Economic Bulletin

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Economic and monetary developments

Overview

At its monetary policy meeting on 9 March 2017, the Governing Council concluded that a very substantial degree of monetary accommodation is still needed for underlying inflation pressures to build up and support headline inflation in the medium term. The ECB's monetary policy measures have continued to preserve the very favourable financing conditions that are necessary to secure a sustained convergence of inflation rates towards levels below, but close to, 2% over the medium term. The ongoing pass-through of these measures to borrowing conditions for firms and households benefits credit creation and supports the steadily firming recovery of the euro area economy. Headline inflation has again increased, largely on account of rising energy and food price inflation. However, underlying inflation pressures continue to remain subdued. The Governing Council will continue to look through changes in HICP inflation if judged to be transient and to have no implication for the medium-term outlook for price stability.

Economic and monetary assessment at the time of the Governing Council meeting of 9 March 2017

Global activity has continued its recovery. Global growth improved in the second half of last year and is expected to have remained sustained at the start of 2017, albeit at a modest pace from a historical perspective. Global headline inflation has increased in recent months, following the rebound in oil prices, while slowly diminishing spare capacity is expected to give some support to underlying inflation over the medium term.

Since the Governing Council's monetary policy meeting in December 2016 euro area sovereign bond yields have risen slightly and have exhibited some volatility. Corporate bond spreads have fallen and remain lower than the levels recorded in early March 2016 when the corporate sector purchase programme was announced. Broad equity prices have risen in the euro area and a similar increase has been observed in the United States. The value of the euro has depreciated slightly in trade-weighted terms.

The economic recovery in the euro area is steadily firming. Euro area real GDP increased by 0.4%, quarter on quarter, in the fourth quarter of 2016, following a similar pace of growth in the third quarter. Incoming data, notably survey results, have increased the Governing Council's confidence that the ongoing economic expansion will continue to firm and broaden.

Looking ahead, the pass-through of the ECB's monetary policy measures is supporting domestic demand and facilitates the ongoing deleveraging process. The recovery in investment continues to be promoted by very favourable

financing conditions and improvements in corporate profitability. Moreover, rising employment, which is also benefiting from past structural reforms, is having a positive impact on households' real disposable income, thereby providing support for private consumption. In addition, there are signs of a somewhat stronger global recovery and increasing global trade. 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 adjustment needs in a number of sectors.

The March 2017 ECB staff macroeconomic projections for the euro area foresee annual real GDP increasing by 1.8% in 2017, by 1.7% in 2018 and by 1.6% in 2019. Compared with the December 2016 Eurosystem staff macroeconomic projections, the outlook for real GDP growth has been revised upwards slightly for 2017 and 2018. The risks surrounding the euro area growth outlook have become less pronounced, but remain tilted to the downside and relate predominantly to global factors.

According to Eurostat's flash estimate, euro area annual HICP inflation increased further to 2.0% in February, up from 1.8% in January 2017 and 1.1% in December 2016. This reflected mainly a strong increase in annual energy and unprocessed food price inflation, with no signs yet of a convincing upward trend in underlying inflation. Looking ahead, headline inflation is likely to remain at levels close to 2% in the coming months, largely reflecting movements in the annual rate of change of energy prices.

Measures of underlying inflation, however, have remained low. They are expected to rise only gradually over the medium term, supported by the ECB's monetary policy measures, the expected continuing economic recovery and the corresponding gradual absorption of slack.

The March 2017 ECB staff macroeconomic projections for the euro area foresee annual HICP inflation at 1.7% in 2017, 1.6% in 2018 and 1.7% in 2019. By comparison with the December 2016 Eurosystem staff macroeconomic projections, the outlook for headline HICP inflation has been revised upwards significantly for 2017 and slightly for 2018, while remaining unchanged for 2019. The staff projections are conditional on the full implementation of all the ECB's monetary policy measures.

The ECB's monetary policy measures put in place since June 2014 are providing significant support for borrowing conditions for firms and households and thereby credit flows across the euro area. Broad money growth remained generally stable in January 2017. At the same time, lending to the private sector continued its gradual recovery in the fourth quarter of 2016 and in January. Low interest rates and the effects of the ECB's non-standard monetary policy measures continue to support the financing conditions of the real economy. The annual flow of total external financing to non-financial corporations is estimated to have strengthened further in the fourth quarter of 2016.

Over the coming years, the general government budget deficit and debt ratios for the euro area are projected to remain on a downward path. The euro area

fiscal stance, which was mildly expansionary in 2016, is projected to turn broadly neutral in 2017-19. However, euro area countries' follow-up to the European Commission's review of their draft budgetary plans for 2017 has been unsatisfactory, as none the countries that were considered at risk of non-compliance with the Stability and Growth Pact has implemented significant measures.

Monetary policy decisions

Based on the regular economic and monetary analyses, the Governing Council confirmed the need for a continued very substantial degree of monetary accommodation to secure a sustained return of inflation rates towards levels that are below, but close to, 2% without undue delay. The Governing Council decided to keep the key ECB interest rates unchanged and continues to expect them to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases. Regarding non-standard monetary policy measures, the Governing Council confirmed that it 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 and that, from April 2017, the 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. The net purchases will be made alongside reinvestments of the principal payments from maturing securities purchased under the APP. Moreover, the Governing Council confirmed that if the outlook became less favourable, or if financial conditions became inconsistent with further progress towards a sustained adjustment in the path of inflation, it would stand ready to increase the asset purchase programme in terms of size and/or duration.

1   External environment

Global activity improved in the second half of last year and growth is expected to remain sustained in the first quarter of 2017, albeit at a modest pace when seen in historical perspective. Global headline inflation has increased in recent months, following the rebound in oil prices, while slowly diminishing spare capacity is expected to give some support to underlying inflation over the medium term.

Global economic activity and trade

Global growth is expected to remain sustained, albeit modest by historical comparison. Recent data releases confirm the improvement in global economic activity in the second half of 2016 and point to sustained growth in early 2017. Looking forward, both advanced economies and emerging market economies (EMEs) are anticipated to support growth. In particular, fiscal policy stimulus is expected to strengthen activity in the United States while the gradual easing of deep recessions in some of the larger commodity exporters will support growth in EMEs. However, uncertainty remains elevated owing to a number of factors, including the design of the new US administration's policies and their effects on the US economy and any spillovers to global activity; the strength of the recovery in commodity exporters; the gradual rebalancing of the Chinese economy; and future relations between the United Kingdom and the European Union.

Although financial conditions have overall remained supportive, they tightened in some EMEs. Volatility has remained low across financial markets in the last few weeks, with stock markets in advanced economies recording further gains. US long-term bond yields rose slightly, while remaining at low levels in other advanced economies. By contrast, financial conditions tightened in some EMEs, as sovereign spreads increased and currencies depreciated, particularly the Turkish lira and the Mexican peso. Capital outflows from EMEs overall showed some relief, being less persistent than in previous episodes of uncertainty; however, outflows from China were significant in December, halted only by strong control measures from authorities. Box 1 analyses financial market developments in EMEs since the US election and compares them with the "taper tantrum" episode of 2013.

Monetary policies remained accommodative, but divergence across advanced economies is increasing. The federal funds futures curve has shifted upwards in recent months, following the Federal Open Market Committee's decision in December. By contrast, the stance of the Bank of England and of the Bank of Japan remained accommodative (see Chart 1). This divergence, which reflects heterogeneous economic performance across advanced economies, has also been reflected in exchange rate adjustments.

Chart 1

Policy rates expectations

(percentages)

- 8 March 2017 (United States)
- 8 December 2016 (United States)
- 8 March 2017 (United Kingdom)
- 8 December 2016 (United Kingdom)
- 8 March 2017 (Japan)
- 8 December 2016 (Japan)
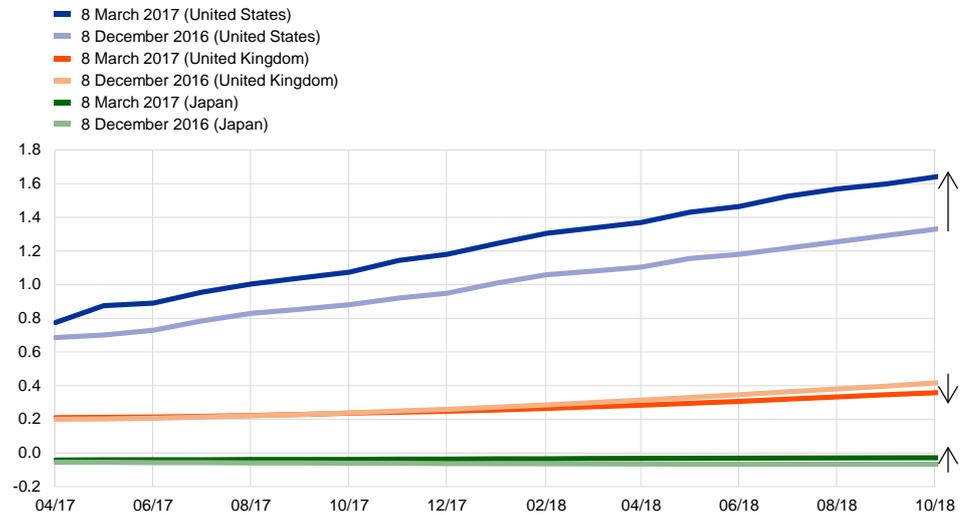
Sources: Bloomberg and Bank of England.

Recent data releases confirm a sustained momentum in global growth in the last quarter of 2016. Excluding the euro area, the global composite output Purchasing Managers' Index (PMI) rose to 53.3 in the fourth quarter of 2016, from 51.5 in the previous quarter, pointing to a recovery in global growth in the second half of last year. The global composite output PMI at the start of 2017 reaffirmed this trend (see Chart 2). At the country level, quarterly PMIs rose in all major advanced economies in the last quarter of 2016. Among EMEs, quarterly figures also edged higher in China and Russia, but retreated in India – in the aftermath of the recent demonetisation policy – and in Brazil, remaining below the 50-level threshold in both of these countries. Looking forward, composite leading indicators of the Organisation for Economic Co-operation and Development (OECD) continue to suggest a pick-up in growth momentum in several advanced economies and signal the build-up of growth momentum in major EMEs.

Chart 2

Global composite output PMI

(diffusion index)

- ■ global excluding euro area
- ■ global excluding euro area – long-term average
- ■ advanced economies excluding euro area
- ■ EMEs
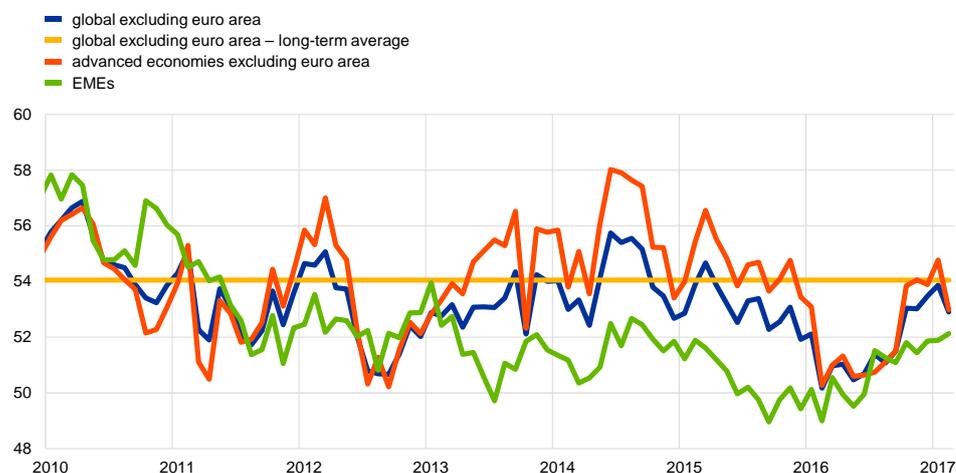
Sources: Haver Analytics and ECB staff calculations.
Notes: The latest observations are for February 2017. "EMEs" is an aggregate of China, Russia, Brazil, India and Turkey. "Advanced economies" comprises the United States, the United Kingdom and Japan. "Long-term average" refers to the period from January 1999 to February 2017.

Economic activity in the United States ended the year on a more solid note, supported by consumer spending and a recovery in investment, as the adjustment in the energy sector and the negative effects of the strong dollar on firms' profitability diminished. Solid consumer spending and a recovery in private investment should support a moderate expansion in 2017. Thereafter, economic activity is expected to expand at a stronger pace, mostly on account of a more expansionary fiscal stance that is likely to be pursued by the new administration.

In the United Kingdom, economic activity has been surprisingly resilient in the aftermath of the referendum on EU membership. While investment stagnated in the last quarter of 2016 amid the "Brexit"-related uncertainty, private consumption contributed significantly to GDP growth, its slowdown compared with the previous quarter notwithstanding. However, economic activity is expected to slow down over the course of 2017. The exchange-rate driven increase in consumer prices is expected to curtail private consumption, while firms' investment decisions are likely to be affected by the uncertainty surrounding Brexit.

In Japan, real GDP decelerated in the last quarter of 2016, as domestic demand weakened. Net exports supported by a weaker yen and recovering activity abroad contributed more to real GDP growth than did domestic demand. In the short-term horizon, growth should be supported by significant fiscal and monetary policies stimuli as well as foreign demand. Looking further ahead, as support from last year's fiscal stimulus package gradually vanishes, economic activity is expected to decelerate over time towards the potential output growth rate.

China's growth strengthened in the last quarter of 2016, supported by strong consumption and the recovery in private investment. The near-term outlook is dominated by the extent of the policy stimulus, but in the medium term economic

growth is expected to remain on a gradual downward trend. In particular, investment growth will continue to moderate as overcapacity is gradually cut back.

Real GDP growth in central and eastern Europe decelerated over 2016 due to the slower drawdown of EU funds at the beginning of the new budget period. Weaker external demand has also contributed to the slowdown. However, in the medium term, economic activity is projected to remain relatively resilient, on the back of solid consumer spending, improving labour markets and higher absorption of EU funds.

Signs of a rebound from the deep recessions in large commodity exporters are mixed. In Russia, quarterly real GDP growth turned positive in the third quarter of 2016, supported mainly by net exports. While the central bank has kept its key interest rate unchanged, the Russian rouble strengthened and equity markets surged on the back of the rebound in oil prices. However, going forward, fiscal challenges are expected to weigh on the business environment and the lack of fixed investment and structural reforms may well undermine growth potential. In Brazil, real GDP dropped more than expected in the second half of 2016. Economic activity in the near term should benefit from slowly stabilising business confidence, improving terms of trade and loosening financial conditions; however, recurring political uncertainties and fiscal consolidation needs continue to weigh on the medium-term outlook.

Global trade improved in the second half of 2016 and is expected to maintain its momentum in the first quarter of this year. Excluding the euro area, global imports were revised slightly upwards in the third quarter of 2016, confirming the rebound from the first half, and available indicators suggest positive short-term prospects. According to data from CPB Netherlands Bureau for Economic Analysis (CPB), the volume of world imports of goods increased by 0.6% in December (in three-month-on-three-month terms), slightly below the pace in the third quarter but still pointing to sustained growth (see Chart 3). The global PMI for new export orders has continued to increase in the last few months, pointing to improving global trade momentum at the start of this year. Further ahead, while the outlook is subject to some uncertainties regarding the United States' future trade policies, world trade is expected to expand broadly in line with global activity.

Chart 3

World trade in goods

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

■ world trade (left-hand scale)
― world 1991-2007 average (left-hand scale)
― global PMI manufacturing excluding euro area (right-hand scale)
― global PMI new export orders (right-hand scale)
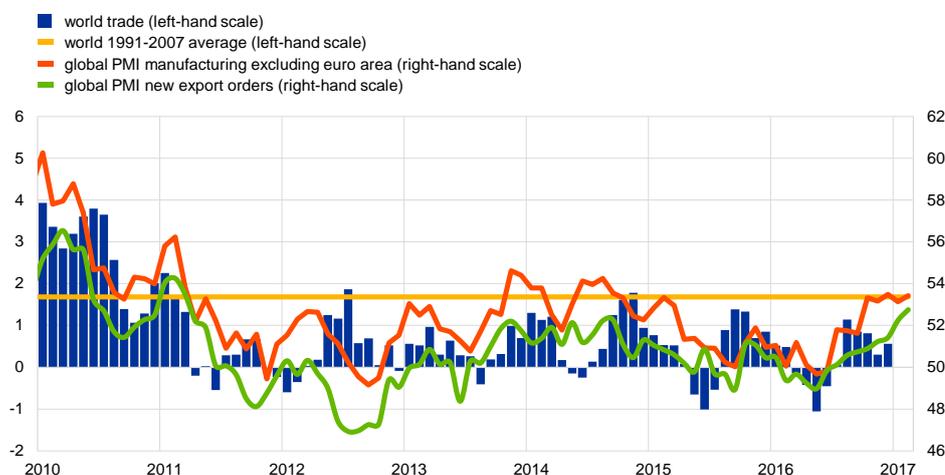
Sources: Markit, CPB and ECB calculations.
Note: The latest observations are for February 2017 (PMIs) and December 2016 (trade).

Overall, global growth is projected to increase gradually over the period 2016-19. According to the March 2017 ECB staff macroeconomic projections, world real GDP growth excluding the euro area is projected to accelerate from 3.1% in 2016 to 3.5% in 2017 and 3.8% in 2018-19. Euro area foreign demand growth is expected to increase from 1.6% in 2016 to 2.8% in 2017, 3.4% in 2018 and 3.5% in 2019. Compared with the December 2016 projections, global growth has been revised slightly upwards, reflecting some data revisions and the inclusion of the expectation of some fiscal stimulus in the US baseline projection. Meanwhile euro area foreign demand growth has been revised upwards in 2016-17, reflecting stronger import data in the second half of 2016; but marginally downwards in 2019, largely on account of expectations of weaker import growth in Latin America and China.

The uncertainty surrounding the baseline projections for global activity remains elevated, with the balance of risks tilted to the downside. Key downside risks include an increase in trade protectionism that is gaining strength across advanced economies; a disorderly tightening of global financial conditions, which could affect in particular vulnerable EMEs; possible disruptions associated with China's reform and liberalisation process; and, lastly, possible disruptions caused by political and geopolitical uncertainties, such as future relations between the United Kingdom and the European Union.

Global price developments

Global headline inflation increased in recent months, following the rebound in oil prices. In the OECD countries, annual consumer price index (CPI) inflation increased to 2.3% in January, going back to levels not seen in almost five years. This was mainly driven by the increase in energy prices, which rose by 8.5% year on

year. Excluding food and energy, OECD annual inflation increased to 1.9% in January from 1.8% in December (see Chart 4). Consumer price inflation increased further in all major advanced economies in January. Conversely, inflation continued to decline in most major non-OECD economies, with the exception of China where consumer prices picked up.

Chart 4

OECD consumer price inflation

(year-on-year percentage changes; percentage point contributions)
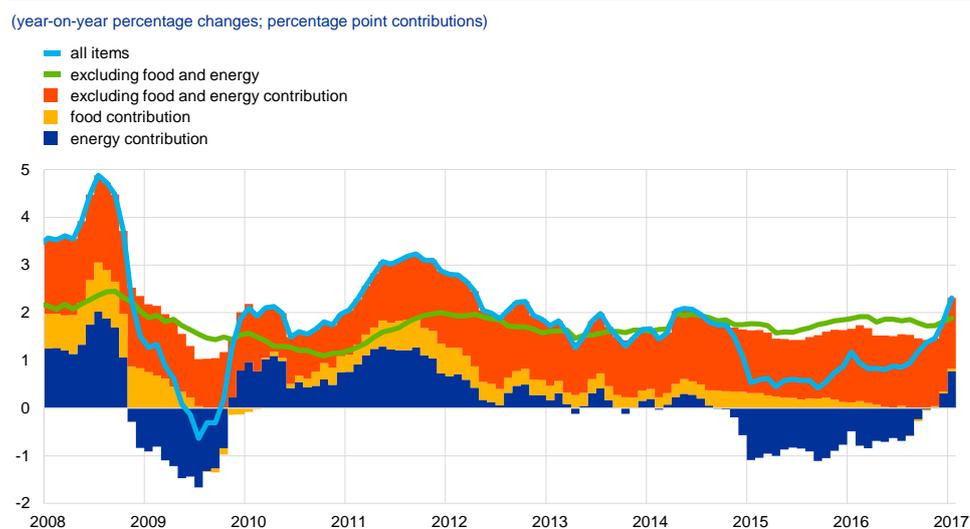
Source: OECD.
Note: The latest observation is for January 2017.

Brent crude oil prices have fluctuated in the range of USD 52 to USD 56 per barrel since the agreement of the Organization of the Petroleum Exporting Countries (OPEC) on 30 November 2016 to cut output. Global oil production dropped in January, mirroring declines in both OPEC and non-OPEC countries. While OPEC production recorded one of the largest output cuts in its history, non-OPEC members participating in the output deal also contributed to what was the biggest month-on-month decline in global oil supply since September 2008. However, looking forward, non-OPEC output is set to increase in 2017 driven mainly by countries outside the output deal (the United States, Canada and Brazil), with US shale production already showing production increases in December 2016. Non-oil commodity prices have increased by around 1% (in US dollar terms) over the past few weeks, mainly driven by a rise in the price of iron ore to a near three-year high, which was partly offset by a fall in food prices.

Looking ahead, global inflation is expected to rise slowly. The recent increase in oil and other commodity prices are expected to support headline inflation in the short term. Further ahead, slowly diminishing spare capacity at the global level is expected to give some support to underlying inflation over the medium term. However, as the current oil futures curve anticipates very stable oil prices over the projection horizon, the future contribution from energy prices to inflation is expected to be very limited.

2   Financial developments

Since the Governing Council's monetary policy meeting in December, euro area sovereign bond yields have risen slightly and exhibited some volatility. Corporate bond spreads have fallen and remain at levels lower than in early March 2016, when the corporate sector purchase programme (CSPP) was announced. Broad equity prices have risen in the euro area, with a similar increase observed in the United States. The value of the euro depreciated slightly in trade-weighted terms.

Long-term euro area government bond yields have overall increased since early December. During the period under review (from 8 December 2016 to 8 March 2017), the GDP-weighted ten-year euro area sovereign bond yield increased by around 15 basis points to approximately 1.2% (see Chart 5).

Chart 5

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

(percentages per annum)
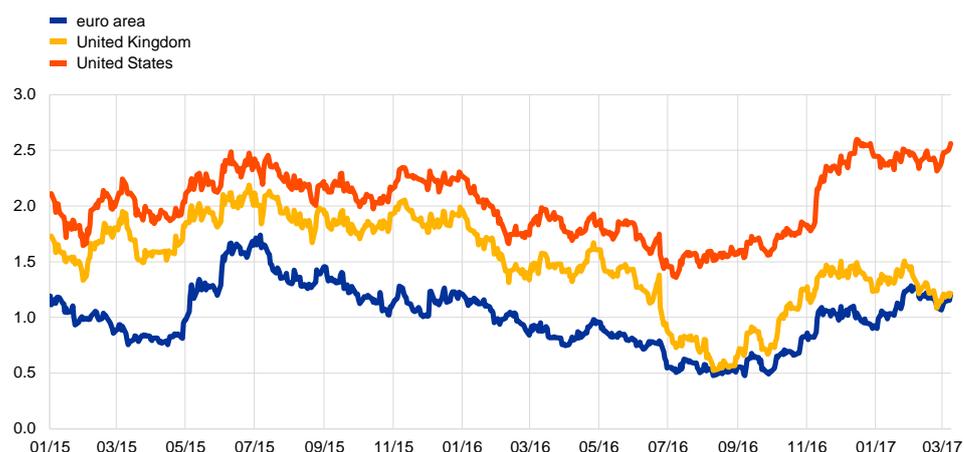
Sources: Bloomberg and ECB calculations.
Notes: For the euro area, the GDP-weighted average of ten-year euro area sovereign bond yields is reported. The latest observation is for 8 March 2017.

Within the euro area, sovereign yield spreads have widened as a result of political uncertainty. The overall stable developments in the GDP-weighted average of sovereign bond yields mask some heterogeneous intra-euro area developments. Sovereign yield spreads widened in several countries (see Chart 6). This was especially evident in France, where increased political uncertainty surrounding the upcoming presidential election led to some volatility in sovereign yield spreads. The ten-year French yield spread to the risk-free overnight interest swap rate ended the review period around 20 basis points wider, after widening by up to 40 basis points during the review period. In countries with a lower rating, a similar widening of the spread was observed.

Chart 6

Euro area sovereign spreads vis-à-vis the euro area OIS rate

(percentages per annum)

- euro area
- Germany
- France
- Italy
- Spain
- Portugal
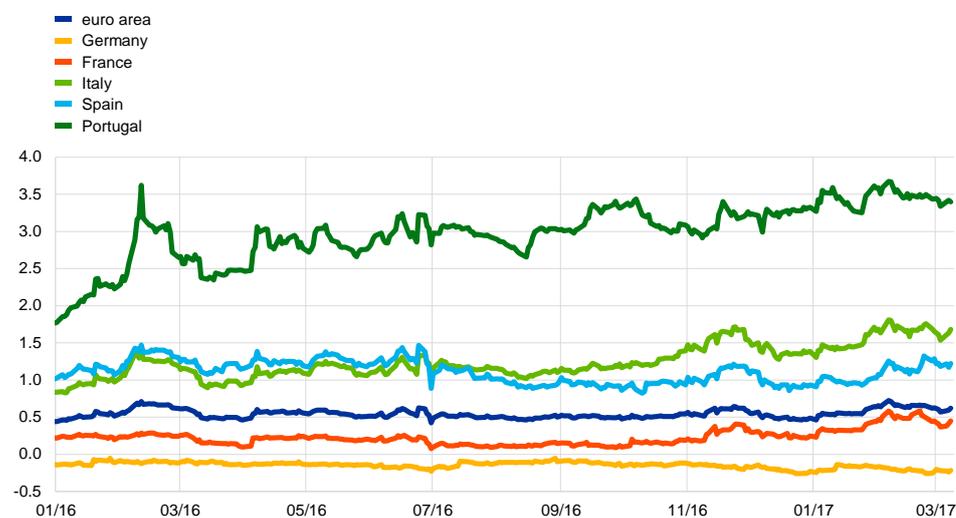
Sources: Thomson Reuters and ECB calculations.
Notes: The spread is calculated by subtracting the overnight index swap (OIS) rate from the sovereign yield. For the euro area the GDP-weighted average of ten-year sovereign yields is reported. The latest observation is for 8 March 2017.

The euro overnight index average (EONIA) forward curve has remained broadly unchanged since early December, indicating no market expectations of further decreases in the deposit facility rate (DFR). The gradual upward sloping profile of the EONIA forward curve implies that market participants continue to expect a prolonged period of negative EONIA rates with no further cuts to the DFR priced in (see Chart 7). This stands in sharp contrast to the situation in early October 2016, where the shorter segment of the curve was downward-sloping and therefore indicative of expectations of further reductions in the DFR.

Chart 7

EONIA forward rates

(percentages per annum)

- 8 December 2016
- 8 March 2017
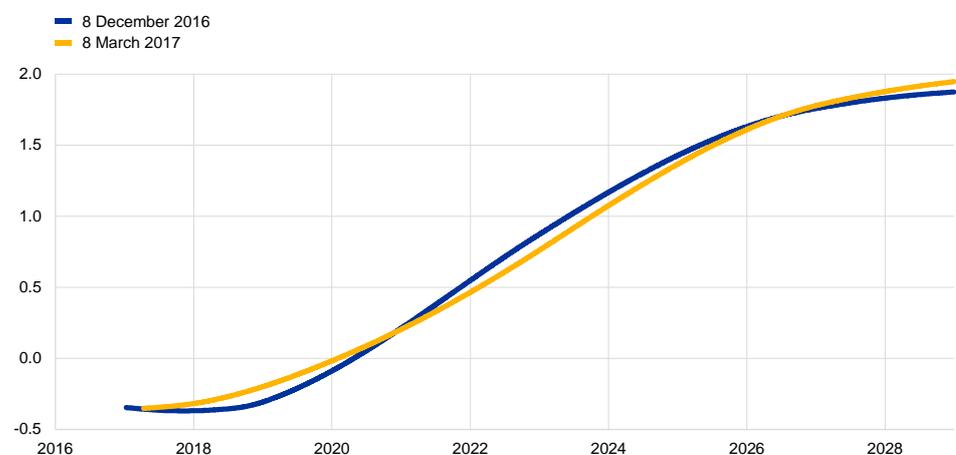
Sources: Thomson Reuters and ECB calculations.

The EONIA rate remained stable at around -35 basis points in the period under review, except for a small increase at the end of the year. Excess liquidity increased by around €165 billion, to approximately €1,356 billion, in the context of the Eurosystem's purchases under the asset purchase programme. The increase in excess liquidity also reflected participation in the third targeted longer-term refinancing operation (TLTRO-II), which took place in December 2016. Box 4 presents more information on liquidity conditions.

Spreads on bonds issued by non-financial corporations (NFCs) have fallen across all rating classes since early December (see Chart 8). The decrease in spreads (over the corresponding AAA-rated euro area curve) has been supported by an improvement in the euro area growth outlook. As such, lower corporate bond spreads indicate a reduction in the market perception of corporate risk. Spreads on investment-grade NFC bonds are currently around 60 basis points below corresponding levels in early March 2016, when the Governing Council announced the launch of the CSPP. In the financial sector, bond spreads also tightened by between 5 and 20 basis points across all rating classes during the review period.

Chart 8

Euro area corporate bond spreads

(basis points)
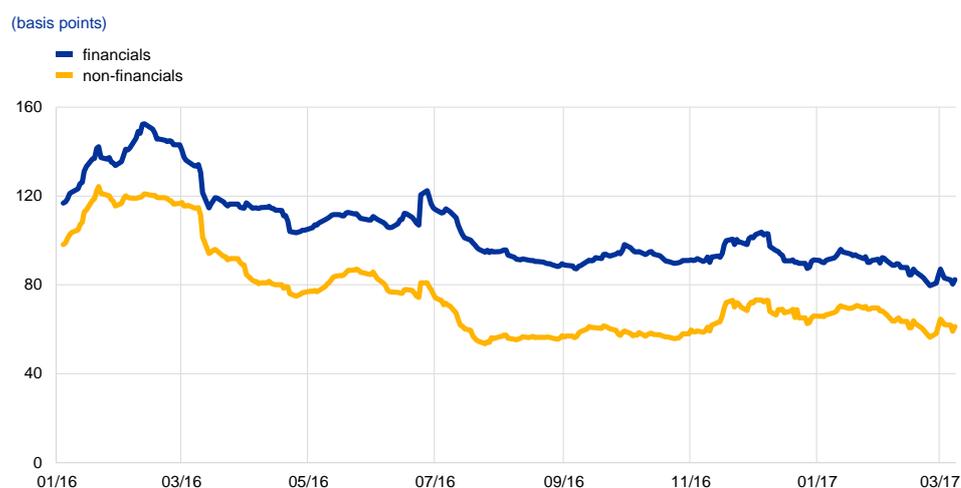
Sources: iBoxx indices and ECB calculations.
Note: The latest observation is for 8 March 2017.

Broad euro area equity prices have risen substantially since early December.
The equity prices of non-banks increased by 7% during the period under review, outperforming the equity prices of banks, which rose by only 2% (see Chart 9). Euro area non-banks outperformed their US counterparts, while the euro area banks underperformed their US counterparts. The increases have been supported by an improved outlook for macroeconomic growth and inflation. 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 2016, broad euro area equity prices have increased by around 25% (of which banks by around 50%). Market uncertainty – measured by expectations of equity price volatility – remained stable during the review period overall. In early March the implied equity market volatility in the euro area was 15% on an annualised basis, while in the United States it stood at 12%. Implied volatilities

in both areas are well below historical averages and partly reflect low realised volatilities in equity price movements.

Chart 9

Euro area and US equity price indices

(1 January 2016 = 100)

- euro area banks
- euro area non-banks
- US banks
- US non-banks

Sources: Thomson Reuters and ECB calculations.
Note: The latest observation is for 8 March 2017.

In foreign exchange markets, the euro slightly depreciated in trade-weighted terms (see Chart 10). The nominal effective exchange rate of the euro has weakened by 1.4% since 8 December. In bilateral terms, over the same period the euro has depreciated by 1.9% against the US dollar. The euro also weakened vis-à-vis other major currencies, including the Japanese yen (by 1.6%) and the Swiss franc (by 1.4%), whereas it continued to appreciate vis-à-vis the pound sterling (by 2.1%). At the same time, the exchange rate of the euro also depreciated vis-à-vis the currencies of most other EU Member States outside the euro area and the currencies of major emerging economies (including the Chinese renminbi), with the exception of the Turkish lira.

Chart 10

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

(percentages)

■ since 9 March 2016
■ since 8 December 2016
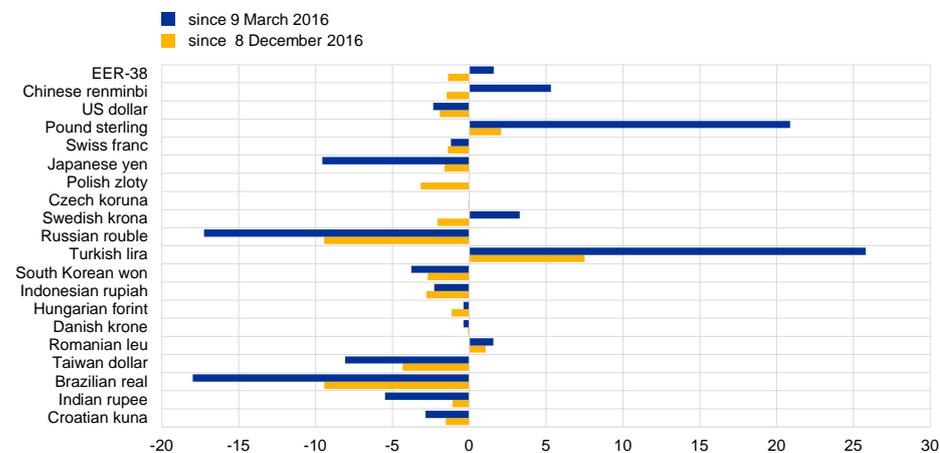
Source: ECB.
Notes: EER-38 is the nominal effective exchange rate of the euro against the currencies of 38 of the euro area's most important trading partners.

3   Economic activity

The ongoing economic expansion continues to firm and is supported primarily by euro area domestic demand. There are also signs of a somewhat stronger global recovery. The March 2017 ECB staff macroeconomic projections foresee euro area real GDP growing by 1.8% in 2017, 1.7% in 2018 and 1.6% in 2019. Risks surrounding the euro area growth outlook have become less pronounced, but remain tilted to the downside and relate predominantly to global factors.

The euro area economic expansion is continuing and is supported by domestic demand. Real GDP increased by 0.4%, quarter on quarter, in the fourth quarter of the year (see Chart 11). Domestic demand and changes in inventories contributed positively to real GDP growth, whereas net trade provided a negative contribution. Output growth in the fourth quarter led to a yearly rise in GDP of 1.7% in 2016. The tendency of economic activity to firm and broaden across sectors and countries continued in the fourth quarter of 2016.

