion of the concept of the euro area fiscal stance, see the article entitled "The euro area fiscal stance", *Economic Bulletin*, Issue 4, ECB, 2016.

Table

Fiscal developments in the euro area

(percentage of GDP)

	2014	2015	2016	2017	2018	2019
a. Total revenue	46.8	46.5	46.2	46.0	45.8	45.7
b. Total expenditure	49.4	48.5	47.9	47.5	47.3	47.0
of which:						
c. Interest expenditure	2.7	2.4	2.2	2.0	1.9	1.8
d. Primary expenditure (b - c)	46.7	46.1	45.8	45.5	45.4	45.2
Budget balance (a - b)	-2.6	-2.1	-1.8	-1.6	-1.5	-1.2
Primary budget balance (a - d)	0.1	0.3	0.4	0.4	0.4	0.6
Cyclically adjusted budget balance	-1.9	-1.8	-1.8	-1.7	-1.6	-1.4
Structural balance	-1.7	-1.6	-1.8	-1.8	-1.6	-1.4
Gross debt	92.0	90.4	89.4	88.5	87.3	85.7
Memo item: real GDP (percentage changes)	1.2	1.9	1.7	1.7	1.6	1.6

Sources: Eurostat, ECB and December 2016 Eurosystem staff macroeconomic projections.
Notes: The data refer to the aggregate general government sector of the euro area. Owing to rounding, figures may not add up. As the projections take recent data revisions into account, this might result in differences from the latest validated Eurostat data.

The high euro area government debt levels are projected to continue to decline. After peaking in 2014, the euro area debt-to-GDP ratio is projected to decline gradually from 90.4% in 2015 to 85.7% by the end of 2019. The debt reduction is mainly supported by the favourable interest rate-growth differential in the light of better cyclical conditions and low interest rates. Small primary surpluses also have a favourable impact on the projected debt path. Compared with the September 2016 projections, the euro area debt-to-GDP ratio is expected to be somewhat higher in 2017 and 2018. More than half of the euro area countries are projected to exceed the 60% of GDP reference value by the end of the projection horizon. Moreover, in several countries, the government debt ratio is expected to increase further over the projection horizon.

Further consolidation efforts are needed, notably in countries with high debt-to-GDP ratios. High-debt countries need to set their public debt ratios firmly on a downward path, as they are particularly vulnerable to renewed financial market instability or a rebound in interest rates. Full compliance with the SGP would ensure the correction of budgetary imbalances and achievement of a sustainable debt trajectory. The euro area countries with fiscal space have scope to make use of the available room for manoeuvre, for example by expanding public investment. Striving for the composition of government budgets to be more conducive to growth would be beneficial for all countries.

Following the submission of the draft budgetary plans in mid-October, the European Commission found that a number of countries were at risk of not complying with the SGP. Among the countries under the preventive arm, six countries were found at risk of not complying with the SGP requirements, namely Belgium, Italy, Cyprus, Lithuania, Slovenia and Finland. Among those under the corrective arm, only Spain was found to be at risk of not complying. However, despite some budgetary plans falling significantly short of the SGP provisions, the

Commission did not request an update of the draft budgetary plans of any Member State. For a more detailed review of the draft budgetary plans, see Box 5 in this issue of the Economic Bulletin.

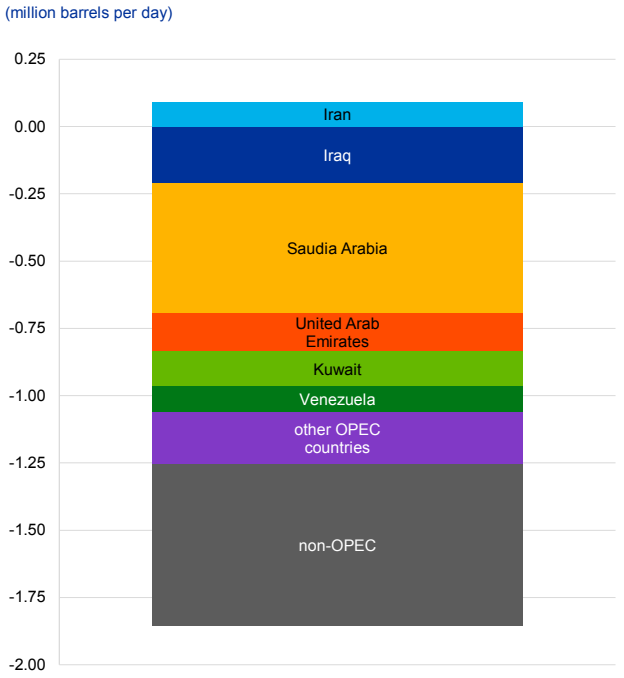
Boxes

1 Impact of the November 2016 OPEC agreement on the oil market

At its Ministerial Conference on 30 November 2016, the Organization of the Petroleum Exporting Countries (OPEC) set the terms for reintroducing an oil production target of 32.5 million barrels per day. The agreement involves a cut in output of 1.2 million barrels per day, to be implemented through a uniform 4.5% reduction of each member's supply, from January to June 2017 (see Chart A). Depending on market conditions and prospects, the agreement to reduce the supply of oil may be extended to the end of 2017. However Libya and Nigeria have been exempted, because their supply is unpredictable and subject to recurrent disruptions as a result of political instability. Iran, which is recovering from western sanctions, was given special treatment and allotted a target of 4 million barrels per day – well above its actual production level. OPEC's strategy to cut oil production is supported by non-OPEC producers, who plan to carry out a reduction of 0.6 million barrels per day. The global supply will be curbed by 1.9%, which compares with its 2.6% growth over the period 2015-16.

Chart A

Production cuts agreed at the OPEC meeting on 30 November



Source: OPEC.
Notes: Iran: 0.09 mb/d, Iraq: -0.21 mb/d, Kuwait: -0.13 mb/d, Saudi Arabia: -0.49 mb/d, United Arab Emirates: -0.14 mb/d, Venezuela: -0.1 mb/d, non-OPEC: -0.6 mb/d; "other OPEC countries" includes Algeria (-0.05 mb/d), Angola (-0.08 mb/d), Ecuador (-0.03 mb/d), Gabon (-0.01 mb/d) and Qatar (-0.03 mb/d).

This box reviews the organisation's new supply strategy and provides an assessment of the potential impact on the oil price. Since OPEC announced on 28 September its intention to reinstate a production cap, the price of oil has fluctuated within a range of USD 44-54 per barrel. This has resulted in somewhat higher volatility but no significant price rise, as market sentiment about the likelihood of reintroducing production quotas has proved fickle. Following the agreement, the Brent oil price soared by USD 6 per barrel (rising from USD 45.9 on 29 November to USD 52.0 on 7 December). However, some of the considerations which generated market uncertainty still prevail.

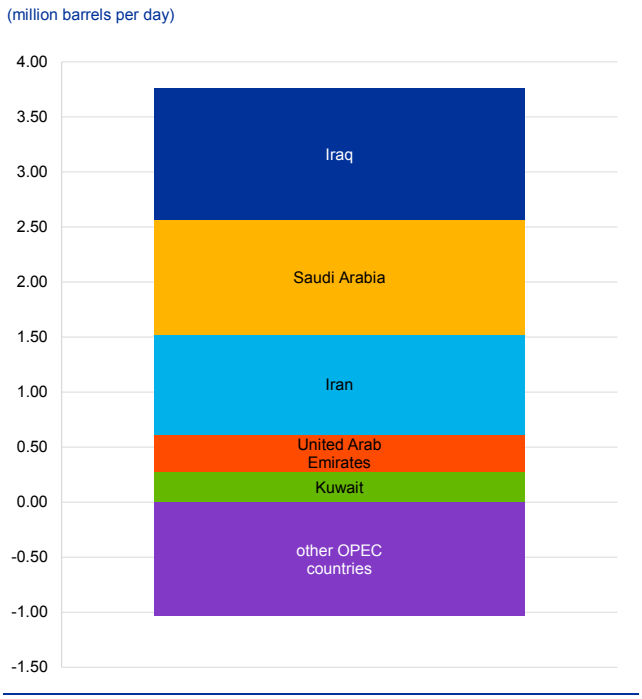
This is the first time that OPEC and non-OPEC producers have agreed a coordinated cut in supply. The collaboration is underpinned by the various countries' common desire to improve the financial conditions of their economies. OPEC's contribution is more modest than on previous occasions (being approximately half the cut implemented during the Asian crisis or the Great Recession) but the involvement of non-OPEC producers helped to ensure a substantial reduction in the supply of oil. However the actual reduction may turn out to be less than

announced, as it remains to be seen whether Russia and other non-OPEC producers will respect their commitments.

With this agreement, Saudi Arabia is backtracking on the strategy it took in November 2014 of safeguarding its market share. At the time, it opposed a move put forward by the smaller members to limit production to prevent a further slide in the price of oil. As a consequence, from the beginning of 2015, the total OPEC supply expanded by 2.7 million barrels per day. The bulk of this supply came from Iraq, Saudi Arabia and, later on, Iran but the production rates of some members declined because of low oil prices (see Chart B).

Chart B

OPEC members supply changes over last two years



Source: International Energy Agency.
Notes: Iran: 0.91 mb/d, Iraq: 1.19 mb/d, Kuwait: 0.28 mb/d, Saudi Arabia: 1.04 mb/d, United Arab Emirates: 0.34 mb/d, "other OPEC countries" includes Algeria (-0.01 mb/d), Angola (-0.17 mb/d), Gabon (-0.03 mb/d), Libya (-0.18 mb/d), Nigeria (-0.32 mb/d), Qatar (-0.06 mb/d), Venezuela (-0.32 mb/d), Ecuador (0.01 mb/d) and Indonesia (0.04 mb/d).

The impact of the OPEC decision on future oil prices can be assessed with a wide set of models. For example, the supply reduction has been analysed through the lenses of models used by Eurosystem staff[9] and with the help of a structural vector autoregression (SVAR) model of the oil market with sign restrictions, similar to the one proposed by Kilian and Murphy.[10] Using these models, the oil price is forecast to increase by the end of 2017 to between 19% and 25% above the baseline projections which are based on oil future prices.[11]

This upward scenario is however surrounded by downside risks. First, the existence of massive inventories accumulated over more than two years of excess supply may act as an additional buffer, cushioning any sudden and large oil price responses. Second, production developments in exempted OPEC members may partially offset the supply. Third, the potential endogenous reaction of non-OPEC supply may cap the oil price response. In particular, the structural modifications brought about by the US shale revolution reduced extraction costs for shale to levels below those of other non-conventional oil producers, a change that is likely to affect the equilibrium price of oil.

In the long run the oil price remains tied down by the marginal cost of production. Structural market conditions have not changed in the meantime. If anything, the oil market has become even more competitive today than it was two

9 See the four-model combination presented in the article entitled "Forecasting the price of oil", *Economic Bulletin*, Issue 4, ECB, 2015.

10 "The role of inventories and speculative trading in the global market for crude oil", *Journal of Applied Econometrics*, Vol. 29, 2014, pp. 454-478.

11 The baseline projections forecast the oil price to reach USD 55 per barrel by the end of 2019. The analysis conducted in this box is broadly in line with an alternative oil price path used to perform a sensitivity analysis around the latest Eurosystem staff macroeconomic projections, which were conditioned, inter alia, on oil price futures before the OPEC agreement. The results of this sensitivity analysis are presented in Box 3, entitled "Sensitivity and scenario analyses", in the December 2016 Eurosystem staff macroeconomic projections for the euro area, available on the ECB's website.

years ago, as the cost-effective restructuring of the US oil industry and new technological progress have further reduced the shale wellhead break-even price by more than a fifth over three years.[12]

[12] Rystad Energy, *North American Shale Report – NASReport*, 2016.

2 Liquidity conditions and monetary policy operations in the period from 27 July to 25 October 2016

This box describes the ECB's monetary policy operations during the fifth and sixth reserve maintenance periods of 2016, which ran from 27 July to 13 September and from 14 September to 25 October respectively. During 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. On 28 September the second targeted longer-term refinancing operation (TLTRO) in the second series of TLTROs (TLTRO-II) was settled for an amount of €45.3 billion. The liquidity injected by means of that operation was partially offset by mandatory repayments for the first series of TLTROs (TLTRO-I) and voluntary repayments for the first TLTRO-I operation, totalling €11.0 billion. That net liquidity injection of €34.2 billion resulted in the total outstanding amount for both TLTRO programmes rising to €497.2 billion at the end of the review period. In addition, the Eurosystem continued buying public sector securities, covered bonds, asset-backed securities and corporate sector securities as part of its expanded asset purchase programme (APP), with a target of €80 billion of purchases on average per month.

Liquidity needs

In the period under review the average daily liquidity needs of the banking system, defined as the sum of autonomous factors and reserve requirements, stood at €908.0 billion, an increase of €65.0 billion compared with the previous review period (i.e. the third and fourth maintenance periods of 2016). This increase in liquidity needs was attributable almost exclusively to an increase in average net autonomous factors, which rose by €63.2 billion to stand at a record €790.8 billion, while the minimum reserve requirements rose only marginally (see the table).

Table

Eurosystem liquidity situation

	Current period (27 July to 25 October 2016)		Previous period (27 April to 26 July 2016)	Sixth maintenance period (14 September to 25 October 2016)		Fifth maintenance period (27 July to 13 September 2016)	
Liabilities – liquidity needs (averages; EUR billions)							
Autonomous liquidity factors	**1,916.7**	**(+65.0)**	**1,851.7**	**1,938.4**	**(+40.3)**	**1,898.0**	**(+0.3)**
Banknotes in circulation	1,095.5	(+13.3)	1,082.3	1,094.7	(-1.5)	1,096.2	(+9.1)
Government deposits	151.9	(+0.2)	151.6	168.3	(+30.5)	137.8	(-37.7)
Other autonomous factors	669.3	(+51.5)	617.7	675.3	(+11.3)	664.0	(+28.9)
Monetary policy instruments							
Current accounts	762.0	(+120.1)	641.9	777.4	(+28.6)	748.8	(+91.4)
Minimum reserve requirements	117.2	(+1.7)	115.5	117.8	(+1.1)	116.7	(+0.8)
Deposit facility	369.9	(+53.3)	316.6	387.3	(+32.2)	355.1	(+32.0)
Liquidity-absorbing fine-tuning operations	-	(+0.0)	-	-	(+0.0)	-	(+0.0)
Assets – liquidity supply (averages; EUR billions)							
Autonomous liquidity factors	**1,126.2**	**(+1.7)**	**1,124.5**	**1,115.5**	**(-19.8)**	**1,135.3**	**(+3.0)**
Net foreign assets	686.3	(+32.1)	654.2	687.8	(+2.8)	685.0	(+18.9)
Net assets denominated in euro	439.9	(-30.4)	470.3	427.8	(-22.6)	450.3	(-15.9)
Monetary policy instruments							
Open market operations	1,922.7	(+236.8)	1,685.9	1,987.9	(+121.0)	1,866.9	(+120.6)
Tender operations	533.5	(+18.4)	515.0	540.9	(+13.7)	527.2	(+8.0)
MROs	40.6	(-9.8)	50.5	37.4	(-6.1)	43.5	(-4.1)
Three-month LTROs	19.3	(-8.2)	27.6	17.7	(-3.0)	20.7	(-3.8)
TLTRO-I operations	60.3	(-253.9)	314.1	56.3	(-7.4)	63.7	(-155.2)
TLTRO-II operations	413.2	(+290.4)	122.9	429.5	(+30.2)	399.3	(+171.1)
Outright portfolios	1,389.2	(+218.4)	1,170.9	1,447.0	(+107.3)	1,339.7	(+112.6)
First covered bond purchase programme	15.9	(-2.4)	18.3	15.2	(-1.3)	16.5	(-1.3)
Second covered bond purchase programme	7.4	(-0.7)	8.0	7.2	(-0.3)	7.5	(-0.2)
Third covered bond purchase programme	191.6	(+11.8)	179.7	194.7	(+5.9)	188.8	(+5.6)
Securities Markets Programme	107.1	(-4.0)	111.1	105.4	(-3.1)	108.5	(-2.4)
Asset-backed securities purchase programme	20.5	(+1.0)	19.5	20.7	(+0.4)	20.3	(+0.4)
Public sector purchase programme	1,023.0	(+192.3)	830.7	1,072.9	(+92.6)	980.3	(+99.1)
Corporate sector purchase programme	23.9	(+20.4)	3.5	30.8	(+12.9)	17.9	(+11.4)
Marginal lending facility	0.1	(-0.1)	0.2	0.1	(+0.0)	0.0	(-0.1)
Other liquidity-based information (averages; EUR billions)							
Aggregate liquidity needs	908.0	(+65.0)	843.1	941.1	(+61.4)	879.7	(-2.0)
Autonomous factors[1]	790.8	(+63.2)	727.6	823.3	(+60.3)	763.0	(-2.9)
Excess liquidity	1,014.7	(+171.9)	842.8	1,046.8	(+59.6)	987.2	(+122.6)
Interest rate developments (averages; percentages)							
MROs	0.00	(+0.00)	0.00	0.00	(+0.00)	0.00	(+0.00)
Marginal lending facility	0.25	(+0.00)	0.25	0.25	(+0.00)	0.25	(+0.00)
Deposit facility	-0.40	(+0.00)	-0.40	-0.40	(+0.00)	-0.40	(+0.00)
EONIA	-0.342	(-0.008)	-0.333	-0.345	(-0.006)	-0.339	(-0.009)

Source: ECB.
Note: Since all figures in the table are rounded, in some cases the figure indicated as the change relative to the previous period does not represent the difference between the rounded figures provided for these periods (differing by €0.1 billion).
1) The overall value of autonomous factors also includes "items in course of settlement".

Liquidity-providing autonomous factors increased slightly over the review period, as the continuing decline in net assets denominated in euro was compensated for by an increase in net foreign assets. Average net assets denominated in euro fell to €439.9 billion, down €30.4 billion from the previous review period, on account of a decline in financial assets held by the Eurosystem for purposes other than monetary policy, combined with an increase in liabilities held with national central banks by foreign official institutions. The fact that those institutions increased their holdings was possibly due to the dearth of attractive alternatives in the market. Net foreign assets increased by €32.1 billion to stand at €686.3 billion, mainly as a result of quarterly portfolio revaluations reflecting the weakening of the euro (which were ultimately offset by equivalent changes affecting the set of other liquidity-absorbing autonomous factors).

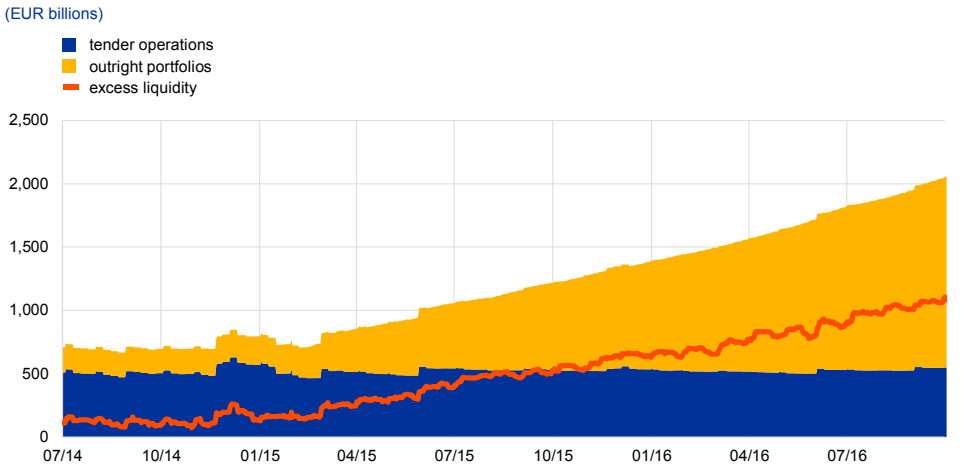
The volatility of autonomous factors remained elevated, broadly unchanged from the previous review period. That volatility primarily reflected both fluctuations in government deposits and – albeit to a much lesser extent – the quarterly revaluation of net foreign assets and net assets denominated in euro. At the same time, the average absolute error in the Eurosystem's weekly forecasts of autonomous factors increased by €5.1 billion to stand at €11.3 billion in the period under review.

Liquidity provided through monetary policy instruments

The average amount of liquidity provided through open market operations – both tender operations and the asset purchase programmes – increased by €236.8 billion to stand at €1,922.7 billion (see the chart). That increase was mostly due to the ECB's expanded asset purchase programme.

Chart

Evolution of monetary policy instruments and excess liquidity



Source: ECB

The average amount of liquidity provided through tender operations increased by €18.4 billion to stand at €533.5 billion. The increase in the liquidity provided by

the TLTROs more than offset the decrease in the liquidity supplied via regular operations. Specifically, liquidity provided via MROs and three-month LTROs decreased by €9.8 billion and €8.2 billion respectively, while the outstanding amount of TLTROs increased by an average of €36.5 billion as a net effect of the settlement of the second TLTRO-II operation, mandatory repayments for TLTRO-I operations and voluntary repayments for the first TLTRO-I operation.

Average liquidity provided through the expanded APP increased by €218.4 billion to stand at €1,389.2 billion, mainly on account of the public sector purchase programme. Average liquidity provided by the public sector purchase programme, the third covered bond purchase programme, the asset-backed securities purchase programme and the corporate sector purchase programme rose by €192.3 billion, €11.8 billion, €1.0 billion and €20.4 billion respectively. The redemption of bonds held under the Securities Markets Programme and the first and second covered bond purchase programmes totalled €7.1 billion.

Excess liquidity

As a consequence of the developments detailed above, average excess liquidity rose by €171.9 billion to stand at €1,014.7 billion in the period under review (see the chart). Most of that increase came in the fifth maintenance period, when excess liquidity rose by €122.6 billion on account of liquidity provided by the expanded APP, with autonomous factors remaining broadly unchanged. The smaller increase of €59.6 billion in the sixth maintenance period was mainly the result of a rise in autonomous factors, which partially absorbed the liquidity provided by the expanded APP.

The increase in excess liquidity was reflected mainly in higher average current account holdings, which rose by €120.1 billion to stand at €762.0 billion in the period under review. Average recourse to the deposit facility increased by €53.3 billion to stand at €369.9 billion.

Interest rate developments

Overnight money market rates remained close to – or even below – the deposit facility rate in the review period. In the unsecured market, the EONIA (euro overnight index average) averaged −0.342%, down marginally from an average of −0.333% in the previous review period. The EONIA fluctuated within a narrow range, with a high of −0.321% and a low of −0.354%. Furthermore, average overnight repo rates in the GC Pooling market declined to −0.401% and −0.395% for the standard and extended collateral baskets respectively, down 0.005 percentage point and 0.008 percentage point relative to the previous review period. Those repo rates also fluctuated within a narrow range with the exception of the end of the third quarter, when the overnight GC Pooling rate for the standard collateral basket spiked downwards to stand at −0.457%. The spike reflected the reduced supply of high

quality collateral in the repo market around regulatory reporting days, such as the quarter-end.

3 Structural indicators of the euro area business environment

Business practices in the euro area countries remain very heterogeneous and generally far from being among the best global performers. A friendly business environment can facilitate the creation of new firms, promote economic activity, boost employment and increase the resilience of economies to adverse shocks.[13] A number of institutions[14], including the ECB[15], have called for reforms to the business environment to boost economic dynamism and encourage enterprise in the euro area. This box uses structural indicators to provide an overview, stylised facts and intuitive examples of where the euro area countries stand regarding their business environment compared with the world's best performers, and how this may have changed during the crisis.

Structural indicators confirm that the environment in the majority of euro area countries remains rather business-unfriendly. The World Bank's "ease of doing business"[16] indicator captures key aspects of the business environment and is presented in Chart A, with the horizontal axis indicating the global ranking of countries and the histograms showing the level of the indicator. The yellow dots show the change in the indicators in the years 2008-13, and the red triangles display progress during 2013-16. The ranking from the *Doing Business 2017* report indicates that not a single euro area country is mentioned among the top ten world performers.[17] The highest ranking euro area countries are Estonia (12), Finland (13) and Latvia (14), while the lowest ranking countries include Luxembourg (59), Greece (61) and Malta (76). Looking at the implementation of reforms, countries such as Latvia, Portugal and Slovenia showed significant progress towards a more friendly business environment during the crisis in 2008-13 (yellow dots). However, the pace of reform over the period 2013-16 was substantially slower in the majority of euro area countries (red triangles). In fact, progress in key areas of the business environment since 2013 accelerated only in Ireland, Austria, the Netherlands, France, Spain, Belgium and Cyprus. At the same time, some euro area countries moved even further away from best practice over the period 2013-16 (e.g. Greece, Italy, Slovakia and Estonia). Moreover, the euro area average (light blue line) is far away from the world's best performers (green line), with the overall ranking of some euro area countries being among the worst performing advanced economies.

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13 As a recent example, see Sondermann, D., "Towards more resilient economies: the role of well-functioning economic structures", *ECB Working Paper Series*, No 1984, November 2016.

14 See for example the European Commission, Recommendation for a Council Recommendation on the economic policy of the euro area, COM(2016) 726, 16 November 2016.

15 See for example recent speeches of the Executive Board members and introductory statements of the ECB President, including Draghi, M., "The productivity challenge for Europe", The 100th anniversary of the Deusto Business School, Madrid, 30 November 2016, or Draghi, M., "Introductory statement to the plenary debate of the European Parliament on the ECB's Annual Report 2015", Strasbourg, 21 November 2016.

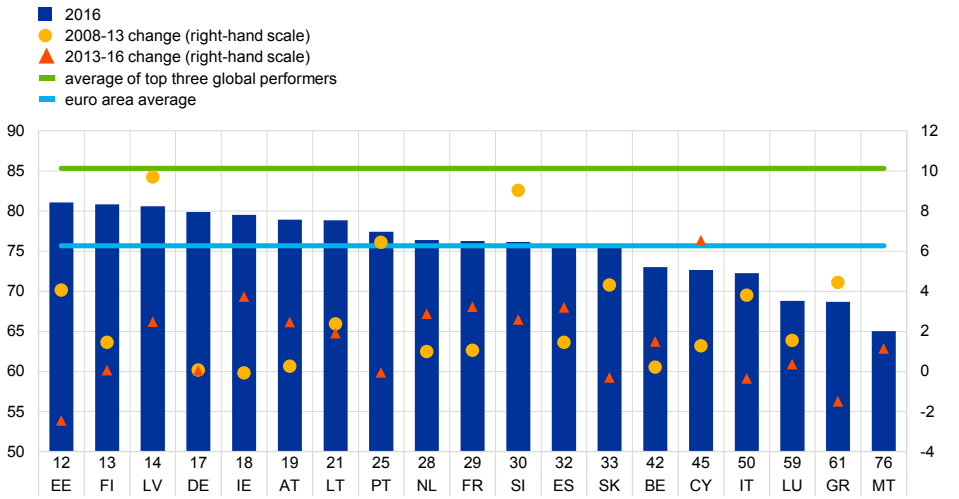
16 The overall Doing Business indicator is an aggregation of ten sub-indicators: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. The sub-indicators themselves are also an aggregation of several indicators.

17 See the Doing Business 2017 report.

Chart A

Overall "ease of doing business" ranking

(distance to frontier (left-hand scale); implementation of reform (right-hand scale))



Sources: World Bank, Doing Business and ECB calculations.
Notes: The left-hand scale depicts the distance to frontier (DTF). The higher the value, the closer the country is to the frontier (frontier = 100). As a measure of the reforms implemented, the right-hand scale shows the change in the DTF over the periods 2008-13 (yellow dots) and 2013-16 (red triangles). A positive (negative) change in the implementation of reform means a country is moving closer to (further away from) the frontier. The number on the horizontal axis stands for the current world ranking of the country. No value is available for MT for 2008.

The majority of euro area countries also remain far from the competitiveness frontier (see Chart B). This is confirmed by the Global Competitiveness Index[18], which suggests that many euro area countries still face substantial competitiveness issues. Whereas the Netherlands, Germany and Finland score among the top ten of the world's most competitive economies, a number of euro area countries still rank among the least competitive advanced economies in the world. According to the index, competitiveness deteriorated over the period 2008 to 2013 in a number of countries (e.g. France, Spain, Slovenia, Slovakia, Cyprus and Greece), but improved somewhat between 2013 and 2016[19] in a majority of euro area countries, with the exception of Finland and Cyprus. Given the low total factor productivity (TFP) growth over the past 20 years in the euro area, combined with a poor outlook for future productivity growth, a major improvement towards more competitive structures[20] is crucial for catching up with the most competitive economies.

18 The Global Competitiveness Index assesses the competitiveness landscape of 138 economies on a scale of 1 (worst) to 7 (best), providing insight into the drivers of their productivity and prosperity. The index integrates more than 100 variables, combining the macroeconomic and micro/business aspects of competitiveness into a single index. Moreover, the overall indicator is an aggregation from 12 pillars (sub-indicators), but in this box only the aggregate indicator is reported.

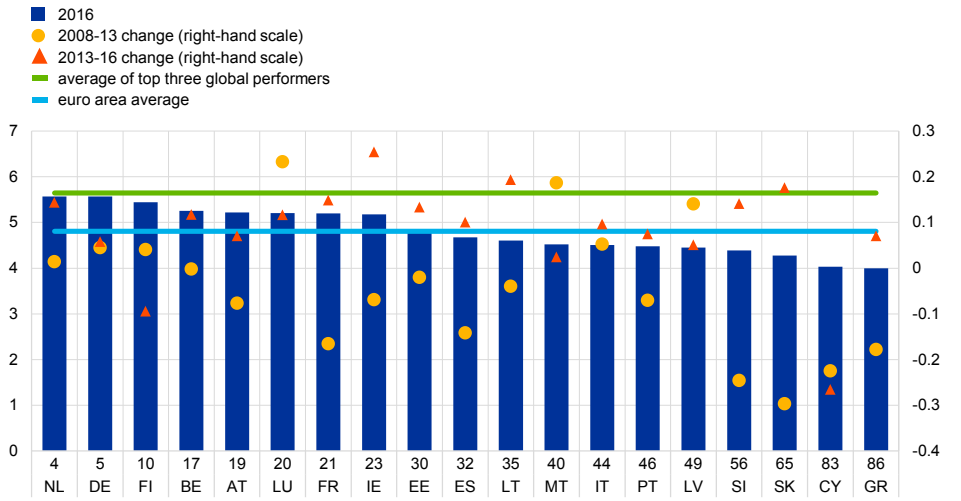
19 It should be noted that the Global Competitiveness Index corrects for the GDP per capita effect. Therefore, countries with higher GDP per capita are expected to have, on average, a more competitive environment, hence the economic recovery helps countries achieve a higher score for the indicator.

20 See also "Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU", *Economic Bulletin,* ECB, Issue 5, 2016.

Chart B

Overall "Global Competitiveness Index"

(index (left-hand scale); implementation of reforms (right-hand scale))



Sources: World Economic Forum and ECB calculations.
Notes: On the left-hand scale, higher values imply greater competitiveness. As a measure of the reforms implemented, the right-hand scale shows the change in the index over the periods 2008-13 (yellow dots) and 2013-16 (red triangles). A positive (negative) change in the implementation of reform greater (less) than zero means a country performed better (worse) at the end of the phase with respect to the starting point. The number on the horizontal axis stands for the current world ranking of the country.

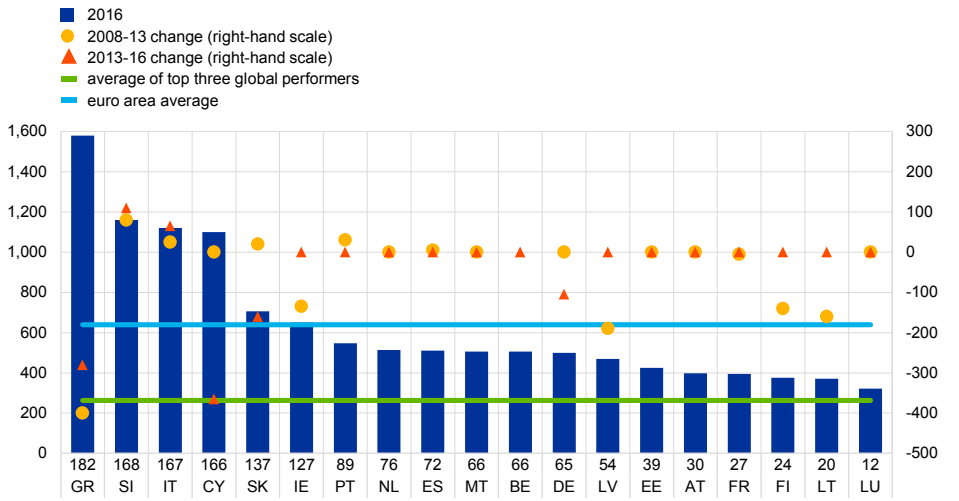
Sub-components of the Doing Business indicator – such as "enforcing contracts" – confirm that the gap between the best performers and the euro area countries is substantial. Lengthy court proceedings and difficulties in enforcing contracts[21] may be signs of limitations in a country's legal system. Such limitations can, for example, discourage investors or reduce access to external financing that firms may need. It is therefore a source of concern that it takes more than 600 days on average to enforce a contract in the euro area but only about 250 days in the best performing countries across the globe (see Chart C). Indeed, it still takes more than three years to enforce a contract in Greece, Slovenia, Italy and Cyprus, even though some progress after 2008 can be observed in Slovenia and Italy. However, their reform efforts are still not commensurate with what is required to align them closer to the world's best performers. By contrast, it takes about a year to enforce a contract in Luxembourg, Lithuania and Finland.

[21] For a detailed review of the literature in this area, see Aboal, D., Noya, N. and Rius, A., "Contract Enforcement and Investment: A Systematic Review of the Evidence", *World Development*, Vol. 64, pp. 322–338, 2014, December.

Chart C

"Number of days to enforce contracts" indicator

(enforcing contracts: time (days) (left-hand scale); implementation of reform (right-hand scale))



Sources: World Bank, Doing Business (enforcing contracts time component) and ECB calculations.
Notes: In the left-hand scale, the higher the value, the more costly it is to enforce a contract as measured by time. As a measure of the reforms implemented, the right-hand scale shows the changes in the number of days needed to enforce a contract over the periods 2008-13 (yellow dots) and 2013-16 (red triangles). A change in the implementation of reform greater (less) than zero means a country is moving closer to (further away from) best practice. The number below the chart stands for the current world ranking of the country. No value is available for MT for 2008.

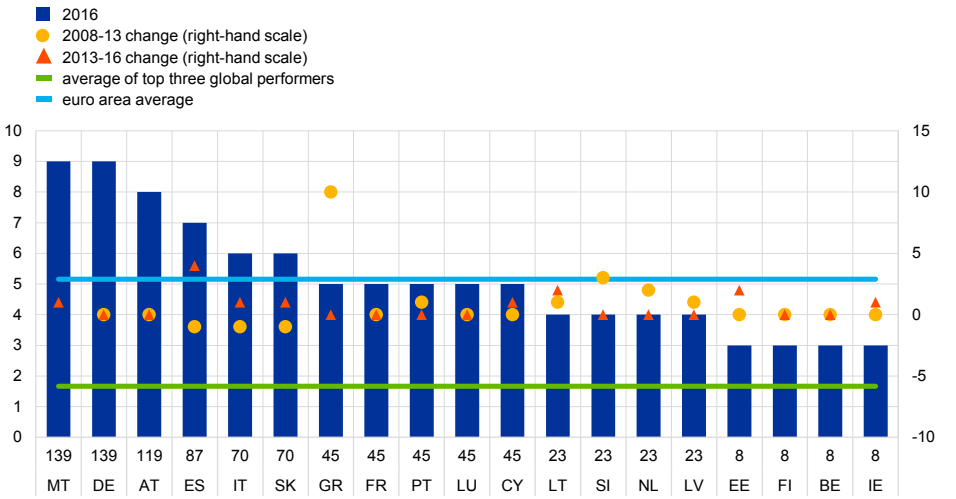
Five procedures need to be undertaken to open a business in the euro area, which amounts to far more red tape in comparison with the world's best performers (see Chart D). This figure varies, from three procedures (in Belgium, Estonia, Finland and Ireland) to nine (Germany and Malta), whereas the global best performer requires only one. Apart from Greece, a large majority of euro area countries made little effort to cut red tape. Stringent bureaucracy and burdensome regulations make it harder for firms to allocate resources efficiently and can often signal that the public administration is unwieldy.[22]

[22] See, for example, Gust, C., and Marquez, J., "International comparisons of productivity growth: the role of information technology and regulatory practices", *Labour Economics*, Vol. 11, Issue 1, pp. 33-58, 2004, February.

Chart D

"Number of procedures to open a business" indicator

(starting a business: procedures (number) (left-hand scale); implementation of reform (right-hand scale))



Sources: World Bank, Doing Business (starting a business – number of procedures) and ECB calculations.
Notes: In the left-hand scale, the higher the value, the more costly it is to start a business as measured by a number of procedures involved when opening a business. As a measure of the reforms implemented, the right-hand scale shows the changes in the number of procedures involved when opening a business over the periods 2008-13 (yellow dots) and 2013-16 (red triangles). A change in the implementation of reform greater (less) than zero means a country is moving closer to (further away from) best practice. The number below the chart stands for the current world ranking of the country. No value is available for MT for 2008.

To increase investment and productivity, boost job creation and guarantee sufficient shock absorption capacity, action to address the above-mentioned weaknesses in the business environment – including measures to facilitate the entry of new firms and enhance competitiveness – should be a matter of priority in the euro area. A number of euro area countries have relatively unfriendly business environments across a number of indicators, and would therefore benefit the most from substantial reforms in this area. Nevertheless, the overall message across various measures and indicators is that the euro area lags behind the world's best performers. The euro area countries can therefore benefit significantly from implementing reforms to improve their business environments.

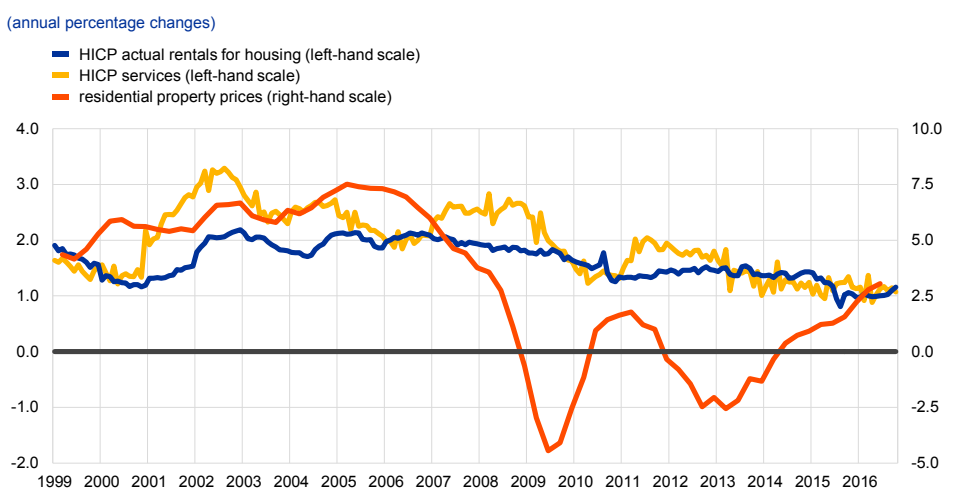
4 Assessing the impact of housing costs on HICP inflation

The euro area has recently experienced strong residential property price growth, while HICP inflation has remained subdued. Annual euro area residential property price inflation has successively strengthened over several quarters, and in mid-2016 returned to its long-term average of 2.9%.[23] This box addresses the question of why housing costs have not then been putting upward pressure on HICP inflation via the services component. Housing costs currently enter the HICP through actual rentals and minor repairs, but, ideally, the HICP would cover all housing-related consumption expenditures. With the aim of further improving the relevance and comparability of the HICP, the European Statistical System is developing a measure of owner-occupied housing (OOH) costs.[24] Against this background, this box first reviews the link between residential property prices and rentals and, second, assesses some experimental data on OOH published by Eurostat earlier this year.

Falls in housing rental inflation have contributed to the past decline in HICP services inflation. The HICP item "actual rentals for housing" accounts for 15% of the euro area HICP services basket, and its annual inflation rate is typically more stable than that of all services. After falling to a little under 1.5% in 2010, rental inflation declined further to around 1.0% in 2015, well below the long-term average of 1.7% (see Chart A). Developments in rental prices over the past few years have therefore not supported services inflation, but been an integral part of its decline.

Chart A

Euro area inflation rates of rentals, all services and residential property prices



Sources: Eurostat and ECB calculations.

23 See the box entitled "Recent developments in euro area residential property prices", *Economic Bulletin,* Issue 7, ECB, 2016. Averages are calculated using data going back to 1999.

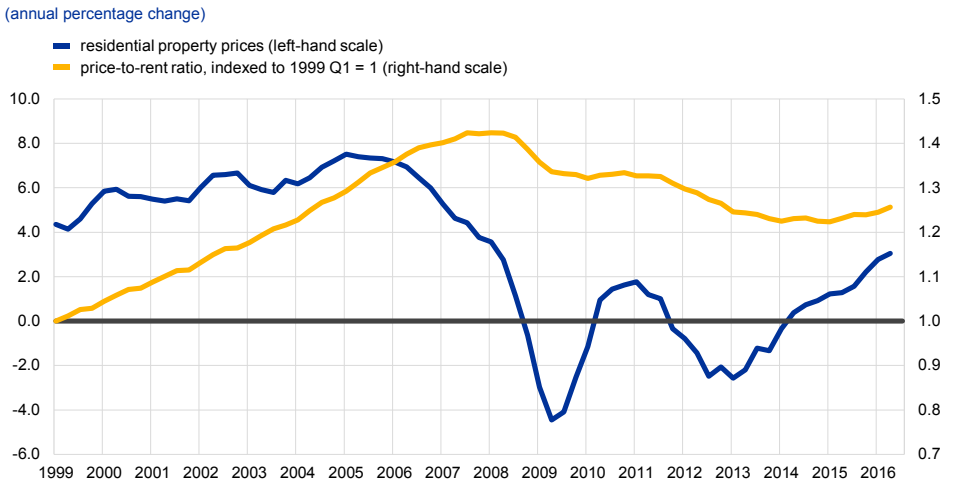
24 For further information, see Recital 10 of Regulation (EU) 2016/792 of the European Parliament and of the Council of 11 May 2016 on harmonised indices of consumer prices and the house price index, and repealing Council Regulation (EC) No 2494/95 (OJ L 135, 24.5.2016, p. 11).

In principle, there is a long-run relationship between residential property prices and rents. For example, if residential property prices were considered high relative to rents, then some property owners might decide to sell and instead rent, in anticipation of purchasing again later at a lower price. That would put downward pressure on property prices and upward pressure on rents, leading to an adjustment.

In practice, however, a number of frictions can lead to a protracted decoupling between the dynamics of residential property prices and rents. These frictions, such as transaction costs, credit constraints and the long-term nature of some rental contracts, limit the substitutability between renting and owning property. Moreover, in some euro area countries rent controls, including indexation, are important and can lead to a longer-lasting divergence between the two sets of prices. This is especially true of social housing, which accounts for a significant part of some countries' national HICP "actual rentals for housing" component. Where rents are indexed to a consumer price index, low inflation over the past few years may have exerted successively more downward pressure on rental inflation.

Chart B

Residential property prices and the price-to-rent ratio



Sources: Eurostat and ECB calculations.

The ratio between residential property prices and rental prices in the euro area has varied over time (see Chart B).[25] In particular, past falls in interest rates are likely to have had a bearing on this relationship. Falls in nominal interest rates imply lower yields on other benchmark investment assets such as bonds, and thereby also imply a lower required rental yield on residential property.[26] In practice, this downward adjustment to the rental yield is more likely to occur through faster increases in property prices than slower increases in rental prices. But the changes in the residential property price-to-rent ratio also illustrate that, in the run-up to the financial crisis, housing valuations had become stretched in many countries. In

[25] See the box entitled "House prices and the rent component of the HICP in the euro area", *Monthly Bulletin*, ECB, August 2014.

[26] The rental yield is defined as the ratio of a year's rent to the price of the property, i.e., it is the inverse of the price-to-rent ratio, so a lower rental yield means a higher price-to-rent ratio.

conclusion, the recent pick-up in residential property price inflation should not be expected to provide an automatic boost to housing rental inflation and thereby HICP inflation.

HICP inflation only partially reflects changes in housing-related prices, as it focuses on actual rents and does not include all OOH costs. This restriction reflects the difficulties involved in resolving the trade-off between two seemingly opposed conceptual objectives. The first is that the HICP should capture consumption prices rather than asset prices. However, it is more natural to consider residential property not as a consumption good, but rather as a form of investment asset that both serves as a store of wealth and provides an ongoing flow of consumable housing services.[27] This would suggest that residential property prices should not be incorporated directly in the HICP. The second conceptual objective is that the HICP should be based on only the prices of observable monetary transactions. This argues against using the rents of equivalent properties to measure the price of the ongoing dividend flow of housing services consumed by an owner occupier (known as the rental equivalence approach).

The nature of this dichotomy means that national statistical institutes tend to compromise between these two objectives regarding their own consumer price indices. There is, however, no international consensus on the optimal form of compromise; often the individual characteristics of each country and the main purposes for which the consumer price index is used are a key factor. Many countries with uniformly well-developed rental markets have opted to take the rental equivalence approach.[28] Other countries, especially those where data distinguish between the prices for the housing structure (reflecting the part of the property related to a consumption good) and prices for the land (reflecting the part related to an investment asset), derive their OOH price index directly from the price of the housing structure. In the euro area, there is great heterogeneity in property markets across member countries, with owner-occupancy ratios ranging from below 50% to over 90%; for over 15 years the European Statistical System has therefore been pursuing an approach based on the observable price of residential property. This does, however, mean that the index still includes an asset price element.

Eurostat released new, experimental data on OOH earlier this year, provided by EU national statistical institutes. These OOH price indices reflect changes in the price of *net* purchases of residential property by the household sector, i.e., transactions between households are excluded. Indicative ECB calculations, made to illustrate the scale of the potential effect of including the national OOH indices into the euro area HICP, imply absolute differences in the inflation rates of up to 0.2 percentage points in any individual quarter, but no difference on average over the past five years. These national OOH price indices are only available quarterly with a

[27] In this sense, a house could be likened to a share: an asset which also generates a dividend stream.

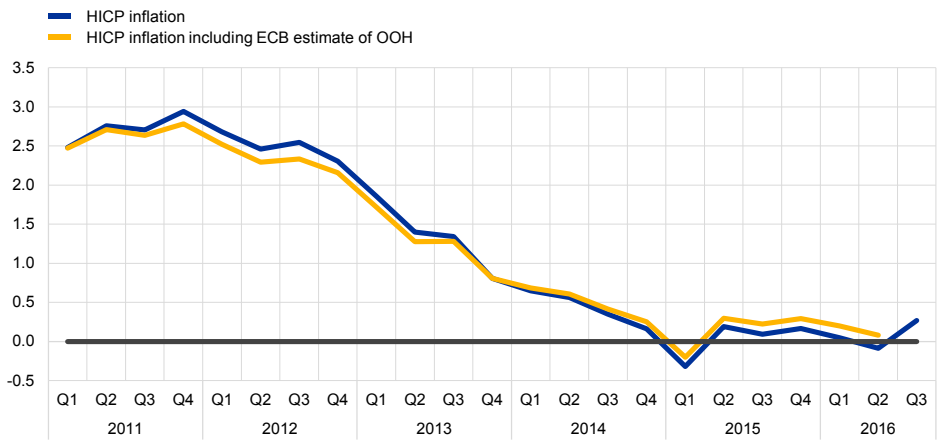
[28] For instance, the United Kingdom's Office for National Statistics has recently announced that a rental equivalence-augmented consumer price index will become the Office's main measure of inflation.

lag (the most recent data refer to the second quarter of 2016).[29] At this juncture, an estimate including OOH would point to an inflation rate that is slightly higher than the HICP, but not significantly so (see Chart C). The experimental nature of these data should, however, be kept in mind because Eurostat is still assessing the approach and methodology.

Chart C

Euro area inflation and OOH costs

(annual percentage changes)



Sources: Eurostat and ECB calculations.

Overall, housing costs are currently providing little support to HICP inflation. The housing components currently included in the HICP, namely rental prices, are still weighing down on inflation, partly because they are indexed to inflation. An illustrative ECB calculation based on the national OOH price indices published by Eurostat shows that expanding the coverage of HICP to take account of OOH costs would not materially affect the inflation assessment.

[29] Specifically, these quarterly, experimental OOH indices are only released alongside the HICP data for the last month of the quarter following the reference quarter. This means that data for Q3 2016 will be released alongside the December 2016 HICP data in January 2017. More information on these new, experimental data is available at http://ec.europa.eu/eurostat/cache/metadata/en/prc_hpi_oo_esms.htm

5 Review of draft budgetary plans for 2017 and the budgetary situation for the euro area as a whole

On 16 November the European Commission released its opinions on euro area governments' draft budgetary plans for 2017,[30] together with an analysis of the budgetary situation for the euro area as a whole. The opinions on the draft budgetary plans include an assessment of the plans' compliance with the Stability and Growth Pact (SGP). They also follow up on the guidance provided in the country-specific recommendations for fiscal policies under the 2016 European Semester, as adopted by the Economic and Financial Affairs Council on 12 July 2016.[31] Jointly with these opinions, the Commission released a communication entitled "Towards a positive fiscal stance for the euro area", in which it discussed the current role of fiscal policies in the euro area at the aggregate level. This reflects the mandate in Regulation (EU) No 473/2013 (part of the "Two-Pack"), which calls on the Commission to "make an overall assessment of the budgetary situation and prospects in the euro area as a whole, on the basis of the national budgetary prospects and their interaction across the area".

The Commission's assessment, based on its 2016 autumn economic forecast, is that only five of the 18 draft budgetary plans are fully compliant with the SGP. The Commission finds the plans of Germany, Estonia, Luxembourg, the Netherlands and Slovakia (all under the preventive arm) to be "compliant" with the SGP, unchanged from the previous year, while it regards the draft budgetary plans of five countries as only "broadly compliant" (see the table).[32] Under the SGP's preventive arm this relates to Ireland, Latvia, Malta and Austria. Under the corrective arm – the excessive deficit procedure (EDP) – it affects France. While France's headline deficit is forecast to fall below the deficit reference value of 3% of GDP by the 2017 EDP deadline, the correction of the excessive deficit is not expected to be sustainable in the light of sizeable cumulated shortfalls in structural efforts vis-à-vis commitments under the SGP.[33]

30 The draft budgetary plans exclude those of euro area countries under a financial assistance programme, i.e. Greece.

31 See the box entitled "Country-specific recommendations for fiscal policies under the 2016 European Semester", *Economic Bulletin*, Issue 4, ECB, June 2016.

32 For details regarding the criteria underlying the assessment, see the notes accompanying the table.

33 According to the European Commission's 2016 autumn economic forecast, the structural effort is forecast at 0.6% of GDP cumulated over the period 2015-17, whereas 2.2% of GDP is recommended under the EDP recommendation that the Council issued to France in 2015.

Table

2017 draft budgetary plans

	Medium-term budgetary objective (MTO)	Structural balance in 2017 (Commission 2016 autumn forecast)	Actual structural effort 2017 (Commission 2016 autumn forecast)	2017 structural effort commitment under SGP (percentage points)
Compliance with the SGP				
Germany	-0.5	0.4	-0.2	at MTO
Estonia*	0.0	-0.2	-0.8	at MTO
Luxembourg	-0.5	0.4	-1.5	at MTO
Netherlands	-0.5	-0.2	0.3	at MTO
Slovakia	-0.5	-1.4	0.6	0.5
Broad compliance with the SGP				
Ireland[1]	-0.5	-1.0	0.7	0.6
Latvia* [1]	-1.0	-1.7	-0.2	-0.2
Malta[1]	0.0	-0.7	0.4	0.6
Austria* [1]	-0.5	-0.9	0.1	-0.1
France (EDP deadline 2017)[2]	-0.4	-2.3	0.2	0.9
Risk of non-compliance with the SGP				
Belgium[3]	0.0	-2.0	0.7	0.6
Italy[3]	0.0	-2.2	-0.5	0.6
Cyprus* [3]	0.0	-1.3	-1.4	-0.4
Lithuania* [3]	-1.0	-1.4	-0.4	-0.2
Slovenia[3]	0.25	-2.3	-0.2	0.6
Finland* [3]	-0.5	-1.6	-0.3	0.6
Portugal (EDP deadline 2016)[4]	0.25	-2.4	0.0	0.6
Spain (EDP deadline 2018)[4]	0.0	-3.8	0.0	0.5

Sources: European Commission and AMECO.
Notes: * Estonia, Cyprus, Latvia, Lithuania, Austria and Finland have applied for flexibility under the SGP (notably regarding structural reforms, investment and pensions).
1) For countries under the SGP's preventive arm, draft budgetary plans are "broadly compliant" if, according to the Commission's forecast, the plan may result in some deviation from the MTO or the adjustment path towards it, but the shortfall relative to the requirement would not represent a significant deviation from the required adjustment. Deviations from the fiscal targets under the preventive arm are classified as "significant" if they exceed 0.5% of GDP in one year or, on average, 0.25% of GDP in two consecutive years. At the same time, member countries are assessed as being in compliance with the debt reduction benchmark "where applicable".
2) For countries subject to an EDP, the Commission assesses draft budgetary plans as being "broadly compliant" if the Commission's forecast projects that the headline deficit targets will be achieved but there is a noticeable shortfall in fiscal effort compared with the recommended value, putting at risk compliance with the EDP recommendation.
3) Under the preventive arm, the Commission assesses draft budgetary plans as being "at risk of non-compliance with the SGP" if the Commission's forecast projects a significant deviation from the MTO or the required adjustment path towards the MTO in 2017, and/or non-compliance with the debt reduction benchmark "where applicable".
4) The Commission assesses countries under an EDP as being "at risk of non-compliance" if the Commission's forecast for 2017, subject to ex post confirmation, could lead to the stepping up of the EDP, as neither the recommended fiscal effort nor the recommended headline deficit target are forecast to be achieved.

Although some budgetary plans fall significantly short of SGP provisions, by the end of October the Commission had not called on any Member State to provide an updated plan, stating that the criterion of particularly serious non-compliance according to Regulation (EU) No 473/2013 was not fulfilled. Still, according to the Commission, the draft budgetary plans of eight countries pose a "risk of non-compliance" with the SGP. This compares with five countries in this category under last year's review exercise. Under the SGP's corrective arm, the

group identified this year comprises Portugal and Spain,[34] with EDP deadlines in 2016 and 2018 respectively. Both countries are found to have taken effective action in 2016 in response to the notices to take additional measures issued under Article 126(9) of the Treaty on the Functioning of the European Union (TFEU) on 2 August. At the same time, significant shortfalls in structural efforts are forecast for 2017, although the Spanish authorities submitted a draft budgetary plan on a no-policy-change basis by the 15 October deadline and committed to submitting an updated and fully compliant plan at the Eurogroup meeting of 5 December.[35]

Under the preventive arm the group includes six Member States. For Belgium, Italy, Cyprus and Slovenia, the improvement in the structural balance towards the country-specific medium-term budgetary objective (MTO) is forecast to fall significantly short of requirements, i.e. by more than 0.5 percentage point of GDP. This assessment would hold even if they were granted, on an ex post basis, the flexibility under the SGP that some governments have applied for in their draft budgetary plans. The remaining two countries in the group are Lithuania and Finland, for which the shortfall in structural efforts towards the MTO would remain below the significance threshold even if the requested flexibility were to be granted ex post. The Commission will assess countries' eligibility for deviating from the adjustment path towards the MTO on the grounds of the SGP's flexibility provisions in spring 2017.

For Italy and Belgium, the Commission's opinions imply that compliance with the preventive arm ceases to apply as a mitigating factor when assessing their (non-)compliance with the debt rule. On 5 December the Eurogroup noted that "in light of prima facie non-compliance with the debt reduction benchmark, the Commission will issue a new report under 126(3) TFEU" for both countries. As regards Italy, the Commission had initially envisaged reviewing its assessment of relevant factors in November in a new report based on the draft budgetary plan for 2017.[36]

The draft budgetary plans point to a broadly neutral fiscal stance for the euro area in 2017, which strikes a balance between aggregate stabilisation and sustainability needs. Generally, the concept of the euro area aggregate fiscal stance provides a useful input to policy discussions and economic analysis at the euro area level, where a single monetary policy is complemented by national fiscal policies.[37] Nevertheless, it is not a legally binding constraint on Member States, which continue to be bound by the SGP. Taking note of the Commission's communication on an appropriate euro area fiscal stance, on 5 December the Eurogroup underlined "the importance to strike an appropriate balance between the

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34 Spain and Lithuania, which submitted draft budgetary plans based on a no-policy-change scenario in the absence of a new government after general elections, have been requested to submit updated plans as soon as possible. Spain's Council of Ministers approved the updated draft budgetary plan for 2017 on 9 December. It foresees a headline deficit of 3.1% and a 0.5% improvement of the structural deficit ratio, in line with EDP commitments.

35 See http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/dbp/2016/assessement_pt_es_en.pdf.

36 For details see http://europa.eu/rapid/press-release_MEMO-16-1727_de.htm

37 For a discussion of the difficulties surrounding the assessment of the fiscal stance, see the article entitled "The euro area fiscal stance", *Economic Bulletin*, Issue 4, ECB, June 2016.

need to ensure sustainability and the need to support investment to strengthen the fragile recovery." The Eurogroup also recalled that, in July, euro area finance ministers had concluded that the broadly neutral fiscal stance in 2017 was striking an appropriate balance.

At the same time, the broadly neutral fiscal stance reflects a suboptimal composition across countries, as also observed by the Commission. On the one hand, a sizeable number of euro area countries need to step up their structural efforts to comply with the SGP. On the other hand, some countries are overachieving their MTOs and thus have scope to use fiscal space. In this respect, the Eurogroup statement recalls that "these Member States could use their favourable budgetary situation to further strengthen their domestic demand and growth potential [...], while respecting the MTO [...]."[38]

Looking ahead, an appropriate euro area fiscal instrument would be conducive to achieving fiscal policy goals at the euro area aggregate level. The Five Presidents' Report,[39] released in June 2015, recommends enriching the EMU institutional framework with a euro area fiscal instrument, e.g. to increase the automatic stabilisation capacity in the presence of large macroeconomic shocks. The report stresses that "the objective of automatic stabilisation at the euro area level would not be to actively fine-tune the economic cycle at euro area level. Instead, it should improve the cushioning of large macroeconomic shocks". In this context, the report emphasises that any move towards risk-sharing within the euro area "should be the culmination of a process that requires, as a precondition, a significant degree of economic convergence, financial integration and further coordination and pooling of decision-making on national budgets, with commensurate strengthening of democratic accountability".[40]

In the absence of such instruments and in view of the EU fiscal rules, the composition of national budgets remains the essential instrument for supporting economic activity. In this regard, the Commission finds that "the draft budgetary plans envisage only very limited changes in the composition of public finances in 2016-17 for the euro area as a whole". In this vein, the Eurogroup also acknowledged on 5 December that there was "scope for more growth-friendly choices" within government budgets, and reaffirmed the importance of reducing the burden of labour taxation as well as the benefits of well-designed reviews of government expenditure.

The Eurogroup will reassess countries' commitments in March 2017, based on the European Commission's 2017 winter forecast. It stressed in December 2016 that "fiscal policies should be pursued in full compliance with the SGP".

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38 The SGP is, however, asymmetric in the sense that countries falling short of structural efforts vis-à-vis commitments need to ensure compliance, while countries with fiscal space are not required to use it.

39 See https://ec.europa.eu/priorities/sites/beta-political/files/5-presidents-report_en.pdf

40 At the same time, the European Fund for Strategic Investments (EFSI), which was set up in 2015, could potentially contribute to reducing regional disparities across the EU. According to a joint proposal from the Commission and the European Investment Bank, this is part of the EFSI's strategic orientation (see page 4 for details).

Articles

1 The impact of uncertainty on activity in the euro area

Fluctuations in uncertainty can play an important role in shaping the economic conjuncture and outlook. This article discusses the various methods proposed in the literature to measure uncertainty and shows how these measures have evolved in the euro area. It describes the transmission channels of fluctuations in uncertainty to the economy and provides some model-based evidence for the impact of uncertainty on euro area activity. The results suggest that uncertainty in the euro area rose substantially during the Great Recession and during the sovereign debt crisis, and that high uncertainty could significantly dampen activity in the euro area, and notably investment.

1 The relationship between uncertainty and activity

While difficult to measure, uncertainty – in its various forms – is widely cited as a factor that influences the economic conjuncture and outlook. A number of studies have argued that high uncertainty contributed to the downturn in the Great Recession and was an important factor behind both the weakness of the global recovery and, notably, the weakness of activity in the euro area after the Lehman episode.[41] Measuring macroeconomic uncertainty and understanding its impact on economic activity is thus crucial for assessing the current macroeconomic situation and forming a view on the outlook.

Uncertainty arises when economic agents are conscious of their limited knowledge about present facts or possible future outcomes.[42] It is a broad concept covering macroeconomic phenomena such as uncertainty of current and future real GDP growth; microeconomic issues such as uncertainty about the outlook for firm growth or the prospects for household income; or non-economic topics such as uncertainty related to terrorism, war and natural disasters. This article focuses on various types of macroeconomic uncertainty.

Uncertainty affecting an economy is hard to measure as it is an intrinsically unobservable concept. While there is no universal, single commonly accepted measure of uncertainty, a number of proxies have been proposed and applied in the

41 See, for instance, Federal Open Market Committee Minutes, April 29-30, 2008; Blanchard, O., "(Nearly) nothing to fear but fear itself", *The Economist*, 29 January 2009; Buti, M. and Padoan, P.C., "How to make Europe's incipient recovery durable: end policy uncertainty", Vox, 12 September 2013; the box entitled "Uncertainty and the economic prospects for the euro area", *Monthly Bulletin*, ECB, August 2009, pp. 58-61; and Kose, M.A. and Terrones, M., "How does uncertainty affect economic performance?", *IMF World Economic Outlook*, October 2012, pp. 49-53. For a discussion of the impact of uncertainty related to the UK referendum on EU membership see Carney, M., "Uncertainty, the economy and policy", Speech at the Bank of England, 30 June 2016.

42 See Black, J., Hashimzade, N. and Myles, G., *A Dictionary of Economics* (4 ed.), Oxford University Press, 2013.

economic literature. Proxies for uncertainty can be derived from financial market data; the frequency of articles in newspapers featuring certain key words; surveys among forecasters; surveys among private households and businesses; and from macroeconomic time series. While these proxies effectively measure different types of uncertainty – such as financial, political or forecast uncertainty – the empirical literature often applies these proxies to measure the impact of uncertainty on economic activity, typically industrial production, real GDP, investment or consumption. However, all of these proxies are subject to some caveats, and there is increasing agreement that the measurement of uncertainty should be based on an encompassing set of data. This article presents a composite measure of uncertainty for the euro area, based on a large number of proxies for uncertainty.

Increases in uncertainty adversely affect activity in the short term. As reversing investment or employment decisions is often impossible or costly on account of sunk costs or fixed adjustment costs, high uncertainty about the economic outlook or about future economic policies gives enterprises an incentive to postpone or cancel their decisions until uncertainty has declined and/or new information has become available. Managers might also become more risk averse in general during periods of heightened uncertainty, thus shying away from decisions about new investment projects or hirings. Uncertainty can similarly influence decisions of private households when it comes to purchases of durable consumer goods. In addition, high uncertainty about the economic outlook and in particular employment could induce households to reduce consumption and increase precautionary savings. Uncertainty could also adversely affect activity via the higher cost of financing attributable to increased risk premia.

This article surveys the literature on the measurement of uncertainty and its impact on activity, and provides some evidence for the euro area.[43] The remainder of this article is organised as follows. Section 2 starts with a definition of uncertainty and distinguishes uncertainty from risk. It then discusses the various data sources and methods proposed in the literature to measure uncertainty. Box 1 presents a composite measure of uncertainty for the euro area. The article then describes the channels by which fluctuations in uncertainty are transmitted to the economy, as discussed in the theoretical literature, and summarises the empirical literature on quantifying the impact of uncertainty on the real economy. While this literature typically focuses on the United States, Box 2 presents model estimates for the impact of uncertainty in the euro area. Section 5 concludes, also pointing out how the complex nature of fluctuations in uncertainty affects the assessment of the macroeconomic outlook for the euro area.

2 Measuring uncertainty

From an economic perspective, uncertainty can be broadly described as a state where economic agents lack the knowledge necessary to assess the

[43] The cut-off date for the statistics included in this article was 5 December 2016.

current situation with sufficient confidence and/or predict future outcomes. There are different types of uncertainty, and sometimes economic agents may face all of them at the same time.[44] For example, policymakers might be uncertain about the current state of the economy (so-called "measurement uncertainty"), as data are published with sometimes long delays, are prone to subsequent revisions, or are subject to uncertain methods of measurement. Policymakers might also be uncertain about the future ("temporal uncertainty") as any projection depends on a set of critical assumptions. The ECB accounts for uncertainty about the economic outlook by publishing ranges around its point forecasts and through risk assessments and scenario analyses.[45] Policymakers might also be uncertain about the true structure of the economy and the interactions between economic agents ("structural uncertainty"), indeed their policy measures might be intended to change them.

Uncertainty can take different forms.[46] It can be unresolvable ("aleatory uncertainty"): even if the probability distribution of the outcomes of tossing a coin is well known, it is impossible to predict the outcome of the next toss. "Epistemic uncertainty" represents a known and, in principle, resolvable lack of knowledge, which cannot be addressed owing to the lack of empirical data in the absence of previous occurrences. Finally, "ontological uncertainty" represents a state of complete ignorance: agents don't know what they don't know.

The economic literature distinguishes between risk and uncertainty.[47] Economic agents are facing risks in situations where they are able to form views about the probability distribution of possible future states, based on logic (like when assessing likely outcomes of throwing a dice) or on past experience (if similar shocks – to oil prices, exchange rates, etc. – have frequently happened in the past). Uncertainty, also known as Knightian uncertainty, arises when economic agents cannot reasonably assess the likelihood of all possible future states of nature or characterise the probability distribution of their possible impacts. Wars, terrorist attacks or other unprecedented events are examples where it might be impossible for economic agents to assess the likelihood of the event or its economic impact. In practice it is often impossible or inconvenient to maintain the distinction between risk and uncertainty. For example, while the probability of natural disasters can be calculated, agents are unable to assess when and where a natural disaster might occur. Accordingly, attempts to measure uncertainty typically also capture some elements of risk.

There is no objective or perfect measure of uncertainty. Many proxies or indicators of uncertainty developed in the empirical literature have the advantage of being directly observable. However, their adequacy as a measure of uncertainty depends on the extent to which their fluctuations can be attributed to changes in

44 See Rowe, W.D., "Understanding uncertainty", *Risk Analysis*, Vol. 14, No 5, 1994, pp. 743-750.

45 See *A guide to the Eurosystem/ECB staff macroeconomic projection exercises*, ECB, July 2016; see also *New procedure for constructing Eurosystem and ECB staff projection ranges*, ECB, 2009; both available on the ECB's website.

46 See, for example, Squair, M., Epistemic, ontological and aleatory risk; Der Kiureghian, A. and Ditlevsen, O., "Aleatory or epistemic? Does it matter?", *Special Workshop on Risk Acceptance and Risk Communication*, Stanford University, 26-27 March, 2007.

47 See Knight, F.H., *Risk, uncertainty and profit*, Houghton Mifflin, 1921.

uncertainty about economic fundamentals and separated from other unrelated developments. Moreover, these proxies often refer to only one specific group of economic agents (such as forecasters) or specific markets (such as financial markets) whose perception of uncertainty might not be representative for the overall economy. Against that background, it appears preferable to measure uncertainty using data from various sources and applying multiple methods.

Financial market data are most commonly used in the literature to derive proxies for uncertainty.[48] Equity prices, bond yields and exchange rates typically reflect financial market participants' expectations about future economic developments. Low volatility in equity, bond or foreign exchange markets should then indicate stable expectations about future outcomes broadly shared across market participants, while heightened volatility should reflect financial market uncertainty about these future outcomes. An advantage is that proxies for uncertainty based on financial market volatility can be calculated in various ways and at high frequency. However, financial market volatility can change over time even if there is no change in uncertainty about the economic outlook, i.e. when changes in risk aversion or sentiment are the main driving factors of market volatility.[49] In addition, perceptions of uncertainty derived from financial markets might follow a logic different from that of business and private households.

Financial market uncertainty tends to be high during periods of recession. A synthetic measure of financial market uncertainty in the euro area, calculated from bond markets, equity markets and the exchange rate is displayed in Chart 1. It can be seen that the volatility of financial markets rises steeply during the recession periods in 2008/09 and 2012/13. It also briefly spiked at other times, such as the 11 September 2001 terrorist attacks and in the context of the Greek debt crisis in May 2010, while it remained subdued during periods of resilient economic activity. The counter-cyclicality of financial market uncertainty with respect to real GDP growth in the euro area is confirmed by a negative correlation coefficient (of -0.6). Empirical tests also confirm that financial market volatility is useful in predicting real GDP growth and some of its expenditure components. More specifically, so-called Granger causality tests have been used to establish that an increase in uncertainty happens prior to its impact on real GDP growth, and that such an increase has significant information about the future value of real GDP.[50]

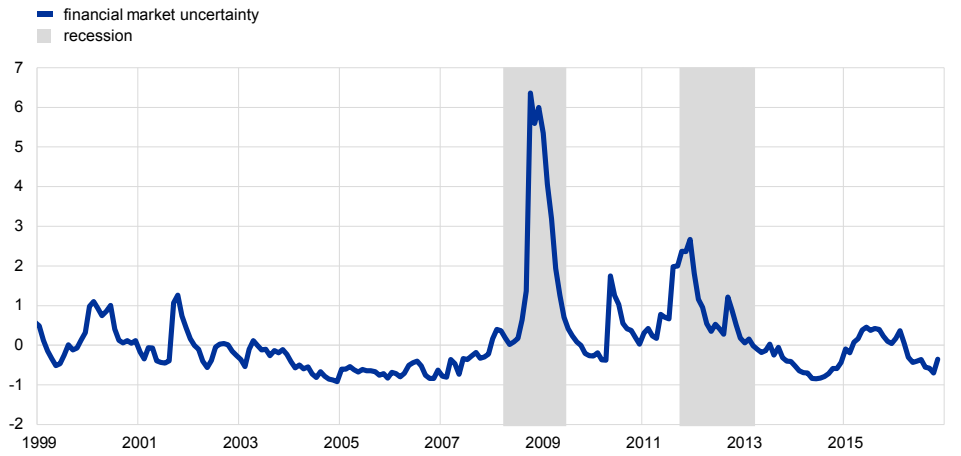
48 See, for instance Bloom, N., "The impact of uncertainty shocks", *Econometrica*, Vol. 77, No 3, 2009, pp. 623-685.

49 See, for example, Jurado, K., Ludvigson, S.C. and Ng, S., "Measuring uncertainty", *American Economic Review*, Vol. 105, No 3, 2015, pp. 1177-1216.

50 See Granger, C.W., "Investigating causal relations by econometric models and cross-spectral methods", *Econometrica*, Vol. 37, No 3, 1969, pp. 424-438.

Chart 1

Financial market uncertainty in the euro area



Sources: BIS, ECB and ECB calculations.
Notes: Areas in grey reflect euro area recessions as identified by the Centre for Economic Policy Research (CEPR).
Financial market uncertainty reflects the mean of conditional volatilities, measured as GARCH, of three financial market indicators: the DOW JONES EURO STOXX Broad Stock Exchange Index, the ten-year euro area benchmark government bond yields, and the USD/EUR exchange rate.