Chart 11
Euro area real GDP and its components

(quarter-on-quarter percentage changes and quarter-on-quarter percentage point contributions)
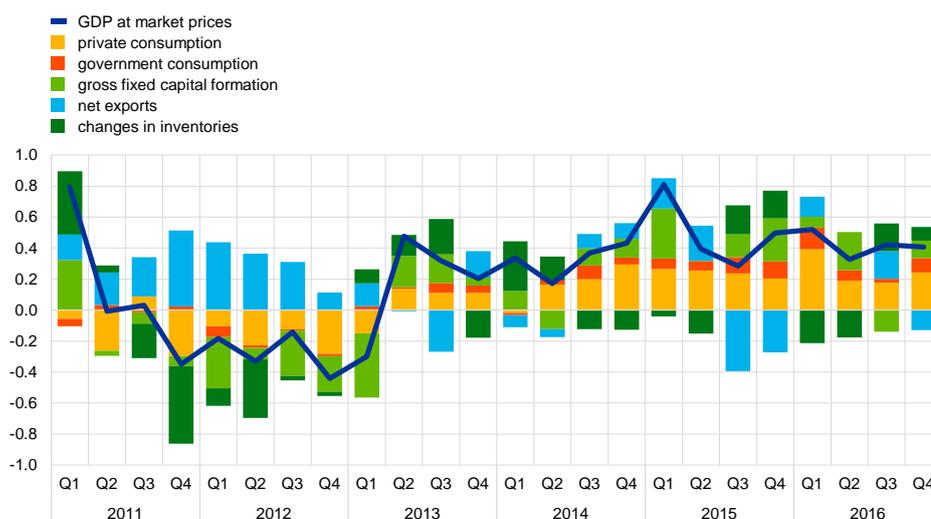
Source: Eurostat.
Note: The latest observation is for the fourth quarter of 2016 for GDP and its components.

Private consumption continues to be the mainstay of the ongoing economic expansion. Real consumer spending increased by 0.4%, quarter on quarter, in the fourth quarter. This uptick, compared with the third quarter, occurred despite an increase in oil prices. Consumer confidence remained resilient and was well above its long-term average in January and February, signalling strong underlying consumer spending dynamics in the near term. Moreover, private consumption growth continued to be fuelled by solid household income gains supported by improving euro area labour markets.

Euro area unemployment has now fallen for 14 consecutive quarters. Euro area unemployment continued to decline in the fourth quarter of 2016, having peaked at

the beginning of 2013. In January, it stood at 9.6%, remaining at the lowest rate since the second quarter of 2009. Growth in euro area employment continued in the third quarter of 2016, owing primarily to job creation in the services sector. Incoming surveys suggest further improvements in labour market conditions, with all main indicators reflecting a further positive trend into February 2017; the one exception is in the construction sector, where they remained broadly unchanged.

Chart 12

The unemployment rate and a broader measure of labour underutilisation in the euro area

(percentages)
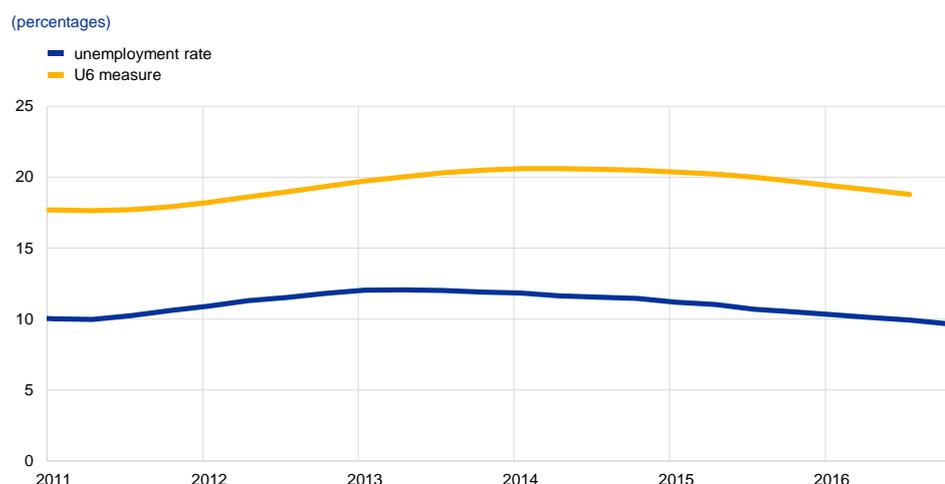
Source: Eurostat and ECB calculations.
Notes: The latest observation is for the fourth quarter of 2016 for the unemployment rate and the third quarter of 2016 for the "U6 measure". U6 is a broader measure of labour underutilisation that also takes into consideration estimates of "discouraged workers, marginally attached labour market participants and underemployed part-time workers".

Although the overall tendency in unemployment is clearly positive, labour market slack remains considerable when broader measures of labour underutilisation are taken into account. While there are fewer unemployed in the labour market, there are still many who are not counted as unemployed, but who may be capable of competing for jobs, thus constraining wage pressures. Broader measures of labour underutilisation (known as the "U6 measure", which includes estimates of the numbers of "discouraged workers", other potentially more marginally attached labour market participants and underemployed part-time workers, who currently have jobs, although not with the weekly hours they would like) remain elevated and have declined by less than has been observed for the unemployment rate (see Chart 12).This suggests a still considerable amount of slack in the wider euro area labour market.

Euro area housing markets are increasingly supporting the growth momentum. The recovery in euro area housing markets has been more delayed and much weaker compared with overall euro area economic activity. Recently, however, increasing numbers of countries have been showing positive year-on-year growth rates in major housing market indicators (see Chart 13). It thus seems that many euro area housing markets are moving into an expansionary phase. However, the strength of this recovery is overall still relatively muted and heterogeneous across countries. Looking ahead, improving financial conditions, higher confidence in

the construction sector and an increasing number of building permits issued also point to a continued pick-up in construction investment in 2017.

Chart 13

Number of euro area countries with positive annual growth rates in housing market indicators
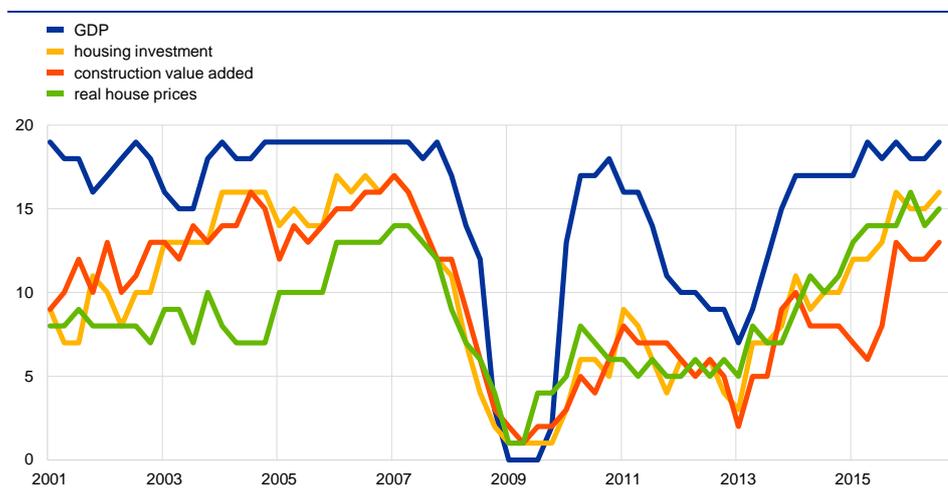
Sources: Eurostat and ECB.
Notes: The latest observations are for the third quarter of 2016. The figures, which are unweighted, can range from 0 to 19.

Business investment also seems to have expanded in the fourth quarter, although likely at a slower rate than in the third quarter, as capital goods production grew only modestly. At the same time, according to the European Commission's survey in the first quarter of 2017, demand as a perceived constraint on the production of capital goods has fallen further and remains at the lowest level since the onset of the Great Recession. Capacity utilisation also increased above average pre-crisis levels in the first quarter of 2017.

Looking ahead, total investment should be further supported by the ECB's very accommodative monetary policy. Financing conditions remain very supportive and profit mark-ups are expected to pick up in the context of an already cash-rich non-financial corporate sector. Moreover, the observed strong recovery in equity prices and moderate debt financing growth has brought down the leverage ratio (debt-to-total assets). The increase in profits of non-financial corporations should encourage investment, particularly in the light of the need to replace capital after years of subdued fixed capital formation. However, the recovery of investment will still be held back by rigidities in product markets, expectations of weaker long-term growth than in the past, and the continuing need for deleveraging in some euro area countries. In addition, the ongoing adjustment to changes in the regulatory environment, low bank profitability and the still high stock of non-performing loans on banks' balance sheets in a number of countries continue to weigh on the intermediation capacity of banks and, in turn, firms' investment funding in the near term.

Euro area export growth has continued to pick up on the back of a gradual improvement in global trade. Total euro area exports expanded by 1.5%, quarter on quarter, in the fourth quarter, driven both by services and goods trade. Monthly

data up to December 2016 points to solid increases (in three-month-on-three-month percentage changes) in goods exports to China and other Asian countries. At the same time, Latin America made a positive contribution alongside the United States. Up until November exports to the United Kingdom fell, whereas exports to other European countries rose. Indications are that euro area goods exports have outpaced global goods imports in the fourth quarter of 2016, thus signalling a possible gain in euro area export market shares against the backdrop of a depreciation of the effective exchange rate of the euro. Surveys and new export orders with a bearing on the first quarter of 2017 point to improving export momentum in the near term. Looking further ahead, exports to outside the euro area are expected to grow following a gradual rebound in global trade. Risks to the trade outlook, however, relate to possible adverse effects stemming from increased uncertainty relating to trade policies globally.

Overall, surveys point to a robust growth momentum in the first quarter of 2017. The European Commission's Economic Sentiment Indicator (ESI) displayed broad-based improvements in January and remained unchanged at high levels in February. The composite output Purchasing Managers' Index (PMI) on the other hand was stable in January and displayed broad-based improvements in February. The rise in the first two months of 2017 compared with the fourth quarter of 2016 reflected an improved assessment of the current situation and robust order book intake in industry and construction. Both surveys are currently above their long-term average levels (see Chart 14).

Chart 14

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

(quarterly growth rates and normalised percentage balances and diffusion indices)
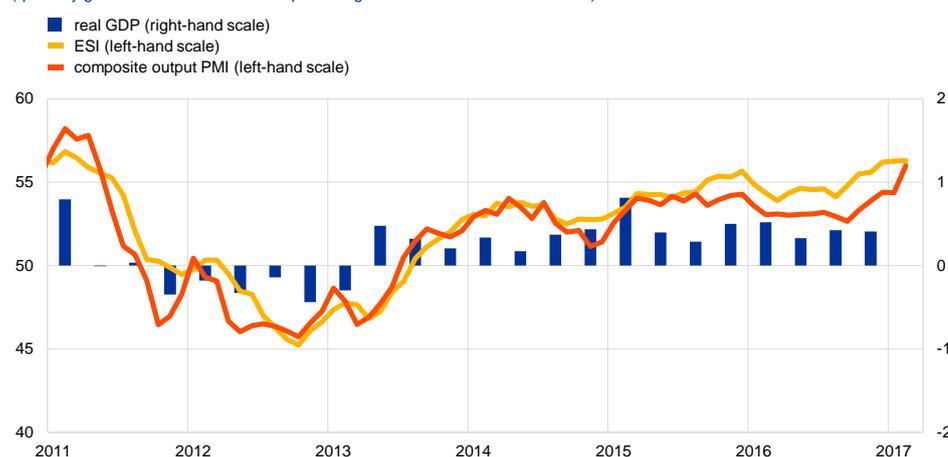
Sources: Markit, European Commission and Eurostat.
Notes: The latest observations are for the fourth quarter of 2016 for real GDP and February 2017 for the ESI and the PMI respectively.

The euro area economic expansion is expected to proceed, supported by the monetary policy measures which continue to be passed through to the real economy. Improvements in corporate profitability and very favourable financing conditions continue to promote a recovery in investment. Sustained employment gains, which continue to be driven by past structural reforms, provide support for households' real disposable income and thus private consumption. There are also

signs of a somewhat stronger global recovery and increasing global trade. 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 March 2017 ECB staff macroeconomic projections for the euro area foresee annual real GDP increasing by 1.8% in 2017, 1.7% in 2018 and 1.6% in 2019 (see Chart 15). Compared with the December 2016 Eurosystem staff macroeconomic projections, the outlook for real GDP growth has been revised up slightly by 0.1 percentage points in 2017 and 2018 due to somewhat stronger foreign demand in the near term, the weaker exchange rate of the euro and more favourable economic sentiment. The risks surrounding the euro area growth outlook have become less pronounced, but remain tilted to the downside and relate predominantly to global factors.

Chart 15
Euro area real GDP (including projections)

(quarter-on-quarter percentage changes)

Sources: Eurostat and the article entitled "March 2017 ECB staff macroeconomic projections for the euro area", published on the ECB's website on 9 March 2017.
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.

4 Prices and costs

According to Eurostat's flash estimate, euro area annual HICP inflation in February 2017 was 2.0%, up from 1.8% in January. Looking ahead, on the basis of current oil futures prices, headline inflation is likely to remain at levels close to 2% in the coming months. Measures of underlying inflation, however, have remained low and are expected to rise only gradually over the medium term. The March 2017 ECB staff macroeconomic projections for the euro area foresee annual HICP inflation at 1.7% in 2017, 1.6% in 2018 and 1.7% in 2019.

Headline inflation increased further in February. According to Eurostat's flash estimate, HICP inflation increased further to 2.0% in February, up from 1.8% in January and 1.1% in December 2016 (see Chart 16). The increase in recent months was mainly driven by energy inflation and, to a lesser extent, food inflation, and brought headline inflation in February of this year to the highest level recorded since January 2013.

Chart 16
Contributions of components to euro area headline HICP inflation

(annual percentage changes; percentage point contributions)
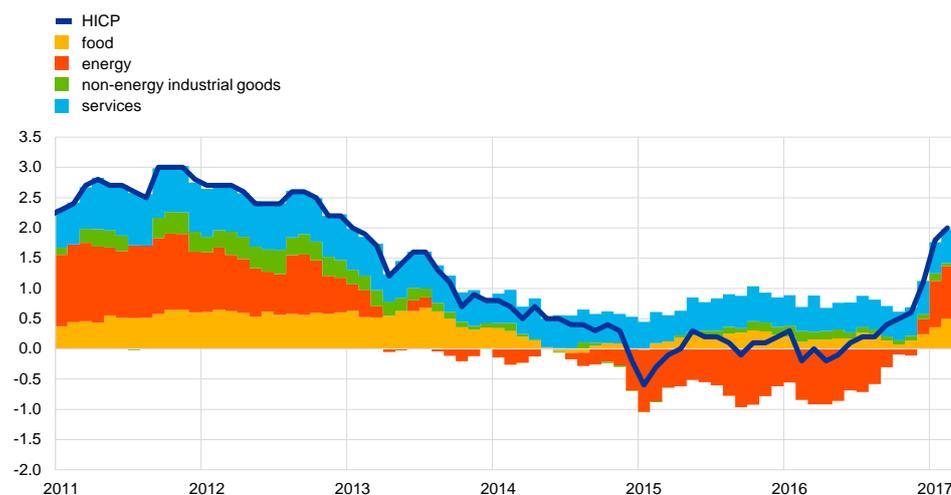
Sources: Eurostat and ECB calculations.
Note: The latest observations are for February 2017.

However, underlying inflation remained subdued. HICP inflation excluding food and energy was 0.9% in February 2017, substantially below its long-term average. The rate was unchanged from December 2016 and only slightly higher than the 0.8% recorded from August to November 2016. Most other measures of underlying inflation also showed no signs of a more dynamic upward development (see Chart 17). The subdued level of underlying inflation may partly reflect the lagged downward indirect effects of past low oil prices but, more fundamentally, also economic slack and continued weak domestic cost pressures.

Chart 17

Measures of underlying inflation

(annual percentage changes)

- ▬ HICP excluding food and energy
- ▬ HICP excluding food, energy, travel-related items and clothing
- ▆ range of underlying inflation measures
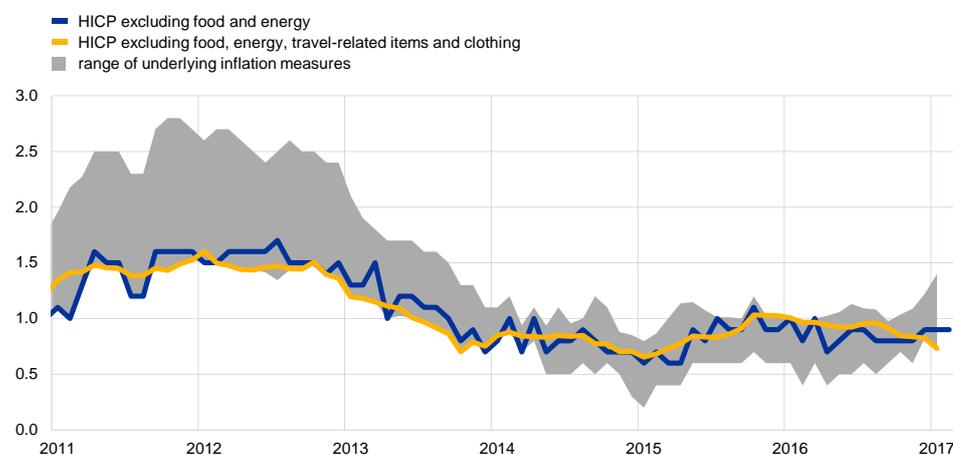
Sources: Eurostat and ECB calculations.
Notes: The range of underlying measures includes the following: HICP excluding energy; HICP excluding unprocessed food and energy; HICP excluding food and energy; HICP excluding food, energy, travel-related items and clothing; the 10% trimmed mean; the 30% trimmed mean; the median of the HICP; and a measure based on a dynamic factor model. The latest observations are for February 2017 (HICP excluding food and energy) and January 2017 (all other measures).

There are only weak signs of upward pipeline price pressures. The strong increases in producer price inflation for total industry (excluding construction and energy) since spring 2016 reflect mainly strong increases in producer prices for intermediate goods (see Chart 18). Part of these increases may – with some lag – be feeding through to prices of non-food consumer goods further down the production and pricing chain. Furthermore, import price inflation for non-food consumer goods recorded a notable increase to 0% in January, up from -0.1% in December and -1.0% in November. However, at the start of 2017, domestic producer price inflation for non-food consumer goods had yet to show a clear upward trend, only increasing to 0.3% in January after fluctuating around 0.1% throughout 2016. A possible explanation is that higher costs and prices emerging at the level of intermediate goods were absorbed by margins at different stages of the production process, and that the pricing power of firms remained constrained by strong global competition.

Chart 18

Contribution to producer prices

(annual percentage changes; percentage point contributions)

- total industry (excluding construction and energy)
- non-food consumer goods (12%)
- capital goods (28%)
- intermediates (41%)
- consumer food, beverages and tobacco (19%)
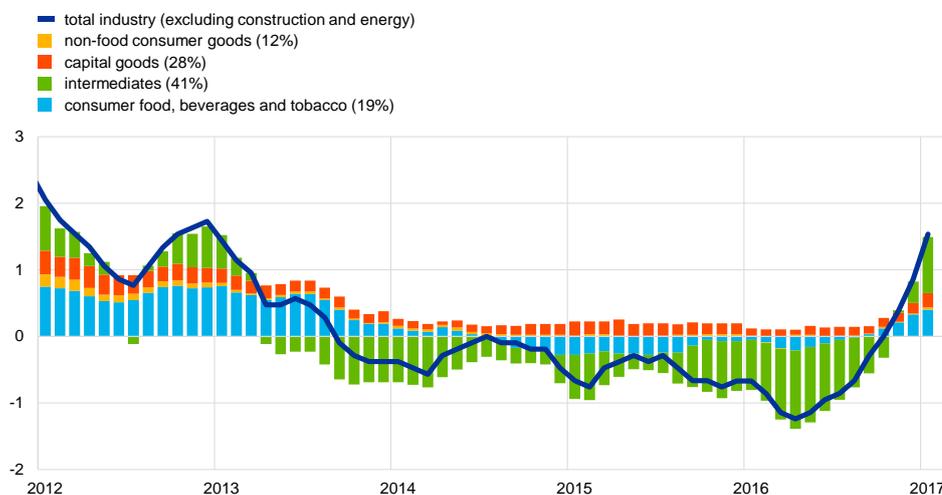
Sources: Eurostat and ECB calculations.
Note: The latest observations are for January 2017.

Wage growth has remained low by historical standards. Annual growth of negotiated wages in the euro area was 1.4% in the fourth quarter of 2016, slightly down from 1.5% in the second and third quarters of 2016. Factors that may be weighing on wage growth include still significant slack in the labour market, weak productivity growth and the ongoing impacts from labour market reforms implemented in some countries during the crisis[1]. Additionally, the low inflation environment over recent years may still contribute to lower wage growth through formal and informal indexation mechanisms.

Market-based measures of long-term inflation expectations have been broadly stable since early December 2016, remaining somewhat below survey-based measures. The upward trend in market-based measures of inflation expectations, which had been observed since the end of September, flattened after early December. Long-term market-based inflation expectations were broadly stable, while an increase was observed in the short end. More specifically, the five-year forward rate five years ahead now stands at around 1.71%, or close to 50 basis points higher than the low levels seen in autumn 2016 (see Chart 19). Irrespective of the significant increases across maturities since September 2016, market-based measures of inflation expectations still only indicate a gradual return to an inflation level of around 2% with, for example, the one-year forward rate four years ahead still hovering at around 1.35%. The higher long-term market-based inflation expectations, when compared with last autumn, have partially closed the gap on survey-based measures, which remained stable at 1.8% according to the ECB Survey of Professional Forecasters for the first quarter of 2017.[2]

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

[2]   Unlike survey-based measures of inflation expectations, market-based measures incorporate a risk premium.

Chart 19

Market-based measures of inflation expectations

(annual percentage changes)

- one-year rate one year ahead
- one-year rate two years ahead
- one-year rate four years ahead
- one-year rate nine years ahead
- five-year rate five years ahead
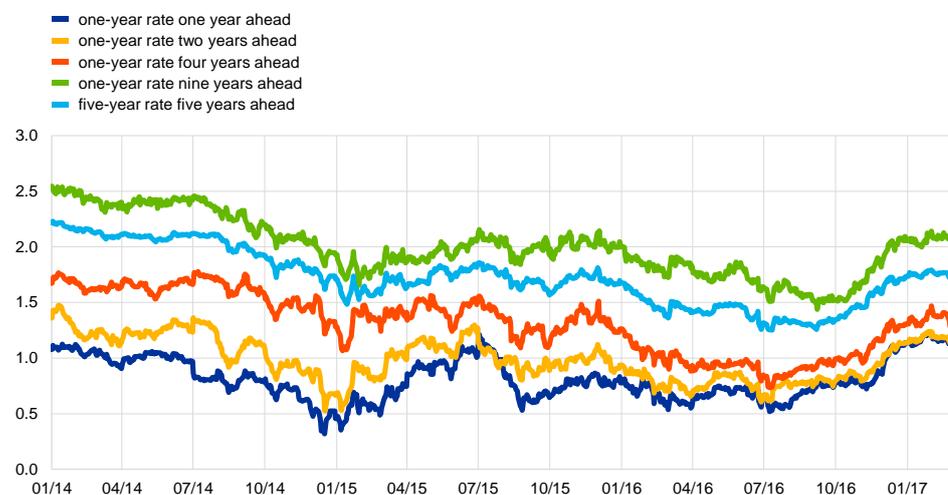
Sources: Thomson Reuters and ECB calculations.
Note: The latest observations are for 3 March 2017.

Looking ahead, HICP inflation in the euro area is projected by ECB staff to increase strongly from 0.2% in 2016 to 1.7% in 2017. The outlook for headline inflation for 2017 has been revised significantly following the recent rise in oil prices. However, there are contrasting patterns in energy and non-energy inflation. Energy prices are expected to account for the bulk of the strengthening in HICP inflation between 2016 and 2017. This, in turn, reflects upward base effects, together with recent significant increases in oil prices. On the basis of the information available in mid-February, the March 2017 ECB staff macroeconomic projections for the euro area foresee HICP inflation at 1.7% in 2017, 1.6% in 2018 and 1.7% in 2019 (see Chart 20).[3] By comparison with the December 2016 Eurosystem staff macroeconomic projections, the outlook for headline HICP inflation has been revised upwards significantly for 2017 and slightly for 2018, while it remains unchanged for 2019.

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[3]   See the article entitled "March 2017 ECB staff macroeconomic projections for the euro area", published on the ECB's website on 9 March 2017.

Chart 20

Euro area HICP inflation (including projections)

(annual percentage changes)

- HICP
- projection range

Sources: Eurostat and the article entitled "March 2017 ECB staff macroeconomic projections for the euro area", published on the ECB's website on 9 March 2017.
Note: The latest observations are for the fourth quarter of 2016 (actual data) and the fourth quarter of 2019 (projection).

In contrast to energy inflation, the expected pick-up in HICP inflation excluding energy and food is likely to be much more gradual over the projection horizon.
HICP inflation excluding energy and food is envisaged to increase from 0.9% in 2016 to 1.1% in 2017 and to rise to 1.6% and 1.8% in 2018 and 2019 respectively. A main factor behind this gradual pick-up is the envisaged increase in wages and unit labour costs as the recovery progresses and consolidates. Declining labour market slack and a gradual fading of crisis-related factors, which have held down wage growth over the past few years, are expected to lead to a rebound in the growth of compensation per employee and, given a more modest projected recovery in productivity, in unit labour cost growth. Overall, a gradual pick-up in underlying inflation should support the level of headline inflation over 2017-19.

5 Money and credit

Broad money growth remained broadly stable in January 2017. At the same time, lending to the private sector continued its gradual recovery in the fourth quarter of 2016 and in January. The annual flow of total external financing to non-financial corporations is estimated to have strengthened further in the fourth quarter of 2016.

Growth in broad money remained broadly stable in January, continuing the robust pace that has been largely observed since mid-2015. The annual growth rate of M3 stood at 4.9% in January (see Chart 21). The low opportunity cost of holding the most liquid instruments in an environment of very low interest rates, as well as the impact of the ECB's monetary policy measures, continued to support money growth. In addition, annual M1 growth remained broadly stable in the fourth quarter of 2016, as the moderating trend observed since mid-2015 paused, before it decreased somewhat in January (8.4%, after 8.8% in December 2016).

Chart 21

M3, M1 and loans to the private sector

(annual percentage changes; adjusted for seasonal and calendar effects)
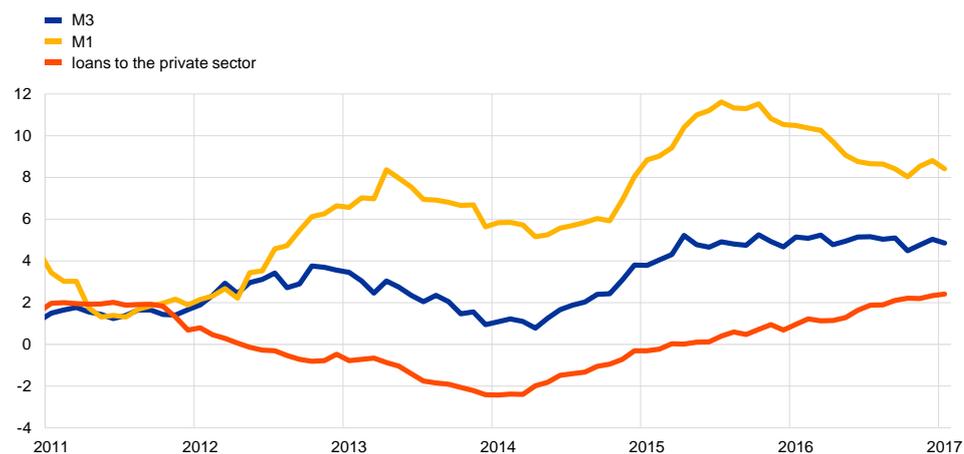
Source: ECB.
Notes: Loans are adjusted for loan sales, securitisation and notional cash pooling. The latest observation is for January 2017.

Overnight deposits continued to be the main driver of M3 growth. Specifically, the annual growth rate of overnight deposits held by households and non-financial corporations (NFCs) increased in the fourth quarter of 2016 and in January 2017, to 11.4% and 10.5% respectively, following a decline in pace during the previous quarter. By contrast, the volatile annual growth rate of overnight deposits held by financial intermediaries (excluding MFIs) declined in January. The annual 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 have a negative impact on M3 in the fourth quarter and in January. The growth rate of marketable instruments (i.e. M3 minus M2), a small component of M3, strengthened towards the end of the fourth quarter and in January, supported mainly by solid growth in money market fund shares/units.

Domestic sources of money creation remained the main driver of broad money growth (see Chart 22). Among the M3 counterparts, 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), contributed positively to M3 growth. In addition, M3 growth continued to be supported by domestic counterparts other than credit to general government (see the blue portion of the bars in Chart 22). This was 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 fourth quarter of 2016 and in January. The negative annual growth rate was partly due to the impact of the ECB's targeted longer-term refinancing operations (TLTRO-II), which 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)
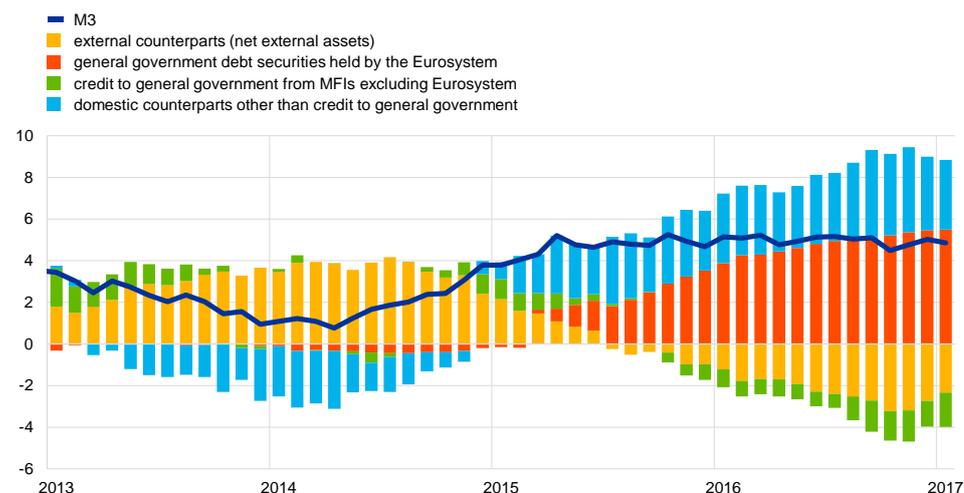
Source: ECB.
Note: The latest observation is for January 2017.

MFIs' net external assets continued to exert downward pressure on annual M3 growth. However, they registered a small positive monthly inflow in December and January. This reduced their downward pressure on annual M3 growth (see the yellow portion of the bars in Chart 22) and might suggest that the share of bond sales by non-residents in the context of the PSPP is moderating. PSPP-related sales of euro area government bonds by non-residents contributed to the annual decline in MFIs' net external assets provided that their proceeds were invested mainly in non-euro area instruments. By contrast, the share of PSPP-related government bond sales from euro area MFIs excluding the Eurosystem has been increasing. Government bond sales from euro area MFIs excluding the Eurosystem contributed to the negative annual growth of credit to general government by MFIs excluding the

Eurosystem and dampened M3 growth (see the green portion of the bars in Chart 22).

Loan growth to the private sector 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 fourth quarter of 2016 and in January 2017 (see Chart 21). Across sectors, the annual growth of loans to NFCs increased further in the fourth quarter and remained stable in January, at 2.3% (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 increased in the fourth quarter of 2016 and recovered slightly further in January, to 2.2%, from 2.0% in December (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 overall 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 bank lending.

Chart 23

MFI loans to NFCs in selected euro area countries
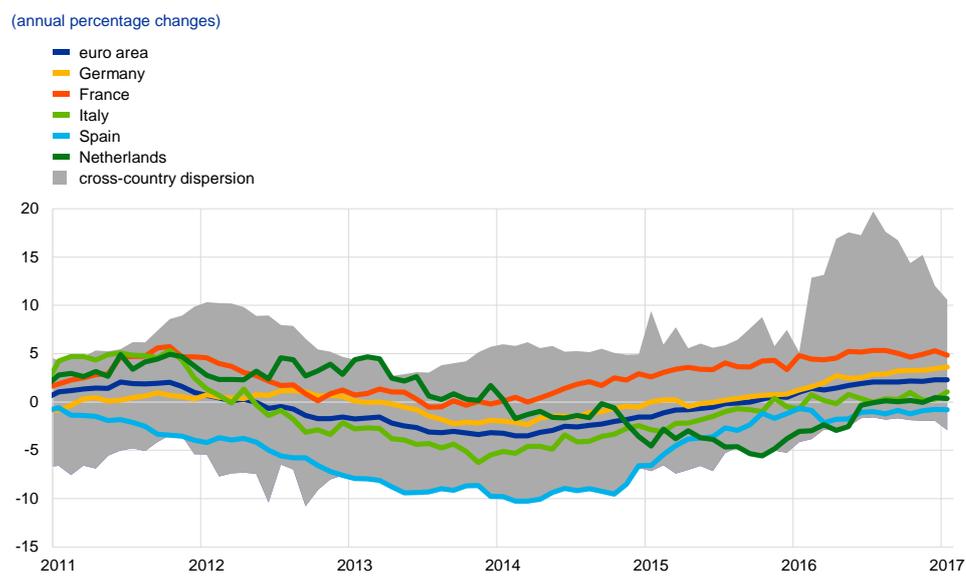
(annual percentage changes)

- euro area
- Germany
- France
- Italy
- Spain
- Netherlands
- cross-country dispersion

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 January 2017.

Chart 24

MFI loans to households in selected euro area countries
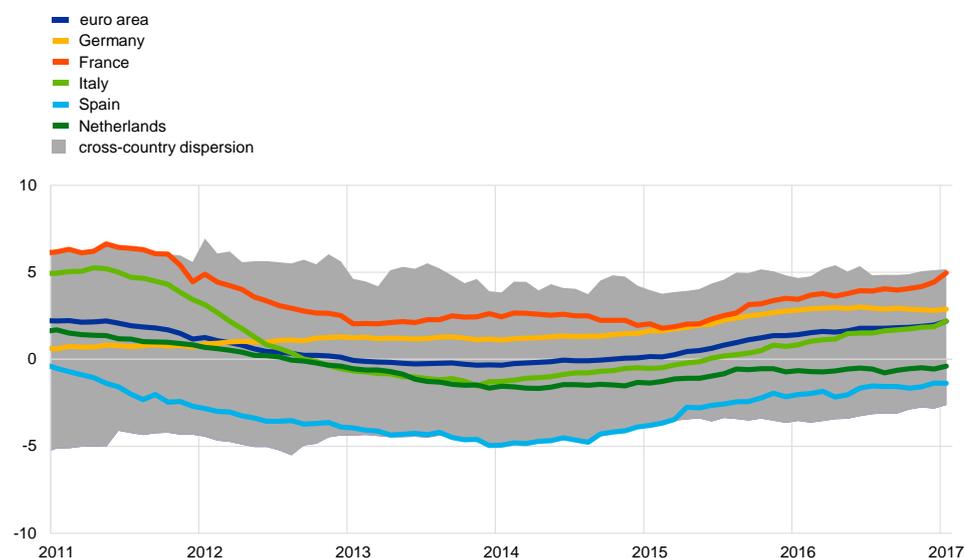
(annual percentage changes)

- euro area
- Germany
- France
- Italy
- Spain
- Netherlands
- cross-country dispersion

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 January 2017.

In the fourth quarter of 2016 loan growth continued to be supported by increasing demand across all loan categories, while credit standards for loans to enterprises and to households for house purchase stabilised broadly.
According to the January 2017 euro area bank lending survey, competitive pressure continued to have an easing impact on credit standards for loans to enterprises and households, while banks' willingness to tolerate risk had a tightening impact. Rejection rates for loan applications decreased across all loan categories. The low general level of interest rates continued to be a key factor behind the net increase in loan demand by enterprises and households. In addition, financing needs for mergers and acquisitions, as well as continued favourable housing market prospects and consumer confidence, contributed positively to loan demand (see survey). In this context, banks surveyed also indicated that profitability motives were the main reason for participating in the third TLTRO-II operation. According to the banks, the main effect of the past TLTROs on loan supply was an easing of credit terms and conditions, while the easing impact on credit standards increased.