Disagreement among professional forecasters is another traditional proxy for uncertainty.[51] While the mean or median of point projections for real GDP growth across forecasters from banks, research firms and public institutions can be defined as a consensus, the variance of these forecasts has frequently been used as a proxy for the uncertainty surrounding this expectation. The underlying assumption is that increasingly diverse opinions about the economic outlook among forecasters are likely to indicate that it is becoming more difficult, and more uncertain, to project future economic developments. In other words, it is assumed that the interpersonal dispersion of projections is an acceptable proxy for the average subjective uncertainty faced by individual forecasters. The level and fluctuations in the dispersion of projections by professional forecasters may, however, also be traced to other factors, such as differences in forecast techniques, differences in information sets and, more generally, in diverse underlying views of forecasters about the economy. And the reverse, forecasters may keep their projections unchanged or revise them all in the same direction, while individual uncertainty about the point estimate may change a lot. Nevertheless, as can be seen from Chart 2, disagreement among forecasters on the economic outlook for the euro area increased substantially during recession periods, while it remained subdued during periods of resilient growth. It is counter-cyclical, with a correlation coefficient to real GDP growth of -0.4. And empirical tests confirm that changes in disagreement have predictive value for future changes in real GDP growth.

51 See, for example, Zarnowitz, V. and Lambros, L.A. , "Consensus and uncertainty in economic prediction", *Journal of Political Economy*, Vol. 95, No 3, 1987, pp. 591-621; and Bomberger, W.A., "Disagreement as a measure of uncertainty", *Journal of Money, Credit and Banking*, Vol. 28, No 3, 1996, pp. 381-392.

Chart 2

Forecast disagreement in the euro area

Sources: Consensus Economics, and ECB calculations.
Notes: Areas in grey reflect euro area recessions as identified by the Centre for Economic Policy Research (CEPR).
Forecast disagreement in the euro area is measured as the unweighted average of the standard deviations of point forecasts provided by Consensus panel members for real GDP, private consumption, fixed investment, consumer price inflation, industrial production and long-term interest rates.

Surveys among professional forecasters also allow a quantification of aggregate and individual forecast uncertainty.[52] Surveys of professional forecasters (SPF) as compiled by the ECB or the US Federal Reserve Bank of Philadelphia ask respondents to provide, in addition to the precise projection, a probability distribution around this point estimate which highlights the uncertainty faced by the individual forecaster in preparing the projection. A measure of aggregate individual forecast uncertainty can then be calculated as the average standard deviation of the individual probability distributions provided by the respondents (shown as the yellow line in Chart 3). One particular advantage of this measure is that it can be directly observed. As this measure tends to underestimate the degree of uncertainty surrounding the forecasts, it is also possible to calculate a broad measure of aggregate forecast uncertainty (shown as the blue line in Chart 3), which combines both forecast disagreement (measured as the standard deviation of individual point forecasts, shown as the red line in Chart 3) and individual uncertainty.[53] It can be seen that all these measures of forecast uncertainty increased strongly during the 2008/09 Great Recession. In contrast to other measures of uncertainty, though, individual and aggregate forecast uncertainty appears to have remained high throughout the post-recession period. This might represent a fundamental change in forecasters' risk perception: as almost all forecasters failed to predict the Great Recession, there might be an increased

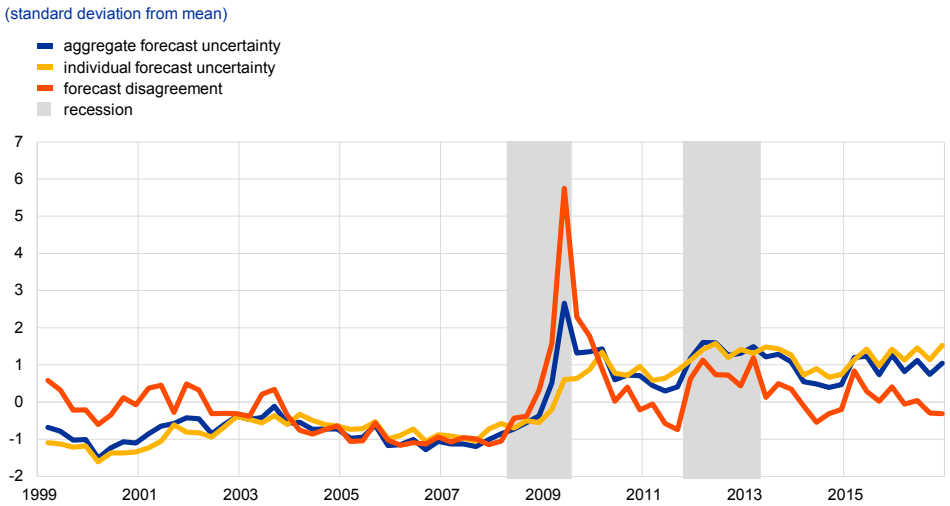
52 See the box entitled "Measuring perceptions of macroeconomic uncertainty", *Monthly Bulletin*, ECB, January 2010.

53 See, for example, Bowles, C., Friz, R., Genre, V., Kenny, G., Meyler, A. and Rautanen, T., "The ECB Survey of Professional Forecasters (SPF): A review after eight years' experience", *ECB Occasional Paper*, No 59, April 2007. As an alternative, aggregate forecast uncertainty can also be expressed as the sum of forecast disagreement and the perceived variability of future aggregate shocks. The latter component can be calculated on the basis of GARCH-type models. See, for instance, Lahiri, K. and Sheng, X., "Measuring forecast uncertainty by disagreement: the missing link", *Journal of Applied Econometrics*, Vol. 25, No 4, 2010, pp. 514-538.

awareness among forecasters of the risks surrounding their projections. Similar to financial market-based measures, proxies for uncertainty derived from surveys among professional economists are based on the views of a rather restricted set of people, whose perceptions of uncertainty might differ from that of other economic agents. In addition, while these proxies for uncertainty are negatively correlated with euro area activity, Granger causality tests suggest that fluctuations in euro area real GDP growth and its components have predictive power for forecast uncertainty in the euro area, but not the other way round.[54]

Chart 3

Forecast uncertainty in the euro area



Sources: ECB calculations.
Notes: Areas in grey reflect euro area recessions as identified by the Centre for Economic Policy Research (CEPR). Forecast disagreement, individual forecast uncertainty and aggregate forecast uncertainty in the euro area are each measured as unweighted averages of projections provided by SPF panel members for real GDP, HICP inflation and the unemployment rate over one, two and five year horizons.

A recently developed proxy for uncertainty is the frequency of newspaper articles referring to economic policy uncertainty.[55] A measure of economic policy uncertainty in the euro area, which counts the frequency of articles containing the words "uncertain or uncertainty" and "economy or economics" and one of a number of policy words (such as "deficit" or "regulation") in leading newspapers is shown in Chart 4. Economic policy uncertainty in the euro area tends to increase during recession periods, but also rises steeply on a number of other occasions, such as the 2003 Gulf war, the 11 September 2001 terrorist attacks, around the June 2016 referendum on EU membership in the United Kingdom, and again in November 2016. As a caveat, this proxy does not distinguish between uncertainty about domestic policies or external policies. In addition, the selection of newspapers (two per country) might not be representative of the media coverage in their countries as they do not include mass-market tabloids and other media coverage. Hence, this

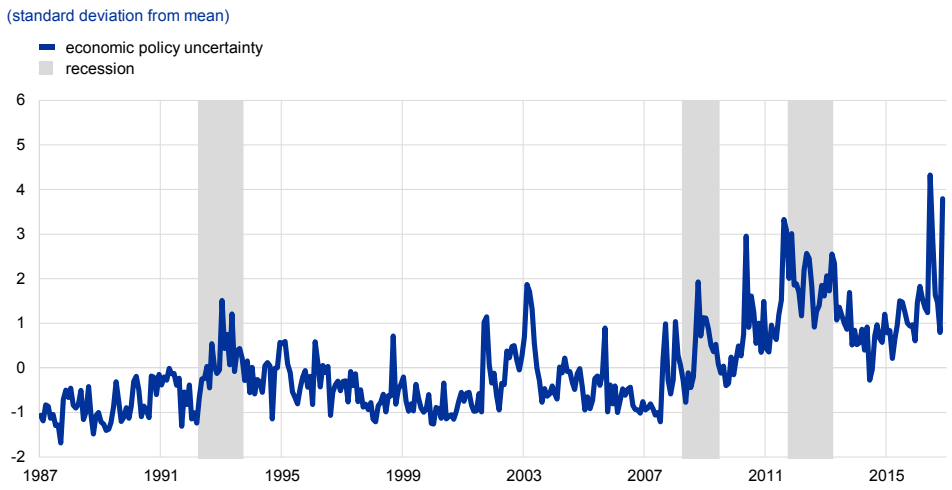
54 This observation is less clear cut for the United States, where all measures of forecast uncertainty are negatively correlated with real GDP growth, and some measures are also found to be Granger causal for real GDP growth.

55 See Baker, S., Bloom, N. and Davis, S., "Measuring economic policy uncertainty", *NBER Working Paper Series*, No 21633, October 2015.

measure of political uncertainty might rather reflect the perception of uncertainty of a group of selected journalists, and it is assumed that their perception of uncertainty represents that of the population at large. While this proxy for uncertainty is also counter-cyclical (with a correlation to real GDP growth of -0.5) and carries predictive power for euro area activity growth, it tends to be rather volatile and has also risen in periods of more stable economic growth.

Chart 4

Economic policy uncertainty in the euro area



Sources: Baker, Bloom and Davis, and ECB calculations.
Notes: Areas in grey reflect euro area recessions as identified by the Centre for Economic Policy Research (CEPR).
Economic policy uncertainty in the euro area has been calculated as the GDP-weighted average of country-specific data for economic policy uncertainty in Germany, Spain, France, Italy and the Netherlands.

Surveys among households and enterprises yield direct proxies for uncertainty. Business and consumer surveys published by the European Commission cover some 120,000 enterprises every month as well as 40,000 consumers across the EU and its applicant countries. They include both backward-looking and forward-looking questions, and are calculated as balance scores of positive and negative answers by respondents.[56] Several approaches have been proposed to exploit this dataset, whose principal advantage is that measures of uncertainty can be directly derived from perceptions of a large and representative number of economic agents. For example, the dispersion of positive and negative answers to forward-looking questions could be used as a proxy for uncertainty.[57] The rationale is that consumers (or enterprises) can be expected to have broadly similar expectations about future developments in times of low uncertainty and resilient growth, while an increasing dispersion of expectations indicates rising uncertainty and more difficult economic times. However, if the questions relate to the personal

[56] For example, when asked: "how do you expect the financial position of your household to change over the next twelve months?", respondents can choose between the following answers: "get a lot better", "get a little better", "stay the same", "get a little worse", "get a lot worse", and "don't know". For details see The Joint Harmonised EU Programme of Business and Consumer Surveys (User Guide).

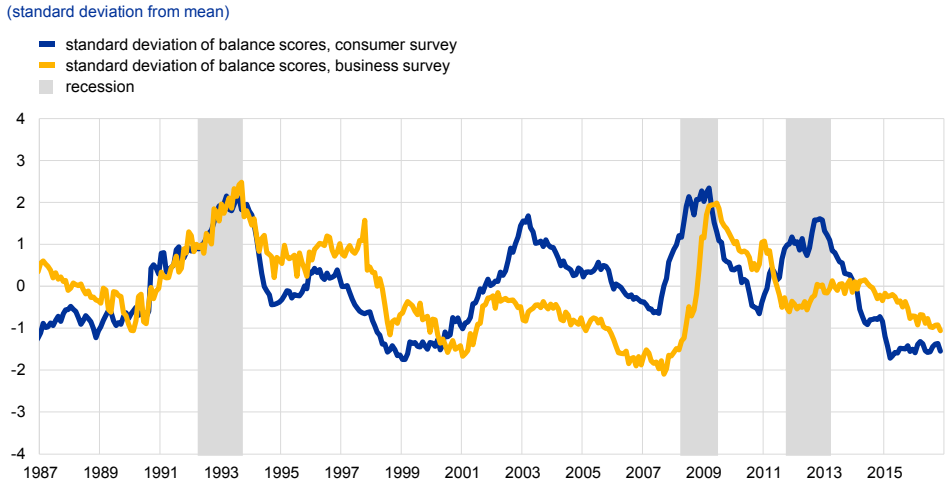
[57] See Bachmann, R., Elstner, S. and Sims, E.R., "Uncertainty and economic activity: evidence from business survey data", *American Economic Journal*, Vol. 5, No 2, 2013, pp. 217-249. As several survey questions are asked twice – once with respect to the past, once with respect to the future – these authors also propose an alternative proxy for uncertainty based on the extent to which a given respondent's expectations have been met.

situation of the household or the enterprise, dispersion of expectations could also reflect idiosyncratic issues. One solution could be to calculate the average dispersion across all questions as a proxy for economic uncertainty.[58]

Another proxy for economic uncertainty derived from survey data looks at the dispersion of changes in balance scores in a given month compared to the previous month across all survey questions. The rationale for this proxy for uncertainty is that in times of certainty, i.e. when the economy is growing steadily, the assessment of most variables should be more or less commonly shared, that is, enterprises should have a favourable assessment of future output, orders, employment, etc. The opposite should be true in times of uncertainty. For example, when the economy is approaching a trough, the dispersion of balance scores is likely to increase as expectations on leading indicators turn positive (such as for expected orders), while expectations for other (lagging) indicators stay unchanged or continue to worsen (such as employment). The counter-cyclicality of such proxies for uncertainty, based on the dispersion of balance scores in the European Commission consumer survey (blue line) and the business survey (yellow line), is shown in Chart 5. Both proxies are clearly negatively correlated to activity growth, and both indicators have predictive power for future activity growth.

Chart 5

Survey-based proxies for economic uncertainty in the euro area



Sources: European Commission, and ECB calculations.
Notes: Areas in grey reflect euro area recessions as identified by the Centre for Economic Policy Research (CEPR). Economic uncertainty in the euro area has been calculated as the standard deviation of changes in balance scores in the consumer survey as well as the manufacturing and construction surveys.

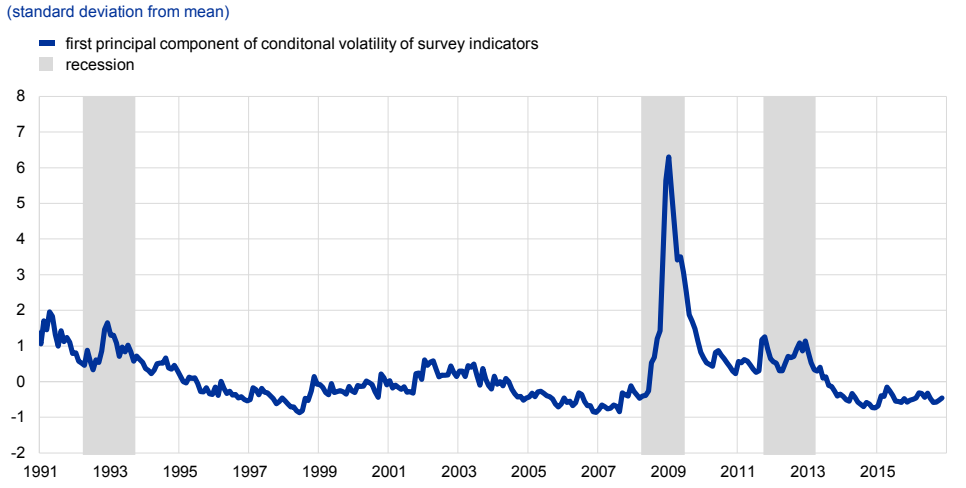
Forecast errors, representing the predictability of economic variables, can also be exploited as a proxy for uncertainty. One recently proposed approach is to apply factor models to predict a large number of variables such as industrial production, and then calculate the forecast errors. Rising and more volatile forecast errors would then suggest an increase in the unpredictable share of the evolution of

[58] See Girardi, A. and Reuter, A., "New uncertainty measures for the euro area using survey data", *Oxford Economic Papers*, Vol. 69, No 1, 2017, pp. 278-300.

a variable, which would then be interpreted as a sign of mounting uncertainty.[59] The rationale is that an assessment of the current situation and forecasting the economy becomes more difficult the larger and the more volatile the unexplained part in time-series models explaining the evolution of macroeconomic indicators. An advantage of this approach is that it can be simultaneously applied to a large set of variables covering all sectors of an economy. As an example, Chart 6 depicts the conditional volatility of European Commission business and consumer survey indicators.[60] This measure is significantly negatively related to real GDP growth, and is useful for predicting real GDP growth in the euro area.

Chart 6

Conditional volatility as a proxy for macroeconomic uncertainty in the euro area



Sources: European Commission, and ECB calculations.
Notes: Areas in grey reflect euro area recessions as identified by the Centre for Economic Policy Research (CEPR).
Macroeconomic uncertainty in the euro area has been calculated as the first principal component of the conditional volatility, measured as GARCH, of European Commission business and consumer survey indicators.

Box 1

A composite measure of macroeconomic uncertainty for the euro area

In the absence of a perfect proxy for uncertainty, it might be preferable to compile a composite measure of uncertainty which captures the information content of a large number of uncertainty proxies. This box presents a composite index of macroeconomic uncertainty for the

59 See Jurado, K., Ludvigson, S.C. and Ng, S., op. cit. Another recent approach exploits the distribution of forecast errors from surveys of professional forecasters as a proxy for uncertainty; the less likely an observed forecast error compared to the historical distribution of forecast errors, the higher the related forecast uncertainty. See Rossi, B. and Sekhposyan, T., "Macroeconomic uncertainty indices based on nowcast and forecast error distributions", *American Economic Review*, Vol. 105, No 5, 2015, pp. 650-655.

60 The conditional volatility of survey indicators has been estimated as follows: first, an ARMA model has been estimated for each survey indicator, with the optimal lag length determined by the Akaike information criterion. The conditional volatility of the forecast errors has then been estimated with a GARCH(1,1) model. As a final step, all results have been standardised to mean zero and unit standard deviation.

euro area, which is based on an encompassing dataset covering all types of methods of measuring uncertainty discussed above.[61]

Proxies for uncertainty should be negatively correlated with macroeconomic indicators, as one would expect an adverse contemporaneous or lagged impact of uncertainty on activity. In other words, proxies for uncertainty should be high in periods of recession and low during periods of resilient growth. One reason is that negative news shocks (such as terrorist attacks, wars and oil price shocks) that can cause recessions also cause higher uncertainty at the same time.[62] Another reason for heightened uncertainty during recessions is that recessions might themselves increase uncertainty. Active trading helps to generate and spread information; as trading activity slows down during recessions, the flow of new information also slows down, thereby potentially increasing uncertainty.[63] Another explanation is that policy becomes more uncertain during recessions because policymakers implement new measures to revive growth.[64] Finally, forecasters might find it more difficult to make forecasts during recessions, as the latter are more unusual events and deviate from the usual pattern of positive growth.[65]

The composite indicator of macroeconomic uncertainty in the euro area is based on proxies for uncertainty which are negatively correlated to activity, and which have proved to be Granger causal for activity growth. A number of activity variables have been used for these tests, including real GDP growth, private consumption growth, investment growth, employment growth (both in terms of persons and hours), and industrial production. For about 160 proxies for uncertainty, the correlation against each of these macroeconomic indicators has been calculated and Granger causality has been estimated. About 50 proxies have passed these two tests. All proxies have been standardised, i.e. they have been demeaned and divided by their standard deviations. The macroeconomic uncertainty indicator has been determined as the median of this group of uncertainty measures.[66] In order to capture the uncertainty around this indicator, Chart A shows both the median and the 25-75 percentiles of the group of uncertainty measures included along with Centre for Economic Policy Research (CEPR) recession dates for the euro area.

The composite indicator of macroeconomic uncertainty in the euro area peaked during recessions and remained subdued during periods of resilient growth.[67] As can be seen in Chart A, the indicator suggests highest levels of uncertainty during the Exchange Rate Mechanism

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61 See also Haddow, A., Hare, C., Hooley, J. and Shakir, T., "Macroeconomic uncertainty: what is it, how can we measure it and why does it matter?", *Bank of England Quarterly Bulletin*, 2013 Q2, pp. 100-109, who follow a similar approach for measuring uncertainty in the United Kingdom.

62 See, for instance Bloom, N. (2009), op. cit.

63 See, Bloom, N., "Fluctuations in uncertainty", *Journal of Economic Perspectives*, Vol. 28, No 2, 2014, pp. 153-176.

64 See Pastor, L. and Veronesi, P., "Political uncertainty and risk premia", *Journal of Financial Economics*, Vol. 110, No 3, 2013, pp. 520-545; for empirical results see Baker, S., Bloom, N. and Davis, S., op. cit.

65 See Orlik, A. and Veldkamp, L., "Understanding uncertainty shocks and the role of black swans", *NBER Working Paper Series*, No 20445, August 2014.

66 For more details, see Gieseck, A. and Largent, Y., "The impact of macroeconomic uncertainty on activity in the euro area", *Review of Economics*, Vol. 67, No 1, 2016, pp. 25-52. Alternative ways of aggregation such as the mean or first principal of the group of indicators evolve very similar to the median.

67 The peaks and troughs exhibited by the composite indicator of uncertainty are similar to those shown in alternative recent indicators. For example, Rossi, B. and Sekhposyan, T., "Macroeconomic uncertainty indices for the euro area and its individual member countries", September 2016, mimeo, develop an indicator based on exploiting forecast error distributions. Deutsche Bundesbank applies the methodology from Jurado et al. for the four largest euro area countries; see "Investment in the euro area", Deutsche Bundesbank, *Monthly Report*, January 2016, pp. 31-49.

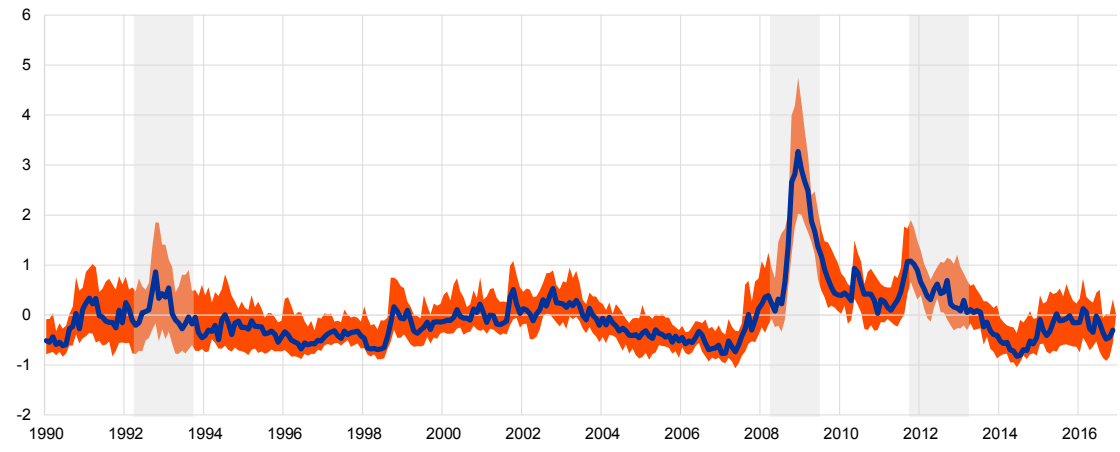
(ERM) crisis in 1992/93, the Great Recession in 2008/09 and during the euro area sovereign debt crisis in 2011/13. It also shows peaks at some other times, notably the Long-Term Capital Management (LTCM) crisis in September 1998, the terrorist attacks in New York in September 2001 and the first Greek crisis in spring 2010. Uncertainty in the euro area, according to this indicator, decreased substantially as the current recovery started and recorded below average levels in 2014. However, it returned to its historical average level from early 2015 in the context of the debate on the debt crisis in Greece and, more recently, the referendum in the United Kingdom on EU membership.

Measured by the median, the composite indicator of uncertainty captures the joint development of all underlying proxies. In fact, the underlying individual proxies for uncertainty are in general significantly positively related to the median. However, its interpretation needs to take into account the development of individual indicators. For example, the increase of the composite indicator since early 2015 can be traced back to the economic policy uncertainty index for the euro area, which rose markedly during the course of 2015 and jumped to its highest level ever in July 2016 before receding in recent months (see Chart 4). Among its other components, aggregate and individual forecast uncertainties remain elevated at the current juncture, perhaps also reflecting an increased sensitivity of forecasters to the risks surrounding projections. All other proxies for uncertainty remain at or below their historical average levels.

Chart A

A composite index of macroeconomic uncertainty in the euro area

(standard deviation from mean)



Sources: Baker, Bloom and Davis; Eurostat; European Commission; Consensus Economics; ECB; and ECB calculations.
Notes: The composite index of macroeconomic uncertainty in the euro area is standardised to mean zero and unit standard deviation over the full horizon. Areas in grey reflect euro area recessions as identified by the Centre for Economic Policy Research (CEPR).

The composite indicator of uncertainty in the euro area exhibits key characteristics similar to other recently published macroeconomic uncertainty indices. First, the indicator displays a wide range of observations; at its extremes, the indicator rose by up to three standard deviations from its mean in early 2009, and fell by up to one standard deviation below that level. Second, the indicator shows a positive skewness, which implies that the mass of the distribution of observed uncertainty levels is concentrated at below-average levels. In other words, the indicator suggests that there are more frequent and longer-lasting periods of low uncertainty than of high uncertainty. Third, the indicator also reveals a relatively high kurtosis. This implies that the distribution has tails that asymptotically approach zero more slowly than a Gaussian distribution. In other words, the

distribution of observed uncertainty levels includes more outliers (in this case on the right-hand side of the mean) than the normal distribution. Fourth, the half-life of a shock to the composite indicator of macroeconomic uncertainty (measured by the first lag in an autoregressive equation) is three quarters, implying a substantial persistence of the shock. This is substantially longer than the half-life of a shock to financial uncertainty, which lasts only around two quarters. Finally, the indicator is significantly negatively correlated to real GDP growth and other macroeconomic indicators. These key characteristics are comparable to the ones from recently published uncertainty indices for the United States.[68]

3 Fluctuations in uncertainty and their transmission to the economy

Overall, the theoretical and empirical literature finds adverse effects of uncertainty on the short-term outlook for growth.[69] Some uncertainty always exists in an economy as no one can perfectly assess the current economic situation, or what will happen in the future. But as uncertainty about the economy changes over time, it can affect decisions by economic agents. Increases in uncertainty are typically related to bad news, such as oil price shocks or terrorist attacks; increases in uncertainty stemming from positive news appear to be rather rare, probably as good news – such as e-commerce opportunities – tends to emerge more gradually over time.[70] The theoretical literature emphasises diverse channels through which high uncertainty can adversely affect the economy in the short term. However, the impact of uncertainty is less clear in general equilibrium models and, under certain circumstances, high uncertainty can also have a positive medium to long-term impact on the economy.[71]

The real options channel suggests that the option value increases with uncertainty in the case of irreversible investment or consumption decisions. In many cases, an investment or employment decision is irreversible or costly to revert on account of sunk costs or fixed adjustment costs: once constructed, a factory building cannot be undone without costs; once hired, staff can often not be fired without compensation. If an investor, facing such a decision, is uncertain about the

68 See Jurado, K., Ludvigson, S.C. and Ng, S., op. cit.

69 An overview is provided by Bloom, N. (2014), op. cit.

70 See Bloom, N. (2014), op. cit.

71 Under certain circumstances, high uncertainty can have a positive medium to long-term impact on investment. The so-called growth options effect arises if an increase in mean-preserving risk means higher expected future profits. This effect can arise if the costs of bad news (e.g. the new product under development turns out to be ineffective) can be curbed (to some sunk costs), while the benefits of good news (e.g. the new product turns out to be more profitable than expected) are unconstrained; See Kraft, H., Schwartz, E.S. and Weiss, F., "Growth options and firm valuation", *NBER Working Paper Series*, No 18836, February 2013. A second channel, known as the Oi-Hartman effect, is based on the idea that firms may become increasingly in favour of taking risks if they can easily expand to exploit good conditions (rising demand, rising prices) and also smoothly contract to weather bad conditions. Increases in cost or demand uncertainty would then increase expected profits if the latter increase more than proportionally to rising demand and/or increase more than proportionally to falling costs; see, for example, Abel, A.B., "Optimal investment under uncertainty", *American Economic Review*, Vol. 73, No 1, 1983, pp. 228-233; and Hartman, R., "The effects of price and cost uncertainty on investment", *Journal of Economic Theory*, Vol. 5, No 2, 1972, pp. 258-266.

future, it might be preferable to wait (i.e. postpone the decision to invest) until further information has become available and uncertainty has diminished.[72] In other words, the option-value of delay is high when uncertainty is high as waiting for more information (and less uncertainty) is likely to make for a better decision. As an analogy, it might be preferable for private households to postpone purchases of major durables like housing and cars in times of heightened uncertainty.[73] While the empirical literature has shown that adjustment costs can be rather substantial, the real options channel nevertheless rests on a number of critical assumptions. In particular, investors must be able to wait, and the costs of delay must be limited. These conditions might not be met, for example, in sectors with fierce competition and rapidly evolving innovation, such as in e-commerce.

Uncertainty can adversely affect the economy through increasing risk premia. Investors want to be compensated for higher risk, and rising uncertainty leads them to demand higher risk premia. Uncertainty could also lead to rising costs of debt financing; banks are likely to charge higher interest rates as uncertainty raises the probability of default. In both cases, the resulting higher cost of finance would adversely affect the economy via its impact on investment and consumption. In general equilibrium models, it can be shown that this effect is of particular importance in the presence of financial constraints.[74]

High uncertainty could lead private households to increase precautionary savings, which would reduce current private consumption. This effect is likely to weigh adversely on the economy in the short term, while its medium-term impact is less clear. To the extent that savers decide to keep these savings in their domestic economy, higher savings should lower the costs of finance and thereby facilitate investment and benefit longer-term growth prospects. However, to the extent that savings increase in excess of domestic financing needs, they are likely to be invested abroad, implying that heightened uncertainty reduces domestic demand.[75] In addition, the impact of precautionary savings on activity might turn negative if prices and interest rates do not fall enough to stimulate an increase in investment; this effect can be particularly damaging if interest rates are constrained by the zero lower bound.[76]

Uncertainty may not only reduce the level of investment, consumption or employment, but could also make the economy less sensitive to changes in business conditions. For example, if firms decide to postpone investment projects

72 See, for instance, Bernanke, B.S., "Irreversibility, uncertainty and cyclical investment", *The Quarterly Journal of Economics*, Vol. 98, No 1, 1983, pp. 85-106.

73 See Eberly, J., "Adjustment of consumers' durables stocks: evidence from automobile purchases", *Journal of Political Economy*, Vol. 102, No 3, 1994, pp. 403-436.

74 See Gilchrist, S., Sim, J.W. and Zakrajšek, E., "Uncertainty, financial frictions, and investment dynamics", *NBER Working Paper Series*, No 20038, April 2014; Christiano, L.J., Motto, R. and Rostagno, M., "Financial factors in economic fluctuations", *ECB Working Paper Series*, No 1192, 2010; and Bonciani, D. and van Roye, B., "Uncertainty shocks, banking frictions, and economic activity", *Journal of Economic Dynamics and Control*, Vol. 73, 2016, pp. 200-219.

75 See Fernández-Villaverde, J., Guerrón-Quintana, P., Rubio-Ramírez, J. and Uribe, M., "Risk matters: the real effects of volatility shocks", *American Economic Review*, Vol. 101, No 6, 2011, pp. 2530-2561.

76 See Leduc, S. and Liu, Z., "Uncertainty shocks are aggregate demand shocks", *Journal of Monetary Economics*, Vol. 82, 2016, pp. 20-35; and Basu, S. and Bundick, B., "Uncertainty shocks in a model of effective demand", *NBER Working Paper Series*, No 18420, September 2012.

because of heightened uncertainty, the elasticity of investment with regard to changes in its driving factors would be lower than in periods with normal uncertainty. The reduced responsiveness of firms to react to changes in business conditions in periods of high uncertainty could also lead to pro-cyclical productivity growth: if productive firms are less aggressive in expanding and unproductive firms are less aggressive in contracting, the productivity-enhancing reallocation across firms would slow, thereby temporarily dampening aggregate productivity growth.[77]

Uncertainty might also have an impact on the effectiveness of economic policies, and could imply changes in composition of the optimal policy mix. For example, the reduced elasticity of investment to changes in business conditions, such as the level of interest rates, at times of heightened uncertainty would require a more substantial cut in interest rates to achieve the same impact on investment as in normal times.[78] Periods of heightened uncertainty could also require a different policy mix, as the latter might also need to include measures aimed at reducing the level of uncertainty, which would in turn make other policy measures more effective.

4 Empirical evidence on the impact of uncertainty

The empirical literature finds evidence for an adverse impact of uncertainty on activity. However, given the difficulties in measuring uncertainty mentioned above and the diversity of data sources and channels covered, it is understandable that the macroeconomic impact of various uncertainty measures can differ.[79] For the euro area as a whole, there is very limited evidence about the impact of uncertainty on activity as the empirical literature typically focuses on the United States or on individual euro area countries.[80]

A key challenge in the empirical literature is to distinguish the causal impact of uncertainty from the impact of other factors driving activity. Uncertainty tends to move with the business cycle, and shocks to uncertainty are unlikely to occur independently from other shocks. For example, an adverse shock to global demand dampens the outlook for companies' exports, thus causing a decline in expected output growth. Such a confidence (or first-moment) shock would lower the mean of the probability distribution of expected output growth, i.e. shift the probability density function of expected output growth to the left. However, companies might also envisage greater diversity in possible outcomes of the shock to global demand, thus

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77 See Bloom, N., Floetotto, M., Jaimovich, N., Saporta-Eksten, I. and Terry, S., "Really uncertain business cycles", *US Census Bureau Center for Economic Studies Paper*, No CES-WP-14-18, 2014.

78 See, for example, Aastveit, K.A., Natvik, G.J. and Sola, S., "Economic uncertainty and the effectiveness of monetary policy", Norges Bank, *Working Paper*, No 2013/17, 2013, who find that the impact of US monetary policy on investment in the United States is half as large if uncertainty is in its top decile rather than in its bottom decile.

79 See Rossi, B. and Sekhposyan, T. (2015), op. cit.

80 See, for example, Popescu, A. and Smets, F.R., "Uncertainty, risk-taking, and the business cycle in Germany", *CESifo Economic Studies*, Vol. 56, No 4, 2010, pp.596-626; Basselier, R. and Langenus, G., "Recent changes in saving behaviour by Belgian households: the impact of uncertainty", *NBB Economic Review*, December 2014, pp. 53-62; and Busetti, F., Giordano, C. and Zevi, G., "Main drivers of the recent decline in Italy's non-construction investment", *Questioni di Economia e Finanza*, No 276, June 2015.

becoming more uncertain about the outlook. In this case, it is likely that the mean expectation for output growth would decline, and the likelihood of much lower and much higher future outcomes would increase (second-moment shock).[81] A key problem is to distinguish the impact of first-moment shocks (on the mean of a probability distribution) from uncertainty shocks (on the width of the probability distribution).

The literature presents three approaches to identify the causal effects of uncertainty on activity. A standard approach has been to rely on timing: estimating the movements in output, investment and employment that follow jumps in uncertainty.[82] This approach is problematic if changes in uncertainty are correlated with other factors driving the economic cycle, but which are not included in the empirical model. In this case, the economic impact attributed to changes in uncertainty could at least partly reflect the impact of omitted variables. A second approach has been to use structural general equilibrium models to quantify the impact of uncertainty shocks.[83] A key problem in this approach is the need to rely on a – sometimes large – set of assumptions, and to take into account the uncertainty around their validity. A final approach relies on events such as natural disasters, political coups, terrorist attacks, etc. to identify uncertainty shocks.[84] An issue with this approach is that such shocks might influence the behaviour of investors and consumers beyond changes in uncertainty. For example, agents might decide or be forced to relocate production facilities to safer places in the aftermath of such events.