Banks' funding conditions remained favourable. Banks' composite cost of debt financing increased slightly in the fourth quarter of 2016 and in January 2017 (see Chart 25). This was driven by a rise in bank bond yields, while the cost of deposits remained stable. Despite the recent increase, banks' composite cost of debt financing continued to be at historically low levels. 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 this development.

Chart 25

Banks' composite cost of debt financing

(composite cost of deposit and unsecured market-based debt financing; percentages per annum)
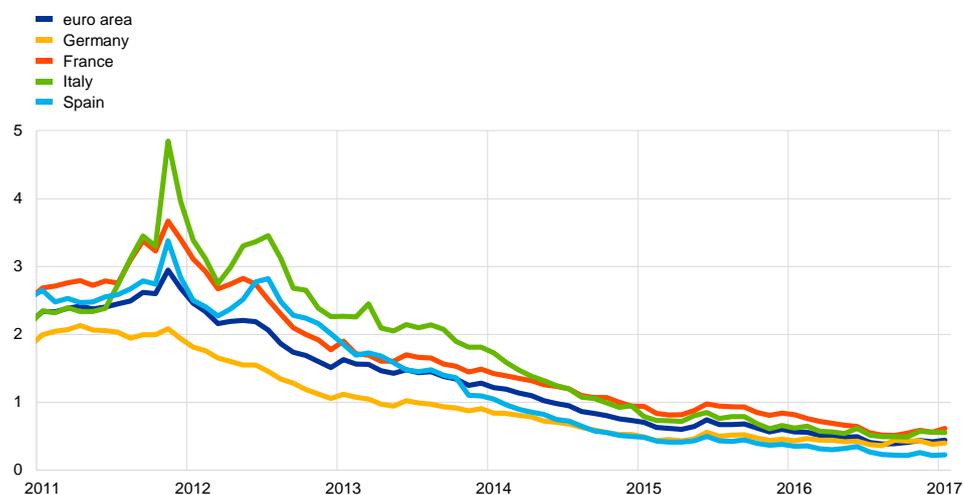
Sources: ECB, Merrill Lynch Global Index and ECB calculations.
Notes: The composite cost of deposits is calculated as an average of new business rates on overnight deposits, deposits with an agreed maturity and deposits redeemable at notice, weighted by their corresponding outstanding amounts. The latest observation is for January 2017.

Bank lending rates for NFCs and households remained at very low levels in the fourth quarter of 2016 and in January 2017 (see Charts 26 and 27). The composite lending rate for NFC loans decreased slightly in the fourth quarter of 2016 and remained broadly stable in January, at a new historical low. Over the same period, the composite bank lending rate for households for house purchase declined somewhat further in the fourth quarter of 2016, reaching a new historical low in December, and increased slightly in January. 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 January 2017, composite lending rates on loans to both NFCs and households fell by around 110 basis points. The reduction in bank lending rates on NFC loans was especially strong in vulnerable countries, thereby contributing to mitigating previous asymmetries in 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 fluctuated around the low levels reached in the fourth quarter of 2016 and in January 2017. This indicates that small and medium-sized enterprises have generally been benefiting to a greater extent from the decline in bank lending rates than large companies.

Chart 26

Composite lending rates for NFCs

(percentages per annum; three-month moving averages)
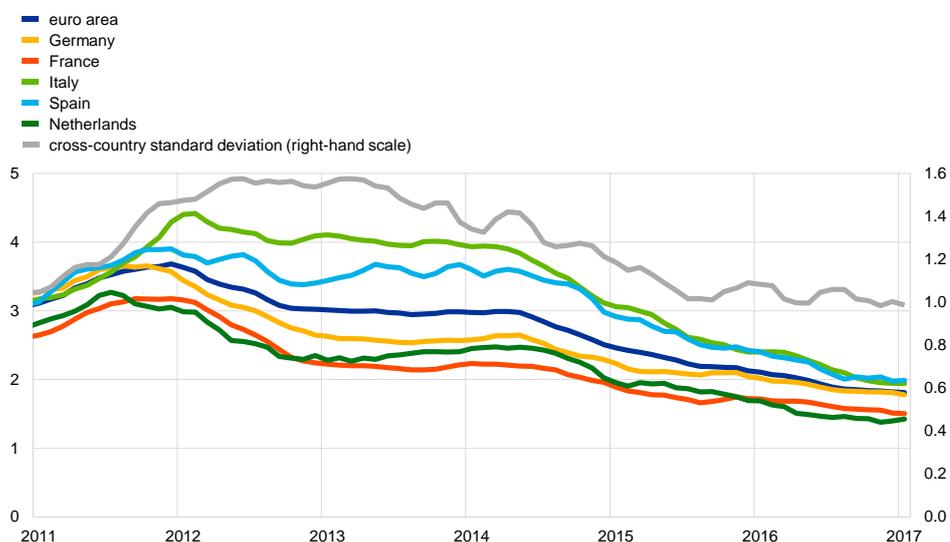
- euro area
- Germany
- France
- Italy
- Spain
- Netherlands
- cross-country standard deviation (right-hand scale)

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 January 2017.

Chart 27

Composite lending rates for house purchase

(percentages per annum; three-month moving averages)
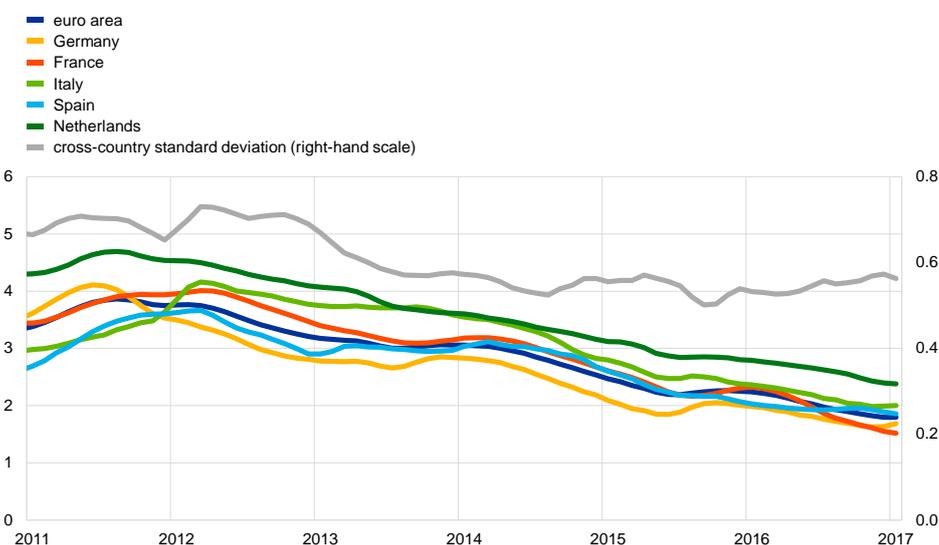
- euro area
- Germany
- France
- Italy
- Spain
- Netherlands
- cross-country standard deviation (right-hand scale)

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 January 2017.

The annual flow of total external financing to euro area NFCs is estimated to have strengthened in the fourth quarter of 2016, after slowing down temporarily in the previous quarter. NFCs' external financing now stands at levels seen at the beginning of 2005 (just 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 larger numbers of mergers and acquisitions. At the same time, NFCs' record high cash holdings have reduced the need for external financing.

Net issuance of debt securities by NFCs increased again in early 2017, after moderating towards the end of 2016. The latest ECB data show that issuance activity declined in December mainly due to seasonal factors. Preliminary data suggest that issuance increased again in January and February. It continued to be supported by the ECB's corporate bond purchases, among other factors. The net issuance of listed shares by NFCs contracted in the fourth quarter of 2016 as a result of marked share buybacks, which amounted to around €7½ billion both in November and December.

Financing costs for NFCs remain very favourable. The overall nominal cost of external financing for NFCs is estimated to have increased slightly, on average, in January and February 2017, after returning in December to its historically low level of July 2016. The rise in the overall cost of financing was explained by a modest increase in the cost of equity, which was attributable to a slight increase in the risk free rate, while equity risk premia were broadly unchanged.

6   Fiscal developments

Over the period 2017-19 the general government budget deficit and debt ratios for the euro area are projected to remain on a downward path. The euro area fiscal stance, which was mildly expansionary in 2016, is projected to turn broadly neutral in 2017-19. However, euro area countries' follow-up to the European Commission's review of their draft budgetary plans for 2017 has been unsatisfactory, as none of the countries that were considered at risk of non-compliance with the Stability and Growth Pact (SGP) has implemented significant measures.

The euro area general government budget deficit is projected to decline over the projection horizon. Based on the March 2017 ECB staff macroeconomic projections,[4] the budget deficit is expected to decline from 1.6% of GDP in 2016 to 0.9% of GDP in 2019 (see the table). The projected reduction is driven by a further decline in interest payments and a higher primary fiscal surplus, also reflecting cyclical conditions. Compared with the December 2016 Eurosystem staff macroeconomic projections, the fiscal outlook is more favourable. Unexpected revenue windfalls in a few countries resulted in a better than expected outcome in 2016. This will also positively affect the outcome in 2017, which, together with lower primary expenditures, explains the more favourable budgetary outlook for 2017-19.

Table

Fiscal developments in the euro area

(percentages of GDP)

	2014	2015	2016	2017	2018	2019
a. Total revenue	46.8	46.5	46.3	46.0	45.9	45.8
b. Total expenditure	49.4	48.5	47.9	47.4	47.1	46.7
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	45.4	45.2	45.0
Budget balance (a - b)	-2.6	-2.1	-1.6	-1.4	-1.2	-0.9
Primary budget balance (a - d)	0.1	0.3	0.5	0.6	0.7	0.8
Cyclically adjusted budget balance	-1.9	-1.7	-1.6	-1.5	-1.4	-1.1
Structural primary balance	1.0	0.8	0.5	0.4	0.5	0.6
Gross debt	92.0	90.4	89.3	88.0	86.4	84.5
Memo item: real GDP (percentage changes)	1.2	1.9	1.7	1.8	1.7	1.6

Sources: Eurostat, ECB and the March 2017 ECB 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 usually take the most recent data revisions into account, there might be discrepancies compared with the latest validated Eurostat data.

The fiscal stance was mildly expansionary in 2016 and is projected to turn broadly neutral in 2017-19.[5] The main stimulus measures in 2016 comprised cuts

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[4]   See the March 2017 ECB staff macroeconomic projections for the euro area.

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

in direct taxes in a number of countries. In the period 2017-19 further deficit-increasing measures on the revenue side are likely to be offset by less dynamic growth in components of government spending. In particular, compensation of employees and intermediate consumption are projected to grow below nominal trend GDP growth rates, while other items, such as government investment, are foreseen to grow above potential. The changes compared with the December 2016 projections are very limited. In view of the need to find a balance between economic stabilisation and fiscal sustainability in a number of euro area countries, a broadly neutral fiscal stance in the period ahead can be regarded as appropriate.

The high level of aggregate euro area government debt is projected to continue to decline gradually. The euro area debt-to-GDP ratio, which peaked in 2014, is projected to decline from 89.3% in 2016 to 84.5% by the end of 2019. The reduction in debt largely stems from the favourable interest rate-growth differential, which reflects better cyclical conditions and low interest rates. Small primary surpluses are also expected to have a favourable impact on the projected debt path. Compared with the December 2016 projections, the euro area debt-to-GDP ratio has been revised downwards over the whole projection horizon owing to the better budgetary outlook and a larger contribution to debt reduction from the interest rate-growth differential. Nevertheless, the ratios of 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 and in a few cases they are expected to actually increase over the projection horizon.

Further consolidation efforts are needed, notably in countries with high levels of debt. These countries need to set their public debt ratio 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 the achievement of a sustainable debt trajectory. By contrast, euro area countries with fiscal space can make use of the available room for manoeuvre, for example by expanding public investment. Striving for a more growth-enhancing composition of government budgets would be beneficial for all countries. For a discussion on the concept of fiscal space, see Box 6.

Euro area countries' follow-up to the review of their draft budgetary plans for 2017 has been unsatisfactory.[6] On 16 November, based on its autumn 2016 forecast, the European Commission concluded that the draft budgetary plans of eight of the 18 Member States participating in the review were at risk of non-compliance with the provisions of the SGP. These countries are Belgium, Italy, Cyprus, Lithuania, Slovenia and Finland under the SGP's preventive arm and Spain and Portugal under its corrective arm.[7] In mid-January 2017 the Commission revised its assessment for Spain to reflect the fact that the government's December update of its draft

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[6] See the box entitled "Review of draft budgetary plans for 2017 and the budgetary situation for the euro area as a whole", *Economic Bulletin*, Issue 8, ECB, 2016.

[7] The budgetary plans of Lithuania and Finland will become broadly compliant with the SGP if the reduction in the required pace of structural adjustment to the MTO that these countries have applied for under the structural reform and investment clauses is granted; in the spring the Commission will reassess their eligibility for these clauses based on their stability programmes.

budgetary plan was broadly compliant with the SGP. In the subsequent Eurogroup meetings, the governments of the countries that were considered at risk of non-compliance committed to adopting the measures needed to ensure compliance with the EU's fiscal rules. However, based on the Commission's winter 2017 forecast, none of these countries has implemented significant measures to address the identified consolidation gaps.

On 22 February 2017 the Commission released its report on Italy's compliance with the debt criterion, which concluded that the criterion is currently not complied with.[8] In line with past practice, compliance with the SGP's preventive arm could be a mitigating factor in the assessment of compliance with the debt reduction benchmark. However, according to the Commission's winter 2017 forecast, Italy's public finances are assessed to be at risk of a significant deviation from the requirements of the SGP's preventive arm. According to the Commission's report, an additional fiscal effort of 0.2% of GDP in 2017 would be crucial for Italy to return to the adjustment path towards the medium-term objective (MTO) in 2017. However, taking all the relevant flexibility provisions of the SGP into account, this adjustment would only be sufficient to ensure "broad" compliance with the preventive arm requirements in 2017. In addition, the Commission expects public investment to have decreased slightly in Italy in 2016, whereas the level of investment should be at least preserved in order to be eligible for the "investment clause". The Commission will take a final decision on whether to recommend the opening of an EDP for Italy in the spring, based on the final data for 2016 and the Commission's spring 2017 forecast, as well as the implementation of the fiscal commitments made by the Italian authorities in February 2017.

It is important that the tools under the strengthened governance framework be effectively applied in a manner which is consistent over time and across countries. It is essential that these tools be used as intended to ensure sustainable fiscal positions in euro area countries. In particular, there is a risk that the debt rule may be sidelined if it is de facto subordinated to the SGP's preventive arm, which may give insufficient weight to debt sustainability concerns. Ultimately, full and consistent implementation of the SGP is key for confidence in the European fiscal framework.

Moreover, on 22 February 2017 the Commission also published its assessment of the transposition of the fiscal compact into national legislation.[9] The Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG) includes as its main provision the requirement to have a balanced budget rule in place in national legislation – the so-called fiscal compact.[10] The TSCG entered into force on 1 January 2013, with a one-year deadline for transposition into

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[8]   See https://ec.europa.eu/info/publications/italy-report-prepared-accordance-article-126-3-treaty_en.

[9]   The Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG), which is an intergovernmental treaty, was signed by 25 countries, of which 22 countries (i.e. the 19 euro area countries plus Bulgaria, Denmark and Romania) are formally bound by the fiscal compact.

[10] See also the article entitled "A fiscal compact for a stronger economic and monetary union", *Monthly Bulletin*, ECB, May 2012 and the box entitled "Main elements of the fiscal compact", *Monthly Bulletin*, ECB, March 2012.

national legislation (i.e. by 1 January 2014). According to Article 8(1) of the TSCG, the Commission should report in due time on the transposition of the fiscal compact into national legislation. The Commission's assessment, which was published on 22 February 2017, only considers the transposition of the fiscal compact into law and not its practical application. The Commission concluded that all "contracting parties have significantly adapted their national fiscal frameworks as a result of the fiscal compact requirements", notwithstanding national differences. In particular, all contracting parties were found to have put in place a binding balanced budget rule, which is backed by a correction mechanism that will be automatically triggered in the event of significant deviations from the MTO or from the adjustment path towards it. Moreover, the Commission confirmed that compliance with the rule is monitored by an independent national fiscal institution. However, for a significant number of countries, the Commission's assessment of "compliant" is conditional on formal commitments by national authorities to implement remaining parts of the fiscal compact. These reservations relate in particular to the substance of the balanced budget rule; the application of the "comply or explain principle" if governments do not follow the recommendations of the independent monitoring institutions; and the procedures governing the activation of the correction mechanism. As these are central elements of the fiscal compact, it remains to be seen whether the way the fiscal compact has been put in place will be satisfactory and sufficient for national fiscal frameworks to be effective.

Boxes

1   EME financial market developments after the 2016 US presidential election compared with developments after the 2013 tapering talk episode

This box compares financial market responses in the United States and emerging market economies (EMEs) since the 2016 US presidential election with developments during the 2013 "tapering talk" episode and emphasises the risks to the outlook for EMEs stemming from US policies.

In both episodes, expectations of a faster pace of US monetary policy normalisation were associated with significant movements in US financial markets (see Chart A). In May 2013 remarks by the Chairman of the Federal Reserve System, Mr Bernanke, announcing that the Federal Reserve System would begin to taper asset purchases under its QE3 programme, caused a marked increase in US bond yields. Since the US presidential election in 2016 US bond yields have increased by a similar amount. In contrast to the 2013 episode, however, stock markets in the United States have rallied, market-based measures of US inflation expectations have increased and the US dollar has strengthened. In both episodes, the yield curve shifted upwards across the maturity spectrum.

Chart A

Changes in US equities, bond yields, inflation expectations and the US dollar exchange rate after the 2016 US election compared with changes after the tapering talk

(percentages (right-hand side); basis points (left-hand side))
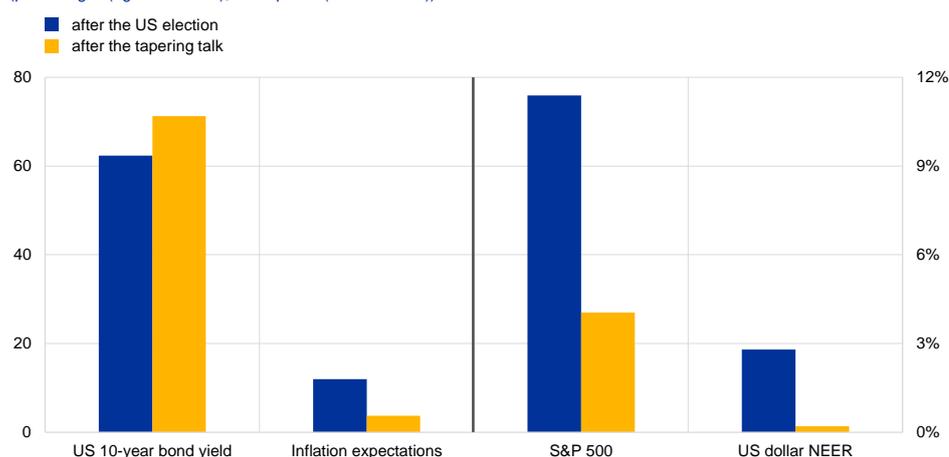
Sources: Bloomberg, Federal Reserve Board and ECB calculations.
Note: "Inflation expectations" refers to the "US Inflation Compensation: Coupon Equivalent Forward Rate: 5-10 years" series and the "US dollar NEER" is the nominal effective exchange rate of the US dollar; "after the US election" refers to changes between 8 November 2016 (the date of the Federal Open Market Committee (FOMC) meeting) and 3 March 2017 and "after the tapering talk" refers to changes between 22 May and 19 September 2013.

However, the reasons for the rise in US bond yields in each case seem to have been different. In the present episode, the interaction of US equity prices, bond

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yields and the US dollar exchange rate suggests that a positive demand shock is driving US asset market developments. Rising equity prices and falling bond prices, in particular, seem to have reflected market expectations of fiscal stimulus measures. Following the tapering talk in 2013, by contrast, it seems that a monetary policy shock – a shift in market expectations regarding the future path of monetary policy – led to the rise in US bond yields.

As a result, the reaction of EME financial markets in recent months has been milder overall than during the tapering talk episode. In the weeks after the US presidential election, EME currencies depreciated, bond prices declined (i.e. yields rose) and equity prices fell markedly. The initial decline in EME bond and equity prices has since reversed, with EME equity prices even rising to levels above those prevailing before the election, and EME currencies have bounced back. Conversely, during the tapering talk episode the decline in EME exchange rates and in bond and equity prices was significantly more persistent (see Chart B). Indeed, the sell-off in May 2013 marked the beginning of a long-term downward trend in EME asset prices that persisted until early 2016.

Chart B
Changes in EME financial asset prices following the 2016 US election and after the tapering talk

(percentage changes)

■ 8 November 2016 to 3 March 2017
■ 22 May to 30 September 2013
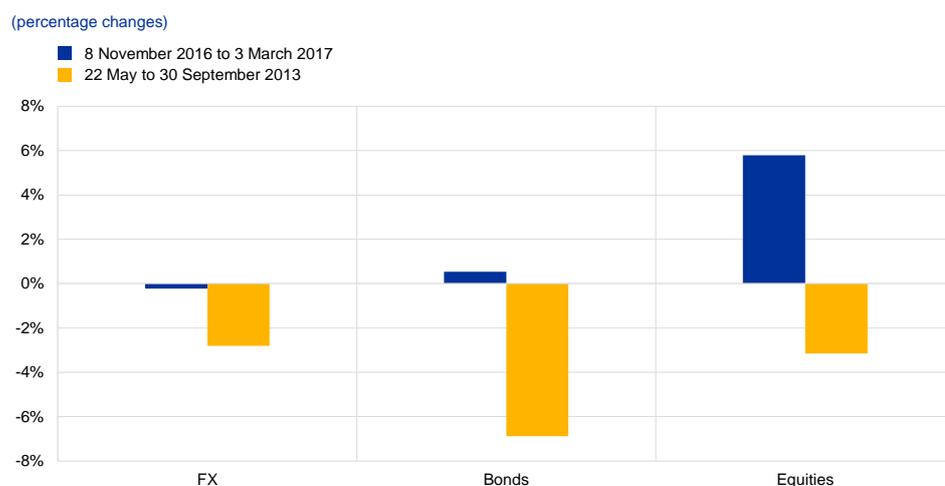
Sources: Bloomberg and ECB calculations.
Notes: "FX" is the trade-weighted JP Morgan EM currency index (EMCI). "Bonds" is the JP Morgan bond price index for US dollar-denominated sovereign debt (EMBI). "Equities" is the MSCI global EM index.

Recent EME equity and bond market outflows have been smaller than the levels seen during the tapering talk episode. Cumulative EME portfolio outflows in the month after the US election reached USD 17 billion (according to data from the Institute of International Finance), only slightly less than the outflows over the same period after the tapering talk which amounted to USD 21 billion (see Chart C). Recent developments have largely been driven by foreign disinvestment from EME bond markets, reflecting the pronounced rise in US yields. At the beginning of this year, however, these capital outflows reversed, which helped to stabilise EME asset markets. In both episodes, non-resident portfolio outflows were quick to rebound and no sudden stop occurred.

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Chart C

Non-resident portfolio outflows from EMEs following the 2016 US election and after the tapering talk

(x-axis: days since start of episode; daily cumulative flows in USD billions)
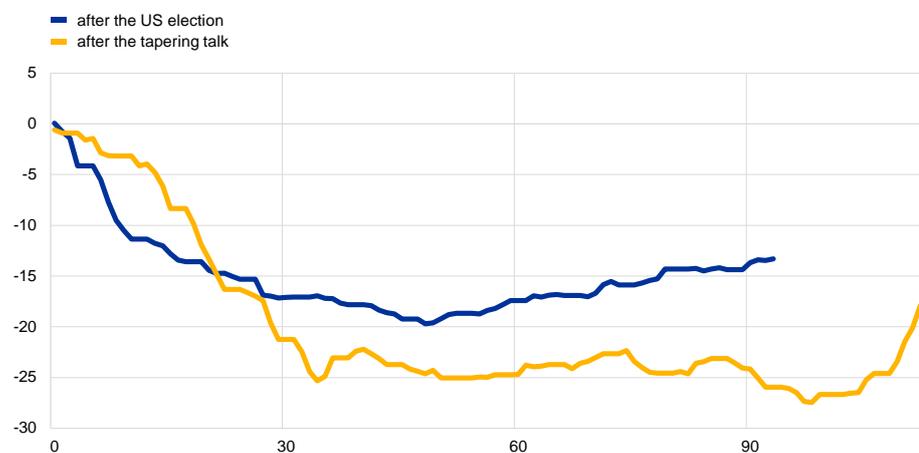
Sources: Institute of International Finance and ECB calculations.
Notes: "after the US election" refers to cumulative changes from 8 November 2016 to 9 February 2017, while "after the tapering talk" refers to cumulative changes from 23 May to 13 September 2013. Aggregate flows are based on eight EMEs that publish daily information on portfolio liabilities: Indonesia, India, Korea, Thailand, South Africa, Brazil, the Philippines and Turkey.

Despite the overall benign financial market developments, downside risks to EME activity prevail, related in particular to a potential increase in protectionist sentiment targeted at key EMEs, which would harm global trade. If implemented, protectionist measures could more than offset the potential gains from stronger US activity and would overall weigh on EMEs' economic growth. For instance, the possibility of rising protectionism has already contributed to a higher degree of uncertainty about Mexico's future trade prospects with the United States, which is weighing on the country's growth prospects. Moreover, exports of many EMEs typically have a high import content. These closely interlinked supply chains imply that any rise in trade barriers would have major repercussions and would lead to global feedback loops.

Moreover, the build-up of EMEs' foreign debt, coupled with the preference of EME firms and banks for US dollar funding, may leave some EMEs in a vulnerable position. The external debt of many EMEs expanded after the global financial crisis and has continued to expand since the taper tantrum episode, owing mainly to very loose global financial conditions (see Chart D). As the US dollar strengthens and interest rates rise globally, debt service payments become increasingly onerous. In addition, in countries confronted with intensified inflationary pressures stemming from the sharp depreciation of their currencies, central banks may need to tighten further their monetary policy stance, further increasing the debt service burden stemming from domestic currency-denominated credit. Overall, the higher debt service ratio could weigh on economic activity, causing negative consequences for consumption and investment in the EMEs concerned.

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Chart D

EME gross external debt

(percentages of GDP, USD trillions)

■ gross external debt in USD trillions (right-hand scale)
■ gross external debt as a percentage of GDP (left-hand scale)
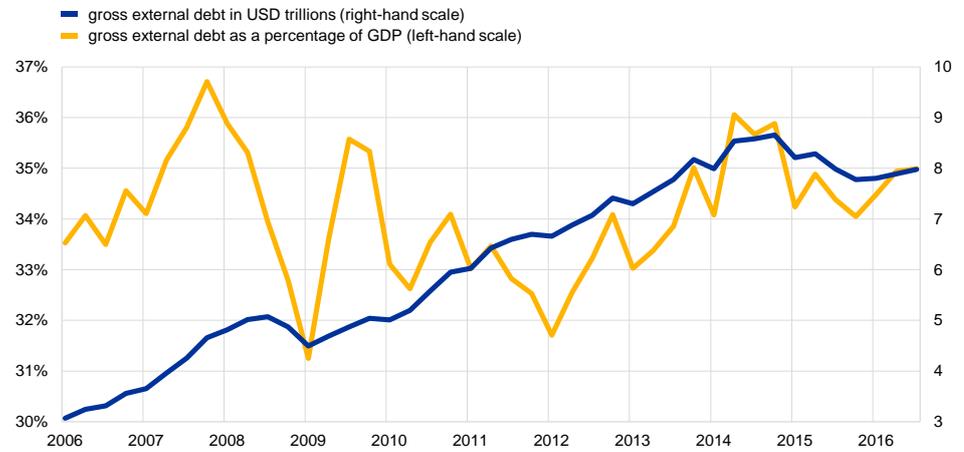
Sources: World Bank and national sources for GDP.
Note: This series is an aggregate of 14 countries (Argentina, Brazil, China, India, Indonesia, Mexico, Russia, South Africa, Korea, Turkey, Hong Kong, Malaysia, Singapore and Thailand).

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2   Analysing euro area net portfolio investment outflows

This box analyses recent developments in portfolio investment flows in the euro area financial account. In 2016 the euro area's current account surplus was mainly mirrored in the financial account of the balance of payments by net outflows for portfolio investment and – to a lesser extent – direct investment.

In 2016 the euro area recorded net outflows for portfolio investment, owing to rebalancing towards non-euro area debt securities on the part of both euro area and non-euro area investors (see Chart A). In the case of euro area residents, that represented a continuation of the pronounced shift towards non-euro area debt securities that had been observed since the second half of 2014. Annual net purchases of non-euro area debt securities by euro area investors totalled €364 billion in 2016, only slightly below the all-time high of €382 billion that was recorded in 2015. However, this masks the fact that the fourth quarter of 2016 saw euro area investors become net sellers of non-euro area debt securities, the first time this had happened since the second quarter of 2012. Net sales of non-euro area debt securities totalled €26 billion in that quarter. Euro area residents' net investment in non-euro area equities remained subdued in 2016, totalling €12 billion.

Chart A
Breakdown of euro area portfolio investment flows

(as a percentage of GDP; three-month moving averages)
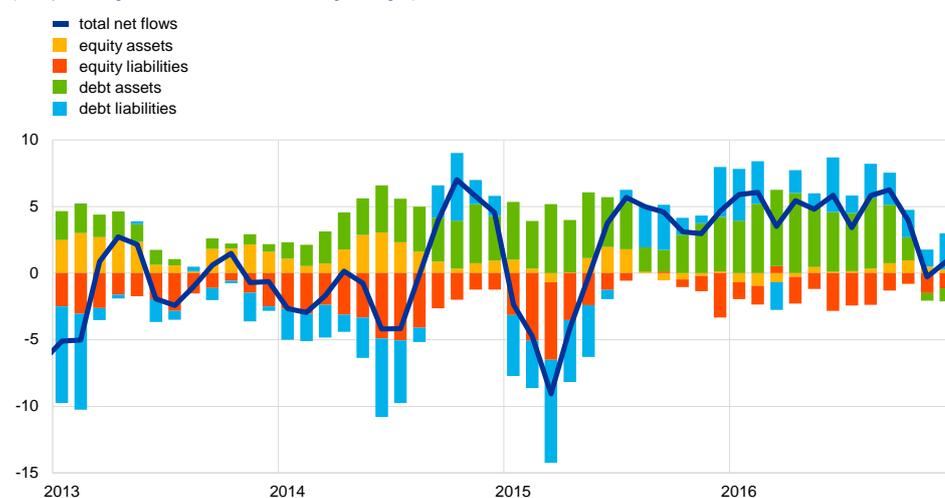
Sources: ECB and Eurostat.
Notes: For assets, a positive (negative) number indicates net purchases (sales) of non-euro area securities by euro area investors. For liabilities, a positive (negative) number indicates net sales (purchases) of euro area securities by non-euro area investors. For net flows, a positive (negative) number indicates net outflows (inflows) from (into) the euro area. Equity includes investment fund shares. The latest observation is for December 2016.

Non-euro area investors were net sellers of euro area debt securities in 2016 – the first time that had happened since the introduction of the euro. Their net sales of euro area debt securities totalled €192 billion in 2016, compared with net purchases of €30 billion in 2015. This was largely a result of net sales of government debt securities (which totalled €116 billion and were, to a significant extent, a reflection of PSPP-related sales) and net sales of debt securities issued by euro area MFIs (which totalled €63 billion). On the other hand, non-euro area investors

remained net purchasers of euro area equities, albeit their net purchases declined to €126 billion in 2016, down from €268 billion in 2015.

The persistently negative interest rate differentials vis-à-vis other advanced economies were an important determinant of net portfolio debt outflows in 2016 (see Chart B). An empirical exercise estimating the time-varying contributions that selected economic and financial variables make to the evolution of euro area net portfolio debt flows suggests that interest rate differentials played a significant role in 2016.[11] For instance, the average yield differential between GDP-weighted euro area government bonds and US government bonds was around -1.0 percentage point for ten-year bonds and -1.4 percentage points for five-year bonds in 2016. Moreover, these estimates suggest that investors' risk aversion contributed somewhat to net portfolio debt outflows in the second half of 2016, which may be linked to the temporary increases seen in financial stress indicators following the United Kingdom's referendum on EU membership in June 2016.

Chart B

Model-based estimates of drivers of net portfolio debt outflows

(as a percentage of GDP; three-month moving averages; contributions of variables)
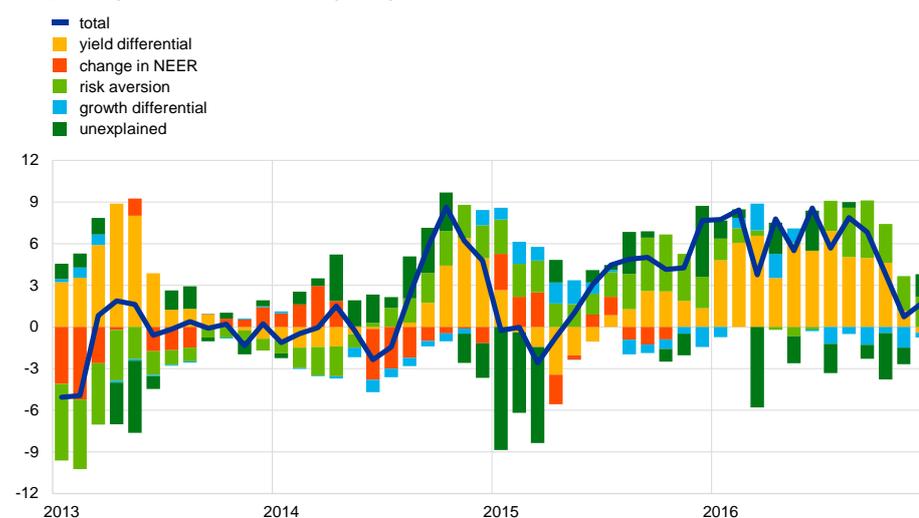
Sources: ECB and Eurostat.
Notes: A positive (negative) number indicates net outflows (inflows) from (into) the euro area. For details of variables, see footnote 1 of this box. The latest observation is for December 2016.

According to data available for the first three quarters of 2016, euro area residents' net purchases of non-euro area debt securities in that period consisted almost exclusively of long-term debt instruments and largely

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[11] These estimates of the time-varying drivers of euro area net portfolio flows are based on a reduced-form model with time-varying regression coefficients which captures both changes in market sentiment and changes in the conditional correlations between fundamentals and financial flows. These fundamentals include (i) the ECB's composite indicator of systemic stress (CISS) as a proxy for the degree of risk aversion among investors, (ii) the nominal effective exchange rate (NEER) of the euro against the currencies of 38 of the euro area's most important trading partners, (iii) the difference between the euro area and non-euro area advanced economies in terms of growth in industrial production, and (iv) the yield differential between euro area government bonds and non-euro area advanced economies' government bonds. The model is estimated at a monthly frequency on the basis of Kalman filtering with maximum likelihood. For more details, see Box 4 in the article entitled "Euro area cross-border financial flows", *Monthly Bulletin*, ECB, February 2012.

reflected transactions by "other financial corporations". This group of corporations – which includes investment and pension funds, as well as insurance companies – accounted for around 74% of the euro area's net purchases of non-euro area debt instruments in that period, with "other private entities"[12] and MFIs excluding the Eurosystem accounting for 14% and 7% respectively. Around 40% of the non-euro area debt securities that were purchased by euro area residents were issued by non-euro area governments, with securities issued by non-euro area MFIs, other financial corporations and other private entities accounting for the remainder (around 20% each).

Euro area investors' portfolio debt investment outside the euro area remained concentrated in other advanced economies in 2016 (see Chart C). According to evidence available for the first three quarters of 2016, 46% of euro area investors' net purchases of non-euro area debt securities in that period involved securities issued by the United States, followed by the United Kingdom (17%), other EU Member States (13%) and Canada (4%). Aggregate net purchases of debt securities issued by Brazil, China, India and Russia continued to account for less than 1% of total net purchases.

Chart C

Geographical breakdown of euro area investors' net purchases of non-euro area portfolio debt securities

(as a percentage of euro area GDP; four-quarter moving averages)
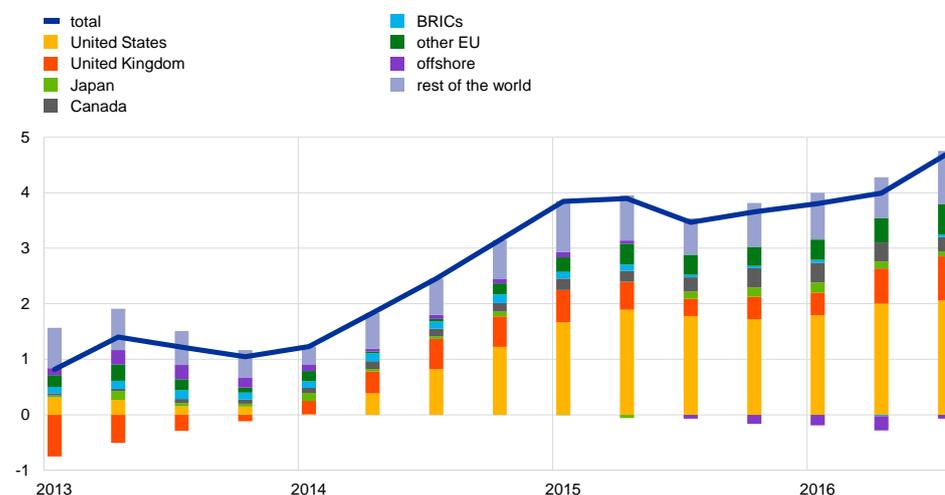
Sources: ECB and Eurostat.
Notes: "BRICs" comprises Brazil, Russia, India and China; "other EU" comprises EU Member States outside the euro area, excluding the United Kingdom. The latest observation is for the third quarter of 2016.

Country-level data show net portfolio investment outflows for the largest euro area countries, driven by foreign investors' net sales of domestic debt securities and domestic investors' net purchases of foreign assets (see Chart D). The largest net sales of debt securities by non-domestic investors were

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[12]   These comprise non-financial corporations, households and non-profit institutions serving households (NPISHs).

recorded in Italy (4.1% of GDP), followed by Germany (3.1% of GDP) and Spain (1.8% of GDP), while non-domestic investors were net purchasers of French debt securities (with net purchases totalling 1.2% of GDP). Spain and France also saw net portfolio equity inflows from foreign investors. In contrast to the euro area financial account, pronounced net cross-border portfolio equity flows have been observed at the country level. These can be explained by strong intra-euro area cross-border flows into investment funds – which are mainly based in euro area financial centres. In 2016, net cross-border flows into investment funds accounted for most of the portfolio equity flows observed for individual euro area countries, with Italy having the largest flows. Moreover, investors in France, Germany, Italy and Spain were net purchasers of non-domestic debt securities in 2016, with those net purchases totalling between 1% and 2% of GDP.

Chart D

Breakdown of net portfolio investment flows in 2016

(as a percentage of GDP)

- total net outflows
- equity assets
- equity liabilities
- debt assets
- debt liabilities
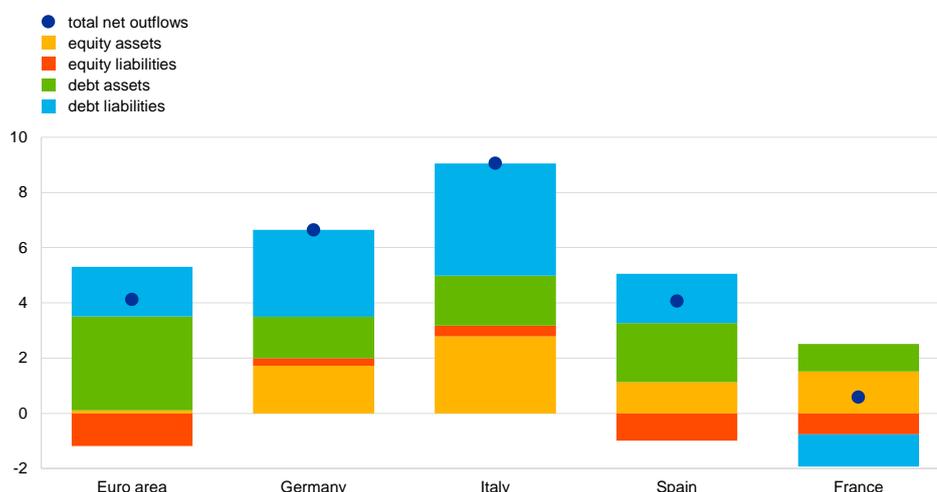
Source: ECB.
Notes: For assets, a positive (negative) number indicates net purchases (sales) of foreign securities by domestic investors. For liabilities, a positive (negative) number indicates net sales (purchases) of domestic securities by foreign investors. For net flows, a positive (negative) number indicates net outflows (inflows) from (into) the relevant country/the euro area. Equity includes investment fund shares.

In the non-MFI sector, portfolio shifts away from euro area debt securities continued to weigh on euro area MFIs' net external asset position in 2016 (see Chart E). Euro area portfolio investment flows excluding the MFI sector closely followed the pattern for the economy as a whole as shown in Chart A. MFIs' net external asset position mirrors transactions resulting from the trade and financial flows of the non-MFI sector. As can be seen from the monetary presentation of the balance of payments, the net portfolio debt outflows in the non-MFI sector had an increasingly negative impact on annual M3 growth in the euro area in 2016 via MFIs' net external asset position. Conversely, MFIs' net external assets continued to be supported by non-MFI transactions related to the euro area's current account surplus and, to a lesser extent, net equity inflows.

Monetary presentation of the balance of payments

(EUR billions; 12-month moving sums of monthly flows)

- MFI net external asset transactions
- current and capital account
- net portfolio equity flows
- net portfolio debt flows
- other
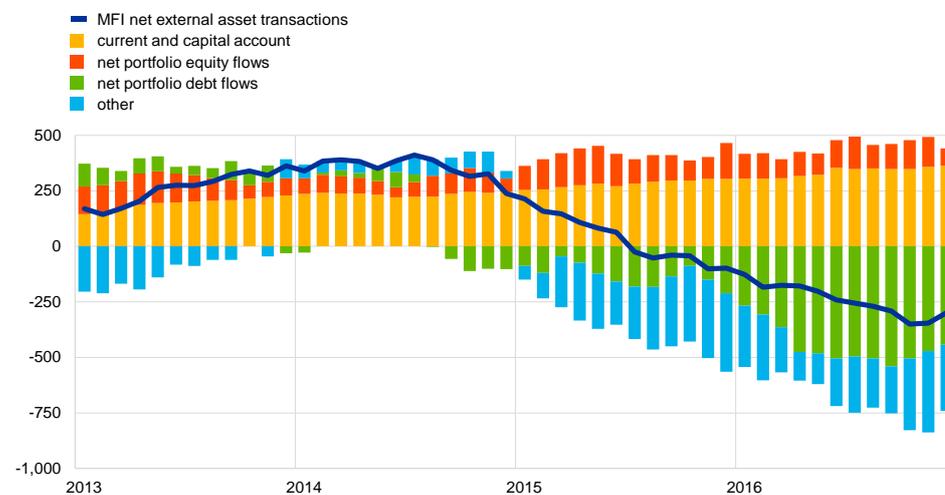
Source: ECB.
Notes: A positive (negative) number refers to a net inflow (outflow)/increase (decrease) in MFIs' net external assets. All b.o.p. transactions relate to the non-MFI sector. "Other" includes net FDI flows, other investments and financial derivatives, and discrepancies between balance of payments and monetary statistics, as well as errors and omissions. The latest observation is for December 2016.

3 Impact of the ECB's non-standard measures on financing conditions: taking stock of recent evidence

Since June 2014 the ECB has adopted a series of non-standard monetary policy measures to bring inflation rates back to levels below, but close to, 2% over the medium term. These measures have included targeted longer-term refinancing operations (TLTROs); lowering the deposit facility rate into negative territory; and an expanded asset purchase programme (APP) targeting a variety of investment-grade private and public sector securities. This set of measures has been underpinned by forward guidance on the key ECB interest rates, which are expected to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases; and on asset purchases, which are intended to continue at their current pace "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". In the context of its forward guidance, the ECB has also reiterated its readiness to increase the asset purchases in terms of size and/or duration, if a less favourable outlook or an unwarranted tightening in financial conditions were to materialise.

This box takes stock of recent evidence on the effectiveness of these measures in supporting financing conditions and credit intermediation. The adoption of non-standard monetary policy measures by major central banks, as well as their effects and the mechanisms by which they operate, have been the subject of much academic research in the past few years.[13] This box reviews some key lessons that can be distilled from this research on the euro area, focusing on adjustments in financial market prices and in bank lending behaviour, which constitute the essential early stages of the monetary policy transmission process.[14] The box organises the empirical evidence according to three stylised transmission channels, namely the signalling channel, the direct pass-through channel and the portfolio rebalancing channel.

Via the signalling channel, the non-standard measures have underpinned the ECB's intention to keep short-term interest rates low for an extended period of time and have supported inflation expectations. The reduction in the deposit facility rate to levels below zero has been a powerful instrument signalling that short-term interest rates may stay low, or even be reduced to lower levels, for a longer period than would have been expected otherwise; this has reinforced the effect of the ECB's APP on the entire yield curve.

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[13] For the United States, see, for instance, Krishnamurthy, A. and Vissing-Jorgensen, A., "The Effects of Quantitative Easing on Long-term Interest Rates", *Brookings Papers on Economic Activity*, autumn 2011, pp. 215-265, and Gagnon, J., Raskin, M., Remache, J. and Sack, B., "The Financial Market Effects of the Federal Reserve's Large-Scale Asset Purchases", *International Journal of Central Banking*, Vol. 7(1), 2011, pp.3-43; for the United Kingdom, see Joyce, M.A.S., Lasaosa, A., Stevens, I. and Tong, M., "The Financial Market Impact of Quantitative Easing in the United Kingdom", *International Journal of Central Banking*, Vol. 7(3), 2011, pp. 113-161.

[14] For an earlier comprehensive assessment of the ECB's non-standard measures, see the article entitled "The transmission of the ECB's recent non-standard monetary policy measures", *Economic Bulletin*, Issue 7, ECB, 2015.

Chart A

Three-month EONIA (OIS) forward rates

(percentages per annum; horizon)

● May 2014
● January 2015
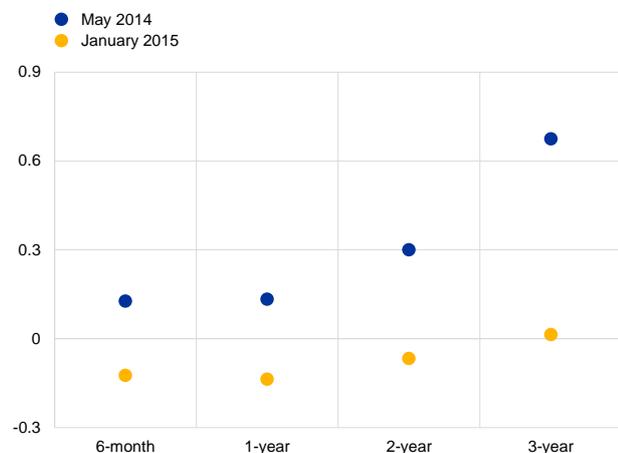
Source: ECB.

A substantial part of the decline in the expected path of short-term interest rates can be ascribed to the non-standard monetary policy measures. Chart A compares two constellations of three-month overnight index swap (OIS) forward rates (which are a proxy for market expectations regarding the evolution of nominal short-term interest rates).[15] The first constellation is observed in May 2014, i.e. just prior to the launch of the non-standard measures; the second constellation is observed immediately after the Governing Council meeting on 22 January 2015 when the APP was announced. Over the period from May 2014 to January 2015 market expectations regarding interest rates were revised downwards markedly, as reflected, for instance, in the decline of OIS rates three years ahead, which fell by around 70 basis points. In addition to the monetary policy measures, a variety of factors may possibly have contributed to these changes in market expectations.

Within the literature, one method used to identify the contribution of the ECB's measures is to examine changes in asset prices around policy announcement dates (an approach often referred to as "event-study evidence").[16] This approach confirms that a relevant part of the decline in the expected path of short-term rates can be ascribed to the non-standard monetary policy measures.[17] Moreover, this approach shows that the measures have exerted signalling effects on inflation expectations, which have increased markedly, in particular around the various APP announcement dates.[18] This re-anchoring of inflation expectations is instrumental in achieving a sustained adjustment in the path of inflation.[19]

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[15]   In principle, OIS forward rates may not fully reflect expected future short-term rates because they may embody a term premium component. In view of the focus on short and medium-term maturities, this consideration is somewhat less relevant, given that for such maturities the compensation for term risk tends to be more contained.

[16]   As financial markets are forward looking, asset prices will respond to policy measures when expectations of those measures are formed and revised, notably around the time of policy announcements. Similar event-study approaches have been used to assess the policy measures adopted in the United States and the United Kingdom. For the United States, see, for instance, Krishnamurthy, A. and Vissing-Jorgensen, A., op. cit.; and, for the United Kingdom, see Joyce, M.A.S., Lasaosa, A., Stevens, I. and Tong, M., op. cit.

[17]   The signalling channel has also contributed to reducing uncertainty surrounding future interest rates. As lower interest rate volatility decreases the likelihood of large swings in the interest rate, it also makes bonds with long maturities less risky, and hence induces a compression in term premia.

[18]   For instance, it has been found that the APP announcement in January 2015 raised inflation expectations across all maturities, with an impact ranging between 10 and 30 basis points for a maturity of five years on inflation expectations derived from inflation-linked swap contracts. See Altavilla, C., Carboni, G. and Motto, R., "Asset purchase programmes and financial markets: lessons from the euro area", *ECB Working Paper Series*, No 1864, ECB, 2015; and Ambler, S. and Rumler, F., "The Effectiveness of Unconventional Monetary Policy Announcements in the Euro Area: An Event and Econometric Study", *Oesterreichische Nationalbank Working Papers*, No 212, Oesterreichische Nationalbank, 2017.

[19]   Specifically, a model-based assessment suggests that this re-anchoring channel may account for a third of the APP's impact on inflation. See Andrade, P., Breckenfelder, J., De Fiore, F. and Karadi, P., "The ECB's asset purchase programme: an early assessment", *ECB Working Paper Series*, No 1956, ECB, 2016.

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Via the direct pass-through channel, monetary policy has induced a further pronounced easing in the market segments targeted by the non-standard measures. As well as inducing a broad-based easing in financial conditions, the ECB's policy measures have been designed to directly improve the way in which the resultant stimulus is passed through to the borrowing conditions of households and firms. The effectiveness of this channel is most evident in the case of the TLTROs, which have built-in incentive mechanisms to ensure that the favourable funding costs they offer to banks are passed on to the ultimate borrowers.[20]

Chart B

Changes in lending rates for non-financial corporations: TLTRO-I operations

(percentage points)

Chart C

Changes in lending rates for non-financial corporations: TLTRO-II operations

(percentage points)
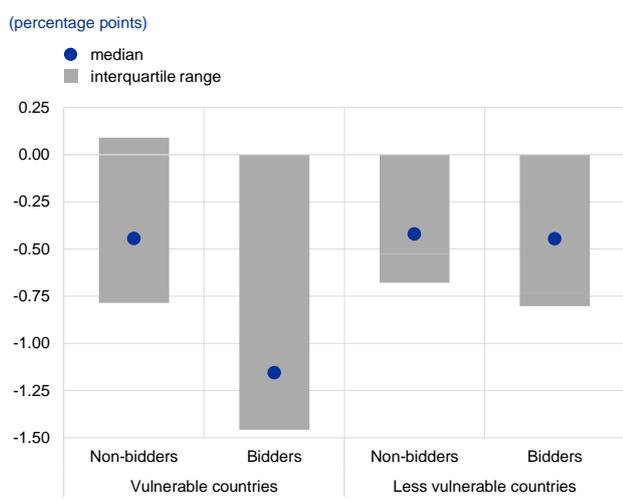
Source: ECB.
Notes: This chart covers the period from June 2014 to July 2015. In "vulnerable" countries, the "non-bidders" group comprises 10 banks and the "bidders" group comprises 49 banks. In "less vulnerable" countries, the "non-bidders" group comprises 71 banks and the "bidders" group comprises 43 banks.
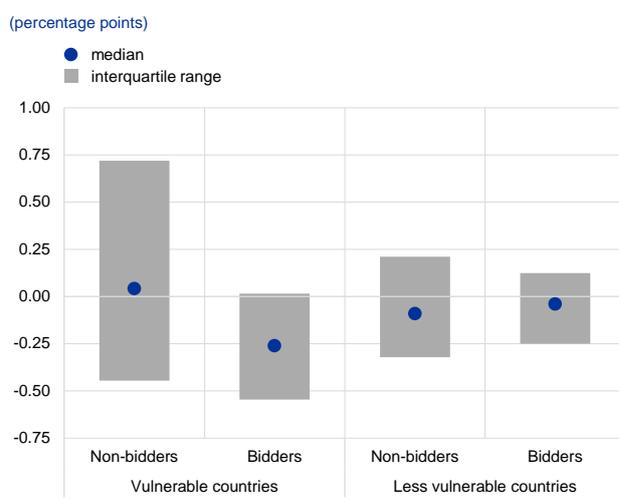
Source: ECB.
Notes: This chart covers the period from March to December 2016. In "vulnerable" countries, the "non-bidders" group comprises 24 banks and the "bidders" group comprises 47 banks. In "less vulnerable" countries, the "non-bidders" group comprises 73 banks and the "bidders" group comprises 51 banks.

Charts B and C provide evidence of this channel using information on banks' lending rates and their bidding behaviour in the two series of TLTROs. The evidence suggests that banks located in vulnerable countries that have participated in TLTROs have lowered their lending rates by more than non-participating banks.[21] This has helped steer the monetary stimulus to private sector borrowers in the euro area who have been most in need of accommodation.

Finally, via the portfolio-rebalancing channel, the ECB's non-standard measures have compressed risk premia across a wide range of asset classes. Central bank asset purchases typically entail the absorption of medium to longer-

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[20] The TLTROs are targeted operations, as the amount that banks can borrow is linked to their loans to non-financial corporations and households. The incentive mechanism works through price effects under TLTRO II: if participating banks outperform their specific quantitative benchmark for credit creation, the interest rate on their TLTRO II borrowings decreases relative to the standard borrowing cost – equal to the rate on the main refinancing operation applicable at the time of settlement – and can fall as low as the interest rate on the deposit facility applicable at the same time.

[21] Throughout this box, the term "vulnerable countries" refers to Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia, while the term "less vulnerable countries" refers to the remaining euro area countries.

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term bonds in return for "zero-duration" central bank reserves. As a result, investors have an incentive to rebalance their portfolios towards other, riskier market segments, while accepting lower compensation for holding this risk. This is because central bank purchases free up risk-taking capacity in the private sector and drive down risk-adjusted returns on the assets targeted by the purchase programmes, hence inducing investors to consider alternative investments. In order to shed light on this channel, Charts D and E show changes in the yields on securities for selected euro area sovereigns during the press conference on 22 January 2015 when the APP was announced.[22] As the theory predicts, the longer the term to maturity, the sharper the decline in yields was. Broader asset price reactions are also consistent with the view that the ECB's measures have brought about an easing in financial conditions, which was evident from the improvement in stock markets and the decline in corporate bond yields around this announcement. Arguably, confining the assessment to the market reaction on 22 January 2015 when the official announcement was made does not capture the evidence that ECB communications hinting at the imminent launch of a purchase programme began to affect market expectations as early as September 2014. When these anticipation effects are accounted for, the response of asset prices is qualitatively similar to the response seen following the APP announcement on 22 January 2015; quantitatively, the APP explains the bulk of the decline observed in euro area long-term bond yields since September 2014.[23] Moreover, risk premia have been compressed across a wide range of asset classes, suggesting spillovers to non-targeted assets. In the case of later recalibrations of the APP, it has become increasingly challenging to identify their effects via event studies, because market participants have, over time, gradually revised their expectations regarding policy packages on the basis of the continuous stream of economic data releases.[24] At the same time, available studies that seek to address this challenge by using time series and cross-sectional variation in asset prices and asset purchase volumes also confirm that the ECB's measures explain the bulk of the decline observed in euro area long-term risk premia since September 2014.[25]

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[22] Charts D and E report changes in yields between 14:30 and 16:00 CET on 22 January 2015 – i.e. between the start of the press conference and immediately after it ended.

[23] Most of the impact attributed to the APP is related to "stock effects" – i.e. the persistent changes in yields that are associated with the absorption of securities by central banks. See, for instance, Altavilla, C., Carboni, G. and Motto, R., op. cit.; Blattner, S.T. and Joyce, M.A.S., "Net debt supply shocks in the euro area and the implications for QE", *ECB Working Paper Series*, No 1957, ECB, 2016; De Santis, R., "Impact of the asset purchase programme on euro area government bond yields using market news", *ECB Working Paper Series*, No 1939, ECB, 2016; and Koijen, R.S.J., Koulischer, F., Nguyen, B. and Yogo, M., "Quantitative easing in the euro area: The dynamics of risk exposure and the impact on asset prices", *Banque de France Working Papers*, No 601, Banque de France, 2016. The impact of the actual implementation of the purchases ("flow effects") is also found to be significant, albeit more limited than the stock effects. See Holm-Hadulla, F. and De Santis, R., "Flow effects of ECB sovereign bond purchases: evidence from a natural experiment", *ECB Working Paper Series*, ECB, forthcoming.

[24] This was evident, for instance, in the context of the most recent recalibration of the ECB's monetary policy stance at the Governing Council meeting on 8 December 2016, which was largely anticipated by the market, as confirmed by survey-based information.

[25] See, for instance, Blattner, S.T. and Joyce, M.A.S., op. cit.

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Chart D

Changes in yields of German and French securities following the announcement of the APP on 22 January 2015

(basis points; years to maturity)

- German securities
- French securities
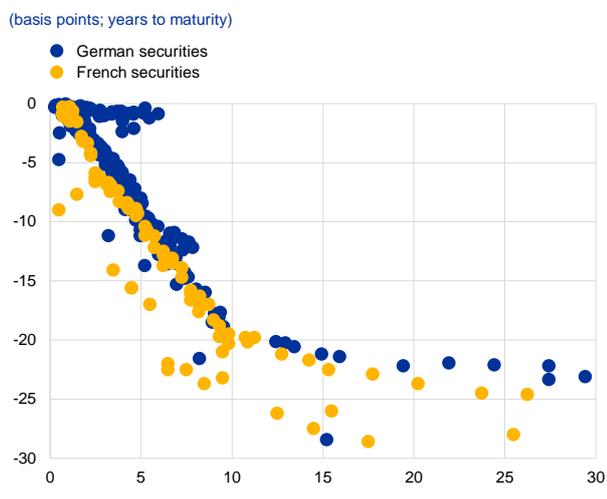
Source: ECB calculations.

Chart E

Changes in yields of Italian and Spanish securities following the announcement of the APP on 22 January 2015

(basis points; years to maturity)

- Italian securities
- Spanish securities
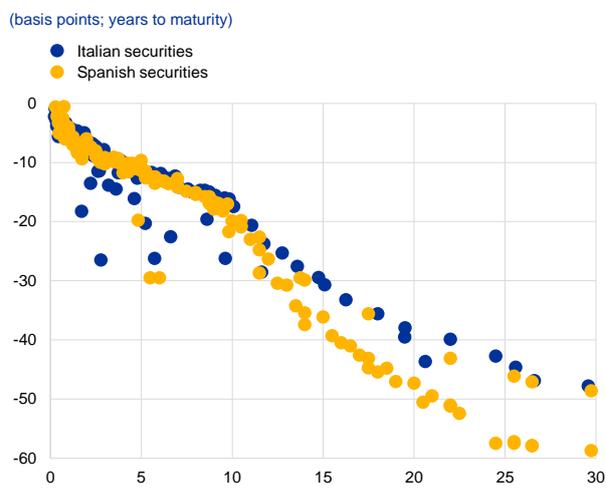
Source: ECB calculations.

The rebalancing channel has not only affected financial assets, it has also given banks incentives to improve credit conditions for households and non-financial corporations alike. A host of empirical analyses highlight that the different measures have had a mutually reinforcing impact on bank lending conditions.[26] For instance, on the liability side, the TLTROs have brought funding relief for banks participating in the operations; at the same time, the APP and the interest rate cuts have led to a compression of funding costs for the banking system as a whole. On the asset side, the negative interest rates on excess liquidity have reinforced portfolio rebalancing effects. This is because the implicit charge applied on excess reserves has increased the velocity of circulation of excess reserves in the money market, and thus has improved the relative attractiveness for banks of granting loans or holding securities with a higher return. At the same time, the precise patterns of the resultant improvements in credit conditions have varied across different types of bank and/or across countries.

In the case of banks with greater recourse to TLTROs and tighter balance sheet constraints, the measures have tended to be transmitted as a reduction in lending rates. For instance, banks located in vulnerable countries with high levels of participation in TLTROs have responded to policy measures primarily by lowering

[26] See, for instance, Albertazzi, U., Becker, B. and Boucinha, M., "Portfolio Rebalancing and the Transmission of Large-Scale Asset Programs: Evidence from the Euro Area", available as a conference paper in *Monetary policy pass-through and credit markets – ECB conference 27-28 October 2016*, ECB, Frankfurt am Main, 2016; Altavilla, C., Canova, F. and Ciccarelli, M., "Mending the broken link: heterogeneous bank lending and monetary policy pass-through", *ECB Working Paper Series*, No 1978, ECB, 2016; and Boeckx, J., De Sola Perea, M. and Peersman, G., "The Transmission Mechanism of Credit Support Policies in the Euro Area", *Working Paper Research*, No 302, Nationale Bank van België/Banque Nationale de Belgique, 2016.

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interest rates on lending to non-financial corporations.[27] In such cases, the flow of credit has recovered only gradually amid, inter alia, a structural need for deleveraging and weak cyclical demand on the back of a slow economic recovery in vulnerable countries. The strong pass-through to lending rates in the countries that were hit hardest by the financial crisis largely reflects a normalisation from earlier impairments. This has also resulted in a reduction in the dispersion of bank lending rates and receding fragmentation in terms of financing conditions across euro area countries.[28]

In the case of banks holding excess liquidity and facing significant demand for credit, the stimulus has tended to result in an improvement in credit volumes. As a result of the ECB's measures, banks located in countries where the economic recovery has been firming more rapidly have rebalanced their portfolios by extending the provision of credit. In these countries, the impact on the cost of borrowing is less significant than in more vulnerable economies, possibly because spreads and premia were already compressed. Moreover, the relatively solid balance sheet positions of banks in less vulnerable economies have provided scope for asset expansion. Finally, complementary evidence suggests that negative policy rates have amplified portfolio rebalancing incentives, as increases in credit volumes have been found to be particularly significant in the case of banks with high levels of excess liquidity.[29]

Taken together, the evidence supports the "bank lending view" of monetary policy transmission, according to which banks' balance sheet conditions affect the terms and conditions of bank credit. The evidence also shows that the transmission of asset purchases in a bank-based system such as the euro area is not weaker than in systems in which capital markets take centre stage. Coupled with negative interest rates and targeted lending operations, the ECB stimulus has led to tangible improvements in borrowing conditions for the real economy.

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[27]   For instance, by the end of December 2015 non-standard measures had contributed 40 basis points to keeping interest rates on new loans to firms low. See Altavilla, C., Canova, F. and Ciccarelli, M., op. cit. See also Albertazzi, U., Nobili, A. and Signoretti, F., "The Bank Lending Channel of Conventional and Unconventional Monetary Policy", *Banca d'Italia Working Papers,* No 1094, Banca d'Italia, 2016.

[28]   See the article entitled "MFI lending rates: pass-through in the time of non-standard monetary policy", *Economic Bulletin*, ECB, Issue 1, 2017.

[29]   Demiralp, S., Eisenschmidt, J. and Vlassopoulos, T., "Negative interest rates, excess liquidity and bank business models: banks' reaction to unconventional monetary policy in the euro area", *ECB Working Paper Series*, ECB, forthcoming.

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4 Liquidity conditions and monetary policy operations in the period from 26 October 2016 to 24 January 2017

This box describes the ECB's monetary policy operations during the seventh and eighth reserve maintenance periods of 2016, which ran from 26 October to 13 December 2016 and from 14 December 2016 to 24 January 2017 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 21 December, the third targeted longer-term refinancing operation (TLTRO) in the second series of TLTROs (TLTRO-II) was settled for an amount of €62.2 billion. The liquidity injected by that operation was partially offset by voluntary repayments for the second TLTRO-I operation, which totalled €14.2 billion. The net liquidity injection of €48.0 billion resulted in the total outstanding amount for both TLTRO programmes rising to €545.7 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 €993.2 billion, an increase of €85.2 billion compared with the previous review period (i.e. the fifth and sixth maintenance periods of 2016). This increase in liquidity needs was attributable almost exclusively to an increase in average net autonomous factors, which rose by €84.3 billion to a record high of €875.2 billion, while minimum reserve requirements rose only marginally (see the table).

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Table

Eurosystem liquidity situation

	26 October 2016 to 24 January 2017		27 July 2016 to 25 October 2016	Eighth maintenance period		Seventh maintenance period	
Liabilities – liquidity needs (averages; EUR billions)							
Autonomous liquidity factors	**1,944.8**	**(+28.1)**	**1,916.7**	**1,942.8**	**(-3.7)**	**1,946.5**	**(+8.1)**
Banknotes in circulation	1,110.5	(+14.9)	1,095.5	1,119.1	(+16.1)	1,103.1	(+8.3)
Government deposits	152.0	(+0.1)	151.9	143.0	(-16.6)	159.7	(-8.6)
Other autonomous factors	682.3	(+13.0)	669.3	680.6	(-3.2)	683.7	(+8.4)
Monetary policy instruments							
Current accounts	867.8	(+105.8)	762.0	919.0	(+95.2)	823.9	(+46.5)
Minimum reserve requirements	118.0	(+0.8)	117.2	118.8	(+1.4)	117.4	(-0.4)
Deposit facility	437.1	(+67.2)	369.9	434.4	(-4.9)	439.4	(+52.1)
Liquidity-absorbing fine-tuning operations	0.0	(+0.0)	0.0	0.0	(+0.0)	0.0	(+0.0)
Assets – liquidity supply (averages; EUR billions)							
Autonomous liquidity factors	**1,070.0**	**(-56.2)**	**1,126.2**	**1,042.1**	**(-51.8)**	**1,093.9**	**(-21.6)**
Net foreign assets	681.5	(-4.7)	686.3	674.7	(-12.8)	687.4	(-0.4)
Net assets denominated in euro	388.4	(-51.5)	439.9	367.4	(-39.1)	406.5	(-21.3)
Monetary policy instruments							
Open market operations	2,179.9	(+257.2)	1,922.7	2,254.3	(+138.3)	2,116.0	(+128.1)
Tender operations	563.2	(+29.7)	533.5	583.5	(+37.8)	545.8	(+4.9)
MROs	34.3	(-6.4)	40.6	34.6	(+0.6)	34.0	(-3.4)
Three-month LTROs	13.3	(-6.1)	19.3	11.7	(-2.9)	14.6	(-3.1)
TLTRO-I operations	47.2	(-13.1)	60.3	40.8	(-11.8)	52.6	(-3.7)
TLTRO-II operations	468.5	(+55.2)	413.2	496.4	(+51.8)	444.6	(+15.1)
Outright portfolios	1,616.7	(+227.4)	1,389.2	1,670.8	(+100.6)	1,570.2	(+123.2)
First covered bond purchase programme	13.1	(-2.8)	15.9	12.5	(-1.0)	13.5	(-1.7)
Second covered bond purchase programme	7.0	(-0.4)	7.4	6.9	(-0.1)	7.0	(-0.2)
Third covered bond purchase programme	202.7	(+11.2)	191.6	205.0	(+4.2)	200.8	(+6.1)
Securities Markets Programme	102.2	(-4.9)	107.1	102.2	(-0.0)	102.2	(-3.2)
Asset-backed securities purchase programme	22.4	(+1.9)	20.5	23.0	(+1.0)	21.9	(+1.2)
Public sector purchase programme	1,221.2	(+198.2)	1,023.0	1,268.6	(+88.0)	1,180.6	(+107.7)
Corporate sector purchase programme	48.0	(+24.2)	23.9	52.6	(+8.5)	44.1	(+13.3)
Marginal lending facility	0.2	(+0.1)	0.1	0.2	(+0.1)	0.2	(+0.1)
Other liquidity-based information (averages; EUR billions)							
Aggregate liquidity needs	993.2	(+85.2)	908.0	1,019.9	(+49.5)	970.3	(+29.3)
Autonomous factors[1]	875.2	(+84.3)	790.8	901.1	(+48.2)	852.9	(+29.6)
Excess liquidity	1,186.7	(+172.0)	1,014.7	1,234.5	(+88.8)	1,145.7	(+98.9)
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	-0.350	(-0.008)	-0.342	-0.351	(-0.003)	-0.348	(-0.003)

Source: ECB.
Notes: 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".

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The increase in autonomous factors was largely the result of an increase in liquidity-absorbing factors. The main contributor to that increase was average demand for banknotes, which increased by €14.9 billion to stand at €1,110.5 billion, broadly in line with usual year-end patterns. Average other autonomous factors also increased, rising by €13.0 billion to stand at €682.3 billion. Average government deposits were more or less unchanged, increasing by just €0.1 billion to stand at €152.0 billion.

Liquidity-providing autonomous factors decreased over the review period, as a result of the continuing decline in net assets denominated in euro, coupled with a slight decrease in net foreign assets. Average net assets denominated in euro fell to €388.4 billion, down €51.5 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. It is likely that these institutions increased their holdings as a result of limited investment opportunities in the market. Average net foreign assets decreased by €4.7 billion to €681.5 billion.

The volatility of autonomous factors remained elevated, broadly unchanged from the previous review period. That volatility primarily reflected fluctuations in both government deposits and net assets denominated in euro.

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 €257.2 billion to stand at €2,179.9 billion (see the chart). This increase was primarily due to the ECB's expanded asset purchase programme.

Chart
Evolution of monetary policy instruments and excess liquidity
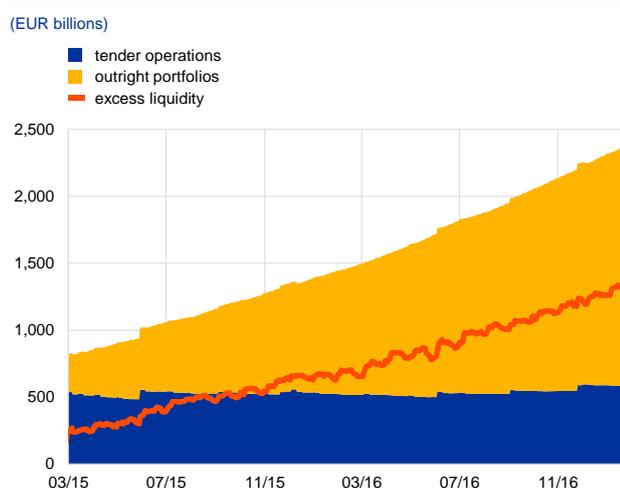
(EUR billions)

Source: ECB.