Time-series models have been the standard approach to estimate the impact of uncertainty shocks on activity. Vector autoregressive (VAR) models have been widely used to capture the existing dynamic relationship between various macroeconomic variables. A VAR model is a system of equations where every variable is dependent on its own past values and the past values of all other variables in the system. Uncertainty and economic activity therefore depend on each other. It is then possible to introduce an exogenous shock to the uncertainty equation and observe its impact on all variables within the system. The empirical results in VAR models are typically derived from so-called impulse response functions which display the impact of a typical change in one variable on all variables captured within the system. These shocks typically amount to one standard deviation of the historical volatility of the variable and are typically temporary, with the unwinding of the shock itself endogenously being determined within the model. Structural VAR models have proved especially useful in this context as they allow for an improved identification and estimation of the true uncertainty shocks.[85] Such analysis has been carried out

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81 In addition, companies might also become increasingly concerned about extreme events, such as the possibility of a global recession (third-moment shock).

82 See, for instance, Bloom, N. (2009) op. cit.; and Bloom, N., Bond, S., and Van Reenen, J., "Uncertainty and investment dynamics", *Review of Economic Studies*, Vol. 74, No 2, 2007, pp. 391-415.

83 See, for instance, Bloom, N., Floetotto, M., Jaimovich, J., Saporta-Eksten, I. and Terry, S. J., op. cit.; and Bonciani, D. and van Roye, B., op. cit.

84 See, for instance, Baker, S.R. and Bloom, N., "Does uncertainty reduce growth? Using disasters as natural experiments", *NBER Working Paper Series*, No 19475, September 2013.

85 The Cholesky decomposition of the variance-covariance matrix of the VAR residuals is the most commonly applied identification methodology used to estimate uncertainty shocks elasticities to the endogenous variables.

to quantify the impact of uncertainty shocks on economic activity for the United States and a few individual countries[86] by using different proxies to measure the level of uncertainty (implied equity market volatility, economic policy uncertainty, financial uncertainty or macroeconomic uncertainty).

VAR models typically show an initial adverse impact of uncertainty shocks, but differ on duration and persistence of the impact. Most empirical studies focus on the United States and on industrial production as an economic activity indicator. For example, a temporary one standard deviation increase in implied stock-market volatility as a proxy for uncertainty is found to be associated with a rapid drop in industrial production followed by a sharp rebound, suggesting that uncertainty shocks amplify the magnitude of business cycles. In comparison, a temporary first-moment shock to the federal funds rate displays a much more persistent drop and subsequent recovery.[87] Other studies, although using different indicators of uncertainty, exhibit far more protracted responses of industrial production and employment than those using an implied stock market volatility indicator; in addition, shocks to these uncertainty indicators do not generate any significant overshooting.[88] Other studies find evidence of an asymmetric impact of uncertainty shocks during the cycle, showing that activity reacts more strongly to increases in uncertainty during recessions than during periods of expansion.[89] For the euro area, it has been shown that uncertainty indicators based on European Commission surveys and on economic policy uncertainty can be successfully added to standard regression equations for private consumption and investment, showing significantly negative effects of increases in uncertainty; in addition, the impact of uncertainty appears to have increased since the Great Recession.[90]

Box 2
Quantifying the effects of uncertainty shocks on economic activity in the euro area

This box summarises some results from an analysis of the impact of uncertainty shocks on euro area activity using a Bayesian vector autoregressive (BVAR) model. One problem with structural VAR models is that only a limited number of endogenous variables can be included; this raises the possibility that the estimated impact of an uncertainty shock might, at least partly, reflect

86 See, for instance, Bijsterbosch, M. and Guérin, P., "Characterizing very high uncertainty episodes", *Economics Letters*, Vol. 121, No 2, 2013, pp. 239-243; Carriero, A., Mumtaz, H., Theodoridis, K. and Theophilopoulou, A., "The impact of uncertainty shocks under measurement error: a proxy SVAR approach", *Journey of Money, Credit and Banking*, Vol. 47, No 6, 2015, pp. 1223-1238; and Popescu, A. and Smets, F.R., op. cit. For the euro area, see Gieseck, A. and Largent, Y., op. cit.

87 See Bloom, N. (2009), op. cit.

88 See Jurado, K., Ludvigson, S.C. and Ng, S., op. cit., who use a measure of uncertainty derived from a stochastic volatility model; Jo, S. and Sekkel, R., "Macroeconomic uncertainty through the lens of professional forecasters", Bank of Canada, *Staff Working Paper*, No 2016-5, 2016, who exploit forecast errors as measure of uncertainty; Bachmann, R., Elstner, S. and Sims, E.R., op. cit., who use survey data; and Baker, S.R., Bloom, N. and Davis, S.J., op. cit., who use newspaper articles as a measure of uncertainty.

89 See, for example, Ferrara, L. and Guérin, P., "What are the macroeconomic effects of high-frequency uncertainty shocks?", Université de Paris Ouest, *Working Paper 2015-12*, 2015; and Caggiano, G., Castelnuovo, E. and Groshenny, N., "Uncertainty shocks and unemployment dynamics in U.S. recessions", *Journal of Monetary Economics*, Vol. 67, 2014, pp. 78-92.

90 See Balta, N., Valdes Fernandez, I. and Ruscher, E., "Assessing the impact of uncertainty on consumption and investment", European Commission, *Quarterly Report on the Euro Area*, Vol. 12, No 2, 2013, pp. 7-16.

the impact of shocks to other variables not included in the model. However, using Bayesian estimation methods, it is possible to specify VAR models which include a much larger number of endogenous variables and which thus may help to better distinguish the impact of uncertainty shocks from that of other variables. The model discussed in this box includes twenty-one macroeconomic variables, including real GDP and its expenditure components, some nominal variables and a number of important cyclical driving factors.[91] The composite indicator of macroeconomic uncertainty shown in Box 1 is used as a proxy for macroeconomic uncertainty in the euro area. The model is estimated over the period from the first quarter of 1987 to the second quarter of 2016 using quarterly data, with four lags.[92] The model is then used to simulate the dynamic effects of an adverse macroeconomic uncertainty shock[93] on the euro area economy.

The generalised impulse response functions show that temporary uncertainty shocks have strong adverse impacts on economic activity in the euro area (see Chart A). Following an increase in uncertainty by one standard deviation, real GDP growth is dampened for up to three quarters. The biggest impact is observed in the second quarter after the shock, and the total impact on real GDP is estimated to amount to around 0.3 percentage point. Among the components of expenditure, and in line with theory, real investment growth is found to be significantly more affected than real private consumption growth.[94] The adverse impact on employment growth appears to be somewhat weaker in total, albeit more persistent. It is interesting to note that this model shows some (albeit hardly significant) overshooting of real GDP growth after the initial adverse shock, consistent with the real option value strand of the economic literature.[95]

91 These macroeconomic variables are: macroeconomic uncertainty, real GDP, real private consumption, total employment, real imports, real exports, real investment, real government consumption, world demand, oil prices, commodity prices (excluding energy), the USD/EUR exchange rate, EURO STOXX 50 index, the long-term interest rate, the savings rate, compensation per employee, HICP (excluding energy), consumer confidence, manufacturing confidence, construction confidence, and the short-term interest rate.

92 The large BVAR methodology and the priors used in this analysis are described in Bańbura, M., Giannone, D., and Reichlin, L., "Large Bayesian vector auto regressions", *Journal of Applied Econometrics*, Vol. 25, No 1, 2010, pp. 71-92. A Cholesky decomposition is applied on the variance-covariance matrix of the residuals in order to estimate the shock elasticities.

93 The shock corresponds to a positive one standard deviation shock to macroeconomic uncertainty. The responses of the macroeconomic variables are estimated using a variant of the generalised impulse response function (GIRF) methodology described in Koop, G., Pesaran, M.H. and Potter, S.M., "Impulse response analysis in nonlinear multivariate models", *Journal of Econometrics*, Vol. 74, No 1, 1996, pp. 119-147.

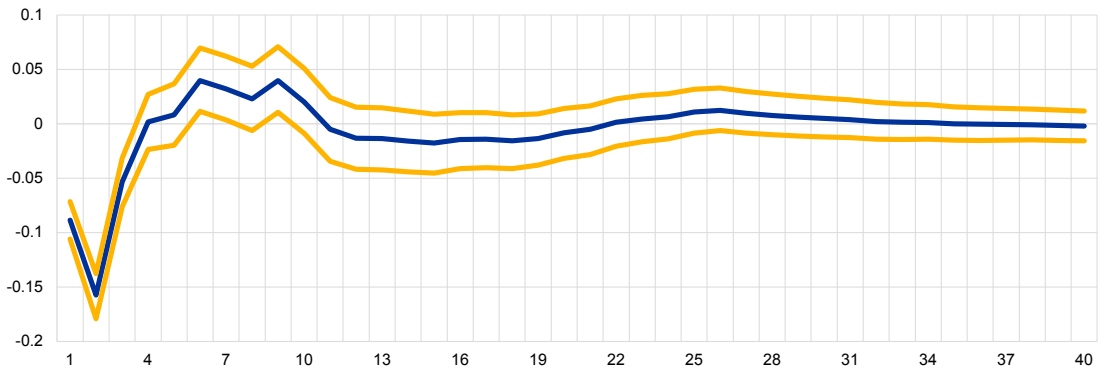
94 These results are comparable to those found by Bonciani, D. and van Roye, B., op. cit. based on a small Bayesian VAR model and using implied stock market volatility as a proxy for uncertainty.

95 For a similar finding in the case of an adverse, temporary shock on investment in Germany and France, see Bundesbank, op. cit.

Chart A

Responses of real GDP growth following a temporary shock on macroeconomic uncertainty

(percentage point)

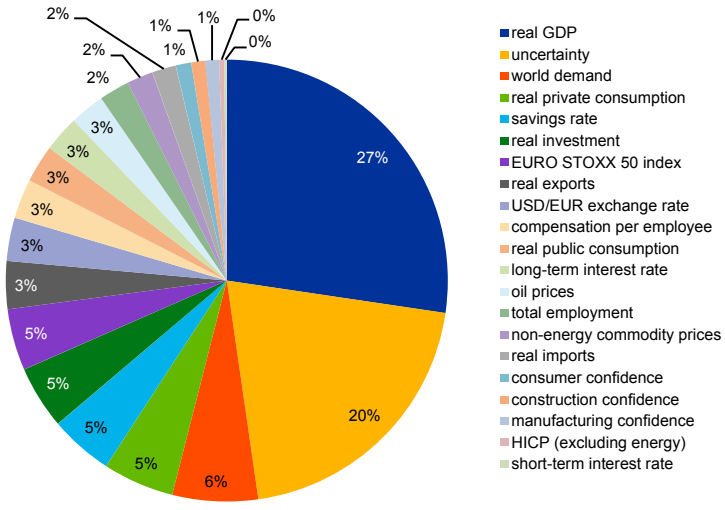


Source: ECB calculations.
Note: The blue line denotes the median response of real GDP growth and the yellow lines denote the 95% one standard deviation confidence bands.

Uncertainty shocks appear to contribute significantly to real GDP growth fluctuations in the euro area. To assess the quantitative importance of uncertainty shocks for macroeconomic fluctuations, Chart B reports the forecast error variance decomposition for real GDP growth.[96] On average over the whole forecast horizon (forty quarters), macroeconomic uncertainty is estimated to have contributed significantly to real GDP growth fluctuations in the euro area, second only to the lagged contribution of past real GDP growth.[97]

Chart B

Average shock contribution to euro area real GDP fluctuations



Source: ECB calculations.
Notes: The chart depicts the average shock contribution to real GDP fluctuations (in percentages), computed from a forecast error variance decomposition performed over a horizon of forty quarters. The composite indicator of macroeconomic uncertainty presented in Box 1 has been used as a proxy for uncertainty. The legend (on the right) displays the nature of the shocks according to their level of contribution.

96 The forecast error variance decomposition denotes the proportion of the h-step ahead forecast error variance of an endogenous variable which is accounted for by each estimated structural shock.

97 Jurado, K., Ludvigson, S.C., and Ng, S., op. cit., show similar contributions of macroeconomic uncertainty for real GDP growth dynamics in the United States.

Further analysis of the transmission of uncertainty shocks to activity is warranted. The results presented above are robust to various tests, including different ordering of variables within the system and using other priors that have been applied in large BVAR models. One particular problem with large BVAR models is that they make it increasingly difficult to apply identification schemes – other than the standard Cholesky decomposition – which allow theory-based restrictions to be imposed. In addition, the inclusion of further variables into the system could further help to disentangle the impact of uncertainty shocks. These variables could include indicators on financial frictions and liquidity constraints.

5 Conclusion

While difficult to observe and quantify, there is some evidence that increases in uncertainty can adversely impact the economy. The economic literature offers many different ways to measure uncertainty, and in combining these approaches and the various data sources it might be possible to achieve a useful composite indicator of uncertainty for the euro area.

Given its potential role as a driver of business cycles in the euro area, it is important to construct and monitor indicators of uncertainty, for forecasters and policymakers alike. An assessment of the current level of uncertainty and an assumption about expected uncertainty during the projection horizon is imperative for any projection, and scenario analysis capturing the estimated impact of possible uncertainty shocks can serve as an indication of the risks surrounding projections. For policymakers, in times of heightened uncertainty, optimal policies might include measures aimed at reducing this uncertainty and mitigating its impact.

2 Looking back at OTC derivative reforms – objectives, progress and gaps

At the Pittsburgh summit in 2009, G20 leaders pledged to reform over-the-counter derivatives markets to improve their transparency, prevent market abuse and reduce systemic risks. Focusing on Europe, this article recalls the objectives of the Pittsburgh reforms, reviews the progress made since their adoption, in particular with regard to trade reporting and central clearing, and identifies remaining gaps and issues for policymakers. The latter relate mainly to: (i) the resilience, recovery and resolution of central counterparties, given their growing systemic importance as a result of the reforms; (ii) the need to strengthen the stability of derivatives markets; and (iii) the still insufficient data quality and transparency of OTC derivative transactions, despite the considerable progress already made.

1 Introduction: the Pittsburgh reforms of OTC derivatives

Owing to their size, inherent risks and lack of transparency, global over-the-counter (OTC) derivatives markets came into the focus of policymakers after the crisis. As at end-2008, they had reached USD 598 trillion (EUR 430 trillion) measured by notional value and USD 35 trillion (EUR 25 trillion) by gross market value (see Chart 1). In response to the global financial crisis, G20 leaders pledged at the Pittsburgh summit in September 2009 to reform OTC derivatives markets to improve their transparency, prevent market abuse and reduce systemic risks. Seven years later, it is apt to review the progress in implementing the Pittsburgh commitment at the global and in particular the European level and the remaining gaps.

A derivative is a contract which "derives" its value from an asset or a reference price and is used for hedging or speculative purposes. The most basic types of derivative are forwards, options and swaps.[98] In terms of underlying asset classes, commodity, equity, foreign exchange, credit and interest rate derivatives can be distinguished, with the latter being by far the largest class, both in terms of notional principal and gross market value (see Chart 1). Derivative contracts can either be traded on a regulated exchange or a trading platform ("exchange-traded derivatives", or ETDs, which are usually highly standardised) or agreed over the counter, i.e. bilaterally between counterparties on tailor-made terms. Derivatives are not necessarily as dangerous as some have suggested – perhaps most notably Warren Buffet who in 2002 called credit default swaps "financial weapons of mass destruction".[99] They do, however, create counterparty risk and have a higher

[98] Forwards are agreements between two parties whereby the seller/buyer has the obligation to deliver/pay for an asset at a fixed price at an agreed future date. Futures are standardised forwards. Options are contracts that give the buyer the right but not the obligation to buy or sell an asset at a fixed price in the future. Swaps involve an obligation to exchange future cash flows over an agreed term, e.g. a set of cash flows based on a fixed interest rate for those based on a floating rate.

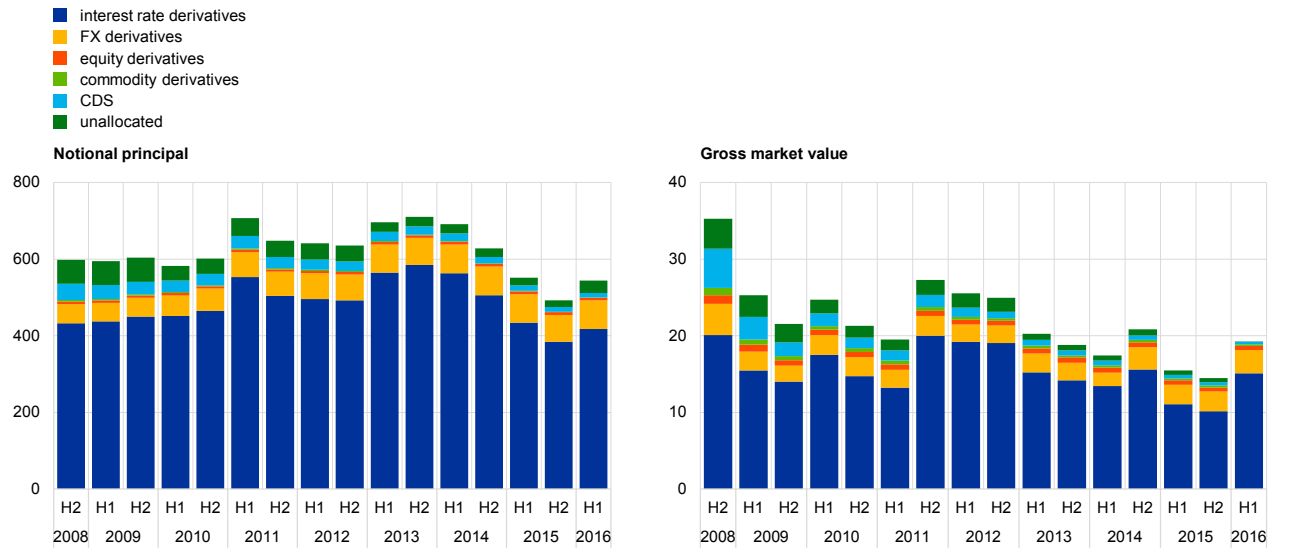
[99] See Helen Simon's article in Investopedia, entitled "Are derivatives a disaster waiting to happen?"

leverage than other financial instruments, due to their gearing effect that can magnify gains and losses.

Derivatives and especially credit default swaps (CDS) were a main factor behind the problems of Lehman Brothers and AIG. It is therefore not a coincidence that in November 2008, two months after the collapse of Lehman Brothers, the Washington G20 summit listed "increasingly complex and opaque financial products, and consequent excessive leverage" as one of the root causes of the global financial crisis. Supervisors and regulators were therefore asked to "speed efforts to reduce the systemic risks of CDS and over-the-counter (OTC) derivatives transactions and expand OTC derivatives market transparency".[100] The latter was even a high-priority action to be completed prior to 31 March 2009.

Chart 1
Global OTC derivatives markets

(USD trillions; half-year data)



Source: Bank for International Settlements (BIS) semi-annual OTC derivatives survey data.

At the Pittsburgh summit in September 2009, G20 leaders committed to increase the resilience and transparency of OTC derivatives markets. In the Leader's Statement, they called on the G20 Finance Ministers and Central Bank Governors "to reach agreement on an international framework of reform in the following critical areas", including:

"Improving over-the-counter derivatives markets: All standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties[101] by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories. Non-centrally

[100] Declaration of the Summit on Financial Markets and the World Economy, Group of Twenty (G20), 2008, p. 1, and Action Plan, p. 3, respectively.

[101] The part of the OTC derivatives market served by central counterparties performed better during the crisis due to their stronger risk management and higher transparency of members' exposures.

cleared contracts should be subject to higher capital requirements. We ask the FSB and its relevant members to assess regularly implementation and whether it is sufficient to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse."[102]

There have rarely been so few lines that have kept so many busy for so long, as those of the Pittsburgh commitment on OTC derivatives. The implementation of this mandate resulted in an unprecedented wave of new standards and regulations, and led to extensive industry adaptations, both at the global level and in individual jurisdictions, with the ultimate aim of improving transparency, avoiding market abuse and reducing systemic risks of OTC derivatives markets.

This article focuses on assessing the current situation in the European Union (EU) against the original objectives of the Pittsburgh agenda. It takes stock of the progress made and identifies remaining gaps with regard to the five elements of the bold Pittsburgh reform agenda[103]:

- reporting all OTC derivative contracts to trade repositories;
- bringing all standardised OTC derivative contracts on exchange; and
- clearing them through central counterparties;
- introducing higher capital requirements for non-centrally cleared contracts;
- regularly assessing whether those four measures are sufficient to "improve market transparency, mitigate systemic risk, and protect against market abuse".

Central counterparties (CCPs) and trade repositories (TRs) are financial market infrastructures (FMIs) that have become more prominent with respect to OTC derivatives markets as a result of the Pittsburgh reforms. A CCP interposes itself between the two parties of a securities or derivative trade, becoming the buyer to the seller and vice versa, and taking on the counterparty credit risk (i.e. the risk that one party to the contract defaults).[104] Through this process, as well as through multilateral netting (see Figure 1), the CCP reduces overall credit and liquidity risk and replaces bilateral exposures by a centralised network of exposures between clearing members and the CCP. While the CCP removes members' counterparty risk towards each other, the members are – in addition to their principal positions – exposed to the CCP through their margin payments and contributions to the default fund, which the CCP might use as part of its waterfall of resources if other members default (Figure 2). The risk management tools of a CCP include "initial margin" (a

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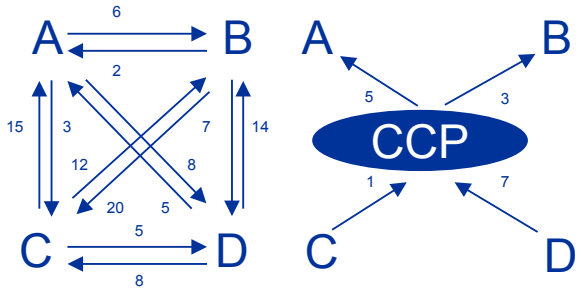
102 Leaders' Statement – The Pittsburgh Summit, G20, 2009, pp. 8-9.

103 The G20 summits in Cannes (November 2011) and St. Petersburg (September 2013) added additional aspects to the OTC derivative reform agenda, notably margining requirements for non-centrally cleared derivatives in the case of the former, and the agreement that jurisdictions should defer to the CCP rules of other jurisdictions in the case of the latter, but the gist of the agenda stems from Pittsburgh.

104 For more detailed explanations of the functioning of CCPs, see for example the webpages of the Deutsche Bundesbank on oversight of central counterparties; "OTC derivatives: new rules, new actors, new risks", *Financial Stability Review*, No 17, Banque de France, 2013; and Nixon, D. and Rehlon, A., "Central counterparties: what are they, why do they matter and how does the Bank supervise them?", *Bank of England Quarterly Bulletin*, Q2 2013.

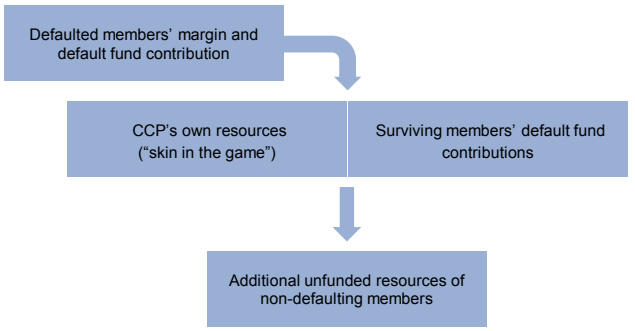
pre-set amount of collateral posted to the CCP), "variation margin" (payments that become due as a result of changes in market prices) and haircuts applied to collateral. A trade repository is a centralised electronic registry for storing details of individual derivative trades, both cleared and non-cleared (see Section 3.1).

Figure 1
Multilateral netting of CCPs



Source: ECB.
Note: CCP calculates and records net obligations from trades ("multilateral netting").

Figure 2
Waterfall of financial resources if a clearing member defaults on its obligations



Source: ECB.

The remainder of this article is organised as follows: Section 2 describes the Principles for financial market infrastructures (PFMIs), a key set of global standards influenced by the Pittsburgh commitment as regards CCPs and TRs, and other global guidance and ongoing reform work. Section 3 reviews where Europe stands with regard to the reporting obligation, the clearing obligation and the other elements of the Pittsburgh reforms, which were to a large extent implemented via the European Market Infrastructure Regulation. Section 4 identifies remaining gaps and issues for further reform, in particular in relation to making CCPs more resilient and easier to recover and resolve, strengthening the stability of derivatives markets, and further improving the transparency of OTC derivatives markets. Section 5 concludes.

2 Global guidance

2.1 Global standards

As part of a wider regulatory response to the crisis, enhanced standards for FMIs have been adopted around the globe. On a global level, these include notably the Principles for financial market infrastructures of the Committee on Payment and Settlement Systems (CPSS)[105] and the International Organization of Securities Commissions (IOSCO). In February 2010, the CPSS and IOSCO launched a comprehensive review of three existing sets of standards for systemically important payment systems, securities settlement systems and CCPs, "in support of

[105] The former CPSS was renamed the Committee on Payments and Market Infrastructures (CPMI) in September 2014 and is currently chaired by Benoît Cœuré, Member of the Executive Board of the ECB. See the BIS website for an overview of the role and work of the CPMI.

the FSB's broader efforts to strengthen core financial infrastructures and markets by ensuring that gaps in international standards are identified and addressed"[106]. The ECB and some Eurosystem central banks were closely involved in this review and the definition of the PFMIs.

Published in April 2012, the PFMIs took the lessons learnt from the financial crisis into account. This applies in particular to the need to mitigate risks arising from centrally cleared OTC derivatives. Six out of the 24 principles specifically address CCPs (Principles 4, 6, 7, 13, 14 and 20). TRs are also mentioned, and under "Access to FMIs", the introduction makes explicit reference to the Pittsburgh reform agenda: "Access to CCPs in particular is even more important in light of the 2009 G20 commitment to centrally clear all standardised OTC derivatives by the end of 2012."[107]

Inter alia, the PFMIs set strong risk management standards for CCPs, and for the first time also create a framework for TRs.[108] To increase the resilience of CCPs, the Principles set stronger requirements for CCPs' credit and liquidity risk management, as well as their investment and custody risk management. For example, CCPs need to cover credit exposures to their members for all products through an effective margin system that is risk-based and regularly reviewed and tested (Principle 6), and to maintain financial resources sufficient to cover the default of the largest member (or in the case of globally active CCPs the two largest members) in extreme but plausible market conditions (Principle 4). The PFMIs also outline responsibilities for central banks, market regulators and other relevant authorities responsible for FMIs in implementing the standards ("Responsibilities A to E"). Although the Principles are not legally binding, all Financial Stability Board (FSB), IOSCO and CPMI member jurisdictions have committed to implement them and the CPMI and IOSCO are monitoring progress in this respect.

Under "Responsibility D" of the PFMIs, relevant authorities are asked to adopt and apply the Principles consistently. In Europe, the PFMIs were implemented by the European Market Infrastructure Regulation (EMIR), which entered into force in August 2012 and for the first time introduced a common EU regulatory and supervisory framework for CCPs and TRs (for the latter, see Section 3.3.1).[109] In June 2013, the Governing Council of the ECB adopted the PFMIs as Eurosystem oversight standards for all FMIs in the euro area under Eurosystem responsibility.

2.2 Ongoing global reform work

The FSB has been tasked with regularly assessing the implementation of the Pittsburgh reform agenda. The FSB progress reports on the implementation of

106 Principles for financial market infrastructures, CPSS-IOSCO, 2012, p. 6.

107 Ibid, p. 15.

108 The PFMIs also cover other types of FMI such as payment systems and central securities depositories.

109 In this article, the focus is on the process, not the content of EMIR. It should be noted that the CPMI and IOSCO did not find EMIR to be fully compliant with the PFMIs.

OTC derivative reforms, the latest of which was published in August 2016[110], provide a good overview of the numerous ongoing global workstreams triggered by Pittsburgh. Beyond the PFMIs, these include other relevant work and guidance by the CPMI and IOSCO, the Basel Committee on Banking Supervision (BCBS) and the FSB itself. The reform activities, many of which are also pursued at national level, range from trading-related aspects, capital and margin requirements for non-centrally cleared derivatives, central clearing and trade reporting, to cross-border issues, which also mainly relate to CCPs and TRs.

The Eurosystem is involved in several global workstreams stemming from Pittsburgh. These include in particular the work on CCP resilience, recovery and resolution, which became crucial due to the increased concentration of business and risk within CCPs resulting from the clearing mandate (see Section 4.1). Other international workstreams, to which the ECB and some Eurosystem central banks contribute, relate for example to the Legal Entity Identifier (LEI), the removal of legal barriers to trade reporting and access to TR-held data[111], as well as to the harmonisation and aggregation of OTC derivatives data (see Box 1).

Box 1
Global work on harmonising and aggregating OTC derivatives data

Data reported to TRs on OTC derivatives need to be harmonised to better serve global data aggregation. Global aggregation of the data reported to TRs helps authorities to obtain a comprehensive view of the OTC derivatives market, thereby facilitating authorities' understanding of global exposures of large financial institutions operating in more than one jurisdiction. In September 2014, the FSB published a feasibility study on options to produce and share global aggregated OTC derivatives TR data. This "Aggregation Feasibility Study"[112] concluded that "it is critical for any aggregation option that the work on standardisation and harmonisation of important data elements be completed, including in particular through the global introduction of the LEI, and the creation of a Unique Transaction Identifier (UTI) and Unique Product Identifier (UPI)". The FSB asked the CPMI and IOSCO to develop global guidance on the harmonisation of data elements reported to TRs as a prerequisite for data aggregation by authorities. In November 2014, the CPMI and IOSCO established a joint working group for the harmonisation of key OTC derivatives data elements (Harmonisation Group, HG) with a mandate to develop guidance regarding the definition, format and usage of the UTI, the UPI and other critical OTC derivatives data elements (CDEs). The HG is co-chaired by representatives of the ECB and the US Commodity Futures Trading Commission.

Global work on harmonising the structure, content and format of reported data elements is in progress and expected to be finalised by end-2017. The HG published a consultative report on the UTI in August 2015[113], two consultative reports on the UPI (December 2015 and August

110 See OTC Derivatives Market Reforms – Eleventh Progress Report on Implementation, FSB, 2016.

111 In several jurisdictions, effective access to the details of OTC derivative transactions is restricted by data protection laws, bank secrecy laws and indemnification clauses. See Thematic Review on OTC Derivatives Trade Reporting, FSB, 2015.

112 Feasibility study on approaches to aggregate OTC derivatives data, FSB, 2014.

113 Consultative report – Harmonisation of the Unique Transaction Identifier, CPMI-IOSCO, 2015.

2016)[114] and, so far, two consultative reports on the CDEs (September 2015 and October 2016)[115]. In addition, the HG held workshops involving industry stakeholders to discuss the harmonisation of these data elements. The target date for publishing the final UTI technical guidance to authorities is December 2016.[116] It is intended to provide guidance inter alia on the circumstances in which a UTI is required, which entities should be responsible for generating UTIs, and the UTI's structure and format. As regards the UPI technical guidance, special attention is given to the mapping of the UPI code to the UPI reference data, which contain the bulk of the information about the products and their underlying assets or instruments. The target date for publishing the final UPI technical guidance to authorities is mid-2017. The CDE technical guidance work has been focusing on the identification and harmonisation of data elements other than the UTI and UPI that are critical for reporting and for effective global aggregation. In total, some 80 CDEs are being worked on. An important aspect of the CDE harmonisation work is to make use of existing industry standards, in particular the ISO 20022 standard, whenever possible. The aim is to publish the final CDE technical guidance to authorities by end-2017.

In addition to technical guidance to authorities, work is also ongoing on the governance of the critical data elements. The HG is developing a governance framework for the CDEs. A dedicated FSB working group was established in March 2016 to elaborate governance frameworks for the UTI and UPI (the 'GUUG'). The GUUG has already established criteria for and functions to be performed by the UTI and UPI governance frameworks, and aims to publish a consultative report on the UTI governance arrangement soon after the publication of the UTI technical guidance. As regards the UPI, the GUUG aims to finalise its work and make recommendations to the FSB after completion of the work of the HG on the UPI, i.e. currently scheduled towards the end of 2017.

However, further steps will be needed to facilitate global aggregation. Implementation of the technical guidance on uniform global identifiers, i.e. the UTI, UPI and other CDEs, the definition of efficient and effective governance arrangements as well as the adoption of the LEI are important steps towards, and prerequisites for, creating a global data aggregation mechanism and ensuring that OTC derivatives data can be adequately aggregated. The ECB expects that internationally coordinated work will start in 2017 to develop and implement an efficient and effective mechanism for global data aggregation.

3 Review of the situation and progress in Europe

In Europe, a large part of the Pittsburgh reform initiative was formalised in 2012 in the European Market Infrastructure Regulation (EMIR). Formally known as "Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories"[117],

114 Consultative report – Harmonisation of the Unique Product Identifier, CPMI-IOSCO, 2015, and Second consultative report – Harmonisation of the Unique Product Identifier, CPMI-IOSCO, 2016.

115 Consultative report – Harmonisation of key OTC derivatives data elements (other than UTI and UPI) – first batch, CPMI-IOSCO, 2015, and Consultative report – Harmonisation of critical OTC derivatives data elements (other than UTI and UPI) – second batch, CPMI-IOSCO, 2016.

116 The cut-off date for data and sources used in this article was 2 December 2016.

117 See the Regulation published in the Official Journal of the European Union on 27 July 2012.

EMIR for the first time set regulatory and supervisory standards in the EU for CCPs and TRs, which have been further detailed in regulatory technical standards (RTS). While Recital 5 of EMIR refers to the Pittsburgh agreement, there was an even stronger link to the financial crisis and the G20 commitment in the press release of 15 September 2010 accompanying the European Commission's draft proposal:

"As part of its ongoing work in creating a sounder financial system, the European Commission has tabled today a proposal for a regulation aimed at bringing more safety and more transparency to the over-the-counter (OTC) derivatives market. […] The near-collapse of Bear Sterns in March 2008, the default of Lehman Brothers on 15 September 2008 and the bail-out of AIG the following day started to highlight the shortcomings in the functioning of the OTC derivatives market, where 80% of derivatives are traded. […] The Commission's proposal, fully in line with the EU's G20 commitments and the approach adopted by the United States, now passes to the European Parliament and the EU Member States for consideration."[118]

3.1 Where Europe stands with regard to the reporting obligation

EMIR introduces the mandatory reporting of all derivative contracts to TRs, which started in February 2014. This "reporting obligation" applies to both OTC and exchange-traded derivatives in all five main asset classes, i.e. commodity, equity, foreign exchange, credit and interest rate derivatives. Trades cleared via CCPs are also included. For each derivative transaction around 85 data fields have to be reported, which are divided into two groups: the first group contains information on the counterparties involved, which usually remain static over the life cycle of a trade; the second group provides details on the characteristics of the contract, such as the type of derivative, the underlying, the price, the amount outstanding, the execution and clearing venue of the contract, the valuation, the collateral and life-cycle events (e.g. compression, cancellation, termination). Some of these characteristics, notably price or life-cycle events, change over the life cycle of a derivative trade.

According to EMIR, all EU-located counterparties to a derivative contract must report the contract details to a TR authorised by the European Securities and Markets Authority (ESMA). Pursuant to EMIR Articles 55 and 77, TRs to which the contracts are reported need to be registered with, or in the case of third-country TRs, recognised by ESMA. Currently there are six TRs authorised by ESMA, which are CME, DDRL[119], ICE, KDPW, Regis-TR and UnaVista.[120] Together they provide daily derivatives data to over 60 authorities in the EU, which in accordance with their mandate have access to the respective data of their jurisdiction. Only the European

118 Making derivatives markets in Europe safer and more transparent, European Commission, 2010.

119 The DTCC Derivatives Repository Ltd. (DDRL), sometimes also just referred to as DTCC, is a London subsidiary of DTCC Global Trade Repository (GTR).