The average amount of liquidity provided through tender operations increased by €29.7 billion to stand at €563.2 billion. The increase in the liquidity provided by TLTROs more than offset the decline in the liquidity supplied via regular operations. Average liquidity provided via MROs and three-month LTROs decreased by €6.4 billion and €6.1 billion respectively, while the average outstanding amount of TLTROs increased by €42.1 billion, largely as a net effect of the settlement of the third TLTRO-II operation and voluntary early repayments for funds borrowed via the second TLTRO-I operation.

Average liquidity provided through the APP increased by €227.4 billion to stand at €1,616.7 billion, mainly on account of the public sector purchase programme (PSPP). Average liquidity provided by the public sector purchase programme, the third covered bond purchase programme, the asset-

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backed securities purchase programme and the corporate sector purchase programme rose by €198.2 billion, €11.2 billion, €1.9 billion and €24.2 billion respectively. The redemption of bonds held under the Securities Markets Programme and the two previous covered bond purchase programmes totalled €8.1 billion.

Excess liquidity

As a consequence of the developments detailed above, average excess liquidity rose by €172.0 billion to stand at €1,186.7 billion in the period under review (see the chart). In the seventh maintenance period, average excess liquidity rose by €98.9 billion on account of liquidity provided by the APP. The smaller increase of €88.8 billion in the eighth maintenance period was mainly the result of a €51.8 billion decline in liquidity-providing autonomous factors, which partially offset the liquidity provided by the expanded asset purchase programme. In addition, the pace of asset purchases under the purchase programmes was somewhat slower in the eighth maintenance period owing to the Christmas period.

The increase in excess liquidity was mainly reflected in higher average current account holdings, which rose by €105.8 billion to stand at €867.8 billion in the period under review. Average recourse to the deposit facility increased by €67.2 billion to stand at €437.1 billion.

Interest rate developments

Overnight money market rates remained close to the deposit facility rate (with some rates falling below it), while record low rates were observed over the year-end period in the repo market. In the unsecured market, the EONIA (euro overnight index average) averaged -0.350%, down marginally from an average of -0.342% in the previous review period. The EONIA fluctuated within a relatively narrow range, with a high of -0.329% on the final day of 2016 and a low of -0.356%. Furthermore, in the secured market, average overnight repo rates in the GC Pooling market declined slightly to stand at -0.405% and -0.399% for the standard and extended collateral baskets respectively, both down 0.004 percentage point relative to the previous review period.

Core collateral rates reached historic lows over the year-end period amid supply constraints. For instance, the one-day RepoFunds Rate for German collateral reached -4.9% over the year-end period, while the French equivalent reached -5.3%. In comparison, the one-day RepoFunds Rate for German collateral averaged -0.86% over the whole of the period under review, while the rate for French collateral averaged -0.75%. Rates for Italian and Spanish collateral saw smaller declines over the year-end period. Following year-end, repo rates reverted to the levels observed in November.

As of 8 December, Eurosystem central banks can also accept cash as collateral in their PSPP securities lending facilities, and they do not have to reinvest it in a cash-

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neutral manner. This measure acts to support the liquidity and functioning of the euro area repo market and helps to alleviate potential collateral-related tensions in the market.

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5 New euro area statistics on insurance corporations

Insurance corporations comprise a sizeable subsector within the euro area financial sector, representing 11% of total assets in the third quarter of 2016. This subsector has grown steadily in recent years, with total assets amounting to €7.9 trillion in the third quarter of 2016 (equivalent to 74% of annual euro area GDP) as shown in the chart below.

Chart

Total assets of euro area insurance corporations

(EUR trillions; percentages)

- ■ value
- ▬ as a percentage of total euro area financial sector
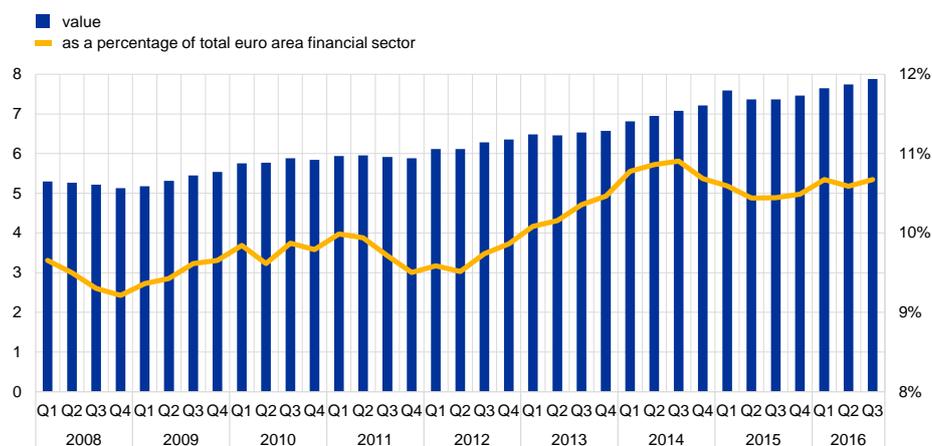
Sources: ECB and ECB calculations.

In February 2017 the ECB released harmonised statistics on insurance corporations for the first time. The dataset consists of assets and liabilities of insurance corporations aggregated quarterly across the euro area, beginning with data for the third quarter of 2016. These data (together with a separate new dataset on pension funds) further increase the quality, coverage and granularity of ECB statistics on the euro area financial sector. At this initial stage the dataset covers outstanding amounts; further improvements such as the addition of transaction data, more detailed breakdowns and more timely data releases are envisaged for the future.

The dataset on euro area insurance corporations and pension funds released by the ECB from June 2011 until October 2016 had certain shortcomings. In particular, data were not harmonised across the euro area. Furthermore, some data were estimated where actual data were not available at the national level. This dataset was discontinued after the data release for the second quarter of 2016. However, users of the statistics on insurance corporations have the benefit of a link between the old and new datasets, as data on insurance corporations for the third quarter of 2016 under the previous framework have also been made available as estimates.

The new statistics on insurance corporations improve on the previous dataset in several respects. The new dataset features (i) harmonised concepts that comply with international statistical standards; (ii) full coverage of institutions; (iii) detailed

breakdowns of assets and liabilities; (iv) breakdowns by type of insurance corporation into life, non-life, composite and reinsurance corporations; and (v) more timely releases of data.

In designing the statistical compilation framework for the new dataset, the ECB has made a concerted effort to minimise the reporting burden on insurance corporations by integrating the European statistical and supervisory data reporting requirements. In this way, the statistical data collection framework allows the statistical information to be derived, to a large extent, from data reported for supervisory purposes under the EU's Solvency II framework. Many national competent authorities have opted to receive a single reporting flow for statistical and supervisory data, based on reporting templates prepared by the ECB – in close cooperation with the European Insurance and Occupational Pensions Authority (EIOPA) – that consolidate statistical and supervisory data reporting requirements. A common technical framework, based on the eXtensible Business Reporting Language (XBRL) taxonomy, has been set up by EIOPA to facilitate the integration.

6 Conceptual issues surrounding the measurement of fiscal space

Recommendations for the conduct of budgetary policies frequently refer to countries' "fiscal space". For example, on 5 December 2016 the Eurogroup highlighted that "there are considerable differences across Member States in terms of fiscal space and budgetary consolidation needs".[30] Accordingly, policy recommendations often refer to how fiscal space can be generated, for example through the implementation of growth-friendly structural reforms.[31]

Fiscal space generally describes governments' scope for budgetary manoeuvre while preserving overall fiscal soundness. However, there is no commonly agreed approach to measure it. Instead, estimates of "fiscal space" differ, depending on the method or model used. Different approaches have evolved in recent policy discussions. They can be grouped into three broad categories, depending on whether they account for possible constraints on fiscal policies arising from (i) existing fiscal frameworks, (ii) risks to debt sustainability or (iii) so-called "debt limits", i.e. estimates of debt ratios beyond which governments' ability to honour debt obligations becomes questionable.[32] This box reviews and assesses these different concepts in the context of the EU's fiscal governance framework.

Starting with the first constraint, EU Member States' fiscal space derives from the Stability and Growth Pact (SGP) and from national fiscal frameworks. The provisions of the SGP guide countries towards sustainable budgetary positions over the medium term. These are captured by so-called "medium-term budgetary objectives" (MTO), which are defined as structural budget balances, i.e. corrected for the impact of the economic cycle and temporary measures. MTOs are country-specific and set by the government, and are conditional on respecting minimum values that are calculated according to a common methodology.[33] Against this background, the simplest measure of fiscal space within the SGP is the distance of a country's structural balance to the MTO. According to the European Commission's 2017 winter forecast, only three euro area countries (Germany, Luxembourg and the Netherlands) are expected to outperform their MTOs in 2017 (see the table). For countries that have not yet met their MTOs, the SGP recommends an appropriate effort to do so.[34] Compared with the country-specific recommendations for 2017, structural efforts towards achieving sound budgetary positions are expected to fall short of commitments under the SGP in many countries (see the table). Thus, only a

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[30] See the main results of the Eurogroup meeting on 5 December 2016.

[31] See, for example, "Priorities for structural reforms in G20 countries", staff background paper for G20 surveillance note, IMF, Washington, 2016.

[32] For another way to categorise existing approaches, see "Using the fiscal levers to escape the low-growth trap", *Economic Outlook*, OECD, November 2016.

[33] According to the SGP, MTOs are designed to serve three goals: (i) Member States maintain a safety margin that prevents them from breaching the 3% Maastricht Treaty deficit reference value during cyclical downturns; (ii) Member States' debts are sustainable, taking into consideration the economic and budgetary impact of ageing populations; and (iii) Member States have room for budgetary manoeuvre, particularly when it comes to preserving public investment.

[34] For details, see the box entitled "The effectiveness of the medium-term budgetary objective as an anchor of fiscal policies", *Economic Bulletin*, Issue 4, ECB, 2015.

few countries are likely to have any – limited – fiscal space relative to the adjustment requirement this year.

The EU's fiscal framework is asymmetric. Countries falling short of adjustment requirements are asked to step up consolidation efforts. In addition, in some countries, the national fiscal frameworks may impose fiscal adjustments that are more demanding than those under the SGP. By contrast, the SGP does not require countries with room for budgetary manoeuvre to use it.

Table

Indicators of fiscal space

	Structural balance (2017)	Medium-term budgetary objective (MTO)	Structural effort in 2017 (change in the structural balance in percentage points of GDP)	Structural effort commitment under SGP (in percentage points of GDP)*	Fiscal space			
					Distance to MTO	Shortfall vis-à-vis structural effort commitment	Debt criterion: distance to 60% reference value	Debt sustainability – overall EC assessment**
SGP preventive arm								
Belgium	-2.0	0.0	0.6	0.6	-2.0	0.0	46.5	HIGH
Germany	0.4	-0.5	-0.3	-	0.9	0.0	5.5	LOW
Estonia	-0.4	0.0	-0.7	-	-0.4	0.0	-49.9	LOW
Ireland	-1.4	-0.5	0.5	0.6	-0.9	-0.1	13.6	MEDIUM
Italy	-2.0	0.0	-0.4	0.6	-2.0	-1.0	73.3	HIGH
Cyprus	-0.7	0.0	-1.3	-0.6	-0.7	-0.7	43.2	HIGH
Latvia	-1.6	-1.0	-0.9	-1.0	-0.6	0.1	-23.5	LOW
Lithuania	-1.4	-1.0	-0.4	-0.2	-0.4	-0.2	-16.5	LOW
Luxembourg	0.4	-0.5	-1.8	-	0.9	0.0	-36.9	LOW
Malta	-0.7	0.0	0.7	0.6	-0.7	0.1	-2.0	LOW
Netherlands	0.0	-0.5	-0.1	-	0.5	0.0	0.2	LOW
Austria	-0.8	-0.5	0.1	0.3	-0.3	-0.2	21.3	MEDIUM
Slovenia	-2.1	0.25	-0.2	0.6	-2.4	-0.8	18.9	HIGH
Slovakia	-1.3	-0.5	0.7	0.5	-0.8	0.2	-8.2	LOW
Finland	-1.5	-0.5	-0.3	0.6	-1.0	-0.9	5.6	HIGH
SGP corrective arm								
Spain	-3.6	0.0	0.2	0.5	-3.6	-0.3	40.0	HIGH
France	-2.3	-0.4	0.2	0.9	-1.9	-0.7	36.7	HIGH
Portugal	-2.3	0.25	-0.1	0.6	-2.0	-0.7	68.9	HIGH

Sources: European Commission's Winter 2017 Forecast and Debt Sustainability Monitor 2016 (see https://ec.europa.eu/info/publications/debt-sustainability-monitor-2016_en).
Notes: The table excludes Greece, which is subject to a financial assistance programme. *The structural effort requirements refer to those outlined in the country-specific recommendations for 2017; they may be lower if countries are granted flexibility for, inter alia, the implementation of structural reforms or government investment. In turn, adjustment requirements are higher for countries whose debt reduction benchmark is the binding requirement under the SGP. This aims to ensure sufficient progress in reducing high debt levels towards 60% of the GDP debt reference value. **This grouping into risk categories refers to the risks identified in the Commission's "medium-term" debt sustainability analysis. The Commission's sustainability framework includes a comprehensive "medium-term" analysis (over a ten-year horizon), along with the "S1" indicator. Two additional indicators are used by the European Commission to capture risks: the "S0" indicator (for risks over the short run) and the "S2" indicator (for risks over the (very) long run). In particular, "S2" calculates the upfront fiscal adjustment required in order to stabilise the debt-to-GDP ratio over the infinite horizon, including financing for any additional expenditure arising from an ageing population.

The availability of fiscal space under the EU's fiscal rules also reflects economic and other developments. A number of provisions in the SGP explicitly allow for cyclical developments and other factors. Following the Commission's January 2015 communication on flexibility within the EU's fiscal framework, adjustment requirements under the SGP's preventive arm have been made dependent on the output gap. Adjustment towards the MTO may also be carried out more slowly in the event countries implement structural reforms or raise

investment.[35] Regarding debt reduction requirements, various relevant factors such as low inflation and growth may reduce the necessary adjustment needs.[36] Furthermore, the "general escape clause", which has so far never been applied, in principle allows amendments to fiscal adjustment in the event of a severe economic downturn, provided debt sustainability over the medium term is not endangered.

Turning to the second constraint above, available fiscal space can be derived from the comprehensive analysis of debt sustainability. There is no single measure of whether, in practice, debt is sustainable. Comprehensive debt sustainability analysis (DSA) presents both projected debt dynamics and the level at which debt stabilises in a central scenario (benchmark) and in the presence of various adverse shocks. DSA also takes into account other relevant indicators, such as a government's gross financing needs, its fiscal framework, the maturity structure of government debt, the scope for contingent liabilities, the quality of institutions and political risks.[37] Given the need to project debt developments over long horizons, any DSA is sensitive to the assumptions applied. According to the European Commission's latest Debt Sustainability Monitor[38], a sizeable number of countries are facing elevated or high risks to debt sustainability over the medium term (see the table)[39]. Most euro area countries thus have very little or no room for budgetary manoeuvre under this methodology. As the table shows, the results following this approach are closely related to those derived from rules-based fiscal space: generally, countries with elevated or high risk-to-debt sustainability are also those whose debt ratios exceed the 60% of GDP reference value by the greatest margin and whose structural budgetary position is furthest from the MTO.[40]

Regarding the third constraint, the concept of fiscal space in relation to "debt limits" captures the room for budgetary manoeuvre as the distance between current debt ratio and a level beyond which sovereigns risk not honouring their debt obligations.[41] The specification of such debt limits is either directly linked to the government's ability to raise revenue, or it is gauged more broadly as the point where political fatigue is estimated to prevent the consolidation measures necessary to stabilise rising debt. Different approaches model the shocks assumed to hit

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[35] For details, see the box entitled "Flexibility within the Stability and Growth Pact", *Economic Bulletin*, Issue 1, ECB, 2015.

[36] See also the articles "Government debt reduction strategies in the euro area", *Economic Bulletin*, Issue 3, ECB, 2016 and "The euro area fiscal stance", *Economic Bulletin*, Issue 4, ECB, 2016.

[37] See, for instance, Bouabdallah O., Checherita-Westphal, C., Warmedinger, T., de Stefani, R., Drudi, F., Setzer, R. and Westphal, A., "Debt sustainability analysis for euro area sovereigns: a methodological framework", forthcoming Occasional Paper, ECB, 2017.

[38] See https://ec.europa.eu/info/publications/debt-sustainability-monitor-2016_en and the table.

[39] No euro area country is facing high risks in the short run according to the results based on the "S0" indicator, while only one country is facing high risks over the (very) long run according to results based on the "S2" indicator.

[40] In principle, a low interest rate environment increases a government's fiscal space derived both from the SGP and from constraints associated with the level of debt: lower interest payments improve structural balances and debt sustainability.

[41] See, for example, Gosh, A.R., Kim, J.I., Mendoza, E., Ostry J.D. and Quereshi, M., "Fiscal fatigue, fiscal space and debt sustainability in advanced economies", *Economic Journal*, Vol. 123, 2013. Another approach is related to capturing the steady-state debt level, i.e. the debt-to-GDP ratio towards which an economy tends to converge in the long term. It is operationalised by discounting historical primary balances by a positive interest-growth differential. In Gosh et al., estimates of sustainable debt ratios captured like this range from 62% to 74% of GDP across euro area countries.

economies, governments' track records of budgetary policies and their responses to increasing debt. Generally, given that they vary significantly with the underlying assumptions, the model-based and empirical results for debt limits are subject to a high degree of uncertainty. This places a question mark over their concrete applicability for policy advice.

For policy purposes, the rules-based fiscal space is directly relevant for euro area countries' budgetary planning and less exposed to extreme revisions than other measures. It therefore satisfies the need for fiscal policies in Economic and Monetary Union to err on the side of caution. At the same time, the review of the different concepts for measuring fiscal space all imply that room for budgetary manoeuvre can be generated with the help of well-designed policies.[42] These range from additional consolidation to a growth-enhancing composition of budgetary policies, as well as structural reforms to increase potential output growth. All euro area countries have scope in this regard.

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[42] See also Box 3 in Bankowski, K. and Ferdinandusse, M., "Euro area fiscal stance", *Occasional Paper Series*, No 182, ECB, January 2017.

7 The 2017 macroeconomic imbalance procedure and implementation of the 2016 country-specific recommendations

On 22 February 2017 the European Commission published the European Semester Winter package which includes the conclusions reached following the application of the macroeconomic imbalance procedure (MIP), as well as an assessment of the progress with reforms in each Member State since the adoption of the relevant country-specific recommendations (CSRs) in July 2016.

Outcome of the 2017 MIP assessment by the European Commission

The MIP was introduced in 2011 and is now in its sixth year of application. It seeks to prevent the emergence of harmful macroeconomic imbalances in EU countries and to correct them where they are excessive. Following a screening exercise in autumn each year on the basis of a set of indicators, the European Commission conducts in-depth reviews of selected countries (included in the annual country reports) to assess the severity of any imbalances. If such imbalances are found to exist, the Member State concerned receives policy recommendations from the Council of the European Union – based on recommendations by the European Commission – under the preventive arm of the procedure. Where the imbalances are found to be excessive, the excessive imbalance procedure (EIP) may be initiated following a recommendation to the Council by the Commission.[43] Under this corrective arm of the procedure, a corrective action plan must be provided to explain how the excessive imbalances will be addressed. In the event of repeated failures to provide an adequate plan, or if an approved plan is not complied with, the Council may impose financial sanctions on the euro area country in question.

In its assessment, the European Commission identified six countries with excessive imbalances: Bulgaria, France, Croatia, Italy, Cyprus and Portugal (see Table A). Excessive imbalances have been identified in each of these countries, with the exception of Cyprus, since 2015. Cyprus was added to this list in 2016, after exiting its economic and financial adjustment programme in March of that year. Looking back over a longer period, the number of countries assessed by the Commission as having excessive imbalances has increased each year since 2012, and only stabilised this year (see Chart A). This trend has to some extent been driven by countries whose economic adjustment programmes have ended and which have therefore been automatically reintegrated into the regular EU surveillance processes. While the adjustment programmes have helped to reduce imbalances, overall vulnerabilities in those countries remain high and therefore close monitoring is still essential. Nevertheless, even allowing for such "automatic" inclusions, the number of countries in the "excessive imbalances" category has not declined. This

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[43] See Recital 22 of Regulation (EU) No 1176/2011 of the European Parliament and of the Council of 16 November 2011 on the prevention and correction of macroeconomic imbalances.

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appears to be consistent with the finding from the assessment of the implementation of CSRs made in 2016 (see below) that reform remains slow despite the challenges faced by these countries. Only Spain and Slovenia have managed to move out of the "excessive imbalances" category, while Italy has now been included in it for the fourth year.

Table A

The Commission's conclusions on the 2017 macroeconomic imbalance procedure

(1) No imbalances				(2) Imbalances		(3) Excessive imbalances		(4) Excessive imbalances and application of the corrective arm (EIP)	
2016		2017		2016	2017	2016	2017	2016	2017
BE*	HU*	BE	HU	DE	DE	BG	BG	-	-
CZ	MT	CZ	MT	IE	IE	FR	FR		
DK	AT*	DK	AT	ES	ES	HR**	HR		
EE*	PL	EE	PL	NL	NL	IT	IT**		
LV	RO*	LV	RO	SI	SI	PT**	PT**		
LT	SK	LT	SK	FI		CY	CY**		
LU	UK*	LU	UK	SE	SE				
		FI*							

Source: European Commission.
Notes: * These countries were each the subject of an in-depth review in 2017. The remaining countries in column (1) were assessed in the alert mechanism report – which is the first stage of the MIP – as having no imbalances. ** In the cases of Italy, Cyprus and Portugal, the Commission will specifically review whether their respective National Reform Programmes contain sufficiently ambitious policy measures. If satisfied that this is the case, the Commission will not invoke the corrective arm of the MIP in relation to that country. The same approach was applied to Croatia and Portugal in 2016.

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Chart A

Increase since 2012 in the number of countries with excessive imbalances
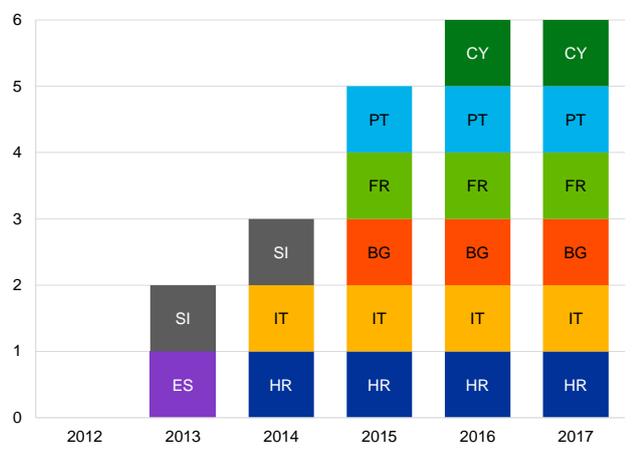
Source: European Commission.
Notes: The chart shows those countries assessed by the European Commission as having "excessive imbalances" in each year. A country subject to an economic adjustment programme enters the MIP automatically once that programme ends. In 2012 no country was assessed as having excessive imbalances.

As in the previous year, the Commission has again identified imbalances (although not excessive) for Germany, Ireland, Spain, Netherlands, Slovenia and Sweden. By contrast, in the case of Finland the Commission closed the procedure after concluding that the imbalances identified last year were no longer present, owing (among other things) to strong policy measures implemented by the government to recover competitiveness.

While one can observe an increase in the number of countries with no imbalances in 2016, it does not follow that their endeavours to implement reforms should cease. Most euro area countries are still far from achieving best practice in terms of well-functioning labour and product market policies.[44] Empirical work also suggests that there is a strong link between higher quality institutions and both higher resilience to shocks and higher growth performance.[45] Such countries thus require further reforms to increase their resilience and competitiveness.

Despite having identified excessive imbalances in six countries, the European Commission is not proposing at this stage to activate the excessive imbalance procedure (i.e. the corrective arm of the procedure). Since the creation of this procedure it has been the view of the ECB that the MIP tools – including the full corrective arm of the procedure – should be fully employed in relation to those countries with excessive imbalances. This has also been explicitly called for by the five Presidents in their 2015 report.[46] The use of such tools is desirable not only in order to increase the economic prospects of the relevant country itself, but also to help facilitate economic adjustment processes inside the euro area and reduce euro area-wide vulnerabilities. It is thus in the interest of the euro area as a whole.

Although the Commission has not for the moment activated the corrective arm, it has announced that three of the countries with excessive imbalances (Italy, Cyprus and Portugal) have been asked to propose particularly ambitious policy measures in their National Reform Programmes (which are to be submitted by April 2017). In the event that those programmes do not contain the required policy measures, the excessive imbalance procedure could be opened in May. For each country which it has assessed as having an imbalance or an excessive imbalance, the Commission will conduct a specific monitoring mission appropriate to the severity of the imbalance.

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

[45] ibid.

[46] Juncker, J.-C. et al., *Completing Europe's Economic and Monetary Union*, June 2015.

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Overall, EU Member States have taken insufficient steps to implement reforms in response to the CSRs made in 2016 (Table B). The European Commission has concluded that the overwhelming majority – more than 90% – of reform recommendations have been followed by only "some" or "limited" progress in implementation, while just two (out of around 90) CSRs have been substantially implemented, and none have been fully implemented. This weak reform momentum stands in stark contrast to the finding that the number of countries with excessive imbalances has not fallen. Despite their greater vulnerability, the six countries identified last year as having excessive imbalances did not on average – with the exception of France – achieve significantly higher implementation rates than the average EU Member State. This is particularly surprising in the case of Portugal and Croatia, as these countries committed themselves to an ambitious reform agenda in 2016, following which the Commission decided not to apply the EIP.

Table B

The Commission's assessment of implementation of the 2016 country-specific recommendations

Legend:
- Not assessed
- Fully addressed
- Substantial progress
- Some progress
- Limited progress
- No progress

	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
CSR 1*																											
CSR 2																											
CSR 3																											
CSR 4																											
CSR 5																											
2017 MIP category	(1)	(3)	(1)	(1)	(2)	(1)	(2)	(2)	(3)	(3)	(3)	(3)	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(1)	(3)	(1)	(2)	(1)	(1)	(2)	(1)

Source: European Commission.
Notes: * CSR 1 assessment excludes compliance with the Stability and Growth Pact which will be assessed by the Commission in spring 2017.
Greece (GR) was not included in the EU semester in 2016 because it is engaged in an economic adjustment programme, has therefore not received any CSRs. "No progress" means that the Member State has not credibly announced nor adopted any measures to address the CSR. This also applies if a Member State has commissioned a study group to evaluate possible measures. "Limited progress" means that the Member State has either announced certain measures but these only address the CSR to a limited extent and/or has presented legislative acts in the governing or legislator body but these have not yet been adopted and further substantial non-legislative work is needed before the CSR will be implemented and/or has presented non-legislative acts, but with no further follow-up in terms of the implementation which is needed to address the CSR. "Some progress" means that the Member State has adopted measures that partly address the CSR, and/or has adopted measures that address the CSR, but a fair amount of work is still needed to fully address the CSR as only a few of the adopted measures have been implemented. "Substantial progress" means that the Member State has adopted measures that go a long way in addressing the CSR and most of which have been implemented. "Fully addressed" means that the Member State has implemented all measures needed to address the CSR appropriately. "Not assessed" applies to cases in which CSR 1 pertains mostly or exclusively to the Stability and Growth Pact (see above).
For the 2017 MIP category labels see Table A.

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Chart B

Decline in share of fully addressed CSRs or those where substantial progress has been made in implementation

(percentages)
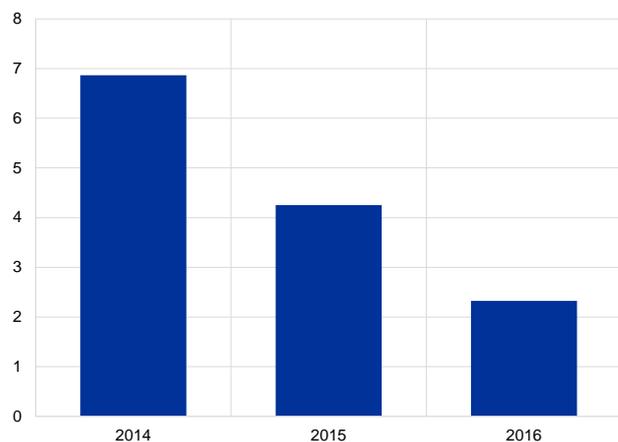
Source: European Commission.
Note: The chart shows the share of overarching CSRs (as opposed to their detailed elements) which have been fully addressed, or where substantial progress has been made in implementation, in each year (see Notes to Table B for detailed definitions of "fully addressed" and "substantial progress").

Looking back at the implementation of CSRs during the past three years, reform efforts have continued to weaken despite the fact that the number of CSRs has fallen. Last year the Commission concluded that most countries had made only "some" or "limited" progress in implementing the CSRs made in 2015. This year, the number of cases where "substantial progress" has been made or where CSRs have been "fully addressed" is even lower (see Chart B). The Commission's decision to significantly reduce the number of CSRs made in 2015 in order to allow Member States to focus on key priority issues of macroeconomic and social relevance did not produce the desired effect of increasing reform efforts.

Overall, Member States have implemented proportionally fewer recommendations on product market policies than on labour market policies. According to the Commission's assessment, the implementation of product market reforms was particularly weak when viewed in comparison with other policy areas (e.g. labour market reforms). Examples of product market-related CSRs include calls for Member States to: (i) lower barriers preventing new firms from entering network industries (energy, transport, communication, etc.); (ii) open up closed professions; and (iii) improve regulatory frameworks in order to foster competition. Improvement in all of these areas is key to achieving stronger productivity growth and fostering investment.

Full and effective use of all instruments available under the MIP – including its corrective arm – is needed to increase the momentum of reform. The further slowdown observed in the implementation of reforms is in sharp contrast to both the need to address major vulnerabilities that continue to exist in many euro area countries and the need to increase resilience. The poor track records of countries in this regard suggest that policy commitments made by Member States in their National Reform Programmes and repeated calls by the Commission for decisive action are insufficient to evidence and enforce reform. The tools available under the corrective arm of the MIP are well suited to improving reform efforts, thereby increasing the resilience of individual countries and enhancing the functioning of Economic and Monetary Union.

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Articles

1 The impact of global value chain participation on current account balances – a global perspective

Participating in global value chains may improve an economy's competitiveness and thereby raise its current account balance. Specifically, an economy's competitiveness may increase as a result of substituting imported for domestically produced intermediate goods. The increase in competitiveness boosts the economy's exports and raises its income. If it is expected that other economies will eventually catch up in terms of competitiveness by also participating in global value chains, the economy's competitive edge – and thus the rise in income – is only temporary. As a consequence, part of the income gain will be saved, raising the economy's current account balance. This article provides empirical evidence suggesting that a rise in global value chain participation relative to the rest of the world has a positive impact on an economy's current account balance. Results from widely used reduced-form current account regression models suggest that economies that participate more in global value chains than their trading partners also display larger current account surpluses or smaller current account deficits. Differences in the extent to which countries participated in global value chains appear to explain a substantial fraction of the current account surpluses that were observed in the run-up to the global financial crisis.

1 Introduction

A salient feature of the global economy over the last few decades has been the existence of large and persistent global imbalances. For example, the years prior to the global financial crisis were marked by some emerging market economies, commodity exporters and some advanced economies running large current account surpluses, matched by deficits in particular in the United States. Several studies have shown that part of these global imbalances can be explained by differences in financial market development across economies, in particular by the lack of financial development in emerging market surplus economies.[47] At the same time, the debate about the driving forces underlying large and persistent current account surpluses in several advanced economies is still ongoing. Understanding the determinants of external imbalances is critical for academics and policymakers, because such determinants play an important role in the transmission of domestic shocks and policies across borders in an increasingly integrated world.

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[47] See, for example, Bernanke, B.S., *The global saving glut and the U.S. current account deficit*, speech at the Sandridge Lecture, Virginia Association of Economists, Board of Governors of the Federal Reserve System , 2005; Caballero, R., Farhi, E. and Gourinchas, P.-O., "An Equilibrium Model of Global Imbalances and Low Interest Rates", *American Economic Review*, Vol. 98, Issue 1, 2008, pp. 358-393; or Mendoza, E.G., Quadrini, V. and Ríos-Rull, J.-V., "Financial Integration, Financial Development, and Global Imbalances", *Journal of Political Economy*, Vol. 117, No 3, 2009, pp. 371-416.

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Another striking feature of the global economy during the last few decades has been the rise of global value chains. The increasing dispersion of stages of production across countries was spurred by a number of factors. The decline in transportation costs amid large wage differences between advanced and emerging market economies made the internationalisation of supply chains profitable. Moreover, advances in information and communication technologies made the complex coordination of production processes at distance possible.[48] A further factor was the adoption of trade-liberalising policies over the past few decades.

The fragmentation of production chains across countries led to a steady increase in the share of trade accounted for by intermediate goods. This development continued at least until the start of the global financial crisis. Trade in intermediate goods and services now accounts for a very large share of overall trade flows in goods and services.[49] The regional dispersion of the research and development underlying the iPod, the manufacturing and assembly of its components as well as its sale and distribution in local markets is a well-known example of global value chain fragmentation.[50]

Global value chains may have effects on a wide range of economic outcomes. Several studies have shed light on the effects of global value chains by documenting the increased fragmentation of production across borders. Drawing on newly developed input-output tables, these studies have developed frameworks to measure trade in valued added and economies' and individual sectors' integration in global value chains.[51] Building on these insights, other studies have been concerned with the economic implications of global value chains. For example, participation in global value chains appears to boost growth[52], amplify cross-country monetary policy spillovers[53] and render an economy's income distribution more uneven.

This article examines the role of global value chains in current account balances from a global perspective.[54] It presents empirical evidence suggesting

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[48] See, for example, Elms, D. and Low, P. (eds.), *Global value chains in a changing world*, WTO Secretariat, 2013; Baldwin, R., "Global supply chains: why they emerged, why they matter, and where they are going", in Elms, D. and Low, P. (eds.), *Global value chains in a changing world*, WTO Secretariat, 2013, pp. 13-59; and United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2013 – Global Value Chains: Investment and Trade for Development*, 2013.

[49] One estimate is that, respectively, 56% and 73% of overall trade flows in goods and services are accounted for by intermediates; see Miroudot, S., Lanz, R. and Ragoussis, A., "Trade in Intermediate Goods and Services", *OECD Trade Policy Papers* 93, OECD Publishing, 2009.

[50] See Dedrick, J., Kraemer, K. and Linden, G., "Who Profits from Innovation in Global Value Chains? A Study of the iPod and Notebook PCs", *Industrial and Corporate Change*, Vol. 19, Issue 1, 2010, pp. 81-116.

[51] See, for example, Hummels, D., Ishii, J. and Yi, K.-M., "The nature and growth of vertical specialization in world trade", *Journal of International Economics*, Vol. 54, Issue 1, 2001, pp. 75-96; Trefler, D. and Zhu, S.C., "The structure of factor content predictions", *Journal of International Economics*, Vol. 82, Issue 2, November 2010, pp. 195-207; Johnson, R.C. and Noguera, G., "Accounting for Intermediates: Production Sharing and Trade in Value Added", *Journal of International Economics*, Vol. 86, Issue 2, 2012, pp. 224-236; or Koopman, R., Wang, Z. and Wei, S.-J., "Tracing Value-Added and Double Counting in Gross Exports", *American Economic Review*, Vol. 104, No 2, 2014, pp. 459-494.

[52] See Saito, M., Ruta, M. and Turunen, J., "Trade Interconnectedness: The World with Global Value Chains", *IMF Policy Paper*, August 2013.

[53] See Georgiadis, G., "Determinants of global spillovers from US monetary policy", *Journal of International Money and Finance*, Vol. 67, 2016, pp. 41-61.

[54] The article does not investigate the impact of global value chain participation on current account balances in the euro area.