120 See List of registered trade repositories, ESMA.

Systemic Risk Board (ESRB) and ESMA have access to the full EU-wide dataset.[121] ESMA also directly supervises the TRs and can impose sanctions in case of non-compliance with EMIR requirements. In March 2016, ESMA took for the first time such an enforcement action against a TR registered in the EU.[122]

One characteristic of EMIR reporting is the "double-reporting obligation".[123] Unlike the single-sided reporting under the US regime, under EMIR both counterparties to a derivative transaction have to report it, if they are located in the EU. As there are multiple TRs in the EU, trades are often reported to two different TRs. Hence, any data aggregation requires the reconciliation of the information on the two sides of a trade within and across TRs. This reconciliation relies in principle on the use of the UTI, but its definition is still under development at the global level (see Box 1).

In addition to the mandatory reporting of transaction-level data, EMIR also requires TRs to publish aggregated figures. On their websites the TRs publish the number of trades, their notional and market value, and other indicators. Due to the double-reporting regime, the transactions are divided into dual-sided and single-sided trades, depending on whether the other leg of the transaction is reported to the same TR or not. The public TR data are characterised by structural breaks, related to differences and changes in reporting or incorrectly submitted trades. Despite these open issues (see also Section 4.3), within certain limits the EMIR data allow some conclusions to be drawn on the characteristics of the European derivatives market (see Box 2). In line with the CPMI-IOSCO public disclosure framework, European CCPs also publish a wide range of quantitative data, e.g. related to credit and liquidity risk, margin and collateral.[124]

Box 2
Characteristics of the European derivatives market based on EMIR data

The size of the European OTC derivatives market in terms of notional outstanding was around EUR 460 trillion according to the EMIR public data for end-June 2016. By far the largest asset class, reaching 85% of the notional outstanding at end-June, were interest rate swaps (IRS), followed by foreign exchange (FX) derivatives (9%), while credit, commodity and equity-linked derivatives together made up around 6% (see Chart A). These shares are broadly consistent with the semi-annual global OTC derivatives survey of the BIS, on which Chart 1 is based. In absolute terms, however, the notional outstanding values of the EMIR public data and the BIS semi-

[121] See Fache-Rousová, L., Kulmala, K.-M. and Osiewicz, M., "Reporting of derivatives transactions in Europe – Exploring the potential of EMIR micro data against the challenges of aggregation across six trade repositories", 2015, for a description of the reporting under EMIR and related issues such as data quality and the methodology for aggregating data across TRs.

[122] See ESMA fines DTCC Derivatives Repository Limited €64,000 for data access failures, 2016.

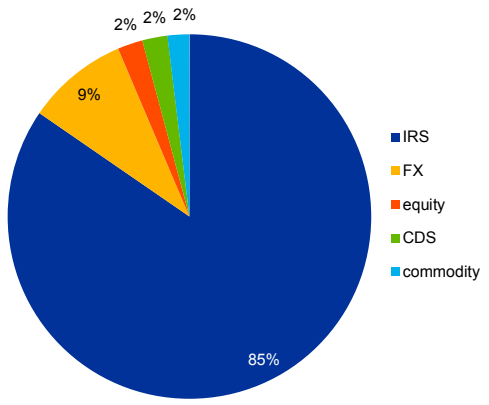
[123] When creating the framework for EMIR, ESMA's rationale for dual-sided reporting was that if both counterparties are required to report their valuations of a derivative position, it allows for a clearer process for discovering pricing mismatches and an easier detection of potential sources of risk. In addition, authorities come to know about a derivative trade even if one counterparty fails to report it.

[124] The European Association of CCP Clearing Houses (EACH) maintains a list of these public disclosures.

annual survey (global size of around EUR 490 trillion at end-June 2016[125]) cannot be reconciled, which is explained by the methodological differences of the two datasets.[126]

Chart A
European OTC derivatives market by asset class

(percentage of notional amount outstanding on 1 July 2016)



Sources: EMIR public data, published on TRs' websites.

The EMIR data also provide first insights into the structure of the derivatives market in Europe. In the analysis, the focus is on data from three individual TRs connected to European CCPs (see Table 2) authorised to clear the largest asset class IRS. These are Regis-TR, CME and DDRL. In addition to their use in the analysis, data reported to DDRL are particularly interesting given their large and diversified coverage of asset classes. The choice of the TRs for analytical purposes is also dictated by the availability of trade state reports, as opposed to trade activity reports. The former contain all outstanding trades at the end of the day and allow positions to be derived and data to be aggregated. However, trade state reports are currently not mandatory under EMIR and not all TRs provide them.[127]

The analysis of EMIR data shows that for IRS, the share of cleared OTC trades has increased steadily since the introduction of the clearing obligation. Chart B depicts cleared versus non-cleared OTC IRS transactions since January 2015 for two TRs which provide trade state reports, DDRL and Regis-TR. The focus is on the number of trades, as this measure is less prone to outliers or misreporting than notional or market values. The share was stable at around 25% in 2015, while it increased to around 35% in the first three quarters of 2016, i.e. after the entry into force of the first RTS on the clearing obligation in December 2015 (see Section 3.3).

The EMIR data also shed light on the short-term effects of the introduction of the clearing obligation for IRS and of the so-called "frontloading" (see Section 3.3). Chart C depicts the developments in the number and notional values of new cleared trades reported to CME. In the week including the frontloading deadline of 21 May 2016, there is a noticeable one-off increase in the trading volumes, both in terms of notional values and of the number of trades, due to the clearing of the trades outstanding before the frontloading deadline. After the start of the clearing obligation (i.e. for Category 1 counterparties) on 21 June 2016 (see Table 1 below), a significant

125 At end-June 2016, the total global notional value stood at USD 544 trillion (USD 1 = EUR 1.1102).

126 The BIS surveys a limited set of derivative dealers, which report their aggregate derivative positions on a global consolidated basis. About 70 major derivative dealers from 13 countries participate in the BIS semi-annual survey; despite the limited sample, the semi-annual survey captures a large portion of the global OTC market as the BIS triennial survey, which covers many more institutions (around 400) from many more countries (47), confirms (a comparison between the two BIS surveys suggests that the market share of the semi-annual reporters is about 97% for interest rate and credit derivatives). See Abad et al., "Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset", 2016.

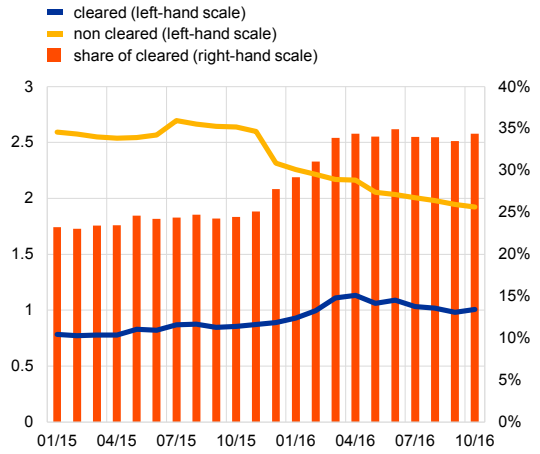
127 In the future, trade state reports are envisaged to become a mandatory output by TRs. For more details, see ESMA's consultation paper Draft technical standards on access to data and aggregation and comparison of data across TR under Article 81 of EMIR, 2015.

shift in the level of weekly trading can be observed for all OTC IRS contracts between Category 1 counterparties, which then had to be centrally cleared.

Chart B

Cleared versus non-cleared outstanding OTC IRS trades for DDRL and Regis-TR

(millions of trades, percentage; end-of-month data)

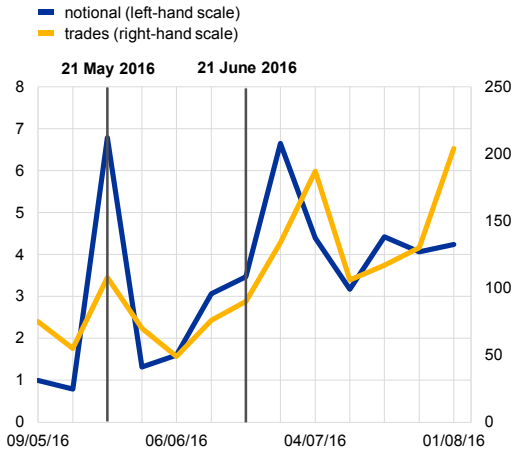


Sources: EMIR data, DDRL and Regis-TR.

Chart C

Number and notional values of cleared OTC IRS trades reported to CME

(EUR billions, number of trades; weekly data)



Sources: EMIR data and CME activity reports.

3.2 Trading requirements for OTC derivatives

Whereas in the United States the Dodd-Frank Act deals with trading and clearing of OTC derivatives, in Europe EMIR only covers clearing, while trading aspects are dealt with by the revised Directive and new Regulation on markets in financial instruments (MiFID II and MiFIR). Published in the Official Journal of the European Union on 12 June 2014, the combined legislation will, after transposition of MiFID II into national law, enter into force on 3 January 2018 within Member States. Its aim is to ensure fairer, safer and more efficient markets, as well as a high degree of harmonised protection for investors in financial instruments. More specifically, the revised Directive and new Regulation include authorisation requirements for regulated markets, rules on the admission of financial instruments to trading, transparency obligations for trading shares, requirements for investment firms, rules for transaction reporting, and most relevant in relation to Pittsburgh, requirements for OTC derivatives to be traded on exchanges or electronic trading platforms, so-called “organised trading facilities” (OTFs). One important requirement for example is that OTFs must remain market risk neutral and cannot take on positions themselves. The requirements apply to OTC derivatives, which are subject to mandatory clearing, which creates a link to EMIR. Like for EMIR, ESMA is responsible for drafting regulatory and implementing technical standards (ITS) in relation to MiFID II and MiFIR.

3.3 Where Europe stands with regard to the clearing obligation

Japan and the United States were the first to implement the clearing obligation agreed on in Pittsburgh for certain OTC derivative contracts. The clearing obligation was first introduced in Japan for yen-denominated IRS and CDS indices in November 2012, and for yen-euro IRS in July 2014. In the United States, where the Pittsburgh agenda was enshrined in the Dodd-Frank Act, the clearing obligation kicked in in March 2013 for a wider range of contracts including IRS, basis swaps and forward rate agreements (FRAs) in any of the most liquid currencies (US dollar, euro, pound sterling and yen), as well as CDS indices and overnight index swaps (OIS) in US dollars, euro and pounds sterling.[128]

In the EU, the phasing-in of the clearing obligation started in June 2016 and will continue until 2018, covering an even wider range of contracts and currencies than in the United States and Japan. ESMA is responsible for proposing which contracts should be subject to the clearing obligation via RTS, which are then approved by the European Commission, Council and Parliament. A first RTS entered into force on 21 December 2015, which mandates the central clearing of fixed-to-float IRS and basis swaps in euro, pounds sterling, yen and US dollars, and of FRAs and OIS in euro, pounds sterling and US dollars. Depending on the type of counterparty, the implementation of the clearing obligation is phased in. It started on 21 June 2016 for CCP clearing members, and on 21 December 2016 for financial counterparties and alternative investment funds that are not clearing members but are above a certain threshold[129] (see Table 1). For financial counterparties and alternative investment funds below that clearing threshold, and for non-financial counterparties, the obligation will start on 21 June 2017 and 21 December 2018 respectively.[130] In addition, the European Commission has published a second and third RTS, which entered into force on 9 May and 9 August 2016 and mandate the clearing of certain index CDS in euro (e.g. “iTraxx Europe Main” five-year portfolio CDS) and fixed-to-float IRS and FRAs in Norwegian krone, Polish zloty and Swedish krona. Depending on the type of counterparty, the implementation of these mandates will start on 9 February 2017 and continue until 9 May 2017 for the index CDS, and until 9 July 2019 for the derivative classes in the three non-euro currencies.[131]

Under EMIR, there is also an obligation to centrally clear certain contracts that counterparties have entered into with each other before the clearing obligation takes effect (“frontloading”). The frontloading obligation only applies to Category 1 and Category 2 counterparties (see the frontloading dates in Table 1). All contracts

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128 See Rahman, A., “Over-the-counter (OTC) derivatives, central clearing and financial stability”, *Bank of England Quarterly Bulletin*, Q3 2015, for an overview of the clearing obligation in the United States, Japan and the EU, and the different types of contracts that are or have the potential to become subject to it.

129 The threshold of EUR 8 billion needs to be computed at group level, as the month-end average of the group’s outstanding gross notional amount of non-centrally cleared derivatives for January, February and March 2016. A number of exceptions apply, e.g. in the case of non-EU counterparties.

130 For more information, see the first RTS on the clearing obligation published in the Official Journal of the European Union.

131 See ESMA’s webpages on the clearing obligation, and the second RTS and third RTS.

subject to clearing obligations, frontloaded or not, must be cleared through a CCP only once the clearing obligations take effect. However, counterparties may choose to start clearing these derivatives already during the frontloading period.

Table 1

Timeline for the clearing obligation by counterparty type and asset class

Counterparties	Category number	IRS in G4 currencies	Index CDS	IRS and FRAs in NOK, PLN and SEK
Clearing obligation starting dates				
CCP clearing members	Cat. 1	21/06/2016	09/02/2017	09/02/2017
Other financial counterparties and alternative investment funds above the group-level threshold of non-cleared derivative positions (EUR 8 billion)	Cat. 2	21/12/2016	09/08/2017	09/07/2017
Other financial counterparties and alternative investment funds below the EUR 8 billion threshold	Cat. 3	21/06/2017	09/02/2018	09/02/2018
Other non-financial counterparties	Cat. 4	21/12/2018	09/05/2019	09/07/2019
Frontloading dates				
CCP clearing members	Cat. 1	21/02/2016	09/10/2016	09/10/2016
Other financial counterparties and alternative investment funds above the group-level threshold of non-cleared derivative positions (EUR 8 billion)	Cat. 2	21/05/2016	09/10/2016	09/10/2016

Sources: First, second and third RTS on the clearing obligation (see footnotes 33 and 34).

3.3.1 Supervisory framework for CCPs

Pursuant to EMIR Article 18, supervisory colleges have been established for all CCPs operating in the EU. During the authorisation phase, these CCP colleges have focused on assessing the CCPs' compliance with EMIR. In doing so, the national competent authorities for each CCP have conducted a risk assessment of the extent to which the CCP complies with all the requirements set in EMIR and the accompanying RTS. Based on this assessment, Eurosystem college members in their roles as, inter alia, oversight and central bank of issue (CBI)[132] representative have been assessing areas such as the CCP's clearing and settlement process, liquidity risk management, stress testing and interoperability arrangements with other CCPs. During its elaborations in the college and when forming its opinion regarding the authorisation of the CCPs, the Eurosystem provided recommendations and induced changes in these key areas, and thus achieved improvements in the ultimate CCP risk management design.

The Eurosystem and the Single Supervisory Mechanism (SSM) are represented in colleges of euro area CCPs and non-euro area CCPs. Two functions of the ECB/Eurosystem participate in the EMIR CCP colleges: the SSM, as the supervisor of the significant clearing members participating in the CCPs (EMIR Article 18.2 (c)); and the Eurosystem, as CBI for the euro, for those CCPs where the euro is one of

[132] While the oversight function primarily looks at the CCP itself, the CBI function focuses on potential risks for the currency, which may emanate from the CCP's activities. Both functions share the concern for the CCP's systemic implications in view of its central role and limited substitutability in the markets served and its interdependencies with other CCPs and FMIs.

the most significant currencies cleared (see Table 2). Pursuant to EMIR Article 18.2 (g) and (h), relevant members of the Eurosystem participate in EMIR colleges in their oversight capacity and as CBI for CCPs where the euro is one of the most relevant currencies cleared, notably – besides euro area CCPs – offshore CCPs which clear a significant share of financial instruments denominated in euro. For the CBI function, the Governing Council decided in December 2012 that, as a general rule, the Eurosystem is represented by the relevant euro area NCBs when the CCP is established within the euro area, and by the ECB for non- euro area CCPs.

Table 2
List of EU CCPs showing Eurosystem CBI college representation and TR connection

Country	CCP	Connected TR
	Euro area	
Austria	CCP Austria Abwicklungsstelle für Börsengeschäfte GmbH (CCP.A)	N/A*
France	LCH.Clearnet SA	UnaVista
Germany	Eurex Clearing AG	Regis-TR
	European Commodity Clearing AG (ECC)	Regis-TR
Greece	Athens Exchange Clearing House (Athex Clear)	UnaVista
Italy	Cassa di Compensazione e Garanzia S.p.A.(CCG)	UnaVista
Netherlands	European Central Counterparty N.V. (EuroCCP)	DDRL
	ICE Clear Netherlands B.V.	ICE
Portugal	OMIClear	DDRL
Spain	BME Clearing	Regis-TR
	Non-euro area EU	
Sweden	Nasdaq OMX Clearing AB	Regis-TR
United Kingdom	CME Clearing Europe	CME
	ICE Clear Europe	ICE
	LCH.Clearnet Limited	UnaVista
	LME Clear Limited (observer status)	DDRL

Sources: CCP websites.
* CCP.A no longer clears derivatives; it now mostly clears equities.

In addition, the Eurosystem is – albeit only to a limited extent – involved in the recognition of third-country (i.e. non-EU) CCPs. Pursuant to Article 25.3 (f) of EMIR, ESMA consults the Eurosystem as central bank of issue in cases where the euro is one of the most relevant currencies cleared by the CCP. However, the recognition procedure under EMIR leaves room for improvement, and the ECB sees the review of EMIR as an opportunity to rethink it. In particular, the conditions which ESMA has to consider when taking its recognition decision are limited to matters of regulatory and supervisory equivalence and supervisory cooperation. This may not provide sufficient leeway to ESMA to take into account significant concerns raised by the consulted authorities, where the current conditions for recognition are met.

3.3.2 Capital charges for exposures to non-qualified CCPs

The Basel III framework and its EU implementation via the Capital Requirements Regulation (CRR) grants EU banks lower capital requirements

for their exposures to a qualified CCP (or QCCP), compared with a non-QCCP. Basel III introduced a capital requirement for the exposures of EU banks and their foreign subsidiaries to a CCP. A CCP gains QCCP status in the EU if it has been authorised (in the case of EU CCPs) or recognised (in the case of non-EU CCPs) under EMIR.[133] Foreign CCPs can only be recognised by ESMA if the European Commission has taken a positive equivalence decision on the foreign regulatory regime for CCPs. However, the CRR also includes a transitional provision that allows CCPs not yet authorised/recognised to be treated as QCCPs by EU Member States until a given deadline (re-extended by the European Commission to 15 December 2016), unless they receive EU recognition earlier.[134] The higher capital charges for exposures to non-QCCPs create incentives for banks to use QCCPs and for CCPs to seek this status if they are not yet authorised or recognised under EMIR. As regards default fund contributions and trade exposures to non-QCCPs, the capital requirement under Basel III is as follows:[135]

- banks must apply a risk weight of 1,250% to their default fund contributions to a non-qualifying CCP;
- banks must apply the standardised approach for credit risk in the main framework, according to the category of the counterparty, to their trade exposure to a non-qualifying CCP.

3.4 Requirements for non-centrally cleared derivatives

EMIR requires counterparties to apply risk mitigation techniques to their non-centrally cleared derivatives, including the exchange of collateral and bilateral margining. Article 11.3 of EMIR specifies that "financial counterparties shall have risk-management procedures that require the timely, accurate and appropriately segregated exchange of collateral with respect to OTC derivative contracts that are entered into on or after 16 August 2012". The same applies for non-financial counterparties exceeding the clearing threshold.

ESMA, the European Banking Authority (EBA) and the European Insurance and Occupational Pensions Authority (EIOPA) have jointly issued an RTS on these risk mitigation techniques. On 4 October 2016, the European Commission adopted a delegated regulation that specifies how margin should be exchanged for OTC derivative contracts that are not cleared by a CCP.[136] It foresees a staggered implementation, starting with the entities with the largest derivative portfolios. The standard foresees a mandatory exchange of variation margin (VM) and of initial margin (IM) between the two counterparties, to protect against the default of the other counterparty, and to reflect changes in the value of the derivative position.

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133 See e.g. Article 301 of the CRR.

134 ICE Clear Europe, the last EU CCP not to be authorised under EMIR, had benefited from this extension when it was finally authorised in September 2016.

135 Capital requirements for bank exposures to central counterparties, BCBS, 2014, and CRR, Articles 306 to 311.

136 See Technical Standard supplementing Regulation (EU) No 648/2012, European Commission, 2016.

Market participants may either use an internal model or standardised margin and haircut schedules to calculate initial margin requirements for their non-centrally cleared derivatives. Currently, standard models for the calculation of initial margin are developed by the industry.[137] For internal margin models, while VM is based only on past price performance and therefore objective, IM is an estimate of future potential losses based on two parameters: the number of days required to replace or re-hedge positions, known as the "margin period of risk" (MPOR), and the volatility of the underlying asset during the MPOR. The RTS prescribes both parameters: a minimum ten-day MPOR and a 99% confidence interval. The standards also specify the criteria concerning intragroup exemptions from the requirements. In developing these standards, the three European Supervisory Authorities took into account the framework developed by IOSCO and the BCBS for margining requirements for non-centrally cleared derivatives, as well as the BCBS supervisory guidance for managing risks associated with the settlement of foreign exchange transactions, while also considering the specific features of European financial markets.

The international framework for margin requirements for non-centrally cleared derivatives was finalised in March 2015. The BCBS-IOSCO framework requires market participants either to use an internal model or a standard method to calculate margin requirements for their non-centrally cleared derivatives. It foresees a phased-in implementation, which started in a number of countries on 1 September 2016 with the entities with the largest derivative portfolios.[138]

4 Remaining gaps and issues

Clearly there was a need to act at the time of the Pittsburgh summit, and a lot has been achieved since then in terms of regulatory reforms. At the global level, the 11th progress report of the FSB concludes that "overall, progress continues to be made across the OTC derivatives reform agenda". Although since the Washington summit delays seem to be characteristic of the implementation of that agenda, in the EU today, legislative frameworks are in place in the areas of trade reporting, central clearing, and capital requirements for non-centrally cleared trades. Margin requirements for non-centrally cleared derivatives, strictly speaking not a part of the Pittsburgh commitment, are expected to come into force in 2017, and trading requirements for OTC derivatives will enter into force in January 2018.

Work remains to be done to meet the G20 objective of making OTC derivatives markets more transparent and resilient.[139] The FSB report states that "authorities continue to note a range of implementation challenges, though international

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137 See, for example, the Standard Initial Margin Model (SIMM) developed by the International Swaps and Derivatives Association (ISDA).

138 See Margin requirements for non-centrally cleared derivatives, BCBS-IOSCO, 2015. Canada, the United States and some other jurisdictions started implementing the new regime on 1 September 2016, while in Europe it is now expected to be phased in from 2017. The main new feature of the framework is the exchange of initial margin (previously only variation margin had been exchanged).

139 Benoît Cœuré, ECB Executive Board member, came to the same conclusion in September 2013. See Four years after Pittsburgh: What has OTC derivatives reform achieved so far, speech given at a joint Banque de France, Bank of England and ECB conference on OTC derivative reforms, Paris, 2013.

workstreams that aim to address many of these challenges are underway". In Europe these challenges relate for example to trade reporting (see Section 4.3) as a result of insufficient clarity with respect to reporting, the double-reporting regime and the multiplicity of TRs. A TR is essentially a library and competition among libraries can create unnecessary complications. From this perspective, an aggregator of European TRs with access by all relevant authorities could help overcome some of the current quality and aggregation challenges. Alternatively, the challenges could be addressed by a full European harmonisation of the reporting of OTC derivatives data to TRs and by making such data available to authorities. From an ECB perspective, the lack of progress in meeting the trading requirements globally is also a concern.

With the increasing concentration of risks in CCPs and their growing systemic importance, efforts are needed to ensure that these risks are effectively managed. While CCPs eliminate counterparty risk among their members, their increasing use concentrates systemic risk[140] and increases interlinkages between the CCP, its members and their clients. CCPs are thus becoming "magnets of risk", and increasingly so with the clearing obligation covering more and more derivative products (see Section 3.3). This may create "single points of failure" and "buffer the system against relatively small shocks, at the risk of potentially amplifying larger ones", as some have observed[141]. Because of this growing systemic importance of CCPs, particularly robust arrangements must be in place to ensure that they prudently manage the increasing risks. Ongoing global and European work on CCP resilience, recovery and resolution (see Section 4.1) addresses these concerns. Additional work is also being undertaken to strengthen the stability of derivatives markets, including a further analysis of the different regulatory requirements affecting CCPs (see Section 4.2).

4.1 Making CCPs more resilient and easier to recover and resolve

In order to ensure that the increased risks of CCPs are prudently managed, they must be subject to strong requirements for resilience, recovery and resolution.[142] In concrete terms, this means that:

- As set out in the PFMIs, CCPs must be sufficiently resilient in the sense that financial resources (including margins, pre-funded default funds, and liquid resources) allow CCPs to withstand with a very high probability clearing member defaults and other extreme but plausible stress events.

- As also set out in the PFMIs and the supplementing CPMI-IOSCO guidance on the recovery of FMIs[143], CCPs must have recovery plans for market conditions

[140] See also Lieven, H., McGoldrick, P. and Schmiedel, H., "Central counterparties and systemic risk", *ESRB Macro-prudential Commentaries*, Issue No 6, 2013.

[141] See Domanski, D., Gambacorta, L. and Picillo, C., "Central clearing: trends and current issues", *BIS Quarterly Review*, December 2015, p. 73.

[142] In his speeches, Benoît Cœuré has repeatedly stressed this point; see for example "Ensuring an adequate loss-absorbing capacity of central counterparties", Chicago, 2015, and "Central counterparty recovery and resolution", London, 2014.

[143] Recovery of financial market infrastructures, CPMI-IOSCO, 2014.

which are more severe than “extreme but plausible conditions”. The recovery plans should allow CCPs to address uncovered losses and liquidity shortages comprehensively and without putting an excessive or unpredictable burden on clearing members and other financial institutions, many of whom are likely to be systemically important in their own right.

- Finally, in line with the FSB framework on FMI resolution published in 2014[144], authorities must develop resolution plans for CCPs to ensure that, in cases where the execution of the recovery plan may fail, is likely to fail or could endanger financial stability, the continuity of the CCPs’ critical functions can be ensured with minimal systemic externalities and without using taxpayers’ money.

In April 2015 the FSB, the CPMI, IOSCO and the BCBS agreed on a wide-ranging work plan to further strengthen CCP resilience, recovery planning and resolution. This work plan consists of: (i) an evaluation of existing standards related to CCP resilience and in particular loss-absorption capacity, liquidity and stress testing; (ii) a stock-take of existing CCP recovery mechanisms, including loss allocation tools, and an assessment of the need for more granular standards; (iii) a review of the existing CCP resolution regimes and resolution planning arrangements, and an assessment of the need for more granular standards; and (iv) an analysis of the interdependencies between CCPs and the banks that are their major clearing members, and of potential channels for the transmission of risk.

All workstreams of the global CCP work plan have in the meantime advanced significantly and, with regard to resilience and recovery, the CPMI and IOSCO have published two reports in August 2016.[145] The first report assesses the implementation of the PFMIs by ten selected CCPs with respect to financial risk management and recovery practices.[146] It finds that while CCPs have made meaningful progress in implementing the PFMIs, some gaps remain and should be promptly addressed, notably in the areas of recovery planning and credit and liquidity risk management. The CPMI and IOSCO intend to follow up on the findings in 2017. The second report is a consultative report, which sets out proposals for more granular guidance on several key aspects of the PFMIs, including governance, credit and liquidity stress testing, coverage of financial resources, margin, and a CCP’s contribution of its financial resources to losses.[147] Taking into account the feedback received in the public consultation, the CPMI and IOSCO will finalise its proposals for more granular guidance in these areas by mid-2017.

With regard to resolution, the FSB has issued in August 2016 a discussion note on essential aspects of CCP resolution planning, and specific EU legislation has also been proposed. The FSB note focuses on: (i) the timing of

144 Key Attributes of Effective Resolution Regimes for Financial Institutions, FSB, FMI Annex, 2014.

145 See their press release dated 16 August 2016 “Reports from CPMI-IOSCO advance regulatory agenda on central counterparties”.

146 Implementation monitoring of PFMI: Level 3 assessment - Report on the financial risk management and recovery practices of 10 derivatives CCPs, CPMI-IOSCO, 2016.

147 Resilience and recovery of central counterparties (CCPs): Further guidance on the PFMI – consultative report, CPMI-IOSCO, 2016.

entry into resolution; (ii) the adequacy of financial resources in resolution; (iii) the choice of the appropriate tools to return a CCP to a matched book; (iv) the order for allocating losses in resolution and the application of the "no creditor worse off" (NCWO) safeguard; (v) cross-border cooperation in resolution; and (vi) the overall effects of the resolution strategy on the incentives of the various stakeholders of a CCP.[148] The FSB will publish a proposal for more specific guidance on CCP resolution in early 2017, with the aim of finalising the guidance by the G20 Summit in July 2017. In parallel, the European Commission has issued a legislative proposal on recovery and resolution of EU CCPs, which has been developed and will be further fine-tuned in line with the international work.[149]

Work on the identification, quantification and analysis of interdependencies between CCPs and major clearing members and related systemic externalities is also progressing. For this purpose, a joint BCBS, CPMI, FSB and IOSCO study group was established in July 2015. The group has collected data from around 20 CCPs to capture interconnections between CCPs and their direct members, indirect members, investment counterparties, liquidity providers as well as other financial institutions, and will report its findings to the parent committees in early 2017.

While current efforts focus on the full and timely implementation of the CCP work plan, the global standard-setting bodies are already launching work to further improve the robustness of central clearing in the medium term. In particular, in addition to the proposed further guidance on internal stress testing for CCPs, the CPMI and IOSCO have started work on conceptualising a framework for supervisory stress testing of CCPs. The aim of the exercise is to assess the collective response of a set of CCPs to the same stress event. Furthermore, the CPMI and IOSCO are developing criteria and a process for identifying CCPs that are systemically relevant in more than one jurisdiction, with the objective of setting up adequate cooperative arrangements among authorities for all relevant cross-border CCPs. Close cooperation of authorities throughout the potential lifecycle of a CCP – i.e. from ongoing risk management to potential recovery and even resolution – will provide an additional important element in ensuring that the systemic risk externalities of CCPs can be fully identified and effectively addressed.

4.2 Strengthening the stability of derivatives markets

Given the central role of CCPs in the financial system, requirements are in place to not only ensure their microprudential robustness but also strengthen the macroprudential safeguards for central clearing. The PFMIs already require CCPs to adopt countercyclical margin and collateral haircut practices, notably to avoid sudden and steep increases of the respective requirements during an economic downturn. The PFMIs also provide that CCPs with cross-border systemic relevance or a more complex risk profile need to comply with more stringent

148 Essential Aspects of CCP Resolution Planning, Discussion Note, FSB, 2016.

149 See the proposal for the recovery and resolution of CCPs published by the European Commission on 28 November 2016.

requirements for financial resources, in particular by covering with prefunded or liquid financial resources the potential default of the two participants giving rise to the largest aggregate credit or liquidity exposure.[150]

Ongoing measures under the CCP work plan will further enhance the macroprudential safeguards for central clearing. For instance, forthcoming CPMI-IOSCO guidance on CCP resilience will strengthen requirements for anti-procyclical behaviour by requiring CCPs to adopt a holistic approach in addressing these issues, using quantitative metrics and considering this aspect during the model validation process. Similarly, more stringent provisions on stress testing will introduce additional prudence in preparing for stressed market conditions. CCP recovery and resolution plans are being developed to ensure that CCPs are able to withstand even extreme market situations in a predictable and orderly fashion. Finally, the work on central clearing interdependencies will play a key role in better understanding how CCPs could propagate financial risks, while progress in cross-border cooperation among authorities will help to devise effective action to address these vulnerabilities. In the medium term, progress in supervisory stress testing, combined with regular global data collections on CCP interdependencies, could support top-down (model-based) stress testing of the central clearing network.

In addition, there could be benefits in enabling macroprudential authorities to introduce requirements for conservative margins and collateral haircuts for OTC derivative transactions to pre-emptively address the build-up of systemic risks, including the build-up of excessive leverage in this growing market segment. In its response to the public consultation on the review of EMIR, the ECB has proposed including minimum floors and time-varying add-ons to haircuts and margins in the macroprudential toolkit.[151] This proposal would apply at the transaction level, regardless of whether the concerned trades are centrally cleared or not.

Recent theoretical and empirical evidence supports the introduction of such tools with a broad scope.[152] The recent academic work suggests using a broad scope for a macroprudential framework to be effective.[153] Furthermore, it is argued that countercyclical tools may be more effective than static tools in addressing the build-up of leverage in the financial system and the procyclicality of margins and haircuts.

The interplay between the various regulatory requirements applied to the central clearing ecosystem also needs to be further assessed. Having resilient clearing members and clients is important for the CCP, and a robust CCP is crucial

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150 As explained in Section 2.1, the PFMIs generally require CCPs to cover the potential default of one member (i.e. the "cover-one requirement"), but the bar is raised to two members for CCPs with cross-border systemic relevance or a more complex risk profile (i.e. the "cover-two requirement").

151 ECB response to the European Commission's consultation on the review of the European Market Infrastructure Regulation (EMIR), ECB, 2015.

152 See Battistini, N., Grill, M., van der Veer, K. and Marmara, P., "A case for macroprudential margins and haircuts", *Financial Stability Review*, ECB, May 2016.

153 Brumm, J., Grill, M., Kubler, F. and Schmedders, K., "Margin regulation and volatility", *Journal of Monetary Economics*, Vol. 75, 2015.

for the clearing members and their clients. The international workstreams mentioned in Section 4.1 in relation to central clearing interdependencies and multi-CCP supervisory stress testing will provide useful insights into the overall robustness of the central clearing ecosystem. At the same time, further (data-driven) analysis is needed to better understand how the different regulatory – mainly prudential – requirements have been summing up and how they are impacting the incentives for central clearing as well as the traditional ways of providing CCP services (for example, the shift to direct client clearing services).

4.3 Further improving the transparency of derivatives markets

The mandatory reporting of derivative transactions to authorised TRs marks an important step towards more transparency in the traditionally opaque OTC derivatives market. EMIR data have the potential to provide regulators, supervisors and central banks with valuable input for key policy functions such as the microprudential supervision of financial institutions, supervision and oversight of market infrastructures, the design of macroprudential policies and the assessment of systemic risk. The experiences of users show, however, that gaps and shortcomings remain in the EMIR data (see Box 3), despite the progress already made.

Box 3

User experiences and remaining shortcomings of EMIR data

In close collaboration, experts of the ECB and the European Systemic Risk Board (ESRB) are analysing EMIR data.[154] The findings show that the data collected by TRs can indeed provide useful insights into the structure of derivatives markets and the underlying risk exposures of market participants. However, at the same time, the work has highlighted a number of important shortcomings that still need to be addressed.

The biggest remaining shortcoming relates to data quality. Given the complexity of modern financial markets, it is of paramount importance that the data designated to help policymakers in safeguarding financial stability are accurate and meaningful. With this in mind, ESMA has at several points in time introduced validation rules that impose so-called “hard checks” on the data submitted to TRs. Chart A shows that the rules introduced in December 2014 were indeed successful in reducing the number of reports with missing observations for key variables. However, the ESRB/ECB experience has shown that the EMIR data continue to suffer from a number of significant quality problems that remain to be tackled in the future.