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that economies which participate more in global value chains than other economies exhibit larger current account surpluses or smaller current account deficits. The evidence also suggests that the impact of global value chain participation on current account balances is economically significant. For example, about a quarter of the large US current account deficit during the run-up to the global financial crisis that cannot be explained by other fundamentals can be explained by its limited relative participation in global value chains.

The finding that global value chain participation improves an economy's current account balance has important policy implications. In particular, it implies that persistent deviations from a balanced current account do not, as is often argued, reflect domestic distortions, but are in fact welfare-maximising outcomes against the background of differences in economies' competitiveness. As a consequence, policies aimed at narrowing global imbalances should focus on measures that facilitate participation in global value chains. For example, adopting policies that facilitate innovation and reduce protectionist barriers may help to improve an economy's competitiveness by fostering its global value chain participation; similarly, multilateral initiatives aimed at trade and financial liberalisation may also reduce an economy's external imbalances by fostering participation in global value chains.

The article is structured as follows: Section 2 reviews the evolution of global imbalances and global value chain participation over the last few decades; Section 3 discusses the mechanism through which global value chain participation may affect an economy's current account balance; Section 4 reports results from an analysis of cross-country data that sheds light on the empirical relevance of participation in global value chains for current account balances; and Section 5 concludes.

2 The evolution of global imbalances and participation in global value chains

2.1 Global current account imbalances

The period before the global financial crisis was characterised by a build-up of large external imbalances (see Chart 1). While the United States accumulated large current account deficits, China, Japan and oil-exporting economies recorded large surpluses. At the time, the consensus view was that an eventual – possibly rapid – unwinding of these imbalances could trigger a crisis.[55] The International Monetary Fund (IMF) repeatedly advocated policy measures that would facilitate a smooth unwinding in the context of a multilateral consultation process.[56]

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[55] See Catão, L.A. and Milesi-Ferretti, G.M., "External Liabilities and Crises", *IMF Working Paper* WP/13/113, May 2013.

[56] IMF, *Imbalances and Growth: Update of Staff Sustainability Assessments for G-20 Mutual Assessment Process*, September 2013.

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The global financial crisis was followed by a rebalancing process. Between 2007 and 2015 surpluses and deficits declined markedly. For G20 economies, the average absolute current account balance relative to GDP fell from 4.7% in 2007 to 3.9% in 2015; in GDP-weighted terms, it fell from 3.6% to 2.6%, as larger economies underwent a stronger rebalancing. The global financial crisis that was triggered by other factors thus preceded the unwinding of global imbalances. While it is difficult to decompose current account balances into structural and cyclical components, the evidence suggests both contributed to the rebalancing after the global financial crisis.[57]

Chart 1

Evolution of global current account balances

(percentages of world GDP)

■ euro area
■ United States
■ China
■ Japan
■ developing Asia excluding China
■ Latin America and Caribbean excluding oil exporters
■ oil exporters
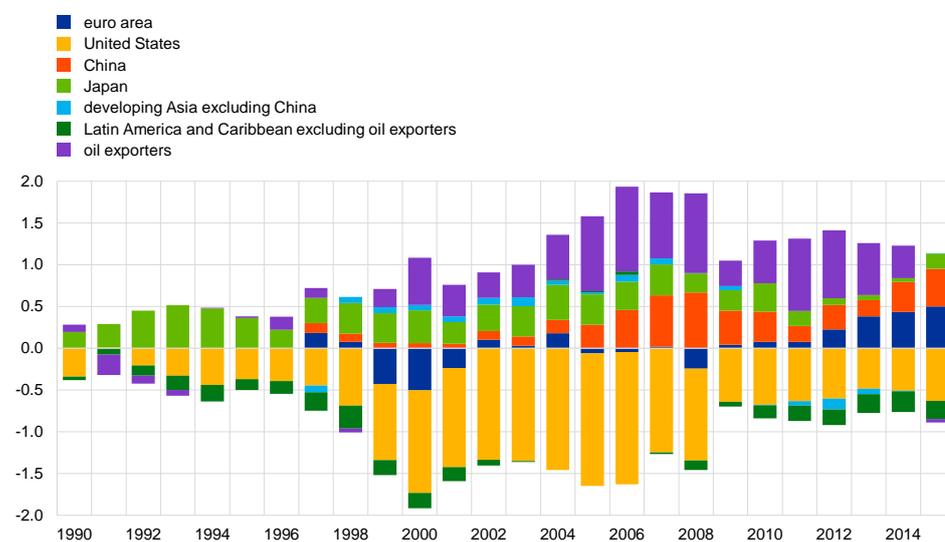
Source: IMF World Economic Outlook.

Adjustments in major surplus and deficit economies contributed markedly to the reduction in global imbalances. For example, the US current account deficit fell from 1.6% of world GDP in 2006 to 0.6% in 2015. In China, the current account surplus dropped from 0.6% of world GDP in 2007 to an average of about 0.3% between 2009 and 2015. In Japan, the persistent current account surplus of around 0.3% of world GDP between 2005 and 2010 subsequently almost disappeared, partly on account of a changed economic policy environment with the temporary halt in nuclear energy production and the effects of the "Abenomics" policies introduced in 2012.

Rebalancing was a global phenomenon across advanced and emerging market economies. This can be seen by the relationship between the current account positions of the countries monitored in the IMF World Economic Outlook in 2007 and the changes in their current account balances between 2007 and 2015 (see Chart 2). Economies with a positive current account balance at the onset of the global

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57   IMF, "2013 Pilot External Sector Report", *IMF Policy Paper*, August 2013.

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financial crisis tended to experience a reduction between 2007 and 2015, whereas those with a negative position tended to see an improvement.

Chart 2

Current account balances in 2007 and changes between 2007 and 2015

(percentages of GDP; x-axis: current account balance 2007; y-axis: change in current account balance, 2007-15)
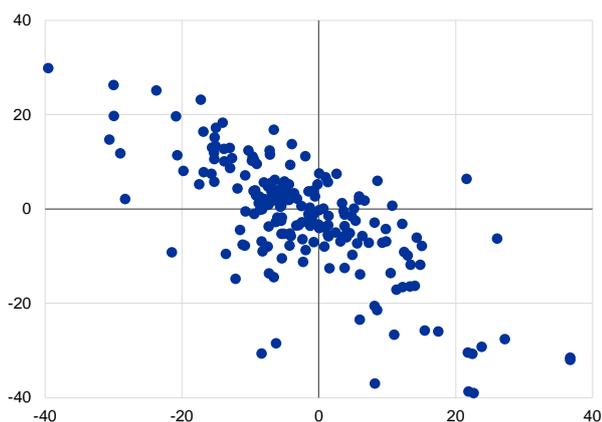
Source: IMF World Economic Outlook.

Chart 3

Current account balances over the periods 1990-2005 and 2008-15

(percentages of GDP; x-axis: current account balance 1990-2005; y-axis: current account balance 2008-15)
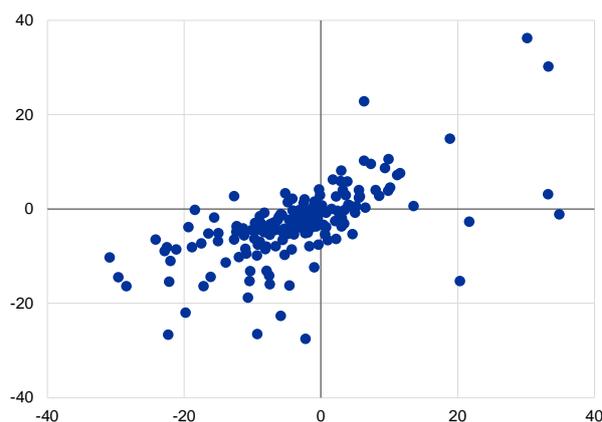
Source: IMF World Economic Outlook.

Chart 4

Current account balances in 2013 and changes between 2013 and 2015 for G20 economies

(percentages of GDP; x-axis: current account balance 2013; y-axis: change in current account balance, 2013-15)
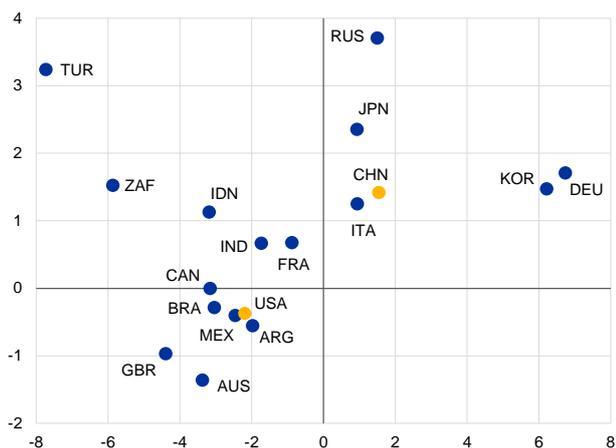
Source: IMF World Economic Outlook.

Despite the contraction in global imbalances across economies, the constellation of current account surpluses and deficits remained broadly unchanged. Chart 3 shows that the bulk of economies with current account surpluses (deficits) in the period 1990-2005 remained in surplus (deficit) in the period after 2008.

More recently, current account imbalances of several economies have widened again, in particular in some systemically important economies. After 2013 the US current account deficit widened to 2.6% of GDP, the surplus of China to 3% and that of Japan to 3.3%. The rebalancing process seems to have come to a halt across G20 economies in general, as there is a positive correlation between current account balances in 2013 and the change in current account balances between 2013 and 2015 (see Chart 4). Despite the recent rise in these economies' current account surpluses and deficits, global imbalances have remained broadly stable owing to the drop in oil prices and the associated fall in the current account surpluses of oil-exporting economies (see Chart 1).

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2.2 Global value chain participation

Measuring global value chain participation is challenging. One measure of "downstream participation", i.e. how much a country is using imports in its production of exports, is the ratio of domestic value added in an economy's gross exports, or "VAX" ratio.[58] Low values of the VAX ratio indicate that a large share of an economy's gross exports reflect the value added of foreign inputs. The production of the iPod may again serve as an illustrative example of downstream participation: while the iPod is exported from China, the actual value added in China is very limited, consisting mainly of low-skilled assembly services. The major part of the value is produced by firms in the United States, Japan, South Korea and Taiwan through delivery of sophisticated intermediate inputs.[59] China therefore has a low VAX ratio in terms of the iPod, and is, according to this downstream metric, participating strongly in the global value chain of the iPod. Another measure of downstream participation, the "backward participation" measure, can be constructed as the ratio of an economy's gross intermediate inputs to total gross output on the basis of data from the World Input-Output Database (WIOD).[60] Box 1 presents a discussion of the WIOD and the backward participation measure.

Global value chain participation has risen significantly since the 1970s. Historical data show that there has been a secular decline in the VAX ratio (see Chart 5). An increasingly large share of an economy's gross exports thus represents imported value added, i.e. imported intermediates that are used in the production of exports. Global value chain participation has also risen when measured by backward participation (see Chart 6).

The rise in global value chain participation has been a global phenomenon. The cross-country mean of backward participation has increased in tandem with its dispersion, measured by the standard deviation (see Table 1). This suggests that the rise in backward participation over this period has been spread relatively evenly across economies and in line with the limited increase in the range between the minimum and maximum values of backward participation.

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[58] See Johnson, R.C. and Noguera, G., "A Portrait of Trade in Value Added over Four Decades", *Review of Economics and Statistics*, 2016.

[59] See Dedrick et al., op. cit.

[60] See Timmer, M.P., Dietzenbacher, E., Los, B., Stehrer, R. and de Vries, G., "An Illustrated User Guide to the World Input-Output Database: the Case of Global Automotive Production", *Review of International Economics*, Vol. 23, Issue 3, 2015, pp. 575-605; and Timmer, M.P., Los, B., Stehrer, R. and de Vries, G.J., "An Anatomy of the Global Trade Slowdown based on the WIOD 2016 Release", *Groningen Growth and Development Centre research memorandum* 162, 2016.

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Chart 5

Evolution of the global VAX ratio

(ratio of domestic value added to gross exports)
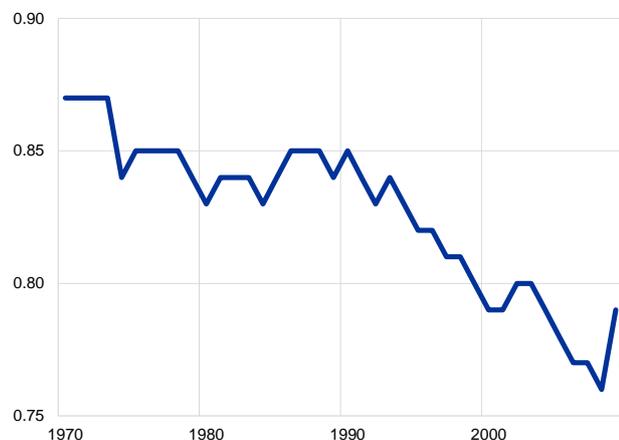
Source: Johnson, R.C. and Noguera, G. (see footnote 12).

Chart 6

Evolution of global backward participation

(ratio of gross imported intermediate inputs to total gross output)
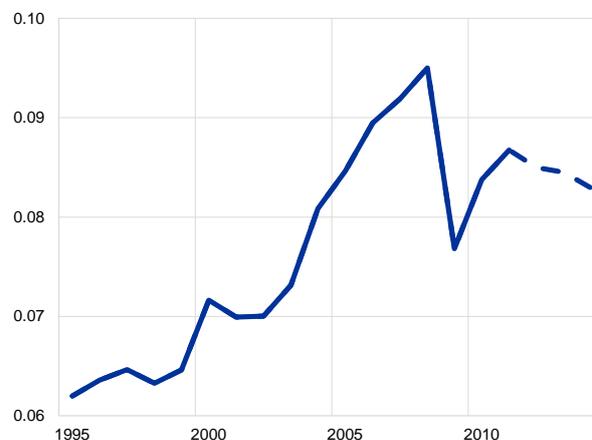
Sources: WIOD and ECB calculations.
Note: The solid line represents data from the 2013 WIOD release and the dashed line data from the 2016 release.

Very recently, in the aftermath of the global financial crisis, measures of downstream participation have pointed to a slowdown in the rise of global value chains. [61] As the levelling-off in the expansion of global value chains has been geographically widespread, the causes of the slowdown are unlikely to be country or region-specific. Possible explanations that have been put forward include reductions in the length of firms' supply chains aimed at improving risk management (for example, in response to the 2011 earthquake in Japan), the adoption of local content requirements and other regulatory measures, and changes in the composition of demand. [62]

Table 1

Descriptive statistics for backward participation in 2000 and 2014

(ratio of gross imported intermediate inputs to total gross output)

	Observations	Mean	Standard deviation	Minimum	Maximum
2000	44	0.12	0.06	0.03	0.35
2014	44	0.15	0.08	0.04	0.42

Sources: WIOD and ECB calculations.

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[61] See also ECB, "Understanding the weakness in global trade – What is the new normal?", *Occasional Paper Series*, No 178, 2016; Timmer, M., Los, B., de Vries, G. and Stehrer, R., "Peak trade? An anatomy of the recent global trade slowdown", Groningen Growth and Development Centre, 2016.

[62] See also IMF, *World Economic Outlook*, October 2016.

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Box 1

Measuring global value chain participation on the basis of international input-output tables

This article uses the WIOD to construct measures of economies' global value chain participation. In two editions, the WIOD provides global input-output tables at annual frequency for a large number of countries and sectors. The 2013 edition covers the period 1995-2011 and the 2016 edition the period 2000-14. Unfortunately, the two editions of the WIOD are not consistent in terms of country and sector coverage. For example, while the 2013 edition covers 35 sectors in 40 countries, the 2016 edition covers 56 sectors in 43 countries. Both editions also cover a block of countries constructed as the "rest of the world". For many purposes, therefore, the data from the two WIOD editions cannot be combined in order to construct continuous measures of global value chain participation for the entire period 1995-2014. This article uses changes in the backward global value chain participation measure for 2011 to 2014 from the 2016 vintage in order to extrapolate the values of the measures constructed using the 2013 vintage beyond 2011.

Various concepts and metrics have been proposed to measure trade in value added and global value chain participation on the basis of global input-output tables.[63] In this article, a simple measure of global value chain participation is constructed on the basis of the WIOD data: the "backward participation" measure reflects a country's downstream participation, and is defined as the ratio of an economy's gross intermediate imports relative to its total gross output.

Another framework for the measurement of trade in value added has been developed and established by the Organisation for Economic Co-operation and Development (OECD).[64] In this framework, the OECD has defined backward participation as "foreign value added".[65] This indicator is constructed on the basis of the OECD-World Trade Organization (WTO) Trade in Value Added database, which covers 61 countries and 34 sectors for1995, 2000, 2005, 2008 and 2011. The correlation between the backward participation measure used in this article and the measure of foreign value added based on the OECD definition is 0.94. The correlation between the VAX ratio and the backward participation measure used in this article is 0.97.

3 The impact of participation in global value chains on the current account

Participating in global value chains may give an economy a temporary competitive edge that results – in order to smooth consumption over time – in a rise in its current account balance. This could occur in a situation where domestic and imported intermediate goods are substitutes in production and the economy experiences a shock that reduces the cost of imported intermediate goods relative to those produced domestically; such a shock could reflect the adoption of trade and capital flow liberalising policies or advances in information and communication technologies, which have been identified in the literature as the

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[63] See, for example, Hummels et al., op. cit.; Johnson, R.C. and Noguera, G., op. cit.; Koopman et al, op. cit.; or OECD, *TiVA 2015 indicators – definitions*, 2015.

[64] See OECD-WTO, *Trade in Value-Added: Concepts, Methodologies and Challenges*, 2012.

[65] OECD 2015, op. cit.

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driving forces behind the rise in global value chain participation. By substituting less expensive imported intermediate goods for those produced domestically, domestic firms participate in global value chains and, at the same time, achieve a gain in competiveness relative to exporters in the rest of the world. As a result, the economy's trade balance improves, driven by a rise in its exports.[66] As it is expected that foreign economies will – possibly with a delay – also adopt trade and capital flow liberalising policies and exploit advances in information and communication technologies, the gain in competitiveness for domestic exporters is perceived to be only temporary. As a consequence, in order to smooth consumption over time, part of the income gain in the domestic economy will be saved, which improves the current account balance.[67] A key element in this hypothesised mechanism is that participating in global value chains (by substituting imported for domestically produced intermediate goods) raises the efficiency of production in the domestic economy. Box 2 discusses the empirical evidence on the effect of global value chain participation on productivity. Moreover, it is crucial that the gain in competitiveness achieved through the substitution of imported intermediate goods for domestic goods is only temporary. If the competitive edge is permanent, or perceived to be so, the current account balance is likely to deteriorate as consumption, and thus imports, rise commensurately to permanent income.

Box 2
Empirical evidence on the effect of participation in global value chains on productivity

Participation in global value chains affects firm-level productivity, mainly by allowing firms to benefit from specialisation gains.[68] Studies that explore this link using industry-level data tend to conclude that off-shoring affects productivity positively. For example, Amiti and Wei[69] estimate the effects of off-shoring on productivity in US manufacturing industries, concluding that services off-shoring has a positive effect on productivity; off-shoring of material inputs also has a positive effect on productivity, but the magnitude is smaller. Winkler[70] obtains similar results for Germany using input-output data for 1995-2006. Crinò[71] uses comparable data for nine European countries and finds that services off-shoring exerts a positive and economically large effect on domestic productivity. Egger and Egger[72] analyse how off-shoring affects the productivity of low-skilled workers employed in the EU manufacturing sector. They find a negative effect on productivity in the

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[66] In principle the rise in imports of intermediates could also lead to a deterioration of the economy's trade balance. However, in a standard structural open economy model in general equilibrium the rise in exports dominates the rise in imported intermediates: see Brumm, J., Georgiadis, G., Gräb, J. and Trottner, F., Global value chain participation and current account imbalances, 2015.

[67] For an analysis of this mechanism in a structural general equilibrium model, see Brumm et al., op. cit.

[68] For a survey, see Amador, J. and Cabral, S., "Global Value Chains: Surveying Drivers, Measures and Impacts", *Banco de Portugal Working Paper*, No 3/2014, 2014.

[69] See Amiti, M. and Wei, S.-J., "Service Offshoring and Productivity: Evidence from the US", *The World Economy*, Vol. 32, Issue 2, 2009, pp. 203-220.

[70] See Winkler, D., "Services Offshoring and its Impact on Productivity and Employment: Evidence from Germany, 1995-2006", *The World Economy*, Vol. 33, Issue 12, 2010, pp. 1672-1701.

[71] See Crinò, R., "Service Offshoring and Productivity in Western Europe", *Economics Bulletin*, Vol. 6, No 35, 2008, pp. 1-8.

[72] See Egger, H. and Egger, P., "International Outsourcing and the Productivity of Low-Skilled Labor in the EU", *Economic Inquiry*, Vol. 44, Issue 1, 2006, pp. 98-108.

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short run, but that the impact becomes positive in the long run. Schwörer[73] combines industry-level data on off-shoring from the WIOD with firm-level data for nine European countries between 1995 and 2008. The study finds that off-shoring of services and of non-core manufacturing activities contributed to an increase in productivity; however, no significant effect is found for off-shoring of core manufacturing activities. Schwörer also finds evidence for additional productivity gains for multinational firms.

Other studies have used firm-level data. Görg and Hanley[74] examine the effect of international outsourcing on productivity at the plant level in the electronics industry in Ireland. They find that total international outsourcing increases plant-level productivity, but that this effect only holds for plants with low export intensities. When distinguishing between off-shoring of services and materials, their study finds that the positive impact on productivity is limited to materials outsourcing. Görg et al.[75] investigate the impact of international outsourcing on productivity with plant-level data for Irish manufacturing, finding that being more embedded in international markets leads to larger productivity gains from outsourcing. McCann[76] also finds that an increase in outsourcing intensity leads to productivity gains for foreign-owned firms and for indigenous exporters in Ireland. In contrast, being an outsourcer matters strongly for Irish firms that are not exporting, while for exporters and foreign affiliates productivity increases are much lower. Using a dataset of Japanese firms, Ito et al.[77] find productivity gains for firms that outsource both manufacturing and services tasks, but not for firms that outsource only one or the other. Hijzen et al.[78] also use firm-level data for the Japanese manufacturing industries, and find that intra-firm off-shoring has generally a positive effect on productivity of the off-shoring firm, while arm's length off-shoring does not. Kasahara and Rodrigue[79] find evidence of a positive impact of imported intermediates on productivity in Chilean manufacturing plants. Morrison Paul and Yasar[80] find that higher shares of imported materials and subcontracted inputs are associated with higher productivity for Turkish textile and apparel manufacturing plants. The results of Fariñas and Martín-Marcos[81] suggest that foreign outsourcing has a positive impact on total factor productivity growth at the firm level in a sample of Spanish manufacturing firms. Jabbour[82] finds positive effects of off-shoring on productivity and profitability for French manufacturing firms, but only in the case of

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[73] See Schwörer, T., "Offshoring, domestic outsourcing and productivity: Evidence for a number of European Countries", *Review of World Economics* (Weltwirtschaftliches Archiv), Vol. 149, Issue 1, 2013, pp. 131-149.

[74] See Görg, H. and Hanley, A., "International Outsourcing and Productivity: Evidence from the Irish Electronics Industry", *The North American Journal of Economics and Finance*, Vol. 16, Issue 2, 2005, pp. 255-269.

[75] See Görg, H., Hanley, A. and Strobl, E., "Productivity Effects of International Outsourcing: Evidence from Plant-level Data", *Canadian Journal of Economics*, Vol. 41, Issue 2, 2008, pp. 670-688.

[76] See McCann, F., "The heterogeneous effect of international outsourcing on firm productivity", *Working Papers* 2010-06, CEPII Research Center, 2010.

[77] See Ito, B., Tomiura, E. and Wakasugi, R., "Offshore Outsourcing and Productivity: Evidence from Japanese Firm-level Data Disaggregated by Tasks", *Review of International Economics*, Vol. 19, Issue 3, 2011, pp. 555-567.

[78] See Hijzen, A., Inui, T. and Todo, Y., "Does Offshoring Pay? Firm-Level Evidence From Japan", *Economic Inquiry*, Vol. 48, Issue 4, 2010, pp. 880-895.

[79] See Kasahara, H. and Rodrigue, J., "Does the use of imported intermediates increase productivity? Plant-level evidence", *Journal of Development Economics*, Vol. 87, Issue 1, 2008, pp. 106-118.

[80] See Morrison Paul, C. and Yasar, M., "Outsourcing, Productivity, and Input Composition at the Plant Level", *Canadian Journal of Economics*, Vol. 42, Issue 2, 2009, pp. 422-439.

[81] See Fariñas, J.C. and Martín-Marcos, A., "Foreign Sourcing and Productivity: Evidence at the Firm Level", *World Economy*, Vol. 33, Issue 3, 2010, pp. 482-506.

[82] See Jabbour, L., "Offshoring and Firm Performance: Evidence from French Manufacturing Industry", *World Economy*, Vol. 33, Issue 3, 2010, pp. 507-524.

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international outsourcing to developing countries. Finally, for Germany Wagner[83] finds some evidence of a positive causal effect of off-shoring on firm-level productivity, although this effect is small.

4 Empirical evidence on the effect of global value chain participation on current account balances

Chart 7

Economies' current account balances and backward participation relative to the rest of the world

(x-axis: current account balance as a percentage of GDP; y-axis: backward participation)
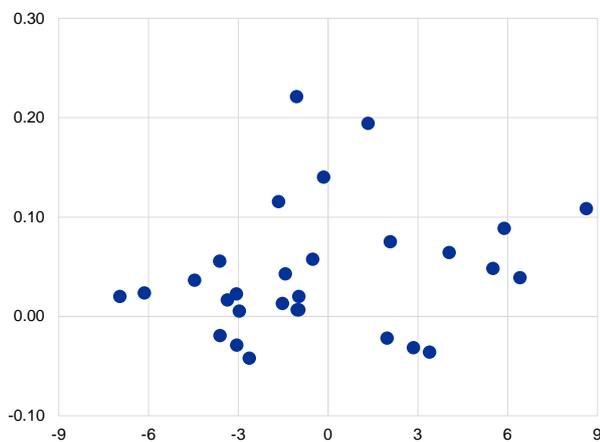
Source: WIOD and ECB calculations.
Note: Each dot corresponds to a country's sample mean backward participation and its current account balance relative to the rest of the world.

Global value chain participation and current account balances are positively correlated.
Consistent with the mechanism discussed in the previous section, the unconditional cross-country correlation between current account balances and economies' backward participation relative to the rest of the world is positive, albeit not statistically significantly different from zero (see Chart 7). Moreover, for selected economies with large and persistent current account imbalances, there is a noticeable co-movement between backward participation relative to the rest of the world and the current account balance over time (see Chart 8).[84] For example, for the United States, the rise and fall in the current account deficit over the past two decades has been accompanied by a similar decline and subsequent increase in the country's backward participation relative to the rest of the world. Likewise, for Germany and China there is a markedly positive correlation between their backward participation relative to the rest of the world and their current account balances.

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[83] See Wagner, J., "Offshoring and Firm Performance: Self-selection, Effects on Performance, or Both?", *Review of World Economics* (Weltwirtschaftliches Archiv), Vol. 147, Issue 2, June 2011, pp. 217-247.

[84] The backward measure used in Chart 8 refers to the value of an economy's backward participation relative to the rest of the world. A change in global value chain participation in a given country can affect its current account balance only to the extent that other countries' global value chain participation does not change to the same degree.

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Chart 8

Co-movement between selected economies' global value chain participation relative to the rest of the world and current account balances

(current account as a percentage of GDP)

■ current account/GDP
■ backward participation relative to the rest of the world
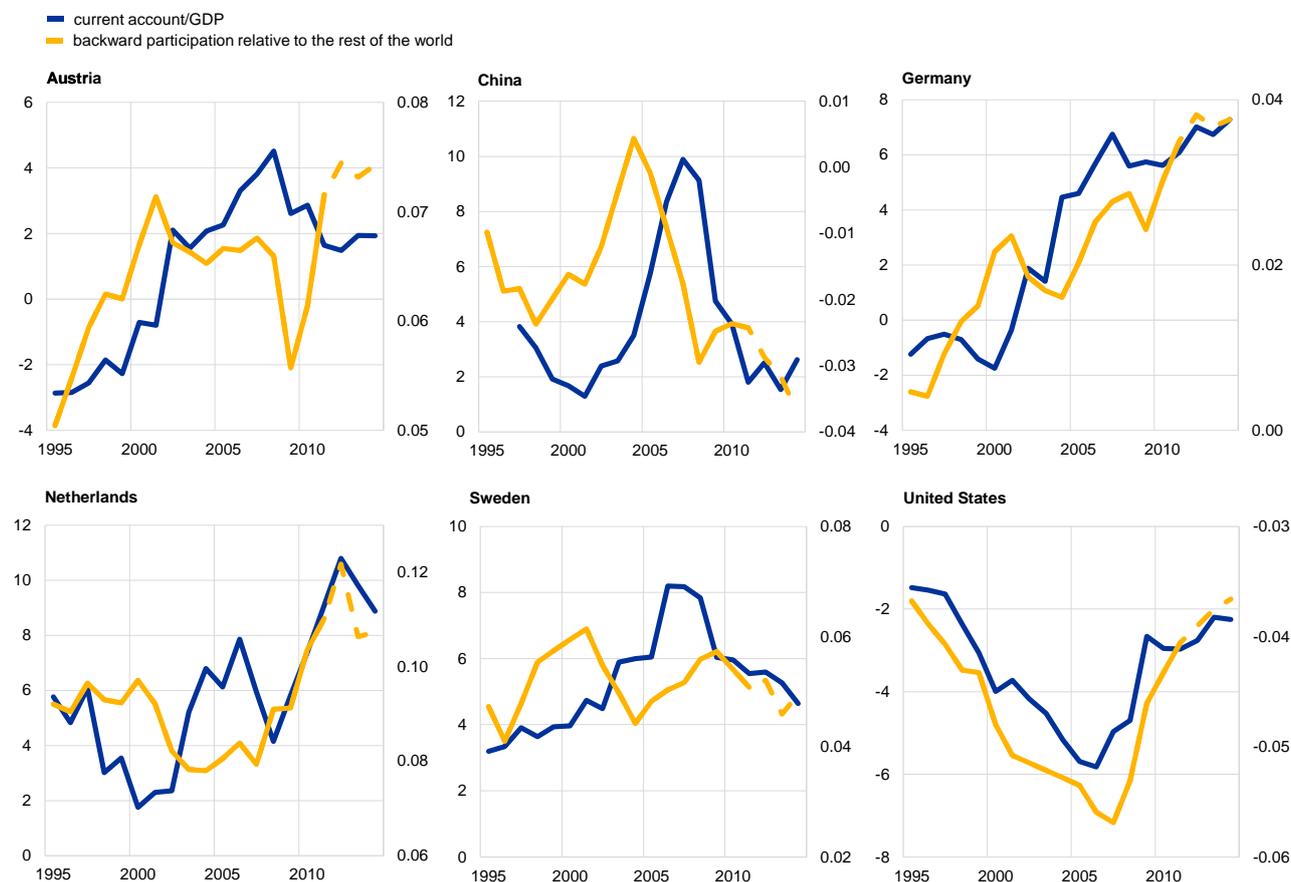
Sources: IMF World Economic Outlook and WIOD.
Note: For the global value chain participation data, the solid line represents data from the 2013 WIOD release and the dashed line data from the 2016 release. The data from the 2016 release have been used to extrapolate the data from the 2013 release.

In order to identify the effect of global value chain participation on current account balances, other possible determinants of the current account must be controlled for. To do so, current account balances are typically regressed on a large number of potential determinants in cross-country panel datasets. Such an approach has also been adopted by the IMF in its multilateral surveillance, namely the Consultative Group on Exchange Rate Issues (CGER) methodology and its successor, the External Balance Assessment (EBA). While it is widely recognised that the EBA model does have its weaknesses,[85] it is a useful empirical framework, not least because it has become the main reference for the assessment of current account imbalances in the IMF's Article IV consultations and External Sector Reports. Box 3 provides a more detailed description of the IMF's EBA model.

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[85] For a discussion, see Phillips, S., Catão, L., Ricci, L., Bems, R., Das, M., Di Giovanni, J., Unsal, D.F., Castillo, M., Lee, J., Rodriguez, J. and Vargas, M., "The External Balance Assessment (EBA) Methodology", *IMF Working Paper*, Issue 13, 2013.

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Box 3
The External Balance Assessment model

In order to identify the determinants of current account balances, one strand of the literature has used structural models inspired by the new open economy macroeconomics paradigm.[86] Under this inter-temporal approach, current account imbalances are the outcome of decisions taken by forward-looking agents who maximise utility given expectations of future productivity, fiscal policy and financial market conditions. While these models allow a structural analysis of current account dynamics, their empirical fit tends to be relatively poor. Another strand of the literature has examined the determinants of the current account in empirical frameworks that are not tied to a particular structural model.[87] In this spirit, reduced-form panel regressions for the determination of the current account have been explored. The IMF's External Balance Assessment (EBA) model is a version of such a reduced-form panel regression model.[88]

The backbone of the EBA consists of the panel data regression

$$ca_{it} = \alpha + x_{it} * \beta + u_{it},$$

where *ca* denotes the current account balance relative to GDP for country *i* in period *t*, and *x* is a set of economic fundamentals that are believed to determine the current account. Importantly, most of the explanatory variables in *x* are measured relative to rest-of-the-world averages; this is done because a change in, for example, the fiscal balance in country *i* can affect its current account balance only to the extent that other countries' fiscal balances do not change commensurately. The explanatory variables in the EBA include the net foreign asset position, the oil balance, output per worker, population growth, the old-age dependency ratio, capital account openness, expected output growth, the terms of trade, the output gap and the fiscal balance. The residuals from the EBA regression are commonly interpreted as those parts of the observed current account balances that cannot be explained by economic fundamentals.

The results from EBA regression models suggest that higher global value chain participation relative to the rest of the world improves economies' current account balances, even after controlling for other economic fundamentals. The first column of Table 2 reports the estimation results for the effect of economies' backward participation relative to the rest of the world on the

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[86]   See, for example, Sachs, J., "The Current Account and Macroeconomic Adjustment in the 1970s", *Brookings Papers on Economic Activity*, Vol. 12, Issue 1, 1981, pp. 201-282; Glick, R. and Rogoff, K., "Global versus country-specific productivity shocks and the current account", *Journal of Monetary Economics*, Vol. 35, Issue 1, 1995, pp. 159-192; or Obstfeld, M. and Rogoff, K., "The Intertemporal Approach to the Current Account", in Grossman, G. and Rogoff, K. (eds.), *Handbook of International Economics*, Vol. 3, Elsevier, 1995, Ch. 34, pp. 1731-1799.

[87]   See, for example, Calderon, C., Chong, A. and Loayza, N., "Determinants of Current Account Deficits in Developing Countries", *The B.E. Journal of Macroeconomics*, Vol. 2, Issue 1, 2002, pp. 1-33; Chinn, M. and Prasad, E., "Medium-Term Determinants of Current Accounts in Industrial and Developing Countries: An Empirical Exploration", *Journal of International Economics*, Vol. 59, Issue 1, 2003, pp. 47-76; Gruber, J., Kamin, S., "Explaining the Global Pattern of Current Account Imbalances", *International Finance Discussion Papers*, Issue 846, Board of Governors of the Federal Reserve System, 2005; or Ca'Zorzi, M., Chudik, A. and Dieppe, A., "Thousands of Models, One Story: Current Account Imbalances in the Global Economy", *Journal of International Money and Finance*, Vol. 31, Issue 6, 2012, pp. 1319-1338.

[88]   IMF 2013, op. cit.; and Phillips et al., op. cit.