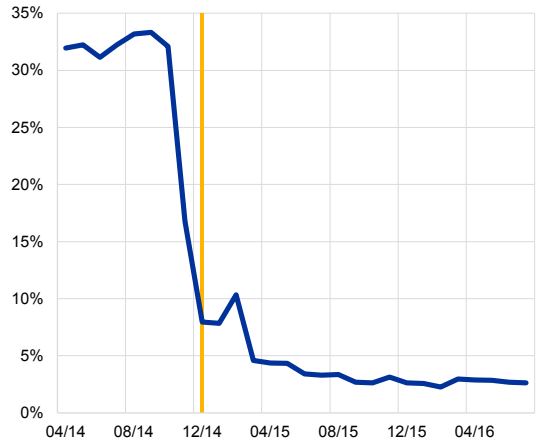
The data quality problems can be grouped into two main categories: the first category includes issues that are due to misreporting by the counterparties or the TRs, whereas the second category includes problems that are caused by a lack of standardisation and harmonisation. One of the main issues detected in the first category is related to the mark-to-market value of the reported contracts: a significant number of outstanding trades do not have an assigned mark-to-market value, despite the fact that most counterparties are required to provide

[154] See, for example, Abad et al., Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset, 2016.

daily updates for this field. An investigation by the ESRB/ECB, in collaboration with TRs, ESMA and national competent authorities, revealed that this issue is mainly due to (i) counterparties failing to submit cancellation messages for cancelled trades, and (ii) TRs failing to incorporate cancellation messages. While this issue can be locally addressed by the authorities analysing the data in an ad hoc fashion by eliminating the relevant observations, it highlights the fact that both TRs and counterparties (including key market players) still have considerable room to improve the underlying procedures, despite EMIR reporting having been in force for more than two years.

Chart A

Percentage of missing observations for selected variables in EMIR trade state reports



Source: ECB calculations based on month-end trade state reports provided by DTCC. See Abad et al., Shedding light on dark markets: First insights from the new EU-wide OTC derivatives dataset, 2016, for further details.
Notes: The chart shows the average percentage of missing observations across four variables: beneficiary ID, notional amount, effective date and price multiplier. The yellow vertical line refers to the first introduction in December 2014 of ESMA validation rules for the data reported to TRs.

Regarding the lack of standardisation and harmonisation, a distinction can be made between local issues and global problems. At the European level, key issues relate to the comprehensiveness of the existing RTS/ITS. Under EMIR, counterparties are required to report around 85 variables. Practice has shown that some variables need to be revised. For example, there is a single field for a maturity date, despite the fact that some important derivative contracts such as forward rate agreements and swaptions have two maturity dates. This makes it impossible to meaningfully analyse these contracts under the current reporting regime. Similarly, there is a single field for initial and variation margin, which some analysts perceive as an important shortcoming. The revised RTS on the minimum details of the data to be reported to TRs, which the European Commission adopted on 19 October 2016, are expected to help resolve these issues.[155]

Further issues relate to the harmonisation of EMIR data, both across different TRs and across the individual reports by different counterparties. Currently, each of the six TRs authorised by ESMA provides its own set of reports to regulators, which leaves a considerable burden for end-users in terms of data consolidation (e.g. as a result of the non-mandatory provision of trade state reports mentioned in Box 2). The revised RTS/ITS put forward by ESMA on what TRs are supposed to report to authorities[156] will address some of these issues, but they first need to be endorsed by the European Commission.

At the global level, the lack of harmonisation of several data elements[157] does not allow the reporting agents to correctly fulfil their obligations and the authorities to properly aggregate and analyse the data. For example, the interest rate benchmarks pertaining to interest rate swaps are provided in a free-text field under EMIR. Accordingly, the two counterparties involved in a trade often provide slightly different inputs. These shortcomings are likely to be addressed by the CPMI-

155 See Technical Standard supplementing Regulation (EU) No 648/2012, European Commission, 2016.

156 See the Consultation Paper on the review of the technical standards on reporting under Article 9 of EMIR, ESMA, 2014.

157 The lack of harmonisation of these data elements partly also stems from the lack of standardisation of the traded derivative products.

IOSCO work on the UPI, UTI and other data elements (see Box 1). Another key aspect that will benefit from this work is the lack of harmonisation in the way the life-cycle events of a contract are reported. Currently, the difficulties in identifying compression, cancellation and other life-cycle events seriously hamper the ability of authorities to aggregate data and identify the effective notional amount that needs to be counted, while at the same time avoiding double-counting.

5 Conclusion

Since the Pittsburgh commitment, considerable progress has been made in making OTC derivatives markets more transparent and resilient. It took the European Union longer than Japan and the United States to implement the reporting and clearing obligations and the other elements of the Pittsburgh agenda, but – with the exception of trading requirements – all legislative frameworks are now in force.

However, several gaps remain in comparison with the Pittsburgh objectives, and further work will be required to close them. From the perspective of the ECB, the following three gaps remain, which partly have a global dimension, but should mainly be addressed via further reform of the respective parts of the regulatory framework in the EU:

- making CCPs even more resilient and easier to recover and resolve, in particular via a full and timely implementation of the global CCP work plan;
- strengthening the stability of derivatives markets, including through a further analysis of how the various regulatory (prudential) requirements come together and impact the incentives for central clearing;
- further improving the transparency of OTC derivatives markets, in particular by enhancing the data quality and creating effective mechanisms for European and global data aggregation, which are currently missing, but for which the ongoing data harmonisation work is an important prerequisite.

The ECB and the Eurosystem have been active in the post-Pittsburgh reforms and will continue to closely monitor developments in OTC derivatives markets and infrastructures, and to contribute to improving their transparency and resilience.

Statistics

Contents

Further information

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

Conventions used in the tables

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

1 External environment

1.1 Main trading partners, GDP and CPI

	GDP [1] (period-on-period percentage changes)						CPI (annual percentage changes)						
	G20 [2]	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area [3] (HICP)
							Total	excluding food and energy					
	1	2	3	4	5	6	7	8	9	10	11	12	13
2013	3.1	1.7	1.9	1.4	7.8	-0.3	1.6	1.6	1.5	2.6	0.4	2.6	1.4
2014	3.3	2.4	3.1	-0.1	7.3	1.2	1.7	1.8	1.6	1.5	2.7	2.0	0.4
2015	3.2	2.6	2.2	0.6	6.9	2.0	0.6	1.7	0.1	0.0	0.8	1.4	0.0
2015 Q4	0.7	0.2	0.7	-0.4	1.6	0.5	0.7	1.8	0.5	0.1	0.3	1.5	0.2
2016 Q1	0.7	0.2	0.4	0.5	1.2	0.5	1.0	1.9	1.1	0.3	0.0	2.1	0.0
Q2	0.6	0.4	0.7	0.2	1.9	0.3	0.8	1.8	1.0	0.3	-0.4	2.1	-0.1
Q3	.	0.8	0.5	0.5	1.8	0.3	1.0	1.8	1.1	0.7	-0.5	1.7	0.3
2016 June	-	-	-	-	-	-	0.9	1.9	1.0	0.5	-0.4	1.9	0.1
July	-	-	-	-	-	-	0.8	1.8	0.8	0.6	-0.4	1.8	0.2
Aug.	-	-	-	-	-	-	0.9	1.8	1.1	0.6	-0.5	1.3	0.2
Sep.	-	-	-	-	-	-	1.2	1.8	1.5	1.0	-0.5	1.9	0.4
Oct.	-	-	-	-	-	-	.	.	1.6	0.9	.	2.1	0.5
Nov. [4]	-	-	-	-	-	-	.	.	.	.	.	.	0.6

Sources: Eurostat (col. 3, 6, 10, 13); BIS (col. 2, 4, 9, 11, 12); OECD (col. 1, 5, 7, 8).
1) Quarterly data seasonally adjusted; annual data unadjusted.
2) Data for Argentina are currently not available owing to the state of emergency in the national statistical system declared by the government of Argentina on 7 January 2016. As a consequence, Argentina is not included in the calculation of the G20 aggregate. The policy regarding the inclusion of Argentina will be reconsidered in the future depending on further developments.
3) Data refer to the changing composition of the euro area.
4) The figure for the euro area is an estimate based on provisional national data, which usually cover around 95% of the euro area, as well as on early information on energy prices.

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

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports [1]		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index [2]					
	Global [2]	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders	Global	Advanced economies	Emerging market economies
	1	2	3	4	5	6	7	8	9	10	11	12
2013	53.4	54.8	56.8	52.6	51.5	49.7	52.2	52.7	50.6	2.8	-0.2	4.9
2014	54.2	57.3	57.9	50.9	51.1	52.7	53.2	54.1	51.4	2.6	3.8	1.8
2015	53.3	55.8	56.2	51.4	50.4	53.8	51.8	53.9	50.3	1.3	3.8	-0.3
2015 Q4	52.7	55.0	55.4	52.3	49.9	54.1	51.3	53.2	50.5	1.1	0.4	1.6
2016 Q1	51.2	51.5	54.1	51.2	50.3	53.2	50.7	51.3	49.4	-1.1	0.6	-2.2
Q2	50.8	51.5	52.5	49.0	50.5	53.1	49.7	51.1	48.8	-0.5	0.1	-0.9
Q3	51.2	51.9	51.6	49.6	51.7	52.9	51.6	51.1	50.1	0.8	1.1	0.7
2016 June	50.6	51.2	52.5	49.0	50.3	53.1	49.7	51.0	49.3	-0.5	0.1	-0.9
July	51.2	51.8	47.4	50.1	51.9	53.2	51.6	51.0	49.7	0.4	0.3	0.4
Aug.	51.1	51.5	53.5	49.8	51.8	52.9	51.8	50.8	50.4	1.2	1.6	1.0
Sep.	51.5	52.3	53.9	48.9	51.4	52.6	51.6	51.4	50.2	0.8	1.1	0.7
Oct.	53.3	54.9	54.7	51.3	52.9	53.3	53.4	53.3	50.5	.	.	.
Nov.	53.2	54.9	55.2	52.0	52.9	53.9	53.2	53.2	50.7	.	.	.

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

2 Financial developments

2.1 Money market interest rates

(percentages per annum; period averages)

	Euro area [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
2013	0.09	0.13	0.22	0.34	0.54	0.27	0.15
2014	0.09	0.13	0.21	0.31	0.48	0.23	0.13
2015	-0.11	-0.07	-0.02	0.05	0.17	0.32	0.09
2016 May	-0.34	-0.35	-0.26	-0.14	-0.01	0.64	-0.03
June	-0.33	-0.36	-0.27	-0.16	-0.03	0.65	-0.03
July	-0.33	-0.37	-0.29	-0.19	-0.06	0.70	-0.03
Aug.	-0.34	-0.37	-0.30	-0.19	-0.05	0.81	-0.02
Sep.	-0.34	-0.37	-0.30	-0.20	-0.06	0.85	-0.03
Oct.	-0.35	-0.37	-0.31	-0.21	-0.07	0.88	-0.02
Nov.	-0.35	-0.37	-0.31	-0.21	-0.07	0.91	-0.06

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
2013	0.08	0.09	0.25	1.07	2.24	2.15	2.91	2.66	0.18	0.67	2.53	3.88
2014	-0.02	-0.09	-0.12	0.07	0.65	0.74	1.95	1.45	-0.15	-0.11	0.58	1.77
2015	-0.45	-0.40	-0.35	0.02	0.77	1.17	1.66	1.68	-0.35	-0.22	0.82	1.98
2016 May	-0.56	-0.54	-0.53	-0.33	0.22	0.76	1.17	1.03	-0.53	-0.48	0.19	1.19
June	-0.65	-0.65	-0.66	-0.52	-0.10	0.54	1.03	0.72	-0.66	-0.66	-0.12	0.60
July	-0.65	-0.64	-0.65	-0.55	-0.15	0.49	0.96	0.56	-0.65	-0.67	-0.19	0.55
Aug.	-0.65	-0.64	-0.65	-0.54	-0.12	0.53	0.98	0.48	-0.65	-0.66	-0.16	0.64
Sep.	-0.74	-0.72	-0.72	-0.59	-0.16	0.56	1.00	0.60	-0.71	-0.71	-0.22	0.64
Oct.	-0.82	-0.74	-0.66	-0.38	0.14	0.88	1.18	1.03	-0.65	-0.51	0.17	1.03
Nov.	-0.80	-0.80	-0.78	-0.42	0.27	1.07	1.60	1.30	-0.80	-0.69	0.39	1.29

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											
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care	Standard & Poor's 500	Nikkei 225
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2013	281.9	2,794.0	586.3	195.0	468.2	312.8	151.5	402.7	274.1	230.6	253.4	629.4	1,643.8	13,577.9
2014	318.7	3,145.3	644.3	216.6	510.6	335.5	180.0	452.9	310.8	279.2	306.7	668.1	1,931.4	15,460.4
2015	356.2	3,444.1	717.4	261.9	628.2	299.9	189.8	500.6	373.2	278.0	377.7	821.3	2,061.1	19,203.8
2016 May	319.5	2,983.7	602.3	248.6	591.6	279.5	150.8	491.9	357.8	252.1	335.4	755.7	2,065.6	16,612.7
June	312.2	2,910.8	591.8	243.6	588.2	276.9	141.7	481.3	359.9	249.8	320.4	761.3	2,083.9	16,068.8
July	312.8	2,919.1	604.5	247.1	599.9	285.0	132.8	481.1	372.6	258.5	317.8	801.0	2,148.9	16,168.3
Aug.	323.2	2,992.9	637.9	253.0	621.1	284.0	138.3	510.9	391.9	255.4	320.0	785.4	2,177.5	16,586.1
Sep.	325.5	3,012.1	635.6	255.4	617.6	281.3	142.8	518.7	396.1	251.6	321.0	780.1	2,157.7	16,737.0
Oct.	327.9	3,042.3	649.8	253.5	620.8	291.0	146.7	519.1	393.0	247.2	318.4	768.8	2,143.0	17,044.5
Nov.	324.5	3,026.4	654.4	247.7	594.1	286.0	152.5	515.1	378.7	231.5	306.9	778.3	2,165.0	17,689.5

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					
	Overnight	Redeemable at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation		APRC [3)]		By initial period of rate fixation				APRC [3)]	Composite cost-of-borrowing indicator
			Up to 2 years	Over 2 years			Floating rate and up to 1 year	Over 1 year			Floating rate and up to 1 year	Over 1 and up to 5 years	Over 5 and up to 10 years	Over 10 years		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2015 Nov.	0.14	0.65	0.64	0.96	6.68	16.91	5.23	6.22	6.60	2.68	2.05	2.31	2.31	2.45	2.62	2.27
Dec.	0.13	0.64	0.64	0.98	6.61	16.95	4.84	5.94	6.25	2.53	1.99	2.27	2.27	2.41	2.55	2.22
2016 Jan.	0.12	0.62	0.63	1.25	6.65	16.88	5.31	6.29	6.65	2.53	1.99	2.23	2.30	2.40	2.53	2.23
Feb.	0.12	0.60	0.60	0.89	6.66	16.89	5.01	6.13	6.46	2.61	2.00	2.20	2.23	2.33	2.48	2.19
Mar.	0.11	0.58	0.59	0.87	6.63	16.88	5.14	5.97	6.34	2.53	1.90	2.10	2.10	2.24	2.38	2.11
Apr.	0.11	0.57	0.58	0.85	6.54	16.82	5.20	5.99	6.33	2.56	1.86	2.09	2.17	2.23	2.41	2.09
May	0.10	0.56	0.54	0.87	6.56	16.75	5.21	6.09	6.46	2.56	1.85	2.03	2.06	2.12	2.37	2.02
June	0.09	0.54	0.56	0.86	6.55	16.79	4.96	5.87	6.18	2.45	1.81	2.00	1.97	2.02	2.32	1.97
July	0.09	0.52	0.50	0.92	6.46	16.80	5.14	5.96	6.29	2.39	1.82	1.96	1.96	1.96	2.33	1.92
Aug.	0.08	0.51	0.52	0.84	6.48	16.78	5.44	6.01	6.37	2.40	1.87	1.96	1.86	1.88	2.31	1.90
Sep.	0.08	0.50	0.50	0.79	6.50	16.78	5.16	5.76	6.14	2.35	1.80	1.98	1.85	1.85	2.28	1.86
Oct. [(p)]	0.08	0.49	0.44	0.75	6.43	16.78	5.17	5.68	6.10	2.43	1.78	1.90	1.80	1.81	2.24	1.81

Source: ECB.

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

2) Including non-profit institutions serving households.

3) Annual percentage rate of charge (APRC).

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

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

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Overnight	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2015 Nov.	0.16	0.23	0.83	3.05	3.14	3.39	2.88	2.03	2.16	2.20	1.46	1.62	1.98	2.13
Dec.	0.14	0.23	0.85	3.01	3.07	3.18	2.77	2.01	2.13	2.17	1.51	1.77	1.92	2.09
2016 Jan.	0.13	0.27	0.77	2.97	3.23	3.25	2.78	2.00	2.22	2.17	1.43	1.67	2.07	2.11
Feb.	0.13	0.24	0.70	2.93	3.16	3.28	2.76	1.96	2.11	2.09	1.37	1.47	1.74	2.02
Mar.	0.13	0.16	0.87	2.89	3.03	3.20	2.68	1.92	2.03	2.02	1.38	1.74	1.77	2.05
Apr.	0.12	0.19	0.64	2.80	2.99	3.12	2.66	1.93	1.96	1.98	1.38	1.59	1.81	2.01
May	0.11	0.13	0.63	2.76	2.91	3.10	2.61	1.91	1.94	1.92	1.27	1.68	1.74	1.92
June	0.11	0.15	0.64	2.75	2.67	3.01	2.52	1.85	1.90	1.85	1.34	1.60	1.64	1.90
July	0.09	0.16	0.42	2.71	2.73	3.07	2.47	1.86	1.91	1.80	1.28	1.56	1.69	1.87
Aug.	0.09	0.16	0.47	2.74	2.68	3.01	2.46	1.86	1.94	1.79	1.22	1.48	1.54	1.83
Sep.	0.09	0.12	0.47	2.72	2.65	2.96	2.43	1.82	1.86	1.73	1.28	1.61	1.64	1.86
Oct. [(p)]	0.08	0.15	0.45	2.68	2.63	3.04	2.37	1.81	1.83	1.72	1.28	1.40	1.63	1.83

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														
2013	1,255	483	124	.	67	529	53	508	314	31	.	44	99	21
2014	1,320	543	131	.	59	538	50	410	219	34	.	38	93	25
2015	1,273	517	151	.	61	478	65	335	150	37	.	32	82	34
2016 Apr.	1,295	519	136	.	78	495	68	355	155	39	.	33	82	46
May	1,306	530	133	.	79	495	68	333	153	38	.	34	75	34
June	1,287	525	132	.	67	493	69	308	136	38	.	27	80	27
July	1,272	524	124	.	72	486	66	349	154	43	.	36	78	38
Aug.	1,290	526	141	.	70	484	70	316	138	51	.	24	77	26
Sep.	1,301	539	136	.	68	492	65	345	155	40	.	30	85	36
Long-term														
2013	15,114	4,403	3,094	.	920	6,069	628	223	70	39	.	16	89	9
2014	15,131	4,045	3,164	.	994	6,285	642	220	65	43	.	16	85	10
2015	15,236	3,784	3,274	.	1,060	6,481	637	214	66	45	.	13	81	9
2016 Apr.	15,109	3,724	3,138	.	1,067	6,548	633	219	61	35	.	25	91	7
May	15,218	3,732	3,160	.	1,081	6,611	634	238	59	57	.	26	88	8
June	15,218	3,733	3,104	.	1,080	6,663	638	216	73	41	.	14	79	10
July	15,178	3,698	3,127	.	1,083	6,629	641	203	55	46	.	10	84	9
Aug.	15,167	3,692	3,125	.	1,082	6,628	640	99	32	17	.	3	42	5
Sep.	15,194	3,673	3,152	.	1,101	6,630	638	216	52	45	.	29	84	7

Source: ECB.

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

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

(EUR billions; percentage changes)

	Debt securities							Listed shares			
	Total	MFIs (including Eurosystem)	Non-MFI corporations			General government		Total	MFIs	Financial corporations other than MFIs	Non-financial corporations
			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central government	Other general government				
	1	2	3	4	5	6	7	8	9	10	11
Oustanding amount											
2013	16,369.5	4,886.1	3,218.6	.	986.6	6,598.1	680.0	5,649.0	569.1	742.5	4,337.4
2014	16,451.0	4,587.9	3,295.1	.	1,052.1	6,823.2	692.7	5,958.0	591.1	780.6	4,586.3
2015	16,508.7	4,301.2	3,425.6	.	1,120.8	6,959.3	701.9	6,744.7	586.1	911.6	5,247.0
2016 Apr.	16,403.3	4,243.1	3,273.1	.	1,144.4	7,042.5	700.2	6,462.6	505.5	917.8	5,039.4
May	16,523.8	4,262.0	3,293.0	.	1,160.6	7,106.5	701.6	6,552.7	491.5	923.5	5,137.6
June	16,504.7	4,258.6	3,235.5	.	1,147.2	7,156.0	707.3	6,210.2	395.0	862.0	4,953.2
July	16,449.7	4,222.3	3,250.8	.	1,154.4	7,115.6	706.6	6,494.8	427.0	874.1	5,193.7
Aug.	16,456.6	4,217.1	3,266.0	.	1,151.9	7,112.0	709.5	6,536.0	444.7	881.4	5,209.9
Sep.	16,494.9	4,212.0	3,288.6	.	1,169.0	7,121.7	703.7	6,592.9	427.5	877.9	5,287.5
Growth rate											
2013	-1.4	-8.9	-3.4	.	8.0	4.5	-1.1	0.7	7.2	-0.4	0.2
2014	-0.7	-7.9	0.4	.	5.1	3.1	1.1	1.5	7.2	1.2	0.7
2015	0.2	-6.9	5.3	.	4.7	1.8	0.6	1.1	4.5	1.4	0.6
2016 Apr.	-1.0	-6.8	-0.2	.	3.6	1.7	-0.1	0.9	2.6	1.7	0.6
May	-0.7	-5.9	-0.6	.	4.7	1.6	0.6	0.9	2.5	1.5	0.6
June	-0.4	-4.6	-2.3	.	4.7	2.1	2.7	0.9	2.7	1.6	0.6
July	-0.2	-4.7	-1.5	.	4.3	2.2	2.8	0.9	2.8	1.6	0.6
Aug.	0.0	-4.6	-0.1	.	4.0	2.1	2.1	0.9	2.8	1.6	0.6
Sep.	0.0	-3.8	-0.8	.	5.5	1.6	1.9	0.9	2.8	1.7	0.6

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
2013	101.2	98.2	96.7	91.8	100.9	98.9	111.9	95.5
2014	101.8	97.8	96.8	92.0	99.4	100.0	114.7	96.0
2015	92.4	88.4	89.1	83.9	86.3	90.7	106.5	87.8
2015 Q4	92.4	88.3	89.3	84.3	85.8	90.5	107.7	88.3
2016 Q1	94.1	89.5	90.8	85.8	86.9	91.7	110.4	90.1
Q2	94.9	90.3	91.5	86.4	86.6	92.1	110.8	90.4
Q3	95.2	90.5	91.5	.	.	.	110.6	90.1
2016 June	94.7	90.2	91.3	-	-	-	110.5	90.3
July	94.9	90.4	91.4	-	-	-	110.2	89.9
Aug.	95.2	90.6	91.6	-	-	-	110.6	90.2
Sep.	95.4	90.7	91.6	-	-	-	110.9	90.3
Oct.	95.5	90.8	91.4	-	-	-	110.6	90.1
Nov.	95.0	90.3	90.6	-	-	-	110.3	89.8
Percentage change versus previous month								
2016 Nov.	-0.5	-0.6	-0.8	-	-	-	-0.2	-0.3
Percentage change versus previous year								
2016 Nov.	4.2	3.7	2.8	-	-	-	4.1	3.4

Source: ECB.

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

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

2.9 Bilateral exchange rates

(period averages; units of national currency per euro)

	Chinese renminbi	Croatian kuna	Czech koruna	Danish krone	Hungarian forint	Japanese yen	Polish zloty	Pound sterling	Romanian leu	Swedish krona	Swiss franc	US Dollar
	1	2	3	4	5	6	7	8	9	10	11	12
2013	8.165	7.579	25.980	7.458	296.873	129.663	4.197	0.849	4.4190	8.652	1.231	1.328
2014	8.186	7.634	27.536	7.455	308.706	140.306	4.184	0.806	4.4437	9.099	1.215	1.329
2015	6.973	7.614	27.279	7.459	309.996	134.314	4.184	0.726	4.4454	9.353	1.068	1.110
2015 Q4	7.000	7.623	27.057	7.460	312.652	132.952	4.264	0.722	4.4573	9.302	1.085	1.095
2016 Q1	7.210	7.617	27.040	7.461	312.024	126.997	4.365	0.770	4.4924	9.327	1.096	1.102
Q2	7.379	7.504	27.040	7.439	313.371	121.949	4.372	0.787	4.4986	9.278	1.096	1.129
Q3	7.443	7.493	27.029	7.442	311.016	114.292	4.338	0.850	4.4646	9.511	1.089	1.117
2016 June	7.402	7.520	27.061	7.437	313.984	118.453	4.400	0.790	4.5230	9.334	1.089	1.123
July	7.391	7.493	27.042	7.439	314.353	115.250	4.396	0.841	4.4856	9.474	1.087	1.107
Aug.	7.454	7.487	27.025	7.441	310.205	113.487	4.300	0.855	4.4591	9.491	1.088	1.121
Sep.	7.482	7.500	27.022	7.447	308.678	114.218	4.321	0.852	4.4502	9.565	1.092	1.121
Oct.	7.420	7.507	27.022	7.440	307.000	114.473	4.308	0.894	4.4942	9.707	1.089	1.103
Nov.	7.388	7.521	27.033	7.441	308.816	116.933	4.391	0.869	4.5100	9.851	1.076	1.080
Percentage change versus previous month												
2016 Nov.	-0.4	0.2	0.0	0.0	0.6	2.1	1.9	-2.8	0.4	1.5	-1.2	-2.1
Percentage change versus previous year												
2016 Nov.	8.0	-1.1	0.0	-0.3	-1.1	-11.1	3.3	23.0	1.5	5.8	-0.7	0.6

Source: ECB.

2 Financial developments

2.10 Euro area balance of payments, financial account

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

	Total [1]			Direct investment		Portfolio investment		Net financial derivatives	Other investment		Reserve assets	Memo: Gross external debt
	Assets	Liabilities	Net	Assets	Liabilities	Assets	Liabilities		Assets	Liabilities		
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts (international investment position)												
2015 Q3	21,708.7	23,017.6	-1,308.9	9,437.3	7,778.0	6,851.3	10,159.9	-45.7	4,821.5	5,079.7	644.2	13,185.1
Q4	22,235.2	23,309.6	-1,074.4	9,815.1	8,079.3	7,175.3	10,303.2	-44.6	4,645.1	4,927.1	644.2	13,003.1
2016 Q1	22,100.0	23,183.1	-1,083.1	9,672.8	7,999.2	7,111.8	10,113.0	-21.8	4,661.9	5,070.9	675.3	13,234.3
Q2	22,550.0	23,431.9	-881.9	9,710.4	8,031.1	7,432.1	10,147.6	-54.9	4,740.5	5,253.2	721.8	13,331.6
Outstanding amounts as a percentage of GDP												
2016 Q2	212.6	220.9	-8.3	91.5	75.7	70.1	95.7	-0.5	44.7	49.5	6.8	125.7
Transactions												
2015 Q4	152.9	-4.1	157.0	227.7	206.5	111.5	-11.8	55.6	-246.5	-198.8	4.6	-
2016 Q1	386.5	381.8	4.7	115.2	74.6	134.1	41.3	27.3	108.8	265.9	1.0	-
Q2	202.0	110.0	92.0	-21.0	4.4	127.0	-47.2	-47.8	141.6	152.8	2.2	-
Q3	191.6	88.2	103.4	63.6	-12.8	124.9	-13.5	1.4	-6.0	114.5	7.7	-
2016 Apr.	151.5	130.5	21.1	-8.0	9.7	55.9	-64.3	-21.4	126.7	185.1	-1.6	-
May	100.1	89.1	10.9	32.7	20.4	26.1	21.3	-14.0	52.1	47.4	3.1	-
June	-49.6	-109.7	60.0	-45.8	-25.6	45.0	-4.2	-12.4	-37.2	-79.8	0.7	-
July	123.1	116.1	7.0	15.6	-6.7	42.0	-16.8	5.8	60.5	139.6	-0.9	-
Aug.	117.0	81.2	35.7	60.6	14.1	38.8	4.7	-2.2	18.0	62.5	1.8	-
Sep.	-48.5	-109.2	60.6	-12.6	-20.2	44.1	-1.3	-2.3	-84.5	-87.6	6.8	-
12-month cumulated transactions												
2016 Sep.	932.9	575.8	357.1	385.5	272.7	497.5	-31.3	36.5	-2.1	334.4	15.5	-
12-month cumulated transactions as a percentage of GDP												
2016 Sep.	8.7	5.4	3.3	3.6	2.6	4.7	-0.3	0.3	0.0	3.1	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
	Current prices (EUR billions)											
2013	9,932.1	9,602.3	5,561.2	2,094.5	1,947.0	1,000.6	572.4	369.1	-0.4	329.9	4,370.2	4,040.3
2014	10,133.2	9,775.3	5,633.7	2,125.1	1,986.4	1,000.6	598.7	382.2	30.2	357.9	4,532.8	4,174.9
2015	10,455.8	9,981.2	5,744.1	2,163.9	2,063.1	1,018.6	631.8	407.6	10.1	474.6	4,831.6	4,357.1
2015 Q4	2,642.9	2,523.7	1,446.8	546.7	525.4	258.0	163.2	102.8	4.8	119.2	1,215.0	1,095.8
2016 Q1	2,659.3	2,533.0	1,454.2	551.2	526.1	259.5	163.8	102.2	1.5	126.3	1,199.4	1,073.1
Q2	2,671.6	2,547.1	1,461.1	554.1	533.5	260.2	165.2	107.3	-1.5	124.5	1,212.8	1,088.3
Q3	2,683.0	2,561.6	1,467.4	558.2	536.0	.	.	.	0.0	121.3	1,216.4	1,095.0
	as a percentage of GDP											
2015	100.0	95.5	54.9	20.7	19.7	9.7	6.0	3.9	0.1	4.5	-	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2015 Q4	0.5	0.8	0.4	0.6	1.3	1.4	3.3	-1.2	-	-	0.8	1.5
2016 Q1	0.5	0.4	0.7	0.6	0.4	1.0	0.5	-0.8	-	-	0.2	-0.1
Q2	0.3	0.3	0.2	0.4	1.2	-0.3	0.7	5.3	-	-	1.2	1.2
Q3	0.3	0.4	0.3	0.5	0.2	.	.	.	-	-	0.1	0.2
	annual percentage changes											
2013	-0.3	-0.6	-0.6	0.3	-2.5	-3.5	-2.7	0.7	-	-	2.1	1.4
2014	1.2	1.2	0.8	0.6	1.4	-0.9	4.4	3.1	-	-	4.5	4.9
2015	2.0	1.8	1.8	1.4	3.2	1.3	4.7	5.6	-	-	6.5	6.4
2015 Q4	2.0	2.3	1.7	1.8	3.9	2.3	5.6	4.8	-	-	5.0	5.9
2016 Q1	1.7	2.1	1.9	2.0	2.4	2.0	4.7	0.7	-	-	2.4	3.4
Q2	1.7	2.2	1.7	2.0	3.6	2.3	5.2	4.7	-	-	2.5	3.8
Q3	1.7	1.9	1.6	2.0	3.0	.	.	.	-	-	2.2	2.9
	contributions to quarter-on-quarter percentage changes in GDP; percentage points											
2015 Q4	0.5	0.8	0.2	0.1	0.3	0.1	0.2	0.0	0.2	-0.3	-	-
2016 Q1	0.5	0.4	0.4	0.1	0.1	0.1	0.0	0.0	-0.2	0.1	-	-
Q2	0.3	0.3	0.1	0.1	0.2	0.0	0.0	0.2	-0.2	0.0	-	-
Q3	0.3	0.4	0.2	0.1	0.0	.	.	.	0.1	-0.1	-	-
	contributions to annual percentage changes in GDP; percentage points											
2013	-0.3	-0.6	-0.3	0.1	-0.5	-0.4	-0.2	0.0	0.2	0.4	-	-
2014	1.2	1.2	0.5	0.1	0.3	-0.1	0.3	0.1	0.3	0.0	-	-
2015	2.0	1.8	1.0	0.3	0.6	0.1	0.3	0.2	-0.1	0.3	-	-
2015 Q4	2.0	2.2	1.0	0.4	0.8	0.2	0.3	0.2	0.1	-0.2	-	-
2016 Q1	1.7	2.0	1.1	0.4	0.5	0.2	0.3	0.0	0.0	-0.3	-	-
Q2	1.7	2.1	0.9	0.4	0.7	0.2	0.3	0.2	0.0	-0.4	-	-
Q3	1.7	1.8	0.9	0.4	0.6	.	.	.	-0.1	-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	Const-ruction	Trade, transport, accom-modation and food services	Infor-mation and com-munica-tion	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2013	8,926.8	155.4	1,740.0	460.5	1,671.6	409.6	445.7	1,035.2	945.2	1,747.8	315.8	1,005.4
2014	9,099.0	149.9	1,777.1	460.8	1,711.5	415.2	461.0	1,044.8	978.6	1,778.6	321.4	1,034.3
2015	9,383.5	150.5	1,883.4	465.9	1,766.3	428.2	460.0	1,062.9	1,022.5	1,816.7	327.1	1,072.3
2015 Q4	2,369.7	38.6	474.3	117.9	446.1	108.8	113.4	268.3	260.7	458.8	82.7	273.2
2016 Q1	2,386.0	36.3	478.7	119.9	449.3	109.5	113.9	269.8	262.2	462.3	84.1	273.3
Q2	2,394.9	36.1	477.3	120.4	451.6	110.3	113.2	271.7	265.5	464.7	84.3	276.7
Q3	2,404.7	36.1	479.1	121.1	453.2	110.7	113.0	272.7	266.8	467.5	84.4	278.2
	as a percentage of value added											
2015	100.0	1.6	20.1	5.0	18.8	4.6	4.9	11.3	10.9	19.4	3.5	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2015 Q4	0.4	1.2	0.2	1.0	0.5	0.1	0.1	0.3	0.7	0.3	0.5	1.5
2016 Q1	0.5	-0.6	0.2	0.9	0.9	0.9	1.0	0.1	0.7	0.5	0.9	0.1
Q2	0.3	0.0	0.1	-0.1	0.4	0.9	-0.4	0.2	1.0	0.2	0.1	0.5
Q3	0.3	-0.6	0.4	0.5	0.4	0.6	0.1	0.1	0.3	0.3	0.3	0.5
	annual percentage changes											
2013	-0.1	2.4	-0.7	-3.6	-0.9	1.9	0.4	1.4	0.3	0.2	-0.9	-1.2
2014	1.2	1.2	2.3	-1.1	1.3	3.3	-1.4	0.6	2.3	0.5	0.2	1.2
2015	1.9	-0.7	4.1	-0.2	2.1	2.8	-0.4	0.8	3.0	1.0	0.0	3.3
2015 Q4	1.8	0.7	3.8	1.0	1.7	2.0	-0.6	0.9	3.0	0.9	0.4	3.6
2016 Q1	1.5	-0.4	1.6	1.2	2.0	2.5	0.3	0.8	2.7	1.0	1.4	3.3
Q2	1.6	0.5	1.2	1.4	2.1	2.7	-0.1	1.0	3.2	1.2	1.8	2.4
Q3	1.6	0.0	0.9	2.4	2.2	2.4	0.8	0.8	2.8	1.3	1.7	2.6
	contributions to quarter-on-quarter percentage changes in value added; percentage points											
2015 Q4	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	-
2016 Q1	0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	-
Q2	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	-
Q3	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-
	contributions to annual percentage changes in value added; percentage points											
2013	-0.1	0.0	-0.1	-0.2	-0.2	0.1	0.0	0.2	0.0	0.0	0.0	-
2014	1.2	0.0	0.4	-0.1	0.2	0.2	-0.1	0.1	0.2	0.1	0.0	-
2015	1.9	0.0	0.8	0.0	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
2015 Q4	1.8	0.0	0.7	0.1	0.3	0.1	0.0	0.1	0.3	0.2	0.0	-
2016 Q1	1.5	0.0	0.3	0.1	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
Q2	1.6	0.0	0.2	0.1	0.4	0.1	0.0	0.1	0.3	0.2	0.1	-
Q3	1.6	0.0	0.2	0.1	0.4	0.1	0.0	0.1	0.3	0.3	0.1	-

Sources: Eurostat and ECB calculations.