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current account balance obtained from the EBA regression model.[89] The coefficient estimate is positive and statistically significant, and consistent with the mechanism discussed in Section 3: countries that participate more in global value chains display larger current account surpluses or smaller deficits.[90],[91]

	current account (1)	trade balance (2)
backward participation	0.13***	0.50***

Source: ECB calculations.
Note: *** indicates statistical significance at the 1% level.

The evidence suggests that the effect of global value chain participation on the current account operates through the trade balance. The mechanism laid out in Section 3 suggests that participation in global value chains affects an economy's current account balance by boosting its exports and thereby its trade balance. The empirical evidence reported in the second column of Table 2 provides support to this hypothesis, suggesting that participation in global value chains indeed improves economies' trade balances.

Cross-country differences in global value chain participation account for a significant fraction of the unexplained component of observed current account balances. Despite some success in terms of empirical fit, a general finding in the literature on reduced-form empirical models is that the unexplained part of the observed current account balances remains large. Chart 9 plots absolute current account balances as a percentage of GDP for the year 2009 for non-EU countries for which this exceeded 2.5% before the recent contraction of global imbalances. The absolute residuals of the EBA model that do and do not account for economies' participation in global value chains are plotted as additional bars. Chart 9 suggests that there are large unexplained current account balances for surplus and deficit economies in the standard EBA model without global value chain participation measures. The unexplained current account balances are considerably smaller when economies' participation in global value chains is accounted for. For example, for the United States about half of the unexplained part of the observed current account deficit of 2.6% of GDP in 2009 can be accounted for by the country's limited participation in global value chains relative to the rest of the world.

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[89] Analogously to the IMF's original EBA model, the results are obtained from generalised least squares estimation using data for 29 economies over the period 1995-2011. The regression results reported are robust to heteroscedasticity and autocorrelation in the error term.

[90] The results also imply that an economy's current account balance improves if its global value chain participation falls by less than that of the rest of the world.

[91] There is also some evidence that, in addition to backward participation, increased forward participation can improve the current account balances of economies, even though the effects are quantitatively weaker and operate through other mechanisms (see Brumm et al., op. cit.).

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Chart 9

Observed and unexplained current account balances

(percentages of GDP)

- ■ current account balance as a percentage of GDP
- ■ standard EBA
- ■ EBA including global value chain participation
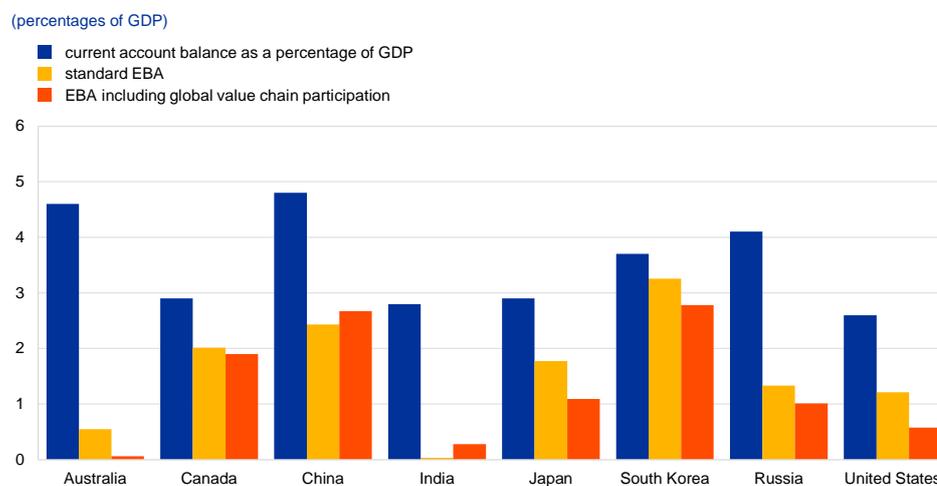
Sources: IMF World Economic Outlook and ECB calculations.

5   Conclusion

The empirical evidence suggests that apart from fostering growth, magnifying cross-country spillovers and changing an economy's income distribution, global value chain participation improves current account balances.

Against the background of the recent stalling in the rise in global value chain participation, it is natural to ask whether this will have implications for global current account balances. However, it must be borne in mind that an economy's global value chain participation only affects its current account balance if the former changes relative to that in the rest of the world. As highlighted in the recent literature, the observed slowdown in the fragmentation of production across borders has been a global phenomenon and is unlikely to impact global current account configurations.

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2   Firm heterogeneity and competitiveness in the European Union

Firms are very heterogeneous in terms of economic performance within even narrowly defined sectors, as is confirmed by the evidence provided in this article for several EU countries. This has major implications for a country's competitiveness, understood as its ability to export or, more broadly, as its aggregate productivity growth. The article discusses those implications and the ensuing policy recommendations to enhance competitiveness in the EU. Regarding trade performance, only a relatively small number of firms – the largest and the most productive in a given sector – are able to export. This implies that the aggregate export performance of each country crucially depends on the dynamics of these firms. In turn, trade participation affects the productivity of exporting and, indirectly, non-exporting firms, thereby positively affecting developments in aggregate productivity. Furthermore, extensive firm heterogeneity means that aggregate productivity growth can be fostered significantly by a better allocation of capital and labour across firms, with evidence suggesting that significant productivity gains can stem from enhanced allocative efficiency within sectors. However, some indicators of capital misallocation have been trending upwards in several EU countries in recent years, on account of both uncertainty and frictions in the production factor and credit markets.

1   Introduction

Owing to the increased availability of firm-level data, various empirical studies have documented the existence of a marked heterogeneity in performance across firms. Empirical literature based on granular data shows that firms are very different in terms of e.g. size, cost structure, profits and productivity, even within finely disaggregated sectors.[92] This also holds true for EU countries, as is confirmed by a database recently produced by the Competitiveness Research Network (CompNet).[93] In the "old" EU Member States (i.e. the nine countries that had joined the EU by 1995 at the latest, for which data are available), the top 10% most

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[92] For a review of the literature, see Bartelsman, E.J. and Doms, M., "Understanding Productivity: Lessons from Longitudinal Microdata", *Journal of Economic Literature*, Vol. 38, 2000, pp. 569-594; and, more recently, Syverson, C., "What Determines Productivity?", *Journal of Economic Literature*, Vol. 49, No 2, 2011, pp. 326-365.

[93] CompNet is a research network originally created within the European System of Central Banks (ESCB) in 2012, which is devoted to the analysis of competitiveness from a multi-dimensional prospective. It is composed of economists from the ECB/ESCB, the European Commission and a number of European and international organisations, universities, statistical institutes and think tanks. The CompNet dataset is based mainly on administrative data from firm registries and provides harmonised cross-country information on the main moments of the sector distribution (e.g. mean, median, standard deviation, deciles of the distribution, etc.) for a number of variables related to firm performance and competitiveness. For details on this micro-aggregated productivity database, see Lopez-Garcia, P., di Mauro, F. and the CompNet Task Force, "Assessing European competitiveness: the new CompNet micro-based database", *Working Paper Series*, No 1764, ECB, 2015, as well as Berthou, A., Dhyne, E., Bugamelli, M., Cazacu, A.-C., Demian, C.-V., Harasztosi, P., Lalinsky, T., Meriküll, J., Oropallo, F. and Soares, A.C., "Assessing European firms' exports and productivity distributions: the CompNet trade module", *Working Paper Series*, No 1788, ECB, 2015, for the details on trade data.

productive firms are, on average, nearly three times more productive than firms located at the bottom 10% of the productivity distribution within each sector (see Chart 1).[94] This figure is even higher for most of the ten "new" EU Member States for which data are available.[95] Moreover, the productivity distribution is asymmetric as it displays a large density of low-productive firms and few highly productive firms. Although this empirical regularity applies to all countries and sectors, the shape of the distribution can differ across countries, reflecting their structural characteristics. For example, the productivity distributions of the manufacturing sector in France and Germany are characterised by a higher mean and fatter right tail than those in countries such as Spain and Italy (see Chart 2).

Firm heterogeneity has implications for the overarching assessment of competitiveness, which covers both trade outcomes and productivity developments. In a broad sense, competitiveness relates to the business environment and institutional framework that allow efficient firms to thrive,[96] thus supporting trade performance and productivity. The existence of a significant degree of heterogeneity across firms has important implications for the assessment of competitiveness along both such dimensions.

Regarding trade performance, both the empirical and the theoretical literature highlight a two-way link between firm-level trade and productivity. In line with empirical evidence based on granular data, the most recent theoretical international trade literature predicts that exporters are the most productive firms in an economy.[97] Moreover, in addition to the traditional gains from trade, both models and empirical analyses show that trade liberalisation can, in turn, boost aggregate productivity by reallocating resources to exporting, more productive firms.

Firm heterogeneity also has implications for aggregate productivity growth. In the presence of heterogeneous firm performance, aggregate productivity developments also depend on the efficiency with which production factors are

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[94] In most cases, the cross-country evidence on trade outcomes provided in this article covers 16 EU countries: ten euro area countries (Belgium, Estonia, France, Italy, Latvia, Lithuania, Portugal, Slovenia, Slovakia and Finland) and six other EU Member States (the Czech Republic, Denmark, Croatia, Hungary, Poland and Romania). The charts containing only productivity indicators also include Germany, Spain and Austria. The use of (slightly) different country samples is flagged in the note to the related chart. Information for 2013 is only available for 12 countries, since it is not available for Lithuania, Hungary, Romania and Slovenia. This article considers 54 two-digit sectors in the non-financial business economy, 23 of which are in manufacturing, according to the NACE rev. 2 system. Moreover, throughout the article, only CompNet data referring to firms with more than 20 employees are considered. This sample is population-weighted, which enhances cross-country comparability. However, some comparability issues, related to, for example, sampling procedures, remain. For detailed information on the dataset, see Lopez-Garcia et al., op. cit., and Berthou et al., op. cit.

[95] Bartelsman et al. explain the differences in within-sector dispersion in productivity between central and eastern European countries and western Europe with the fact that during the initial years of the transition, low-productivity firms were able to survive in the market and coexist with new, far more productive firms created in the private sector (see Bartelsman, E., Haltiwanger, J. and Scarpetta, S., "Cross-Country Differences in Productivity: The Role of Allocation and Selection", *The American Economic Review*, Vol. 103, No 1, 2013, pp. 305-334).

[96] See, for example, the definition given in *The Five Presidents' Report: Completing Europe's Economic and Monetary Union*, European Commission, June 2015, p. 8: "*In the end, a competitive economy is one in which institutions and policies allow productive firms to thrive.*"

[97] It should not be overlooked that this literature originates from the contribution of economists such as Joseph Schumpeter, who already in the 1930s took into account the dynamic evolution of heterogeneous economic agents in his work (see, for example, Schumpeter, J.A., *The Theory of Economic Development*, Harvard University Press, Cambridge, Massachusetts, 1934).

allocated across firms as a result of two fundamental developments: (i) the birth and death of firms, and (ii) their expansion and contraction. Factor reallocation is productivity-enhancing when, as a result of such developments, resources shift from the least to the most productive firms. However, constraints such as credit frictions or structural rigidities may impair the efficient allocative process.

The aim of this article is to take stock of the implications of firm heterogeneity for competitiveness in the EU. The structure of the article is as follows. Section 2 examines the link between firm productivity and trade from an empirical standpoint. Within that section, Box 1 discusses the workhorse theoretical trade models underpinning the empirical analysis, whereas Box 2 assesses the role of firm heterogeneity in explaining the reactivity of aggregate exports to changes in real exchange rates, within and across countries. Section 3 focuses on the efficiency with which capital and labour are allocated across firms within a given sector, which is an important determinant of productivity growth. Section 4 concludes with some policy implications.

Chart 1

Dispersion of firm productivity within sectors in 19 EU countries

(ratio of the labour productivity level of the top and bottom deciles of firms in each two-digit sector, then aggregated to the macro-sector level; averages across countries in the years 2001-13)
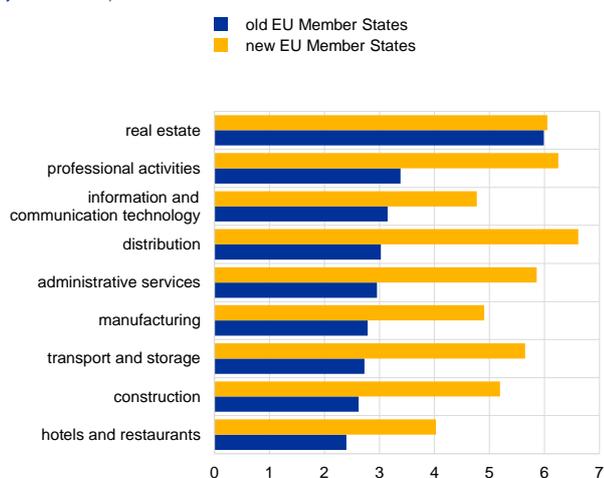
Source: ECB staff calculations based on CompNet data.
Notes: The old EU Member States included in the chart are: Belgium, Denmark, Germany, Spain, France, Italy, Austria, Portugal and Finland. The new EU Member States considered here are: the Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia. The ratios in each two-digit sector are aggregated to the macro-sector level using value-added shares. Unweighted averages across countries and years. 2013 data are available for 12 countries, since they are not available for Germany, Lithuania, Hungary, Austria, Portugal, Romania and Slovenia.

Chart 2

The distribution of firm productivity in manufacturing in the four largest euro area countries

(labour productivity kernels, normalised to country GDP per capita, in EUR ten thousands; manufacturing sector; average over the years 2006-12)
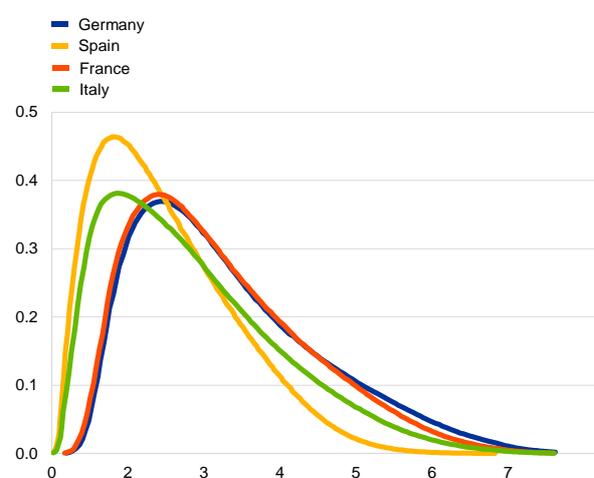
Sources: ECB staff calculations based on CompNet data, Eurostat data and Statistical office of Germany – AFiD-Panel data for Germany.
Notes: The productivity levels are rescaled so that the mean of the productivity distribution is equal to the GDP per capita sourced from Eurostat. It should be noted, however, that rescaling with GDP per capita might alter the order of countries for reasons not necessarily related to productivity, such as the sector composition, the size of the shadow economy or unusual demographic patterns.
Data for Germany refer to a stratified representative sample of manufacturing firms with more than 20 employees. As the revised German data are available by size class, a weighted average was computed, where the weights are the number of firms within a given size class.

2 Productivity and trade: a two-way link

2.1 The importance of firms' productivity for trade

Firms' participation in international trade and their relative importance in a country's exports hinge crucially on their productivity level. Micro-founded evidence based on CompNet trade data, which are available for the manufacturing sectors in 15 EU countries, shows that the export share of firms that are in the top decile of the labour productivity distribution is about four times that of the median firm (see Chart 3).

Chart 3

Export share of manufacturing firms in different deciles of the labour productivity distribution in 15 EU countries

(average across countries over the period 2001-13; percentage share of total manufacturing exports)
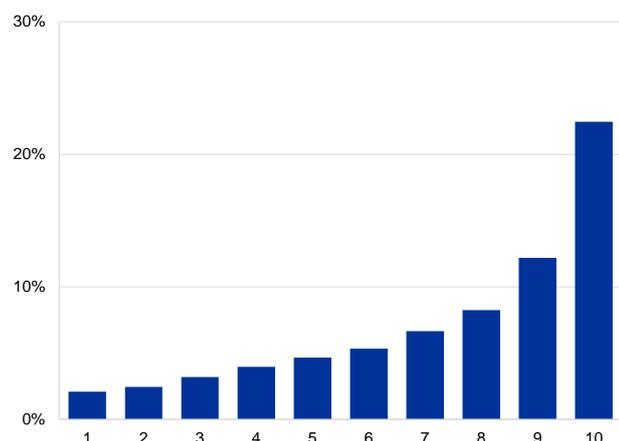
Source: ECB staff calculations based on CompNet data.
Note: Average share of exports as a percentage of total manufacturing exports per labour productivity decile across the 15 EU countries (the 16 EU countries mentioned in footnote 3, with the exception of Hungary).

Chart 4

Performance gap of new manufacturing exporters vis-à-vis non-exporting firms in the same sector in 16 EU countries

(percentage points)
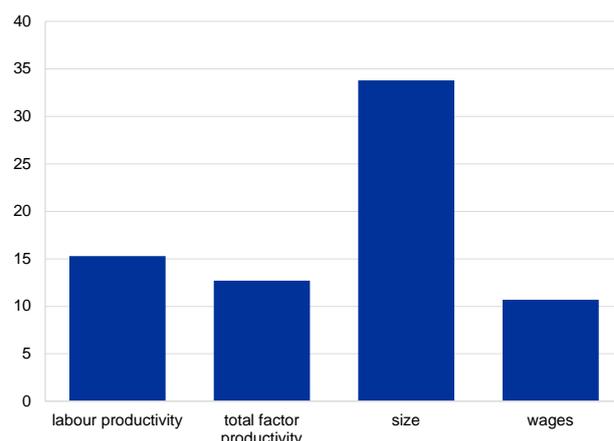
Source: ECB staff calculations based on CompNet data.
Notes: The countries covered in this chart are the 16 EU countries mentioned in footnote 3. Bars represent the estimated coefficient of a dummy variable taking the value of one for the new exporters, and zero otherwise, after controlling for country and two-digit sector-specific fixed effects. All dummy coefficients are significant. The ordinary least squares (OLS) regressions are conducted over the period 2001-13. New exporters are defined as firms that export in time t and t+1, but not in t-1.

Based on firm-level empirical studies, exporting firms in all sectors are found to be not only more productive, but also larger, more capital-intensive and able to pay higher wages than non-exporting firms in the same sector.[98] After controlling for country and sector-specific fixed effects, it is found that new exporting firms (i.e. firms that have just started to export) in the sample of EU countries are, on average, about 15% more productive, 30% larger and pay 10% higher wages than non-exporting firms in the same narrowly defined sector (see Chart 4). This supports

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[98] For example, Bernard and Jensen document large, significant differences between exporters and non-exporters among US manufacturing firms (see Bernard, A.B. and Jensen, J.B., "Exporters, Jobs, and Wages in US Manufacturing: 1976-1987", *Brookings Papers on Economic Activity, Microeconomics*, Vol. 1995, 1995, pp. 67-112; "Exporters, skill upgrading and the wage gap", *Journal of International Economics,* Vol. 42, 1997, pp. 3-31; and "Exceptional exporter performance: cause, effect, or both?", *Journal of International Economics,* Vol. 47, No 1, 1999, pp. 1-25).

the hypothesis that new exporters display a productivity and size advantage in comparison with non-exporters before they even start competing in international markets.[99]

A key reason why exporting firms need to be more productive is that only in this way can they afford to pay the related trade costs, so that expansion into foreign markets is profitable.[100] Engaging in trading activities is costly. Examples of barriers to trade are infrastructure and logistic costs, tariffs and non-tariff barriers, hedging costs to the nominal exchange rate, the cost of credit, and the cost of obtaining information on foreign markets.[101] As discussed in Box 1, both the theoretical and the empirical literature suggest that there is a productivity threshold above which firms find it profitable to pay these costs and expand in foreign markets. A proxy for this unobservable threshold is the estimated labour productivity advantage of new exporters versus non-exporters operating in the same sector – the "exporter productivity premium".[102]

In line with the literature, evidence on EU countries suggests that the lower the level of economic development of a country, the higher tends to be the exporter productivity premium. Countries with low GDP per capita usually have less integrated markets; this allows non-exporters with low levels of productivity to survive, thus explaining the coexistence in the same sector of very productive firms that are able to afford the costs associated with exporting and low-productivity domestically oriented firms.[103] As a result, the exporter productivity premium is larger in economies such as Romania than in, for example, Finland and Denmark (see Chart 5). GDP per capita is also a proxy of institutional quality. Better institutions decrease both the fixed and the variable costs of trade faced by firms.[104] The exporter productivity premium in Chart 5 is indeed found to be low in countries where institutional quality is known to be high.

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[99] Engagement in trading activities might in turn foster firms' own productivity growth (on this issue, see Section 2.2 below).

[100] Evidence about the presence of sunk entry costs to exports and persistence in export activities were found for Columbia (see Roberts, M.J. and Tybout, J.R., "The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs", *The American Economic Review*, Vol. 87, No 4, 1997, pp. 545-564). Other examples of self-selection of firms into export markets refer to France (see Eaton, J., Kortum, S. and Kramarz, F., "An anatomy of international trade: evidence from French firms", *Econometrica*, Vol. 79, No 5, 2011, pp. 1453-1498), Germany (see Bernard, A.B. and Wagner, J., "Export entry and exit by German firms", *Weltwirtschaftliches Archiv*, Vol. 137, No 1, 2001, pp. 105-123), and the United States (see Bernard, A.B. and Jensen, J.B., "Exporting and Productivity in the USA", *Oxford Review of Economic Policy*, Vol. 20, No 3, 2004, pp. 343-357).

[101] See, for example, Minetti, R. and Chun Zhu, S. "Credit constraints and firm export: Microeconomic evidence from Italy", *Journal of International Economics*, Vol. 83, No 2, 2011, pp. 109-125, on the role of credit rationing; and Fontagné, L., Orefice, G., Piermartini, R. and Rocha, N., "Product standards and margins of trade: Firm-level evidence" *Journal of International Economics*, Vol. 97, No 1, 2015, pp. 29-44, on the impact of tariffs and stringent non-tariff barriers in the foreign markets on export performance.

[102] The exporter productivity premium in this article is estimated following the methodology of the International Study Group on Exports and Productivity (ISGEP), "Understanding Cross-Country Differences in Exporter Premia: Comparable Evidence for 14 Countries", *Review of World Economics*, Vol. 144, No 4, 2008, pp. 596-635. However, in contrast to that study, only new exporters among the set of exporting firms have been included here so as to better ensure that the productivity premium does not include the productivity gains due to firms' engagement in international trade.

[103] See Hallward-Driemeier, M., Iarossi, G. and Sokoloff, K.L., "Exports and Manufacturing Productivity in East Asia: A Comparative Analysis with Firm-Level Data", *NBER Working Papers*, No 8894, National Bureau of Economic Research, 2002.

[104] See ISGEP, op. cit.

Chart 5

Exporter productivity premium in manufacturing and GDP per capita in 12 EU countries

(averages over the period 2001-13; x-axis: GDP per capita (log); y-axis: exporter productivity premium)
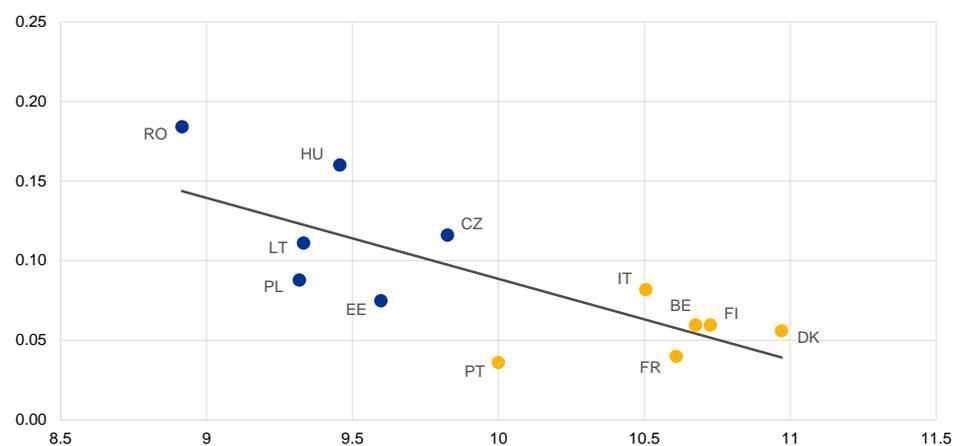
Sources: ECB staff calculations based on ISGEP, CompNet data, and World Bank Development Indicators database.
Notes: The exporter productivity premium is estimated on the basis of the ISGEP methodology. It is computed as the coefficient on a dummy variable taking the value of one for the new exporters, and zero otherwise, in a regression where the dependent variable is the log of the average sector labour productivity. Additional explanatory variables include the average firm size, average wage, year and two-digit sector-specific fixed effects. The countries covered in this chart are the 16 EU countries mentioned in footnote 3, with the exceptions of Croatia, for which data are not available, and Latvia, Slovenia and Slovakia, for which estimated coefficients were not statistically significant at conventional levels. Countries marked in blue are central and eastern European countries; countries in yellow are western European countries.

Box 1

Reconciling empirical evidence with theory: introducing heterogeneous firms in trade theory

Until the 1990s most studies assumed that firms were homogeneous when assessing competitiveness, understood as trade performance. In neoclassical trade models, welfare gains from trade arise from the increase in world production and consumption following the specialisation of countries in industries where they have a comparative advantage. Specifically, countries export those products for which they have lower opportunity costs of production relative to other industries and to other countries. Later "new-trade" models incorporated the empirical feature that countries exchange similar goods, implying that trade across countries also occurs within the same industry, by assuming increasing returns to scale, monopolistic competition and consumers' preference for a variety of products. In these models, the gains from trade arise because trade liberalisation leads to an increase in market size, which allows firms to reduce production costs and widens the availability of cheaper varieties of goods.[105] In all these models, firms are assumed to be homogeneous.

The so-called "new new-trade" theory acknowledges the presence of firm heterogeneity, as unveiled by empirical studies, and provides for a tractable framework to analyse competitiveness through the link between trade and productivity. In a seminal article of 2003, Marc Melitz introduced firm heterogeneity in productivity into the standard new-trade theory

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[105] The reference point for this literature is Krugman, P.R., "Scale Economies, Product Differentiation, and the Pattern of Trade", *The American Economic Review*, Vol. 70, 1980, pp. 950-959.

models.[106] Building on earlier theoretical models of firm size and dynamics,[107] the Melitz model offers a tractable framework and has become the new cornerstone of trade theory. In this model, firms need to pay a fixed cost to be able to produce domestically. Participation in export activities also requires the payment of an additional fixed cost, as well as of a variable cost. This implies that firms will enter the market and produce, and eventually export, only if they find it profitable (i.e. if their revenues are larger than these fixed and variable costs). Since profitability depends on the productivity level of each firm, only a fraction of the total number of firms (i.e. those above a certain "productivity threshold") will be able to produce for the domestic market, and only a fraction of these firms will in turn be able to export.[108] At the same time, while trade liberalisation leads to an increase in potential export market sales, it also heightens domestic competition. Consequently, the most productive firms – those that are able to pay the cost of exporting – engage in export activities and expand to take advantage of the larger foreign market, whereas the least efficient producers tend to exit the market as increased competition causes their revenues to contract. Resources are, therefore, reallocated towards the most productive producers, which leads to an increase in aggregate productivity.

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[106] See Melitz, M.J., "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity", *Econometrica*, Vol. 71, 2003, pp. 1695-1725. Firm heterogeneity was introduced in Krugman's model (see Krugman, op. cit.).

[107] Older theoretical models in this strand of the literature include, for example, Jovanovic, B., "Selection and the evolution of industry", *Econometrica*, Vol. 50, No 3, 1982, pp. 649-670, and Hopenhayn, H., "Entry, Exit, and Firm Dynamics in Long Run Equilibrium", *Econometrica*, Vol. 60, No 5, 1992, pp. 1127-1150.

[108] In the model put forward by Marc Melitz, only the first moment of the productivity distribution, i.e. average firm productivity, matters for exports. However, a recent study based on CompNet data for 16 EU countries in the period from 2001 to 2012 shows how exporter competitiveness (measured as the residual of an export regression, once all possible characteristics of the destination market, trade costs, and geographical, cultural and historical features are netted out) is positively correlated not only with average firm productivity, but also with other moments of the productivity distribution, namely with its dispersion and asymmetry. See Barba Navaretti, G., Bugamelli, M., Forlani, E. and Ottaviano, G., "The importance of micro data in assessing aggregate outcomes", in Altomonte, C. and Békés, G. (eds.), *Measuring competitiveness in Europe: resource allocation, granularity and trade*, Bruegel Blueprint Series, Vol. 24, 2016, pp. 14-25.

Chart 6

Share of manufacturing exports sold by top exporting firms, broken down by country

(average percentage shares in the period 2001-13; weighted averages across sectors, where the weights are value-added shares in total manufacturing value added)
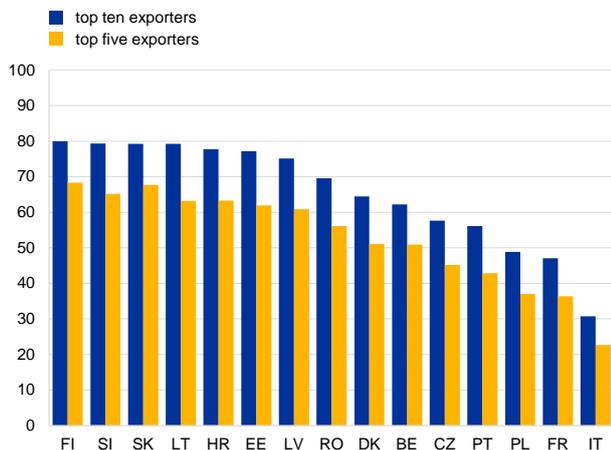
- top ten exporters
- top five exporters

Source: ECB staff calculations based on CompNet data.
Note: The countries covered in this chart are the 16 EU countries mentioned in footnote 3, with the exception of Hungary.

Chart 7

Share of manufacturing exports sold by top exporting firms and size of manufacturing in each country

(export share of the top ten exporting firms in each manufacturing sector and the size of the manufacturing sector in real value-added terms in each country; value-added-weighted sector averages for each country over the period 2001-13; x-axis: manufacturing value added (log); y-axis: concentration of exports in top ten exporters)
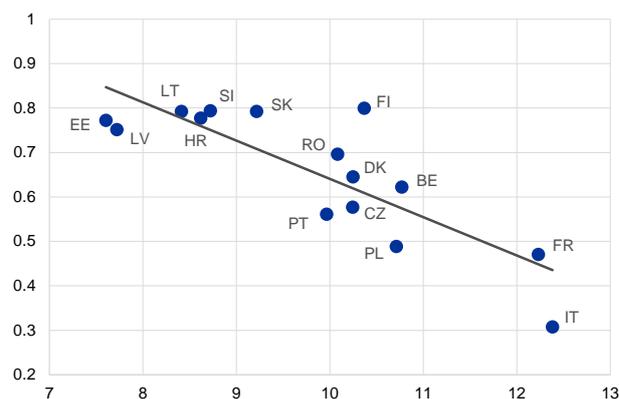
Source: ECB staff calculations based on CompNet and Eurostat data.
Notes: The countries considered are those in Chart 6. The correlation between these two series is -0.83.

These findings also imply that the international performance of a given country will depend on its productivity distribution, as depicted in Chart 2, and, in particular, on the behaviour of relatively few exporting firms. In the 15 EU countries considered in Chart 6, the top exporters (top ten firms in terms of exporting value) account for about 50% to 80% of aggregate exports, with the exceptions of France and, more starkly, Italy, where the shares of top exporters are lower. There is evidence of the concentration of exports being higher the smaller the size of a country's manufacturing sector (see Chart 7).[109] The generally large concentration of exports in most countries implies that aggregate trade performance is driven by very few firms. Export concentration also varies significantly across manufacturing sectors, the highest being recorded in sectors such as transport equipment and pharmaceuticals and the lowest in, for example, the machinery and equipment and fabricated metals sectors (see Chart 8). Sector differences in export concentration can be partially related to sector-specific technological characteristics of production processes, which require different firm sizes across sectors. Chart 9 shows a positive correlation between the cross-country average export concentration and the median size of firms in each sector, which is a proxy of the required scale of operations in the sector.

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[109]   Moreover, according to CompNet data, the median size of exporting firms in a given sector in Italy is about 60% the size of the median exporting firms in the same sector in all other countries considered in Chart 6. The small size of exporters in Italy can contribute to explaining its low concentration of exports.

Chart 8

Share of manufacturing exports sold by top exporting firms, broken down by sector

(average percentage shares in the years 2001-13; unweighted averages across countries)

- top ten exporters (blue)
- top five exporters (yellow)

Sectors (top to bottom): fabricated metals, machinery and equipment, food, rubber and plastic, wood and cork, furniture, textiles, wearing apparel, other non-metallic minerals**, electrical equipment, chemicals, other manufacturing, basic metals, computer and electronics, paper, leather, printing and media, repair and installation, motor vehicles, beverages, pharmaceuticals, other transport*
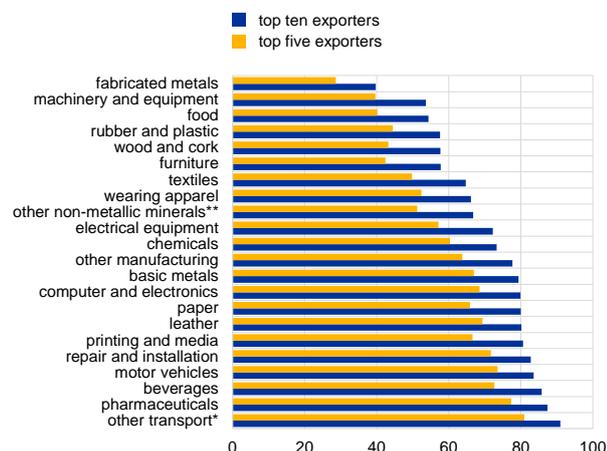
Source: ECB staff calculations based on CompNet data.
Notes: The countries included are those considered in Chart 6. *Manufacture of transport equipment net of motor vehicles. **Manufacture of non-metallic mineral products, such as glass, plastic, cement, etc.

Chart 9

Share of manufacturing exports sold by top exporting firms and median firm size in the sector

(export share of the top ten exporting firms in each manufacturing sector and median number of employees per company in a given sector; cross-country averages for each sector over the period 2001-13; x-axis: median firm size in a given sector (employees); y-axis: concentration of exports in top ten exporters)
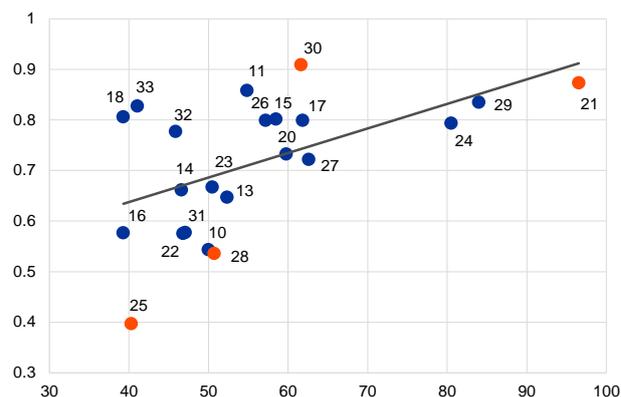
Sources: ECB staff calculations based on CompNet data.
Notes: Unweighted averages across the countries considered in Chart 6. Sectors: 10. Food products; 11. Beverages; 13. Textiles; 14. Wearing apparel; 15. Leather and related products; 16. Wood and cork; 17. Paper; 18. Printing and media; 20. Chemicals; 21. Pharmaceuticals; 22. Rubber and plastic; 23. Other non-metallic minerals; 24. Basic metals; 25. Fabricated metal products; 26. Computer and electronics; 27. Electrical equipment; 28. Machinery and equipment; 29. Motor vehicles; 30. Other transport; 31. Furniture; 32. Other manufacturing; 33. Repair and installation of machinery. Sectors marked in red are sectors with the two highest (sectors 30 and 21) and lowest (sectors 25 and 28) average percentage shares of manufacturing exports sold by top exporting firms (see Chart 8). The correlation between these series is 0.54.