3 Economic activity

3.3 Employment [1)]

(quarterly data seasonally adjusted; annual data unadjusted)

	Total	By employment status		By economic activity										
		Employees	Self-employed	Agriculture, forestry and fishing	Manufacturing, energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12	13
Persons employed													
as a percentage of total persons employed													
2013	100.0	85.0	15.0	3.4	15.2	6.2	24.7	2.7	2.7	1.0	12.9	24.1	7.1
2014	100.0	85.0	15.0	3.4	15.1	6.1	24.8	2.7	2.7	1.0	13.1	24.2	7.1
2015	100.0	85.2	14.8	3.3	14.9	6.0	24.8	2.7	2.6	1.0	13.3	24.1	7.1
annual percentage changes													
2013	-0.6	-0.6	-0.8	-1.8	-1.3	-3.6	-0.9	0.4	-1.3	-1.4	0.4	0.3	0.4
2014	0.6	0.6	0.1	0.0	-0.4	-1.7	0.7	0.6	-0.8	0.8	2.1	1.0	0.5
2015	1.0	1.2	0.0	-0.9	0.1	0.0	1.1	1.2	-0.5	0.8	3.0	0.9	1.1
2015 Q3	1.0	1.2	-0.1	-1.0	0.3	-0.3	1.1	1.7	-0.5	0.7	3.2	1.0	1.0
Q4	1.3	1.5	-0.2	-0.9	0.3	-0.1	1.6	1.8	-0.4	0.5	3.3	1.1	1.6
2016 Q1	1.4	1.7	-0.3	-0.9	0.6	0.0	1.7	2.6	0.0	1.3	3.4	1.1	1.7
Q2	1.4	1.7	0.0	-0.2	0.5	-0.2	2.0	1.9	-0.1	0.4	3.1	1.2	1.7
Hours worked													
as a percentage of total hours worked													
2013	100.0	80.1	19.9	4.4	15.7	6.9	25.7	2.8	2.7	1.0	12.5	21.8	6.3
2014	100.0	80.3	19.7	4.4	15.6	6.8	25.7	2.9	2.7	1.0	12.8	22.0	6.3
2015	100.0	80.5	19.5	4.3	15.5	6.8	25.6	2.9	2.7	1.0	13.0	22.0	6.3
annual percentage changes													
2013	-1.4	-1.3	-1.7	-1.5	-1.5	-5.0	-1.7	0.1	-1.9	-2.7	-0.6	-0.2	-1.0
2014	0.5	0.8	-0.5	-0.5	0.0	-1.4	0.4	0.6	-0.9	0.6	2.2	1.1	0.2
2015	1.1	1.4	0.2	0.2	0.5	0.6	0.9	2.1	-0.5	1.1	3.2	1.1	1.1
2015 Q3	1.2	1.5	0.3	0.0	0.4	0.3	0.8	2.9	-0.7	1.5	3.8	1.3	1.4
Q4	1.2	1.5	0.3	0.4	0.1	0.6	1.3	2.2	-0.1	-0.4	3.2	1.1	1.6
2016 Q1	1.6	2.0	0.3	1.0	1.0	0.5	1.9	3.3	0.5	0.4	4.0	1.1	1.1
Q2	1.7	1.8	1.1	0.6	1.2	0.1	2.2	2.5	0.8	0.3	3.6	1.1	1.9
Hours worked per person employed													
annual percentage changes													
2013	-0.8	-0.7	-0.9	0.2	-0.2	-1.5	-0.8	-0.2	-0.7	-1.4	-1.1	-0.5	-1.4
2014	0.0	0.1	-0.6	-0.6	0.4	0.3	-0.3	0.0	-0.1	-0.2	0.1	0.1	-0.3
2015	0.1	0.2	0.2	1.2	0.4	0.5	-0.2	0.9	0.0	0.2	0.2	0.2	0.0
2015 Q3	0.2	0.2	0.4	1.0	0.1	0.5	-0.3	1.2	-0.3	0.9	0.6	0.3	0.4
Q4	0.0	-0.1	0.5	1.3	-0.2	0.7	-0.3	0.5	0.3	-0.9	0.0	0.0	0.0
2016 Q1	0.2	0.3	0.7	1.9	0.4	0.5	0.2	0.7	0.4	-0.9	0.6	0.0	-0.6
Q2	0.3	0.2	1.1	0.8	0.6	0.3	0.2	0.6	0.8	-0.1	0.6	-0.1	0.2

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-employ-ment, % of labour force [1]	Unemployment												Job vacancy rate [2]
			Total		Long-term unemploy-ment, % of labour force [1]	By age				By gender					
						Adult		Youth		Male		Female			
			Millions	% of labour force		Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions	% of labour force		
	1	2	3	4	5	6	7	8	9	10	11	12	13		14
% of total in 2013			100.0			81.3		18.7		53.6		46.4			
2013	159.359	4.6	19.226	12.0	5.9	15.627	10.7	3.599	24.4	10.304	11.9	8.921	12.1		1.4
2014	160.334	4.6	18.636	11.6	6.1	15.215	10.4	3.421	23.7	9.932	11.5	8.704	11.8		1.5
2015	160.600	4.6	17.441	10.9	5.6	14.292	9.8	3.150	22.3	9.254	10.7	8.188	11.0		1.5
2015 Q4	161.147	4.5	16.916	10.5	5.4	13.842	9.4	3.074	21.9	8.946	10.3	7.970	10.7		1.6
2016 Q1	161.013	4.5	16.640	10.3	5.2	13.628	9.2	3.012	21.5	8.732	10.1	7.909	10.6		1.7
Q2	161.849	4.5	16.372	10.1	5.1	13.391	9.1	2.981	21.1	8.506	9.8	7.866	10.5		1.7
Q3	.	.	16.172	10.0	.	13.214	8.9	2.958	20.9	8.378	9.6	7.794	10.4		1.6
2016 May	-	-	16.352	10.1	-	13.369	9.0	2.983	21.1	8.487	9.8	7.866	10.5		-
June	-	-	16.336	10.1	-	13.362	9.0	2.974	21.0	8.483	9.7	7.853	10.5		-
July	-	-	16.229	10.0	-	13.263	9.0	2.966	21.0	8.410	9.6	7.819	10.4		-
Aug.	-	-	16.200	10.0	-	13.232	8.9	2.968	20.9	8.380	9.6	7.820	10.4		-
Sep.	-	-	16.086	9.9	-	13.147	8.9	2.939	20.7	8.344	9.6	7.742	10.3		-
Oct.	-	-	15.908	9.8	-	12.969	8.8	2.939	20.7	8.286	9.5	7.621	10.1		-

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 2010	100.0	86.0	33.6	29.2	22.5	14.7	100.0	100.0	100.0	39.3	51.5	9.1	100.0
	annual percentage changes												
2013	-0.7	-0.7	-0.9	-0.5	-0.4	-0.8	-2.2	-0.2	-0.6	-0.6	-0.5	-0.8	-4.4
2014	0.9	1.8	1.3	1.8	2.6	-5.4	2.0	3.1	1.5	0.7	2.4	-0.1	3.8
2015	2.0	2.3	1.0	3.6	2.3	0.7	-0.9	3.6	2.7	1.7	3.5	2.6	8.8
2015 Q4	1.8	2.3	1.7	3.4	1.9	-1.9	0.5	2.9	2.5	1.2	3.3	2.1	10.0
2016 Q1	1.3	2.0	1.9	2.9	1.0	-3.5	2.6	0.6	2.2	1.7	2.9	1.4	9.5
Q2	1.0	1.1	1.1	1.3	1.1	-0.9	-0.2	-2.3	1.7	0.6	2.7	2.2	8.5
Q3	0.9	1.2	1.4	0.9	1.4	-1.0	2.9	0.2	1.4	1.2	1.6	2.2	6.5
2016 May	0.4	0.5	1.1	-0.4	0.5	-1.4	-0.5	-1.6	1.7	0.8	2.3	3.8	10.3
June	0.8	1.0	0.6	1.5	1.4	-3.5	0.6	-2.5	1.9	0.8	3.1	0.3	6.9
July	-0.5	0.1	0.6	-1.4	1.8	-4.7	4.1	-3.3	1.9	1.4	2.4	2.8	5.8
Aug.	2.2	2.5	2.5	3.4	0.8	1.1	2.1	2.1	1.3	0.5	2.1	1.6	3.9
Sep.	1.2	1.3	1.3	1.2	1.6	0.7	1.8	1.9	1.0	1.7	0.4	2.1	9.4
Oct.	.	.	.	.	.	.	.	.	2.4	2.1	3.3	0.7	4.2
	month-on-month percentage changes (s.a.)												
2016 May	-1.4	-1.3	-0.3	-2.4	-0.4	-2.8	0.2	0.8	0.3	0.8	-0.3	1.2	0.3
June	0.9	0.9	-0.3	1.7	0.9	-0.3	0.2	1.1	0.1	-0.1	0.8	-3.2	-1.0
July	-0.7	-0.7	-0.3	-1.9	0.4	0.9	1.5	-1.6	0.4	0.8	-0.3	2.0	-0.2
Aug.	1.8	2.1	1.8	4.2	0.0	2.5	0.1	2.5	-0.1	-0.2	0.0	0.1	-0.4
Sep.	-0.8	-1.0	-0.7	-2.2	-0.4	-0.2	-0.9	-0.9	-0.4	0.5	-1.2	0.1	4.9
Oct.	.	.	.	.	.	.	.	.	1.1	0.2	2.3	-1.0	-4.8

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
1999-13	100.0	-6.1	80.7	-12.8	-13.6	-8.7	6.9	-	51.0	52.4	52.9	52.7
2013	93.5	-9.0	78.7	-18.8	-27.8	-12.2	-5.3	87.2	49.6	50.6	49.3	49.7
2014	101.5	-3.8	80.5	-10.2	-26.4	-3.1	4.9	87.7	51.8	53.3	52.5	52.7
2015	104.2	-3.1	81.4	-6.2	-22.5	1.6	9.3	88.4	52.2	53.4	54.0	53.8
2015 Q4	106.2	-2.4	81.8	-6.4	-18.4	5.1	12.7	88.7	52.8	54.0	54.2	54.1
2016 Q1	104.0	-3.8	81.7	-8.3	-18.9	1.9	10.8	88.8	51.7	52.9	53.3	53.2
Q2	104.3	-3.4	81.5	-7.8	-18.4	1.8	11.3	89.0	52.0	53.0	53.1	53.1
Q3	104.3	-2.9	82.0	-8.2	-15.9	0.3	10.4	89.2	52.1	53.7	52.6	52.9
2016 June	104.4	-2.8	-	-7.2	-18.2	0.8	10.9	-	52.8	53.9	52.8	53.1
July	104.5	-2.6	81.6	-7.9	-16.3	1.7	11.2	89.0	52.0	53.9	52.9	53.2
Aug.	103.5	-4.3	-	-8.5	-15.8	-1.1	9.9	-	51.7	53.3	52.8	52.9
Sep.	104.9	-1.8	-	-8.2	-15.6	0.4	10.0	-	52.6	53.8	52.2	52.6
Oct.	106.4	-0.6	82.3	-8.0	-14.2	0.4	12.1	89.4	53.5	54.6	52.8	53.3
Nov.	106.5	-1.1	-	-6.1	-12.7	1.5	12.1	-	53.7	54.1	53.8	53.9

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
2013	12.5	95.5	-0.5	1.2	-4.9	0.6	-1.8	32.3	4.1	129.6	2.0	-0.1	0.8
2014	12.5	94.7	0.7	1.8	0.6	2.8	1.2	32.9	4.8	131.1	2.5	6.5	1.4
2015	12.3	94.1	1.9	2.0	2.3	3.4	2.8	34.4	6.3	133.5	3.9	2.7	2.2
2015 Q3	12.4	94.3	1.7	2.0	2.0	2.6	2.0	34.3	6.0	134.0	3.4	0.1	2.0
Q4	12.3	94.1	1.8	2.0	5.3	3.4	2.8	34.4	6.3	133.5	3.9	4.8	2.2
2016 Q1	12.4	93.6	2.3	1.9	3.1	2.2	3.5	33.7	6.1	132.9	3.8	4.5	2.1
Q2	12.5	93.6	2.4	2.3	6.1	3.3	3.9	33.8	6.7	133.4	4.0	5.0	2.2

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	Net	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit
	1	2	3	4	5	6	7	8	9	10	11	12	13
2015 Q4	899.5	823.5	76.0	524.9	433.6	194.8	182.0	153.6	149.3	26.2	58.6	18.4	9.4
2016 Q1	879.1	793.3	85.8	515.5	426.1	194.3	177.3	144.2	135.3	25.1	54.6	9.8	11.1
Q2	882.1	788.1	94.0	518.2	420.3	190.1	177.8	148.6	136.6	25.2	53.4	7.0	6.6
Q3	879.9	798.2	81.7	518.1	428.5	190.6	175.9	145.5	129.7	25.8	64.0	6.2	5.0
2016 Apr.	293.6	260.3	33.3	172.3	139.9	63.3	58.9	49.6	43.8	8.4	17.7	2.5	2.0
May	294.7	262.9	31.7	172.1	140.0	63.9	59.6	50.3	45.3	8.4	18.0	1.8	2.2
June	293.8	264.8	29.0	173.7	140.4	63.0	59.2	48.7	47.5	8.4	17.7	2.8	2.4
July	292.7	265.5	27.2	172.2	143.8	63.5	58.3	48.4	43.2	8.6	20.2	2.3	1.8
Aug.	296.4	267.3	29.1	175.1	144.4	63.4	58.7	49.5	43.1	8.5	21.1	1.7	1.5
Sep.	290.8	265.4	25.3	170.7	140.4	63.7	59.0	47.6	43.4	8.7	22.7	2.2	1.7
12-month cumulated transactions													
2016 Sep.	3,540.6	3,203.1	337.5	2,076.7	1,708.6	769.8	712.9	591.9	550.9	102.2	230.7	41.5	32.2
12-month cumulated transactions as a percentage of GDP													
2016 Sep.	33.2	30.1	3.2	19.5	16.0	7.2	6.7	5.6	5.2	1.0	2.2	0.4	0.3

1) The capital account is not seasonally adjusted.

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

(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)					Imports (c.i.f.)					
			Total				Memo item:	Total				Memo items:	
	Exports	Imports		Intermediate goods	Capital goods	Consump-tion goods	Manu-facturing		Intermediate goods	Capital goods	Consump-tion goods	Manu-facturing	Oil
	1	2	3	4	5	6	7	8	9	10	11	12	13
Values (EUR billions; annual percentage changes for columns 1 and 2)													
2015 Q4	3.4	2.5	508.1	236.4	105.8	153.5	425.6	444.6	247.5	73.5	114.9	325.3	44.3
2016 Q1	-0.9	-2.7	502.8	233.4	104.2	151.2	422.3	438.4	241.2	71.7	116.7	326.3	37.4
Q2	-0.1	-4.1	502.2	231.0	105.5	153.3	432.9	429.6	235.9	70.9	114.7	324.3	42.3
Q3	-0.3	-2.6	505.5	.	.	.	426.0	436.4	.	.	.	323.4	.
2016 Apr.	-0.7	-5.4	168.8	77.7	35.9	51.0	146.3	143.7	78.2	24.1	38.5	109.3	13.3
May	2.1	-2.0	165.8	76.0	34.8	50.7	140.9	141.9	78.5	22.8	38.2	106.1	14.4
June	-1.5	-4.7	167.6	77.3	34.8	51.6	145.8	144.1	79.3	24.1	38.0	108.9	14.6
July	-9.3	-8.3	166.3	77.4	33.4	50.4	134.9	145.5	80.1	23.2	38.6	104.2	14.9
Aug.	8.3	3.7	170.0	78.6	34.6	51.8	146.9	146.6	80.6	23.9	38.9	111.6	14.2
Sep.	2.0	-2.4	169.1	.	.	.	144.2	144.3	.	.	.	107.5	.
Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)													
2015 Q4	0.8	5.2	118.1	115.0	119.4	122.5	117.2	107.6	107.6	107.8	108.2	110.4	101.3
2016 Q1	-0.8	2.3	118.5	116.0	117.5	121.8	117.1	109.9	110.9	105.8	109.9	111.2	110.8
Q2	2.1	4.0	118.0	114.1	119.0	123.7	120.1	107.1	106.4	104.5	110.0	111.9	101.1
Q3	.	.	.	.	.	.	.	.	.	.	.	.	.
2016 Mar.	-0.5	-0.6	119.3	115.5	121.6	121.6	117.7	109.0	109.8	107.3	110.5	109.8	107.2
Apr.	1.7	3.0	119.6	115.7	121.9	124.2	122.0	108.1	107.0	107.0	110.0	112.9	105.0
May	5.0	7.1	117.1	113.2	117.7	122.8	117.5	106.5	106.4	101.2	110.4	110.2	101.8
June	-0.1	2.0	117.3	113.3	117.5	124.2	120.8	106.8	105.9	105.2	109.7	112.8	96.6
July	-8.4	-4.0	116.7	113.6	112.8	121.7	111.7	107.7	106.8	103.2	110.0	107.4	102.2
Aug.	9.0	7.0	118.8	115.3	115.4	124.5	121.2	108.3	107.3	105.7	110.9	114.5	98.7

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)]						Memo item: 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 2016	100.0	100.0	70.7	55.8	44.2	100.0	12.1	7.4	26.5	9.7	44.2	86.5	13.5
2013	99.5	1.4	1.1	1.3	1.4	-	-	-	-	-	-	1.2	2.1
2014	100.0	0.4	0.8	-0.2	1.2	-	-	-	-	-	-	0.2	1.9
2015	100.0	0.0	0.8	-0.8	1.2	-	-	-	-	-	-	-0.1	0.9
2015 Q4	100.2	0.2	1.0	-0.6	1.2	-0.1	0.1	1.1	0.1	-3.0	0.2	0.1	0.7
2016 Q1	99.2	0.0	1.0	-0.8	1.1	-0.4	0.1	-0.8	0.1	-4.4	0.2	0.0	0.3
Q2	100.4	-0.1	0.8	-0.9	1.0	0.4	0.2	0.7	0.0	2.0	0.3	-0.1	0.1
Q3	100.3	0.3	0.8	-0.4	1.1	0.3	0.1	1.1	0.0	0.3	0.4	0.3	0.3
2016 June	100.7	0.1	0.9	-0.7	1.1	0.2	0.1	-0.2	0.0	1.7	0.1	0.1	0.2
July	100.1	0.2	0.9	-0.6	1.2	0.0	0.0	0.9	0.0	-1.0	0.2	0.1	0.3
Aug.	100.2	0.2	0.8	-0.5	1.1	0.0	0.1	0.8	0.0	-1.0	0.0	0.2	0.2
Sep.	100.6	0.4	0.8	-0.2	1.1	0.1	0.0	-0.8	0.0	1.0	0.1	0.4	0.4
Oct.	100.9	0.5	0.8	0.1	1.1	0.2	0.1	-0.1	0.0	1.6	0.1	0.6	0.2
Nov. [3)]	100.8	0.6	0.8	.	1.1	0.0	0.2	0.0	0.0	-0.2	-0.1	.	.

	Goods						Services					
	Food (including alcoholic beverages and tobacco)			Industrial goods			Housing		Transport	Communication	Recreation and personal	Miscellaneous
	Total	Processed food	Unprocessed food	Total	Non-energy industrial goods	Energy		Rents				
	14	15	16	17	18	19	20	21	22	23	24	25
% of total in 2016	19.5	12.1	7.4	36.3	26.5	9.7	10.7	6.4	7.1	3.2	15.2	8.0
2013	2.7	2.2	3.5	0.6	0.6	0.6	1.7	1.4	2.4	-4.2	2.3	0.7
2014	0.5	1.2	-0.8	-0.5	0.1	-1.9	1.7	1.4	1.7	-2.8	1.5	1.3
2015	1.0	0.6	1.6	-1.8	0.3	-6.8	1.2	1.1	1.3	-0.8	1.5	1.2
2015 Q4	1.4	0.7	2.6	-1.7	0.5	-7.2	1.2	1.0	1.1	-0.1	1.5	1.2
2016 Q1	0.8	0.6	1.1	-1.7	0.6	-7.4	1.1	1.0	0.6	0.0	1.6	1.2
Q2	0.9	0.5	1.4	-1.9	0.5	-7.7	1.1	1.0	0.6	0.0	1.3	1.2
Q3	1.1	0.5	2.1	-1.3	0.3	-5.1	1.1	1.0	0.9	0.0	1.5	1.3
2016 June	0.9	0.5	1.5	-1.6	0.4	-6.4	1.0	1.0	0.8	-0.1	1.6	1.3
July	1.4	0.5	2.9	-1.7	0.4	-6.7	1.0	1.0	1.0	0.0	1.5	1.4
Aug.	1.3	0.5	2.5	-1.4	0.3	-5.6	1.0	1.0	0.8	0.0	1.5	1.3
Sep.	0.7	0.5	1.1	-0.6	0.3	-3.0	1.1	1.1	0.9	0.0	1.5	1.3
Oct.	0.4	0.5	0.2	-0.1	0.3	-0.9	1.1	1.2	1.0	0.0	1.2	1.1
Nov. [3)]	0.7	0.7	0.6	.	0.3	-1.1	.	.	.	.	.	.

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, which usually cover around 95% of the euro area, 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										Con-struction	Residential property prices [1]	Experimental indicator of commercial property prices [1]
	Total (index: 2010 = 100)	Total		Industry excluding construction and energy						Energy			
			Manu-facturing	Total	Intermediate goods	Capital goods	Consumer goods						
							Total	Food, beverages and tobacco	Non-food				
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2010	100.0	100.0	78.1	72.1	29.4	20.1	22.6	13.8	8.9	27.9			
2013	108.5	-0.2	-0.1	0.4	-0.6	0.6	1.7	2.6	0.2	-1.6	0.2	-1.8	-1.0
2014	106.9	-1.5	-0.9	-0.3	-1.1	0.4	0.1	-0.2	0.3	-4.3	0.3	0.4	1.3
2015	104.0	-2.7	-2.4	-0.5	-1.3	0.7	-0.6	-1.0	0.2	-8.2	0.2	1.6	4.5
2015 Q4	102.7	-3.1	-2.5	-0.7	-1.9	0.6	-0.2	-0.3	0.3	-9.4	-0.2	2.2	5.9
2016 Q1	100.6	-3.7	-2.7	-0.9	-2.2	0.4	-0.4	-0.5	0.0	-11.1	-0.3	2.8	5.8
Q2	100.9	-3.8	-2.8	-1.1	-2.7	0.4	-0.5	-0.8	0.1	-10.7	0.2	3.0	3.5
Q3	101.9	-2.0	-1.3	-0.6	-1.8	0.5	0.0	-0.1	0.1	-5.9	.	.	.
2016 May	100.9	-3.8	-2.9	-1.1	-2.8	0.5	-0.5	-0.8	0.2	-10.8	-	-	-
June	101.6	-3.1	-2.3	-1.0	-2.5	0.5	-0.4	-0.5	0.0	-8.7	-	-	-
July	102.0	-2.6	-2.0	-0.9	-2.2	0.5	-0.2	-0.3	0.1	-7.5	-	-	-
Aug.	101.8	-1.9	-1.3	-0.6	-1.8	0.5	0.0	-0.1	0.1	-5.7	-	-	-
Sep.	101.9	-1.5	-0.7	-0.3	-1.4	0.5	0.1	0.1	0.1	-4.5	-	-	-
Oct.	102.7	-0.4	0.3	0.0	-0.8	0.5	0.6	0.6	0.2	-1.5	-	-	-

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

1) Experimental data based on non-harmonised sources (see http://www.ecb.europa.eu/stats/html/experiment.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
2013	103.7	1.2	0.9	1.1	1.2	0.4	-0.5	-1.3	81.9	-9.9	-13.6	-6.1	-9.0	-11.2	-6.3
2014	104.6	0.9	0.6	0.5	0.9	0.6	-0.7	-1.5	74.1	-3.4	2.0	-8.5	-0.4	4.6	-6.4
2015	105.7	1.1	0.3	0.1	0.4	0.7	0.1	-1.9	47.1	0.0	4.2	-4.5	2.9	7.0	-2.6
2015 Q4	106.3	1.3	0.4	0.3	0.5	0.8	-0.2	-2.3	39.5	-7.4	-1.8	-13.4	-8.2	-4.8	-12.9
2016 Q1	106.4	1.1	0.4	0.3	0.9	0.8	-1.5	-3.3	31.2	-12.3	-8.4	-16.5	-12.9	-11.1	-15.6
Q2	106.6	1.0	0.3	0.1	0.8	0.8	-2.4	-4.1	40.8	-8.9	-5.7	-12.4	-12.4	-12.6	-12.2
Q3	106.6	0.8	0.6	0.3	0.9	0.9	-1.6	-2.4	41.0	-0.6	-2.0	1.0	-6.0	-10.5	0.9
2016 June	-	-	-	-	-	-	-	-	43.1	-5.9	-2.0	-10.3	-10.1	-10.4	-9.6
July	-	-	-	-	-	-	-	-	40.7	-3.1	-4.8	-1.2	-8.0	-12.3	-1.4
Aug.	-	-	-	-	-	-	-	-	41.2	0.3	-1.7	2.7	-5.1	-10.3	2.6
Sep.	-	-	-	-	-	-	-	-	41.2	1.1	0.7	1.5	-4.6	-8.9	1.6
Oct.	-	-	-	-	-	-	-	-	45.1	3.0	-0.4	6.9	-3.1	-10.4	8.0
Nov.	-	-	-	-	-	-	-	-	43.1	8.1	-0.2	18.2	2.1	-8.3	18.1

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
1999-13	4.8	-	-	-2.0	34.0	57.7	56.7	-	49.9
2013	-0.4	1.6	-1.4	-17.3	29.7	48.5	53.8	49.4	47.8
2014	-0.9	-1.5	0.9	-17.2	14.2	49.6	53.5	49.7	48.2
2015	-2.7	1.3	2.7	-13.3	-1.1	48.9	53.5	49.6	49.0
2015 Q4	-2.1	1.9	3.8	-8.7	-0.8	45.6	53.6	49.2	49.6
2016 Q1	-4.8	0.7	3.7	-9.3	-1.7	41.5	52.5	47.7	49.0
Q2	-1.0	1.9	4.7	-8.2	-2.2	47.5	54.4	48.5	49.0
Q3	-0.2	1.0	4.5	-6.7	-0.3	51.4	54.0	49.6	49.8
2016 June	0.6	2.0	3.8	-7.7	-1.3	49.6	54.8	49.3	49.0
July	0.2	0.7	4.8	-5.2	-0.5	51.0	54.7	49.9	49.8
Aug.	-0.8	1.3	4.3	-7.4	-0.8	51.0	53.2	48.9	49.5
Sep.	0.0	0.9	4.5	-7.6	0.5	52.4	54.0	49.9	50.0
Oct.	3.5	2.6	4.5	-5.1	0.1	53.9	54.3	50.8	49.7
Nov.	4.8	2.9	5.3	-6.0	1.8	58.8	54.4	51.4	50.3

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

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

	Total (index: 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	
2013	101.4	1.4	1.5	1.2	1.2	1.9	1.8
2014	102.7	1.3	1.3	1.2	1.3	1.2	1.8
2015	104.3	1.6	2.0	0.5	1.6	1.6	1.5
2015 Q4	110.5	1.6	1.9	0.9	1.5	1.8	1.5
2016 Q1	99.0	1.6	1.7	1.5	1.6	1.6	1.4
Q2	109.2	1.0	0.9	1.4	0.9	1.1	1.5
Q3	.	.	.	.	.	.	1.4

Sources: Eurostat and ECB calculations.
1) Experimental data based on non-harmonised sources (see http://www.ecb.europa.eu/stats/intro/html/experiment.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												
2013	103.8	1.2	-1.6	2.0	1.4	1.0	-0.8	-0.2	-2.7	1.4	1.6	2.1
2014	104.6	0.7	-1.0	-0.7	1.1	0.5	-0.5	2.2	1.7	1.4	1.6	1.3
2015	104.8	0.3	1.5	-2.2	1.1	0.5	0.8	0.3	2.6	1.7	1.1	2.2
2015 Q3	105.0	0.3	2.7	-2.2	1.0	0.6	1.5	0.8	2.6	2.2	1.1	2.3
Q4	105.3	0.5	0.5	-2.0	-0.3	1.5	1.7	0.5	2.5	1.7	1.3	2.1
2016 Q1	105.4	1.0	1.8	0.4	0.1	0.9	1.3	1.6	3.8	2.2	1.2	1.8
Q2	105.7	0.9	1.9	0.5	-0.2	1.1	0.3	1.7	2.4	1.2	1.3	0.7
Compensation per employee												
2013	105.1	1.5	2.6	2.7	1.3	1.0	0.8	1.6	0.1	1.3	1.5	0.8
2014	106.5	1.3	0.1	2.0	1.8	1.1	2.2	1.7	1.5	1.6	1.1	1.1
2015	107.9	1.3	1.8	1.7	0.9	1.4	2.4	0.4	2.6	1.6	1.1	1.1
2015 Q3	108.1	1.2	1.6	1.6	0.9	1.4	2.6	0.3	2.6	1.8	0.9	1.1
Q4	108.5	1.2	2.1	1.4	0.8	1.7	1.9	0.3	3.0	1.5	1.2	0.9
2016 Q1	108.8	1.3	2.3	1.5	1.3	1.3	1.2	1.8	3.3	1.5	1.2	1.5
Q2	109.0	1.2	2.5	1.1	1.5	1.2	1.1	1.6	3.1	1.3	1.3	0.8
Labour productivity per person employed												
2013	101.3	0.3	4.3	0.6	-0.1	0.0	1.5	1.8	2.8	-0.1	-0.1	-1.3
2014	101.9	0.6	1.2	2.7	0.6	0.6	2.7	-0.6	-0.2	0.2	-0.5	-0.3
2015	102.9	1.0	0.3	4.0	-0.3	0.9	1.6	0.1	0.0	0.0	0.0	-1.1
2015 Q3	102.9	0.9	-1.0	3.9	0.0	0.7	1.1	-0.5	0.1	-0.3	-0.1	-1.2
Q4	103.1	0.7	1.6	3.5	1.1	0.1	0.2	-0.2	0.5	-0.3	-0.1	-1.2
2016 Q1	103.2	0.3	0.5	1.0	1.2	0.3	-0.1	0.3	-0.4	-0.7	0.0	-0.3
Q2	103.2	0.2	0.6	0.6	1.7	0.1	0.8	-0.1	0.7	0.1	0.0	0.1
Compensation per hour worked												
2013	107.2	2.3	2.4	2.8	2.8	1.9	0.8	2.1	1.5	2.4	1.9	2.3
2014	108.5	1.2	1.1	1.5	1.3	1.2	2.1	1.6	1.3	1.2	0.9	1.2
2015	109.7	1.1	1.2	1.3	0.3	1.5	1.3	0.5	2.2	1.2	1.0	1.2
2015 Q3	109.6	1.0	1.0	1.4	0.3	1.6	1.4	0.6	1.9	1.3	0.7	0.7
Q4	110.2	1.3	1.1	1.5	0.5	2.0	1.3	0.1	3.3	1.2	1.3	1.0
2016 Q1	110.3	1.0	0.3	1.0	0.9	1.1	0.6	1.3	3.7	0.7	1.2	2.1
Q2	110.5	1.0	2.1	0.6	1.4	1.0	0.5	1.0	3.1	0.8	1.5	0.6
Hourly labour productivity												
2013	103.4	1.1	4.0	0.8	1.4	0.9	1.8	2.4	4.2	1.0	0.4	0.1
2014	104.1	0.7	1.8	2.3	0.3	0.9	2.7	-0.5	0.0	0.1	-0.6	0.0
2015	105.0	0.9	-0.9	3.6	-0.8	1.2	0.7	0.1	-0.2	-0.2	-0.1	-1.0
2015 Q3	104.8	0.7	-2.0	3.8	-0.6	1.1	-0.1	-0.2	-0.8	-0.9	-0.4	-1.6
Q4	105.0	0.8	0.2	3.7	0.5	0.4	-0.3	-0.5	1.4	-0.2	-0.1	-1.2
2016 Q1	105.1	0.1	-1.3	0.7	0.7	0.2	-0.8	-0.2	0.5	-1.3	0.0	0.2
Q2	104.9	0.0	-0.2	0.0	1.3	-0.1	0.2	-0.9	0.7	-0.5	0.1	-0.1

Sources: Eurostat and ECB calculations.

5 Money and credit

5.1 Monetary aggregates [1)]

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

	M3											
	M2							M3-M2				
	M1			M2-M1								
	Currency in circulation	Overnight deposits		Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months			Repos	Money market fund shares	Debt securities with a maturity of up to 2 years		
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2013	909.8	4,473.4	5,383.3	1,681.2	2,143.2	3,824.4	9,207.7	122.4	416.8	86.8	626.0	9,833.7
2014	969.5	4,977.5	5,946.9	1,581.0	2,149.8	3,730.8	9,677.8	125.4	422.2	106.3	653.9	10,331.7
2015	1,036.5	5,576.9	6,613.4	1,438.5	2,161.9	3,600.4	10,213.8	78.3	478.8	73.3	630.4	10,844.2
2015 Q4	1,036.5	5,576.9	6,613.4	1,438.5	2,161.9	3,600.4	10,213.8	78.3	478.8	73.3	630.4	10,844.2
2016 Q1	1,049.6	5,711.7	6,761.3	1,420.2	2,164.8	3,585.1	10,346.4	88.7	465.6	94.6	648.9	10,995.2
Q2	1,054.6	5,818.6	6,873.2	1,410.2	2,172.0	3,582.2	10,455.4	84.2	481.7	94.7	660.6	11,116.0
Q3	1,066.6	5,938.9	7,005.5	1,393.3	2,174.5	3,567.8	10,573.3	80.5	495.1	93.5	669.1	11,242.4
2016 May	1,051.1	5,789.3	6,840.3	1,403.5	2,170.8	3,574.3	10,414.6	87.5	475.5	87.2	650.2	11,064.8
June	1,054.6	5,818.6	6,873.2	1,410.2	2,172.0	3,582.2	10,455.4	84.2	481.7	94.7	660.6	11,116.0
July	1,058.2	5,876.2	6,934.4	1,404.8	2,172.9	3,577.7	10,512.1	82.4	485.2	97.4	665.0	11,177.1
Aug.	1,061.5	5,919.6	6,981.1	1,393.0	2,174.0	3,567.0	10,548.1	82.3	479.8	98.6	660.8	11,208.9
Sep.	1,066.6	5,938.9	7,005.5	1,393.3	2,174.5	3,567.8	10,573.3	80.5	495.1	93.5	669.1	11,242.4
Oct. [p]	1,072.4	5,972.3	7,044.7	1,343.9	2,175.0	3,518.9	10,563.6	74.5	504.3	90.0	668.7	11,232.3
Transactions												
2013	45.7	245.1	290.7	-115.7	45.8	-69.9	220.8	-11.1	-48.8	-63.5	-123.5	97.3
2014	59.0	378.5	437.5	-91.8	3.8	-88.1	349.4	1.6	10.4	12.4	24.4	373.8
2015	65.9	567.2	633.1	-135.4	12.2	-123.1	510.0	-48.2	51.1	-25.9	-23.0	487.0
2015 Q4	8.1	135.5	143.6	-5.3	-0.9	-6.2	137.3	-19.0	21.3	-4.8	-2.5	134.9
2016 Q1	13.3	145.2	158.5	-14.1	3.2	-10.9	147.6	10.9	-13.4	19.2	16.7	164.3
Q2	5.0	102.0	107.0	-12.7	7.2	-5.5	101.5	-1.6	15.5	-1.1	12.8	114.3
Q3	12.0	121.6	133.6	-15.7	2.2	-13.5	120.2	-3.7	13.8	-2.5	7.6	127.8
2016 May	2.7	34.2	36.9	-9.5	6.0	-3.5	33.3	-0.2	3.5	-5.6	-2.4	31.0
June	3.5	30.1	33.6	6.0	1.3	7.3	41.0	-3.4	6.1	5.5	8.3	49.2
July	3.6	57.2	60.8	-4.4	1.0	-3.4	57.3	-1.8	4.0	2.3	4.5	61.8
Aug.	3.3	44.0	47.3	-11.8	1.0	-10.8	36.5	-0.1	-5.5	1.0	-4.5	32.0
Sep.	5.0	20.5	25.5	0.6	0.2	0.8	26.3	-1.8	15.3	-5.7	7.7	34.0
Oct. [p]	5.9	25.8	31.7	-25.0	0.7	-24.2	7.5	-6.1	9.1	-5.0	-1.9	5.6
Growth rates												
2013	5.3	5.8	5.7	-6.4	2.2	-1.8	2.5	-8.9	-10.4	-38.0	-16.1	1.0
2014	6.5	8.4	8.1	-5.5	0.2	-2.3	3.8	1.3	2.5	18.1	3.9	3.8
2015	6.8	11.3	10.6	-8.6	0.6	-3.3	5.3	-38.1	11.9	-25.1	-3.5	4.7
2015 Q4	6.8	11.3	10.6	-8.6	0.6	-3.3	5.3	-38.1	11.9	-25.1	-3.5	4.7
2016 Q1	6.0	11.1	10.2	-6.2	0.6	-2.2	5.6	-27.8	6.6	-1.2	-1.1	5.2
Q2	4.0	9.6	8.7	-4.1	0.6	-1.3	5.1	-2.0	9.1	-3.1	5.5	5.1
Q3	3.7	9.3	8.4	-3.3	0.5	-1.0	5.0	-13.9	8.1	13.6	5.5	5.1
2016 May	4.3	10.0	9.1	-5.4	0.6	-1.8	5.1	-15.2	7.4	-2.0	2.2	4.9
June	4.0	9.6	8.7	-4.1	0.6	-1.3	5.1	-2.0	9.1	-3.1	5.5	5.1
July	3.7	9.6	8.6	-3.9	0.5	-1.2	5.1	-17.0	6.8	16.5	4.3	5.0
Aug.	3.6	9.7	8.7	-4.1	0.5	-1.3	5.1	-14.9	4.7	18.5	3.4	5.0
Sep.	3.7	9.3	8.4	-3.3	0.5	-1.0	5.0	-13.9	8.1	13.6	5.5	5.1
Oct. [p]	4.0	8.7	7.9	-4.7	0.6	-1.5	4.6	-28.3	6.9	12.5	1.7	4.4

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													
2013	1,713.6	1,188.9	398.1	109.8	16.8	5,414.7	2,539.0	876.5	1,994.6	4.6	796.9	194.6	300.5
2014	1,845.1	1,349.0	365.1	111.6	19.4	5,557.8	2,749.6	812.1	1,993.2	2.8	875.8	222.2	332.9
2015	1,929.8	1,483.9	321.0	116.4	8.4	5,751.0	3,059.8	695.1	1,993.7	2.4	984.3	225.7	364.7
2015 Q4	1,929.8	1,483.9	321.0	116.4	8.4	5,751.0	3,059.8	695.1	1,993.7	2.4	984.3	225.7	364.7
2016 Q1	1,984.6	1,536.4	322.7	116.0	9.4	5,830.1	3,137.4	693.6	1,996.4	2.7	975.9	218.9	375.9
Q2	2,013.4	1,573.9	314.0	117.1	8.4	5,906.5	3,214.6	688.8	2,000.1	3.0	974.7	210.7	379.8
Q3	2,047.5	1,602.5	317.9	118.1	9.1	5,979.6	3,301.8	672.0	2,003.1	2.6	967.5	206.2	386.3
2016 May	2,007.9	1,564.7	318.6	116.6	8.0	5,877.0	3,184.7	690.6	1,998.3	3.5	972.0	214.7	379.5
June	2,013.4	1,573.9	314.0	117.1	8.4	5,906.5	3,214.6	688.8	2,000.1	3.0	974.7	210.7	379.8
July	2,029.4	1,590.7	313.9	116.5	8.4	5,933.3	3,245.7	684.0	2,000.7	2.9	973.2	214.6	385.7
Aug.	2,031.7	1,595.9	310.1	117.0	8.7	5,961.2	3,277.6	677.6	2,003.3	2.8	976.5	213.4	386.0
Sep.	2,047.5	1,602.5	317.9	118.1	9.1	5,979.6	3,301.8	672.0	2,003.1	2.6	967.5	206.2	386.3
Oct. [p]	2,036.7	1,604.4	307.1	118.1	7.0	5,984.7	3,334.1	643.3	2,004.6	2.8	944.9	206.4	393.0
Transactions													
2013	100.5	91.5	-6.3	9.0	6.3	107.8	181.1	-99.2	32.0	-6.1	-22.0	-13.9	-8.4
2014	69.0	91.1	-26.4	1.5	2.8	140.7	208.9	-65.0	-1.4	-1.7	54.0	7.3	21.0
2015	81.0	121.6	-34.2	4.9	-11.2	193.5	303.1	-109.9	0.8	-0.4	91.1	-0.1	30.3
2015 Q4	18.3	21.7	-2.5	0.7	-1.6	59.8	74.1	-12.0	-1.6	-0.7	18.9	6.6	6.7
2016 Q1	61.1	57.6	2.8	-0.4	1.1	81.2	78.8	-0.6	2.8	0.3	-2.7	-6.5	12.1
Q2	27.1	36.2	-9.0	1.0	-1.1	75.5	76.2	-5.1	4.0	0.4	-2.8	-8.5	3.7
Q3	35.2	29.8	4.1	0.6	0.7	73.5	87.5	-16.6	3.1	-0.5	-6.3	-4.2	6.3
2016 May	2.4	6.0	-3.5	0.5	-0.5	24.6	23.7	-1.8	2.7	-0.1	2.2	-0.9	2.2
June	6.3	9.6	-4.4	0.7	0.4	29.5	29.8	-1.8	1.9	-0.5	2.0	-4.0	0.4
July	16.6	17.2	0.0	-0.6	0.0	26.9	31.1	-4.7	0.7	-0.1	-1.5	4.0	5.9
Aug.	2.3	5.4	-3.9	0.5	0.3	28.2	32.1	-6.4	2.6	-0.1	3.7	-1.2	0.2
Sep.	16.2	7.2	7.9	0.7	0.4	18.4	24.4	-5.5	-0.2	-0.2	-8.4	-7.0	0.2
Oct. [p]	-10.1	0.5	-8.3	-0.1	-2.1	22.6	27.7	-6.6	1.4	0.2	-24.5	0.2	7.3
Growth rates													
2013	6.2	8.3	-1.6	8.9	58.6	2.0	7.7	-10.2	1.6	-57.3	-2.7	-6.7	-2.7
2014	4.0	7.6	-6.6	1.3	15.9	2.6	8.2	-7.4	-0.1	-37.8	6.6	3.9	7.0
2015	4.4	8.9	-9.6	4.4	-57.4	3.5	11.0	-13.6	0.0	-15.1	10.2	0.0	9.1
2015 Q4	4.4	8.9	-9.6	4.4	-57.4	3.5	11.0	-13.6	0.0	-15.1	10.2	0.0	9.1
2016 Q1	7.4	11.0	-4.5	3.8	-31.3	4.2	10.7	-8.8	0.2	-30.6	5.6	-3.3	10.2
Q2	7.9	11.0	-3.1	3.9	-27.8	4.6	10.4	-5.9	0.1	0.3	3.8	-8.5	10.3
Q3	7.4	9.9	-1.4	1.7	-8.5	5.1	10.6	-4.9	0.4	-18.2	0.7	-5.7	8.0
2016 May	7.9	11.0	-2.6	3.4	-32.7	4.5	10.5	-6.9	0.1	-6.3	2.7	-7.4	9.3
June	7.9	11.0	-3.1	3.9	-27.8	4.6	10.4	-5.9	0.1	0.3	3.8	-8.5	10.3
July	7.2	10.2	-3.2	2.5	-29.8	4.9	10.4	-4.9	0.3	-10.6	2.0	-7.4	11.2
Aug.	7.2	10.1	-4.3	2.1	11.9	5.2	10.8	-4.8	0.4	-12.1	1.0	-6.2	9.2
Sep.	7.4	9.9	-1.4	1.7	-8.5	5.1	10.6	-4.9	0.4	-18.2	0.7	-5.7	8.0
Oct. [p]	5.5	7.9	-2.9	0.8	-29.6	5.2	10.7	-5.4	0.6	-20.0	-1.8	-9.4	8.1

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

5.3 Credit to euro area residents [1)]

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

	Credit to general government			Credit to other euro area residents								
					Loans						Debt securities	Equity and non-money market fund investment fund shares
					Total		To non-financial corporations [3)]	To households [4)]	To financial corporations other than MFIs and ICPFs [3)]	To insurance corporations and pension funds		
	Total	Loans	Debt securities	Total		Adjusted loans [2)]						
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2013	3,410.3	1,098.8	2,311.5	12,708.2	10,544.5	10,973.3	4,353.0	5,222.9	869.8	98.8	1,367.2	796.5
2014	3,615.6	1,135.0	2,478.5	12,506.9	10,456.6	10,728.8	4,299.5	5,200.8	827.3	129.0	1,280.0	770.3
2015	3,904.3	1,112.4	2,789.5	12,601.3	10,514.1	10,809.1	4,274.7	5,307.7	808.0	123.7	1,304.9	782.4
2015 Q4	3,904.3	1,112.4	2,789.5	12,601.3	10,514.1	10,809.1	4,274.7	5,307.7	808.0	123.7	1,304.9	782.4
2016 Q1	4,053.5	1,115.9	2,924.5	12,634.2	10,565.5	10,828.3	4,288.7	5,339.3	828.7	108.8	1,312.5	756.2
Q2	4,191.8	1,112.5	3,066.2	12,663.0	10,565.2	10,869.1	4,296.4	5,348.6	816.3	103.9	1,342.5	755.4
Q3	4,272.1	1,105.2	3,153.6	12,768.4	10,622.4	10,926.6	4,288.6	5,379.3	845.5	109.1	1,365.5	780.4
2016 May	4,144.3	1,125.9	3,005.3	12,674.5	10,585.0	10,850.6	4,306.8	5,347.6	819.8	110.7	1,330.4	759.1
June	4,191.8	1,112.5	3,066.2	12,663.0	10,565.2	10,869.1	4,296.4	5,348.6	816.3	103.9	1,342.5	755.4
July	4,247.0	1,109.1	3,124.5	12,710.9	10,592.1	10,892.5	4,299.5	5,356.0	826.2	110.4	1,359.6	759.1
Aug.	4,255.8	1,107.7	3,134.8	12,743.6	10,601.0	10,907.2	4,294.7	5,366.4	829.4	110.5	1,364.8	777.7
Sep.	4,272.1	1,105.2	3,153.6	12,768.4	10,622.4	10,926.6	4,288.6	5,379.3	845.5	109.1	1,365.5	780.4
Oct. [p)]	4,290.9	1,099.6	3,178.0	12,810.1	10,655.4	10,955.5	4,301.7	5,388.5	850.6	114.6	1,376.4	778.3
Transactions												
2013	-24.5	-73.5	48.9	-306.8	-248.0	-271.8	-132.8	-3.6	-121.3	9.7	-72.5	13.8
2014	73.8	16.4	57.4	-104.7	-49.8	-36.1	-61.4	-14.9	14.7	11.7	-89.8	35.0
2015	285.0	-21.0	305.7	85.4	56.9	72.3	-14.7	98.2	-21.0	-5.6	25.0	3.5
2015 Q4	81.2	-13.9	95.0	13.0	26.1	35.4	1.1	24.0	-0.5	1.5	-16.8	3.7
2016 Q1	120.0	1.5	118.6	71.8	81.4	53.3	35.3	36.5	24.3	-14.7	11.3	-21.0
Q2	116.3	-8.9	125.2	54.0	21.7	64.4	19.0	14.6	-7.0	-5.0	30.8	1.5
Q3	69.2	-7.3	76.2	113.3	69.7	71.6	6.1	33.4	25.1	5.2	21.6	22.0
2016 May	38.7	1.4	37.4	27.1	13.1	17.7	10.6	1.6	2.7	-1.9	9.2	4.8
June	34.1	-14.0	48.0	6.7	-6.7	35.9	-1.4	5.2	-3.7	-6.9	14.8	-1.4
July	47.9	-3.3	51.0	53.3	36.0	31.5	11.2	7.8	10.6	6.4	15.3	2.1
Aug.	9.1	-1.4	10.5	35.9	13.1	17.9	-4.2	11.4	5.8	0.1	5.1	17.7
Sep.	12.2	-2.6	14.7	24.0	20.6	22.2	-0.9	14.2	8.7	-1.4	1.2	2.2
Oct. [p)]	38.2	-5.5	43.7	44.5	33.2	29.4	15.5	7.6	4.6	5.5	11.1	0.2
Growth rates												
2013	-0.7	-6.3	2.2	-2.4	-2.3	-2.4	-2.9	-0.1	-12.3	10.9	-5.0	1.8
2014	2.1	1.5	2.4	-0.8	-0.5	-0.3	-1.4	-0.3	1.6	11.9	-6.6	4.4
2015	7.9	-1.8	12.3	0.7	0.5	0.7	-0.3	1.9	-2.5	-4.3	1.9	0.4
2015 Q4	7.9	-1.8	12.3	0.7	0.5	0.7	-0.3	1.9	-2.5	-4.3	1.9	0.4
2016 Q1	10.2	-2.8	16.1	1.1	1.1	1.0	0.8	2.2	-0.6	-19.2	3.2	-2.3
Q2	11.7	-2.8	18.1	1.5	1.2	1.6	1.3	1.9	0.5	-23.6	7.2	-3.0
Q3	10.1	-2.5	15.3	2.0	1.9	2.1	1.4	2.1	5.2	-10.7	3.5	0.8
2016 May	11.1	-1.9	16.9	1.4	1.2	1.2	1.2	2.1	-0.6	-21.1	5.1	-2.3
June	11.7	-2.8	18.1	1.5	1.2	1.6	1.3	1.9	0.5	-23.6	7.2	-3.0
July	12.2	-2.7	18.7	1.4	1.4	1.8	1.3	2.0	0.6	-16.1	4.6	-3.6
Aug.	10.9	-2.8	16.7	1.6	1.4	1.8	1.1	2.0	1.2	-14.1	4.1	-0.5
Sep.	10.1	-2.5	15.3	2.0	1.9	2.1	1.4	2.1	5.2	-10.7	3.5	0.8
Oct. [p)]	10.6	-2.6	16.0	2.3	2.0	2.2	1.7	1.9	5.7	-7.8	5.7	0.1

Source: ECB.

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

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

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

4) Including non-profit institutions serving households.

5 Money and credit

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

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

	Non-financial corporations [2)]					Households [3)]				
	Total		Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total		Loans for consumption	Loans for house purchase	Other loans
		Adjusted loans [4)]					Adjusted loans [4)]			
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2013	4,353.0	4,450.6	1,065.6	741.0	2,546.4	5,222.9	5,547.7	573.8	3,853.3	795.8
2014	4,299.5	4,253.9	1,109.8	720.7	2,469.1	5,200.8	5,546.1	563.5	3,860.9	776.4
2015	4,274.7	4,257.6	1,038.5	758.5	2,477.6	5,307.7	5,640.6	595.9	3,947.9	764.0
2015 Q4	4,274.7	4,257.6	1,038.5	758.5	2,477.6	5,307.7	5,640.6	595.9	3,947.9	764.0
2016 Q1	4,288.7	4,261.3	1,048.4	768.4	2,471.9	5,339.3	5,659.2	602.7	3,974.5	762.0
Q2	4,296.4	4,278.0	1,039.7	774.9	2,481.8	5,348.6	5,683.4	604.4	3,986.0	758.2
Q3	4,288.6	4,278.9	1,008.0	787.2	2,493.3	5,379.3	5,701.1	608.5	4,018.3	752.6
2016 May	4,306.8	4,277.8	1,049.1	771.4	2,486.3	5,347.6	5,675.5	602.2	3,986.3	759.1
June	4,296.4	4,278.0	1,039.7	774.9	2,481.8	5,348.6	5,683.4	604.4	3,986.0	758.2
July	4,299.5	4,277.6	1,028.7	780.3	2,490.5	5,356.0	5,692.3	605.1	3,994.3	756.6
Aug.	4,294.7	4,279.1	1,021.5	782.4	2,490.8	5,366.4	5,700.1	608.3	4,003.4	754.7
Sep.	4,288.6	4,278.9	1,008.0	787.2	2,493.3	5,379.3	5,701.1	608.5	4,018.3	752.6
Oct. [p)]	4,301.7	4,287.2	1,021.8	787.2	2,492.7	5,388.5	5,712.6	612.2	4,018.7	757.6
Transactions										
2013	-132.8	-145.3	-44.3	-44.6	-43.9	-3.6	-16.9	-18.2	27.7	-13.2
2014	-61.4	-68.7	-14.3	2.3	-49.4	-14.9	5.6	-3.0	-3.2	-8.7
2015	-14.7	19.2	-65.0	32.2	18.1	98.2	76.3	21.8	80.0	-3.6
2015 Q4	1.1	18.9	-23.1	12.9	11.3	24.0	20.0	5.2	21.0	-2.1
2016 Q1	35.3	27.1	18.7	12.9	3.7	36.5	24.5	8.2	28.7	-0.4
Q2	19.0	28.4	-4.5	8.8	14.8	14.6	29.4	1.8	13.4	-0.6
Q3	6.1	10.0	-23.6	14.8	14.8	33.4	27.4	4.8	32.7	-4.1
2016 May	10.6	10.0	2.2	0.0	8.3	1.6	9.7	-2.1	3.8	-0.1
June	-1.4	11.5	-5.4	5.1	-1.0	5.2	12.8	2.7	1.4	1.1
July	11.2	6.9	-6.0	6.9	10.3	7.8	9.2	0.6	8.4	-1.2
Aug.	-4.2	1.1	-6.2	2.2	-0.2	11.4	8.2	3.4	9.5	-1.4
Sep.	-0.9	2.0	-11.4	5.8	4.7	14.2	10.0	0.9	14.8	-1.5
Oct. [p)]	15.5	10.9	13.4	0.3	1.8	7.6	9.9	3.8	5.4	-1.6
Growth rates										
2013	-2.9	-3.1	-4.0	-5.6	-1.7	-0.1	-0.3	-3.0	0.7	-1.6
2014	-1.4	-1.5	-1.3	0.3	-1.9	-0.3	0.1	-0.5	-0.1	-1.1
2015	-0.3	0.5	-5.8	4.4	0.7	1.9	1.4	3.8	2.1	-0.5
2015 Q4	-0.3	0.5	-5.8	4.4	0.7	1.9	1.4	3.8	2.1	-0.5
2016 Q1	0.8	1.2	-2.2	5.1	0.8	2.2	1.6	5.0	2.3	-0.4
Q2	1.3	1.9	-2.2	5.2	1.6	1.9	1.8	3.5	2.1	-0.4
Q3	1.4	2.0	-3.1	6.7	1.8	2.1	1.8	3.4	2.4	-0.9
2016 May	1.2	1.7	-2.0	4.8	1.5	2.1	1.7	4.5	2.3	-0.7
June	1.3	1.9	-2.2	5.2	1.6	1.9	1.8	3.5	2.1	-0.4
July	1.3	2.0	-2.9	6.2	1.7	2.0	1.8	3.3	2.2	-0.5
Aug.	1.1	2.0	-4.1	6.4	1.9	2.0	1.8	3.5	2.3	-0.7
Sep.	1.4	2.0	-3.1	6.7	1.8	2.1	1.8	3.4	2.4	-0.9
Oct. [p)]	1.7	2.1	-1.2	5.5	1.7	1.9	1.8	3.5	2.3	-1.1

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

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

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

	MFI liabilities						MFI assets			
	Central government holdings [2)]	Longer-term financial liabilities vis-à-vis other euro area residents					Net external assets	Other		
		Total	Deposits with an agreed maturity of over 2 years	Deposits redeemable at notice of over 3 months	Debt securities with a maturity of over 2 years	Capital and reserves		Total	Repos with central counter-parties [3)]	Reverse repos to central counter-parties [3)]
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2013	264.6	7,312.7	2,374.8	91.6	2,507.4	2,338.9	1,146.3	146.2	183.8	121.9
2014	269.4	7,123.5	2,186.6	92.2	2,383.7	2,461.0	1,381.8	220.3	184.5	139.7
2015	285.0	6,996.5	2,119.5	79.8	2,253.2	2,544.0	1,331.5	288.6	205.9	135.6
2015 Q4	285.0	6,996.5	2,119.5	79.8	2,253.2	2,544.0	1,331.5	288.6	205.9	135.6
2016 Q1	314.6	6,961.8	2,113.3	76.9	2,178.4	2,593.1	1,282.2	301.7	247.1	152.1
Q2	319.2	7,004.1	2,094.0	74.6	2,172.9	2,662.6	1,275.8	308.6	238.0	144.0
Q3	309.7	6,958.0	2,068.5	72.4	2,122.2	2,694.8	1,170.6	298.9	209.2	129.1
2016 May	297.2	6,976.8	2,109.8	75.2	2,182.5	2,609.3	1,238.4	281.6	226.9	138.6
June	319.2	7,004.1	2,094.0	74.6	2,172.9	2,662.6	1,275.8	308.6	238.0	144.0
July	326.3	6,981.9	2,084.5	73.9	2,148.2	2,675.2	1,222.1	305.3	212.9	128.2
Aug.	318.7	6,963.9	2,078.0	73.2	2,138.2	2,674.5	1,182.3	309.7	215.4	134.6
Sep.	309.7	6,958.0	2,068.5	72.4	2,122.2	2,694.8	1,170.6	298.9	209.2	129.1
Oct. [p]	323.7	6,966.0	2,087.7	72.4	2,121.1	2,684.9	1,113.1	307.9	192.8	133.7
Transactions										
2013	-43.7	-81.6	-18.4	-14.3	-137.5	88.6	362.3	-59.0	32.2	43.7
2014	-4.0	-159.7	-120.6	2.0	-148.7	107.6	241.9	-1.0	0.7	17.8
2015	9.5	-218.7	-106.4	-13.5	-205.6	106.7	-99.5	6.9	21.4	-4.0
2015 Q4	-9.9	-56.6	-41.3	-3.6	-41.8	30.0	-37.5	11.8	-9.6	-7.2
2016 Q1	29.4	-57.3	-3.5	-2.8	-46.3	-4.7	-75.0	19.6	41.3	17.3
Q2	4.2	-15.2	-22.1	-1.8	-18.1	26.8	-71.2	4.3	-9.2	-8.1
Q3	-9.6	-53.1	-25.8	-2.1	-40.7	15.6	-101.6	-15.8	-19.2	-13.7
2016 May	-17.4	-1.8	-4.2	-0.3	-2.3	5.1	-27.6	-26.4	-10.2	-1.5
June	22.0	-17.4	-17.4	-0.6	-9.5	10.2	-19.9	32.9	11.1	5.4
July	7.1	-25.2	-9.5	-0.7	-18.8	3.8	-56.4	-1.1	-25.1	-15.8
Aug.	-7.7	-7.1	-6.6	-0.7	-7.1	7.3	-32.5	4.7	2.5	6.4
Sep.	-9.0	-20.8	-9.7	-0.7	-14.8	4.4	-12.7	-19.3	3.4	-4.3
Oct. [p]	13.1	2.1	-0.7	-0.8	-8.1	11.7	-61.2	-0.8	-13.2	4.7
Growth rates										
2013	-14.2	-1.1	-0.8	-13.5	-5.1	3.8	-	-	10.3	23.3
2014	-1.6	-2.2	-5.1	2.2	-5.9	4.5	-	-	0.4	14.6
2015	3.7	-3.0	-4.8	-14.5	-8.4	4.3	-	-	11.6	-2.9
2015 Q4	3.7	-3.0	-4.8	-14.5	-8.4	4.3	-	-	11.6	-2.9
2016 Q1	11.1	-3.3	-3.5	-15.2	-8.4	2.0	-	-	3.7	-5.9
Q2	20.2	-2.3	-2.9	-13.3	-6.9	2.8	-	-	3.5	-2.9
Q3	4.9	-2.6	-4.3	-12.4	-6.4	2.6	-	-	1.5	-8.2
2016 May	6.4	-2.5	-2.6	-13.6	-6.9	2.2	-	-	0.5	-2.9
June	20.2	-2.3	-2.9	-13.3	-6.9	2.8	-	-	3.5	-2.9
July	28.8	-2.6	-3.7	-13.0	-7.0	2.7	-	-	1.8	-10.6
Aug.	15.0	-2.5	-3.9	-12.3	-6.7	2.8	-	-	1.4	1.1
Sep.	4.9	-2.6	-4.3	-12.4	-6.4	2.6	-	-	1.5	-8.2
Oct. [p]	-7.5	-2.1	-3.4	-12.0	-6.1	2.8	-	-	4.4	-6.3

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	Socual security funds	
	1	2	3	4	5	6
2012	-3.6	-3.4	-0.3	0.0	0.0	-0.6
2013	-3.0	-2.6	-0.2	-0.1	-0.1	-0.2
2014	-2.6	-2.2	-0.2	0.0	-0.2	0.1
2015	-2.1	-1.9	-0.2	0.1	-0.1	0.3
2015 Q3	-2.1	.	.	.	.	0.3
Q4	-2.1	.	.	.	.	0.3
2016 Q1	-1.9	.	.	.	.	0.4
Q2	-1.8	.	.	.	.	0.5

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

6.2 Revenue and expenditure

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

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure					Capital expenditure
			Direct taxes	Indirect taxes	Net social contributions				Compen-sation of employees	Intermediate consumption	Interest	Social benefits	
	1	2	3	4	5	6	7	8	9	10	11	12	13
2012	46.1	45.6	12.2	12.9	15.4	0.4	49.7	45.2	10.4	5.3	3.0	22.6	4.5
2013	46.7	46.2	12.6	13.0	15.5	0.5	49.7	45.6	10.4	5.3	2.8	23.0	4.1
2014	46.8	46.3	12.5	13.1	15.5	0.5	49.4	45.4	10.3	5.3	2.7	23.0	4.0
2015	46.5	46.0	12.6	13.1	15.3	0.5	48.5	44.7	10.1	5.2	2.4	22.9	3.9
2015 Q3	46.5	46.0	12.6	13.1	15.3	0.5	48.6	44.9	10.2	5.2	2.5	23.0	3.8
Q4	46.5	46.0	12.6	13.1	15.3	0.5	48.5	44.7	10.1	5.2	2.4	22.9	3.9
2016 Q1	46.4	45.9	12.6	13.1	15.3	0.5	48.3	44.5	10.1	5.2	2.3	22.9	3.8
Q2	46.3	45.8	12.5	13.1	15.3	0.5	48.1	44.2	10.0	5.2	2.3	22.9	3.8

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	MFIs	Non-resident creditors	Up to 1 year	Over 1 year	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Euro or participating currencies	Other curren-cies
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2012	89.5	3.0	17.6	68.9	45.6	26.3	43.9	11.3	78.1	19.6	31.4	38.4	87.3	2.2
2013	91.3	2.6	17.5	71.2	46.2	26.3	45.1	10.4	80.9	19.5	32.0	39.8	89.3	2.1
2014	92.0	2.7	17.1	72.2	45.1	26.0	46.9	10.0	82.0	18.9	31.9	41.2	89.9	2.1
2015	90.4	2.8	16.2	71.4	45.6	27.5	44.8	9.3	81.1	17.7	31.4	41.3	88.3	2.1
2015 Q3	91.5	2.7	16.3	72.5	.	.	.	.	.	.	.	.	.	.
Q4	90.4	2.8	16.2	71.4	.	.	.	.	.	.	.	.	.	.
2016 Q1	91.3	2.7	16.2	72.4	.	.	.	.	.	.	.	.	.	.
Q2	91.2	2.7	16.0	72.6	.	.	.	.	.	.	.	.	.	.

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
2012	3.4	0.6	0.0	1.0	0.3	0.3	-0.1	0.5	-1.3	0.3	2.7	5.0
2013	1.9	0.2	-0.2	-0.8	-0.5	-0.4	-0.2	0.4	0.2	0.4	1.9	2.6
2014	0.7	-0.1	-0.1	-0.3	0.2	-0.2	-0.3	0.0	0.1	0.2	0.8	2.5
2015	-1.6	-0.3	-0.9	-0.5	0.1	-0.2	-0.3	-0.2	-0.1	-0.3	-0.5	1.3
2015 Q3	-0.9	-0.3	-0.5	-0.4	0.2	-0.3	-0.2	-0.2	0.1	-0.2	-0.1	1.6
Q4	-1.7	-0.3	-0.9	-0.6	0.1	-0.3	-0.3	-0.2	-0.1	-0.2	-0.5	1.2
2016 Q1	-1.5	-0.4	-0.6	-0.2	0.3	-0.3	-0.2	0.0	-0.1	-0.3	-0.5	1.4
Q2	-0.9	-0.5	0.2	0.4	0.8	-0.2	-0.2	0.0	-0.1	-0.2	-0.6	2.0

Sources: ECB for annual data; Eurostat for quarterly data.
1) Intergovernmental lending in the context of the financial crisis is consolidated except in quarterly data on the deficit-debt adjustment.
2) Calculated as the difference between the government debt-to-GDP ratios at the end of the reference period and a year earlier.

6.5 Government debt securities [1)]

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

	Debt service due within 1 year [2)]					Average residual maturity in years [3)]	Average nominal yields [4)]						
	Total	Principal		Interest			Outstanding amounts					Transactions	
			Maturities of up to 3 months		Maturities of up to 3 months		Total	Floating rate	Zero coupon	Fixed rate	Maturities of up to 1 year	Issuance	Redemption
	1	2	3	4	5	6	7	8	9	10	11	12	13
2013	16.5	14.4	5.0	2.1	0.5	6.3	3.5	1.7	1.3	3.7	2.8	1.2	1.8
2014	15.9	13.8	5.1	2.0	0.5	6.4	3.1	1.5	0.5	3.5	2.7	0.8	1.6
2015	14.8	12.9	4.3	2.0	0.5	6.6	2.9	1.2	0.1	3.3	3.0	0.4	1.2
2015 Q3	15.1	13.1	4.3	2.0	0.5	6.6	2.9	1.2	0.1	3.3	3.0	0.4	1.4
Q4	14.8	12.9	4.3	2.0	0.5	6.6	2.9	1.2	0.1	3.3	3.0	0.4	1.2
2016 Q1	15.5	13.6	4.8	1.9	0.5	6.6	2.8	1.2	0.0	3.2	2.8	0.3	1.1
Q2	15.4	13.5	5.0	1.8	0.5	6.7	2.7	1.1	-0.1	3.1	2.9	0.3	1.1
2016 May	15.1	13.2	4.5	1.9	0.5	6.7	2.7	1.1	-0.1	3.2	2.9	0.4	1.2
June	15.4	13.5	5.0	1.8	0.5	6.7	2.7	1.1	-0.1	3.1	2.9	0.3	1.1
July	15.1	13.3	4.6	1.8	0.5	6.8	2.7	1.1	-0.1	3.1	3.0	0.3	1.2
Aug.	15.1	13.2	4.7	1.8	0.5	6.8	2.7	1.1	-0.1	3.1	2.9	0.3	1.1
Sep.	14.9	13.1	4.1	1.8	0.5	6.8	2.6	1.2	-0.1	3.1	2.8	0.2	1.2
Oct.	14.8	13.0	3.9	1.8	0.5	6.9	2.6	1.2	-0.1	3.0	2.8	0.3	1.3

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 (+)								
2012	-4.2	0.0	-0.3	-8.0	-8.8	-10.5	-4.8	-2.9	-5.8
2013	-3.0	-0.2	-0.2	-5.7	-13.2	-7.0	-4.0	-2.7	-4.9
2014	-3.1	0.3	0.7	-3.7	-3.6	-6.0	-4.0	-3.0	-8.8
2015	-2.5	0.7	0.1	-1.9	-7.5	-5.1	-3.5	-2.6	-1.1
2015 Q3	-2.9	0.8	0.6	-1.7	-4.4	-5.3	-3.9	-2.6	-0.9
Q4	-2.5	0.7	0.1	-1.9	-7.5	-5.1	-3.5	-2.6	-1.1
2016 Q1	-2.7	0.8	0.7	-1.5	-6.1	-5.1	-3.3	-2.5	-0.2
Q2	-2.9	0.8	0.8	-1.5	-5.0	-5.3	-3.1	-2.3	-1.2
	Government debt								
2012	104.1	79.9	9.7	119.5	159.6	85.7	89.5	123.3	79.3
2013	105.4	77.5	10.2	119.5	177.4	95.4	92.3	129.0	102.2
2014	106.5	74.9	10.7	105.2	179.7	100.4	95.3	131.9	107.1
2015	105.8	71.2	10.1	78.6	177.4	99.8	96.2	132.3	107.5
2015 Q3	109.0	72.0	10.1	85.6	171.8	99.7	97.0	134.0	110.2
Q4	106.0	71.2	10.1	78.6	177.1	99.3	96.2	132.3	108.9
2016 Q1	109.2	70.9	9.9	80.5	176.1	100.6	97.5	135.0	109.3
Q2	109.7	70.1	9.7	77.8	179.2	100.5	98.2	135.5	109.0

	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Austria	Portugal	Slovenia	Slovakia	Finland
	10	11	12	13	14	15	16	17	18	19
	Government deficit (-)/surplus (+)									
2012	-0.8	-3.1	0.3	-3.6	-3.9	-2.2	-5.7	-4.1	-4.3	-2.2
2013	-0.9	-2.6	1.0	-2.6	-2.4	-1.4	-4.8	-15.0	-2.7	-2.6
2014	-1.6	-0.7	1.5	-2.1	-2.3	-2.7	-7.2	-5.0	-2.7	-3.2
2015	-1.3	-0.2	1.6	-1.4	-1.9	-1.0	-4.4	-2.7	-2.7	-2.8
2015 Q3	-2.2	0.0	1.6	-1.7	-2.1	-2.5	-3.2	-4.4	-2.6	-2.9
Q4	-1.3	-0.2	1.6	-1.4	-1.9	-1.0	-4.4	-2.7	-2.7	-2.8
2016 Q1	-0.9	-0.1	1.7	-0.2	-1.6	-0.8	-3.7	-2.5	-2.6	-2.3
Q2	-0.6	0.4	1.6	0.3	-0.8	-1.1	-3.4	-1.6	-2.4	-2.3
	Government debt									
2012	41.3	39.8	21.8	67.6	66.4	82.0	126.2	53.9	52.2	53.9
2013	39.0	38.7	23.5	68.4	67.7	81.3	129.0	71.0	54.7	56.5
2014	40.7	40.5	22.7	67.0	67.9	84.4	130.6	80.9	53.6	60.2
2015	36.3	42.7	22.1	64.0	65.1	85.5	129.0	83.1	52.5	63.6
2015 Q3	36.4	38.2	22.1	66.1	66.2	86.4	130.4	84.3	53.9	61.4
Q4	36.3	42.7	22.1	64.0	65.1	85.5	129.0	83.1	52.9	63.6
2016 Q1	36.3	40.0	22.4	65.4	64.8	86.5	128.9	83.5	52.2	64.2
Q2	38.9	40.1	22.0	64.8	63.7	86.7	131.7	82.3	53.3	61.6

Source: Eurostat.

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

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