This granular distribution of exports implies that microeconomic shocks affecting a relatively small number of firms can have aggregate effects. An example of this is provided in Box 2, which discusses the impact that export granularity, as shown in Chart 6, and the shape of the productivity distribution, as displayed in Chart 2, can have on how a country's aggregate exports react to changes in the real effective exchange rate.[110] In particular, the increase of exports in response to a depreciation of the real effective exchange rate is the stronger, the larger the pool of productive firms that would find it profitable to start exporting under the improved price competitiveness conditions (i.e. the "fatter" is the right tail in a country's productivity distribution). Conversely, the elasticity of exports to fluctuations in the real effective exchange rate will tend to be lower in countries or sectors with a relatively higher concentration of exports in few firms.

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[110] The real effective exchange rate is the weighted average of a country's exchange rate relative to a basket of currencies of its trading partners, adjusted for the effects of inflation. More generally speaking, several other macroeconomic questions can be clarified by looking at the behaviour of large firms. See Gabaix, X., "The granular origins of aggregate fluctuations", *Econometrica,* Vol. 79*,* No 3, 2011, pp. 733-772.

Box 2

The productivity distribution of firms, real exchange rate movements and aggregate exports

This box discusses how the distribution of productivity across firms, which differs from country to country, can affect the external rebalancing processes. Aggregate export dynamics depend, among other factors, on changes in a country's price competitiveness, which is commonly measured by the real effective exchange rate (REER). While, all other things being equal, a depreciation of the REER generally leads to higher export growth, it is critical to recall that this impact takes place via two different channels, namely (i) the "intensive margin" (the changes in foreign sales of *existing* exporting firms) and (ii) the "extensive margin" (the entry of *new* exporting firms). Recent empirical literature has shown that the magnitude of such effects across countries depends – via each of the two channels – on two factors reviewed in this article: first, the extent to which exports are concentrated in few firms (as illustrated in Chart 6) and second, the shape of the productivity distribution prevailing in a given country's manufacturing sector (as illustrated in Chart 2).

With respect to the intensive margin (i.e. the export intensity of existing exporters), large and more productive exporting firms tend to be less sensitive to real exchange rate developments, possibly because of higher market power, product diversification and import intensity. According to evidence based on 11 EU countries, the largest and most productive exporters are found to exhibit up to three times lower elasticities to REER movements than the smaller, less productive exporting firms.[111] Hence, all other factors being equal, the overall reactivity of exports to REER fluctuations will be the lower, the larger the concentration of exports in few, highly productive firms. A first possible explanation of the different reactivity of firms to exchange rate shocks is that firms have heterogeneous *pricing-to-market strategies*: for the largest, most productive exporters, it is easier to absorb exchange rate changes by varying their mark-up, which leads to a weaker reaction of their export volumes.[112] More *import-intensive exporters* are usually the largest and most productive firms even among exporters; they thus need to adjust their export prices less to changes in REERs because their mark-ups are larger and because there are offsetting exchange rate effects on their marginal costs.[113] Finally, large *multi-product firms* are less sensitive to REER movements because, in response to negative exchange rate shocks, they can afford to pull out their least profitable products from the export markets.[114]

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[111] This result is based on the estimation of export elasticities to unit labour cost-deflated real effective exchange rates by firm-level productivity quartile on CompNet data for 11 EU countries in the period from 2001 to 2008 (Berthou, A., Demian, V. and Dhyne, E., "Exchange rate movements, firm-level exports and heterogeneity", forthcoming). See also Demian, C.-V. and Di Mauro, F., "The exchange rate, asymmetric shocks and asymmetric distributions", *Working Paper Series*, No 1801, ECB, 2015.

[112] There is strong evidence of heterogeneous pricing-to-market strategies in France, for example (Berman, N., Martin, P. and Mayer, T., "How do different exporters react to exchange rate changes?", *The Quarterly Journal of Economics*, No 127, 2012, pp. 437-492).

[113] Amiti, M., Itskhoki, O. and Konings, J., "Importers, Exporters, and Exchange Rate Disconnect", *The American Economic Review,* Vol. 104, No 7, 2014, pp. 1942-1978. For a thorough discussion of the determinants of the exchange rate pass-through (the degree to which exchange rate changes are transmitted to import prices and subsequently to final consumer prices), see "Exchange rate pass-through into euro area inflation", *Economic Bulletin*, ECB, July 2016. Such determinants include the degree of competition across industries, the currency of invoice for imports, a country's degree of openness, and the perceived persistence of shocks.

[114] Dekle, R., Jeong, H. and Kiyotaki, N., "Dynamics of Firms and Trade in General Equilibrium", *USC Dornsife Institute for New Economic Thinking Working Paper*, University of Southern California, 2015, No 15-12; and Mayer, T., Melitz, M. and Ottaviano, G., "Product Mix and Firm Productivity Responses to Trade Competition", *CEP Discussion Papers*, No 1442, Centre for Economic Performance, 2016.

Turning to the extensive margin, i.e. the extent to which more firms become exporters, this will also depend on the shape of the productivity distribution prevailing in the country in question. A depreciation of the REER in a given country will trigger higher demand for its tradable goods, thus leading to a decrease in the "productivity threshold" of exporting firms, i.e. the threshold above which it becomes feasible for firms to enter export markets. The country's aggregate exports will, therefore, increase as a result of additional sales by existing exporting firms, as well as on account of new firms becoming exporters. Against this background, the larger the pool of very productive firms in a given country, the higher the probability that new firms will be able to enter foreign markets when price competitiveness improves. All other things being equal, countries such as Germany and France, which are characterised by a higher average productivity and a fatter right tail in the productivity distribution (i.e. a larger reservoir of relatively highly productive firms) than countries such as Italy and Spain (see Chart 2), may record a more marked impact of a given exchange rate change on their exports via the extensive margin.[115]

Ultimately, the overall sensitivity of aggregate exports to real exchange rate changes will depend on the relative importance of the intensive versus the extensive margin. The existing empirical literature is inconclusive with respect to the relative importance of the two channels through which changes in the REER can affect aggregate exports, since this varies across sectors, the time-span considered and the granularity of the data employed.[116] However, the intensive margin is generally found to matter more than the extensive margin in advanced economies.[117] This would imply that, all other things being equal, the smaller share of large exporting firms in, for example, Italy relative to France and Germany would play an important role in explaining the higher reactivity of aggregate exports to REER changes in Italy, as documented in the macroeconomic literature.[118]

2.2 The effects of trade on productivity

Trade, in turn, can enhance aggregate productivity through two channels: first, through firms' own productivity growth and, second, through a better allocation of capital and labour across firms. Exposure to international trade can, indeed, induce exporting firms to increase their own productivity ("within-firm productivity growth"). It can also result in a different allocation of production factors across exporting and non-exporting firms, both within a given sector and across sectors ("reallocation effect"), with a potentially large impact on aggregate productivity.

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[115] Di Mauro, F. and Pappadà, F., "Euro area external imbalances and the burden of adjustment", *Journal of International Money and Finance,* Vol. 48, 2014, pp. 336-356.

[116] See, for example, Crozet, M. and Koenig, P., "Structural gravity equations with intensive and extensive margins", *CEPII Working Papers*, No 30, 2008.

[117] Besedeš, T. and Prusa, T.J., "The role of extensive and intensive margins and export growth", *Journal of Development Economics*, Vol. 96, 2011, pp. 371-379.

[118] See, for example, Giordano, C. and Zollino, F., "Shedding light on price and non-price competitiveness determinants of foreign trade in the four largest euro-area countries", *Review of International Economics*, Vol. 24, No 3, 2016, pp. 604-634.

Chart 10

Labour productivity growth of new manufacturing exporters following entry into export markets and of non-exporters in the same sector within 16 EU countries

(annual growth rates of labour productivity in the year after entry of new exporters; percentages)
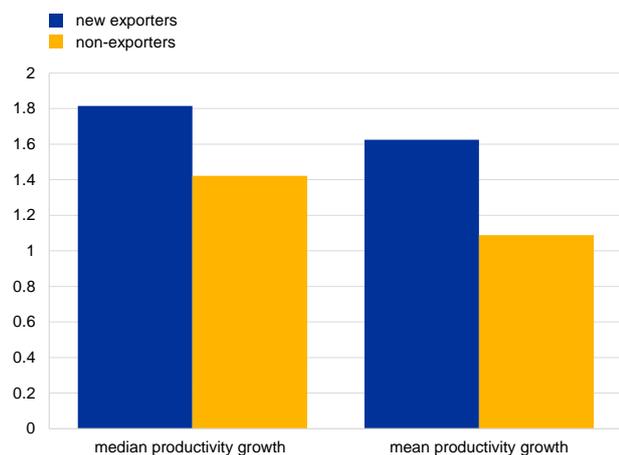
- new exporters
- non-exporters

Source: ECB staff calculations based on CompNet data.
Note: The countries covered in this chart are the 16 EU countries mentioned in footnote 3.

Starting with the first channel, trade can alter within-firm productivity for the following main reasons: (i) exporters "learn by exporting", and (ii) exporters benefit from imports of cheaper and/or higher-quality intermediate goods. Regarding the first reason, empirical evidence documents that exporters are more likely to innovate, shift resources toward the most profitable products and broaden the scope of firm products.[119] As a result, the productivity gap relative to non-exporting firms tends to increase after entry into export markets. Indeed, on average in the sample of EU countries used here, the productivity growth of exporters a year after their entering foreign markets is higher than that of non-exporting firms (see Chart 10).[120] Hence, not only are the most productive firms those that enter into export markets, as discussed in Section 2.1, but export activity boosts their productivity further *after entry*. Turning to the second reason, importing intermediate goods is empirically found to foster within-firm productivity.[121] This is because importers have access to a broader range of more sophisticated inputs.[122] In particular, participation in global value chains (GVCs) acts as a mechanism of technology diffusion. Recent evidence based on CompNet data reveals, for example, that the productivity growth of the better-performing firms (so-called "national frontier firms") in 11 EU countries in central and eastern Europe closely mimics the productivity growth of national frontier firms in EU countries outside central and eastern Europe that supply inputs to the former (the so-called "GVC frontier"). Interestingly, the correlation between these two series is higher than that between productivity developments of national frontier firms

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[119] For theoretical and empirical evidence see, for example, Mayer, T., Melitz, M.J. and Ottaviano, G., "Market Size, Competition, and the Product Mix of Exporters", *The American Economic Review*, Vol. 104, No 2, 2014, pp. 495-536.

[120] Note also that persistent exporters increase their productivity to a larger extent than non-exporting firms in the same sector.

[121] Based on a panel of Indonesian firms, Amiti and Konings show that a 10 percentage point fall in input tariffs leads to a productivity gain of 12% for firms that import their inputs (see Amiti, M. and Konings, J., "Trade Liberalisation, Intermediate Inputs, and Productivity: Evidence from Indonesia", *The American Economic Review*, Vol. 97, No 5, 2007, pp. 1611-1638). Similarly, focusing on trade liberalisation in India, Topolova and Khandelwal show that access to better inputs, due to lower input tariffs, contributed to increasing firm-level productivity (see Topolova, P. and Khandelwal, A., "Trade Liberalisation and Firm Productivity: The Case of India", *Review of Economics and Statistics,* Vol. 93, No 3, 2011, pp. 995-1009).

[122] For example, based on a panel of French firms, Bas and Strauss-Kahn find that the average firm adds four types of imported inputs over the period, leading to an increase of 2.5% in total factor productivity (TFP). Similarly, they find that controlling for TFP, a 10% increase in the number of imported input varieties raises export product scope by 10.5% (see Bas, M. and Strauss-Kahn, V., "Does importing more inputs raise exports? Firm-level evidence from France", *Review of World Economics*, Vol. 150, No 2, 2014, pp. 241-475).

in central and eastern European EU countries and those of EU countries outside that region which do not have particular GVC links with them (see Chart 11).[123]

Chart 11

Productivity growth of the most productive ("frontier") firms and their global value chain partners in 11 central and eastern European EU countries and nine other EU countries

(annual growth rates of total factor productivity; percentages)

- CEE EU countries' total factor productivity frontier – year-on-year growth
- non-CEE EU countries' total factor productivity frontier – year-on-year growth, weighted by the global value chain links with CEE EU countries
- non-CEE EU countries' total factor productivity frontier – year-on-year growth
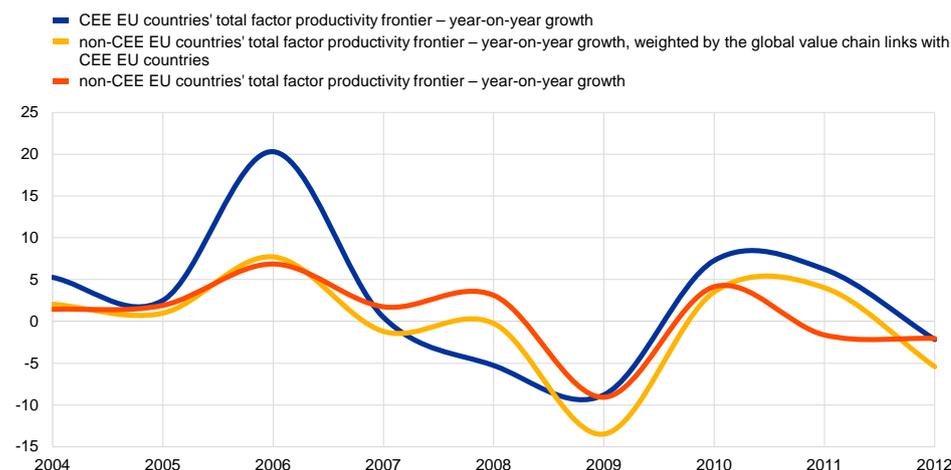
Sources: Chiacchio et al., 2016, based on CompNet and OECD data.
Notes: The total factor productivity frontier refers to the unweighted average annual total factor productivity growth of the top 20% of productive firms in each two-digit sector. The global value chain frontier is the weighted average of total factor productivity growth of the most productive firms in non-CEE EU countries, with weights based on the share of imported intermediates of each CEE country-sector pair from each non-CEE EU country. The CEE EU countries are Bulgaria, the Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia; the non-CEE EU countries are Belgium, Denmark, Germany, Spain, France, Italy, Austria, Portugal and Finland.

Turning to the second channel through which trade can enhance aggregate productivity growth, exporting can also foster a better allocation of resources. When trade costs fall, the most productive, exporting firms are likely to expand to the detriment of the least productive firms, thereby improving the allocation of resources across firms (see Box 1 for the theoretical framework). The empirical literature has also found robust evidence that a shift of resources towards producers that are exposed to international trade can boost aggregate productivity. For example, based on US census data for 1983-92, around 40% of aggregate productivity growth was found to result from increasing output shares of the more productive, exporting firms.[124] Similarly, according to CompNet data referring to 14 EU countries, in the period from 1998 to 2011 an increase in export demand was associated with a rise in

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[123] Chiacchio, F., Gamberoni, E., Gradeva, K. and Lopez-Garcia, P., "The post-crisis total factor productivity growth slowdown in central and eastern European countries: exploring the role of global value chains", forthcoming.

[124] Bernard, A.B. and Jensen, J.B., "Exporting and Productivity in the USA", *Oxford Review of Economic Policy,* Vol. 20, No 3, 2004, pp. 343-357.

total manufacturing productivity, about one-third of which accrued from within-sector labour reallocation.[125]

3 Allocative efficiency and aggregate productivity growth

In addition to trade boosting productivity via the two channels reviewed in the previous section, firm heterogeneity has other, more direct implications for competitiveness, understood as aggregate productivity growth. In the presence of firm heterogeneity, aggregate productivity growth will depend significantly on the degree of allocative efficiency.[126]

All other things being equal, aggregate productivity gains from resource reallocation will be the larger, the more dispersed is the distribution of productivity across firms. Chart 12 shows that the within-sector dispersion between the most and the least productive firms, measured by the ratio of productivity of the top 10% of firms relative to that of the bottom 10% of firms, is substantially larger than the difference in average productivity between firms in the non-tradable and tradable sectors. This fact holds for all countries and time periods.

The allocation of resources across firms within a sector is often not efficient; the most widely used, albeit imperfect, measure of resource misallocation is the dispersion in the marginal revenue productivity of capital and labour – MRPK(L) – across firms.[127] The idea behind this indicator is that in a given sector, if firms face the same marginal costs, labour and capital should flow across firms until the marginal return of hiring an extra unit of input is equalised across firms. However, the presence of different constraints that affect input allocation (e.g. differing access to financial resources, different degrees of exposure to regulation, etc.) could prevent such reallocation of resources and, therefore, induce firms to employ sub-optimal amounts of inputs compared to their productivity level. The result would be that marginal revenue productivities of inputs are not equalised across firms within a

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[125] Berthou, A., Hyun Chung, J., Manova, K. and Sandoz, C., "Productivity, Misallocation and Trade", paper presented at the Annual Meeting of the American Economic Association, January 2017. The importance of the reallocation effect in boosting aggregate productivity via trade is not only limited to advanced economies. For example, in the aftermath of trade liberalisations in Chile, roughly two-thirds of the observed rise in aggregate productivity was found to be the result of reallocation from the least to the most efficient producers (see Pavcnik, N., "Trade liberalisation, exit and productivity improvement: Evidence from Chilean plants", *Review of Economic Studies,* Vol. 69, No 1, 2002, pp. 245-276).

[126] See, for example, Bartelsman, E., Haltiwanger, J. and Scarpetta, S., "Measuring and analyzing cross-country differences in firm dynamics", in Dunne, T., Bradford, J.B., and Roberts, M.J. (eds.), *Producer dynamics: New evidence from micro data*, University of Chicago Press, 2009, and Bartelsman, E., Haltiwanger, J. and Scarpetta, S., "Cross-country differences in productivity: the role of allocation and selection", *The American Economic Review*, Vol. 103, No 1, 2013, pp. 305-334.

[127] In the presence of output distortions, Hsieh and Klenow show that: $MRPL_{si} = w_s \frac{1}{1-\tau_{Ysi}}$, i.e. firm i's marginal revenue product of labour is not equal to the average wage of the sector s in which it operates (and therefore not equal to that of all other firms in the sector), but rather it is larger than the average wage. In particular, it is the higher, the higher the firm's output distortion. Similarly, $MRPK_{si} = r_s \frac{1+\tau_{Ksi}}{1-\tau_{Ysi}}$, i.e. the marginal revenue product of capital is equal to the average sector interest rate, adjusted by both the firm's capital and output distortions. This implies that MRPK is also not equalised across firms in the sector. A standard measure of within-sector dispersion of MRPK(L) across firms is the standard deviation of MRPK(L), which is indeed the measure of capital (labour) misallocation suggested by Hsieh and Klenow (see Hsieh, C.-T. and Klenow, P., "Misallocation and manufacturing TFP in China and India", *Quarterly Journal of Economics,* Vol. 124, No 4, 2009, pp. 1403-1448).

sector, leading to a dispersion in MRPK(L). The higher the dispersion, the higher is the misallocation of inputs.

Chart 12

Productivity differences across tradable and non-tradable sectors versus productivity differences within sectors in 15 EU countries

(productivity ratios)

■ ratio of mean productivity tradables to non-tradables
■ ratio of the 90th percentile to the 10th percentile within each two-digit industry
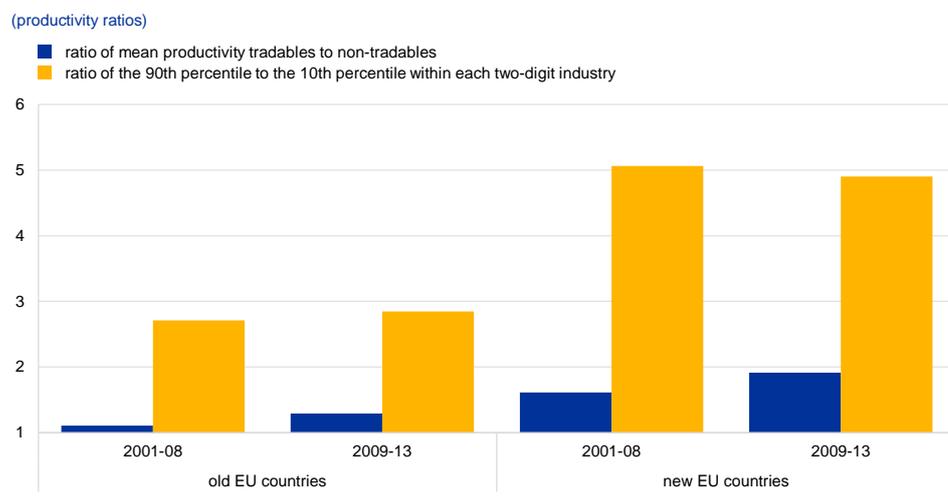
Source: ECB staff calculations based on CompNet data.
Notes: According to the AMECO classification, tradable sectors include: manufacturing, wholesale and retail trade, transportation and storage, and information and communications technology. Non-tradable sectors include: construction, hotels and restaurants, and professional and administrative services. The within-sector 90th percentile/10th percentile productivity ratio is aggregated to the country level using sector shares in total value added. The "old" EU countries are Belgium, Denmark, France, Italy, Portugal and Finland. The "new" EU countries are the Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Romania, Slovenia and Slovakia.

Different empirical studies using this indicator have found that capital misallocation has been trending upwards since at least the early 2000s, while developments in labour misallocation have been flatter. Recent cross-country research by ECB staff based on CompNet data has found that capital misallocation, measured by the aforementioned indicator, has been on an upward trend throughout the period from 2002 to 2013 in Belgium, Spain, France and Italy (see Chart 13).[128] Country-specific studies on Spain, Italy and Portugal that are based on different data sources also point to similar results.[129] The rise in capital misallocation has been particularly apparent in services. This could be related to the fact that the tertiary sector is more regulated and less exposed to international competition than, for example, manufacturing, as well as to the fact that it is more dependent on external finance, which increases its exposure to credit constraints. Labour misallocation has

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[128] Gamberoni, E., Giordano, C. and Lopez-Garcia, P., "Capital and labour (mis)allocation in the euro area: some stylized facts and determinants", *Working Paper Series*, No 1981, ECB, 2016. The study also includes Germany and shows that capital misallocation in Germany increased up to 2006, but then declined until 2012 (the last year for which German data are available, which is why this country has not been included in Charts 13 and 14). The recent drop was driven by the decrease in allocative inefficiency observed in Germany's large manufacturing sector, whereas capital misallocation continued to rise in service sectors.

[129] See Calligaris, S., "Misallocation and Total Factor Productivity in Italy: Evidence from Firm-Level Data", *Labour*, Vol. 29, No 4, 2015, pp. 367-393; Dias, D., Robalo Marques, C. and Richmond, C., "Misallocation and productivity in the lead up to the Eurozone crisis", *Journal of Macroeconomics*, Vol. 49, 2016, pp. 46-70; Garcia-Santana, M., Moral-Benito, E., Pijoan-Mas, J. and Ramos, R., "Growing like Spain: 1995-2007", *CEPR Discussion Papers*, No 11144, Centre for Economic Policy Research, 2016.

instead risen less steeply over the period 2002-13 or has, in the case of Spain, even decreased after the crisis (see Chart 14). Similar capital and labour misallocation trends are also present in other non-euro area EU countries, such as those in central and eastern Europe,[130] as well as in other mature economies such as the United States.[131]

Chart 13

Developments in *capital* misallocation in Belgium, Spain, France and Italy in the period 2002-13

(weighted averages of dispersion in the marginal revenue product of capital across firms within a given sector; 2002=1)

- ● Belgium
- ● Spain
- ● France
- ● Italy
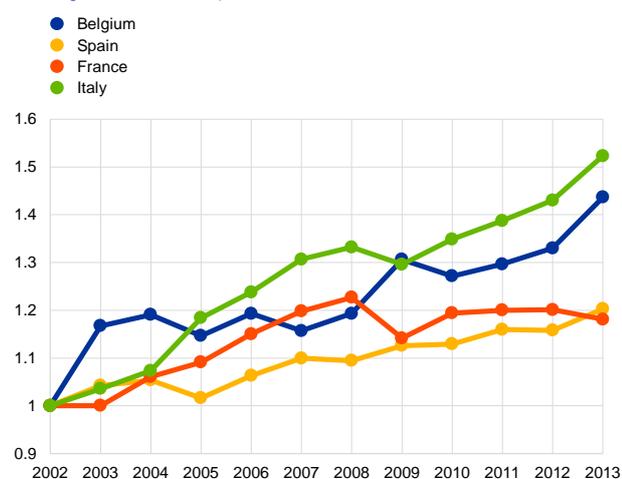
Source: ECB staff calculations based on CompNet data.

Chart 14

Developments in *labour* misallocation in Belgium, Spain, France and Italy in the period 2002-13

(weighted averages of dispersion in the marginal revenue product of labour across firms within a given sector; 2002=1)

- ● Belgium
- ● Spain
- ● France
- ● Italy
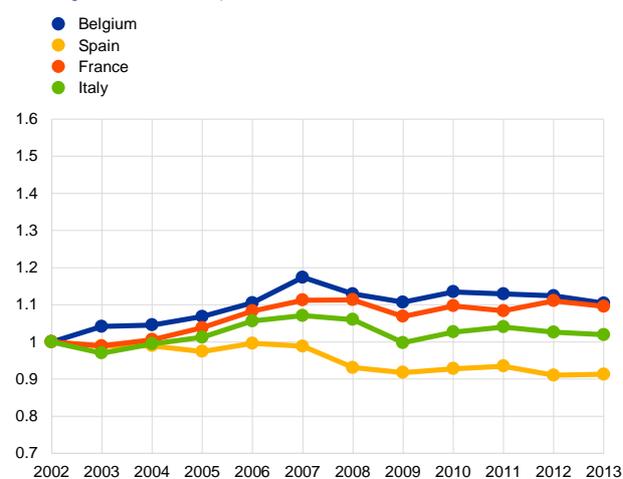
Source: ECB staff calculations based on CompNet data.

Although the factors behind these trends are not clear-cut, several studies have found that cross-country and sector differences in the misallocation of capital and labour are associated with product and labour market regulation. In the presence of *high barriers to entry*, unproductive firms can survive more easily, and thus retain productive resources which could otherwise be shifted to the most efficient firms in a given sector.[132] Furthermore, *employment regulation* that is too stringent may prevent firms from adjusting their workforce to optimal levels, especially in sectors with a higher natural rate of "job churning" (i.e. the ongoing process of job leavers being replaced with new hires) due to their technological characteristics.[133] This is illustrated in Chart 15 for Belgium, Spain, France and Italy.

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[130] The only exception is Slovakia, where capital misallocation declined moderately over the period from 2002 to 2013.

[131] For evidence on non-euro area EU countries, see Gamberoni, E., Gartner, C., Giordano, C. and Lopez-Garcia, P., "Is corruption efficiency-enhancing? A case study of nine Central and Eastern European countries", *Working Paper Series*, No 1590, ECB, 2016. For US evidence, see Hsieh and Klenow, op. cit. The latter study also shows that in emerging economies such as China and India, resource misallocation is very large, but on a downward trend.

[132] See, for example, Andrews, D. and Cingano, F., "Public policy and resource allocation: evidence from firms in OECD countries", *Economic Policy*, Vol. 29, No 78, 2014, pp. 253-296, and Restuccia, D. and Rogerson, R., "Misallocation and productivity", *Review of Economic Dynamics*, Vol. 16, No 1, 2013, pp. 1-10.

[133] See Haltiwanger, J., Scarpetta, S. and Schweiger, H., "Cross country differences in job reallocation: the role of industry, firm size and regulations", *Labour Economics*, Vol. 26, 2014, pp. 11-25, and Bartelsman, E.J., Gautier, P.A. and de Wind, J., "Employment protection, technology choice, and worker allocation", *DNB Working Papers*, No 295, De Nederlandsche Bank, 2011.

In this chart, country-sectors are split into two groups each year, depending on whether their exposure to regulation is above or below the median regulation indicator across all countries and sectors considered – the "tighter regulation" and the "looser regulation" group respectively. The indicator of factor misallocation is then computed for both sub-groups of country-sectors. The chart shows that capital misallocation in the post-crisis period dropped in the country-sectors with more flexible product market regulation (such as manufacturing, construction and distribution), as a result of the exit of less productive firms and an expansion of more productive ones. In country-sectors with stricter regulation, by contrast, the crisis did not have a similar cleansing effect.

Capital misallocation dynamics are also found to be correlated with demand uncertainty and credit market frictions. In addition to product market regulation, *demand uncertainty*[134] is found to be strongly correlated with the observed changes in capital misallocation, as illustrated in Chart 16 by using the same methodology and referring to the same euro area countries as in the previous chart. While it is well-known that demand uncertainty reduces investment, recent empirical evidence documents that it may also affect capital allocation across firms, and thus aggregate productivity dynamics. Heightened uncertainty is indeed conducive to all firms adopting a "wait-and-see strategy", which means that high-productivity firms do not expand and low-productivity firms do not downsize, thereby stalling efficiency-enhancing reallocation and leading to higher resource misallocation.[135] Moreover, higher uncertainty tends to reduce the productivity growth of firms that are relatively more dependent on external finance, generally small firms, irrespective of their level of productivity, thereby possibly leading to a more inefficient input allocation.[136] *Credit market frictions* are also associated with an increase in capital misallocation. Indeed, in country-sectors with a cost of credit above the median (see Chart 17) and tighter credit supply standards (see Chart 18), capital misallocation increased significantly more over the whole period considered than in country-sectors with a lower credit cost and looser credit standards. This supports the idea that the existence of frictions in the financial markets may prevent productive firms from obtaining the resources needed to expand, so that input choices differ systematically across firms in ways that are unrelated to their productivity.[137]

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[134] Here, demand uncertainty is measured as the dispersion in the expectations of firms interviewed in the European Commission's monthly business surveys, when replying to questions such as (depending on the sector) "expectations of the demand over the next three months", "order expectations over the next three months" and "production expectations for the months ahead".

[135] Bloom, N., "The impact of uncertainty shocks", *NBER Working Papers*, No 13385, National Bureau of Economic Research, 2007.

[136] Choi, S., Furceri, D., Huang, Y. and Loungani, P., "Aggregate uncertainty and sectoral productivity growth: The role of credit constraints", *IMF Working Papers*, No 174, International Monetary Fund, 2016, and Ghosal, V. and Loungani, P., "The differential impact of uncertainty on investment in small and large businesses", *The Review of Economics and Statistics*, Vol. 82, No 2, 2000, pp. 338-343. The negative impact of uncertainty on capital allocation is also found in Gamberoni et al., op. cit.

[137] See *Investment and investment finance in Europe. Financing productivity growth*, European Investment Bank, 2016, pp. 232-233. The European Investment Bank notes that a credit crunch tends to have a higher negative impact on the relatively smaller and younger firms within a given sector, which present low net worth, but may potentially be more productive. See also Buera, F., Fattal-Jaef, R. and Shin, Y., "Anatomy of a credit crunch: from capital to labour markets", *Review of Economic Dynamics*, Vol. 18, 2016, pp. 101-117.

Chart 15

Developments in capital misallocation within four euro area economies according to the tightness of *product market regulation*, 2002-13

(weighted averages of dispersion in the marginal revenue product of capital across firms within a given sector for country/sectors below and above the time-varying median of product market regulation (PMR); 2002=1)

- looser PMR
- tighter PMR
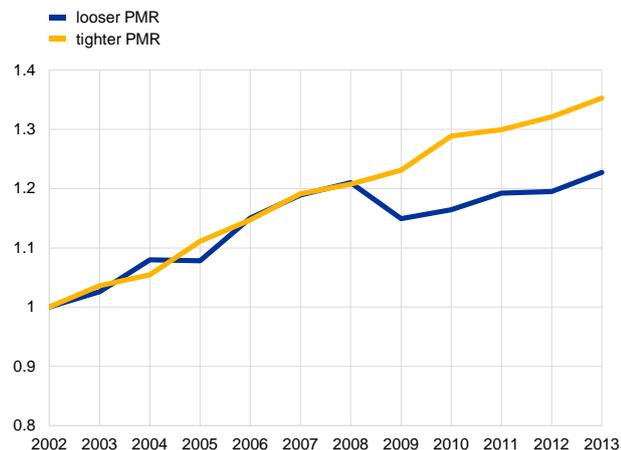
Sources: ECB staff calculations based on CompNet and OECD data.
Note: The euro area countries considered are Belgium, Spain, France and Italy.

Chart 16

Developments in capital misallocation within four euro area economies according to the *demand uncertainty* which firms face, 2002-13

(weighted averages of dispersion in the marginal revenue product of capital across firms within a given sector for country/sectors below and above the time-varying median of demand uncertainty; 2002=1)

- lower uncertainty
- higher uncertainty
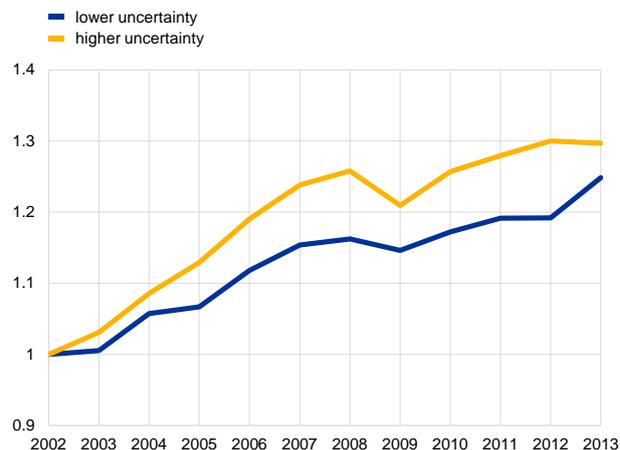
Sources: ECB staff calculations based on CompNet and European Commission data.
Notes: The euro area countries considered are Belgium, Spain, France and Italy. Demand uncertainty is computed as the dispersion in the responses on demand expectations of firms surveyed in the context of the European Commission's business surveys, as in Gamberoni et al., 2016.

Chart 17

Developments in capital misallocation within four euro area economies according to the *cost of credit*, 2003-13

(weighted averages of dispersion in the marginal revenue product of capital across firms within a given sector for country/sectors below and above the time-varying median of the cost of credit; 2003=1)

- lower cost of credit
- higher cost of credit
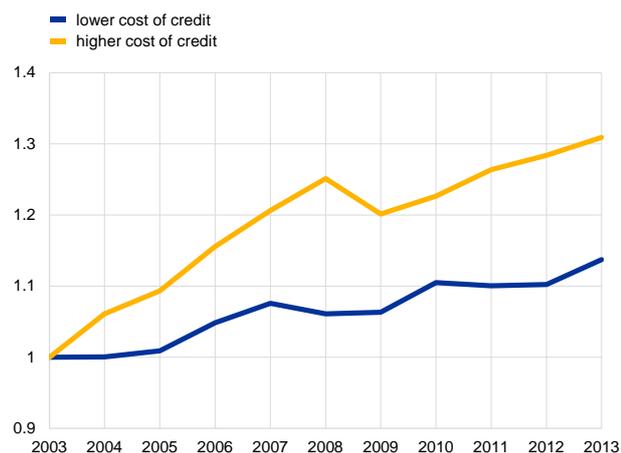
Sources: ECB staff calculations based on CompNet and ECB data.
Note: The euro area countries considered are Belgium, Spain, France and Italy.

Chart 18

Developments in capital misallocation within four euro area economies according to *credit tightness*, 2003-13

(weighted averages of dispersion in the marginal revenue product of capital across firms within a given sector for country/sectors below and above the time-varying median of the tightness of credit standards; 2003=1)

- looser credit standards
- tighter credit standards
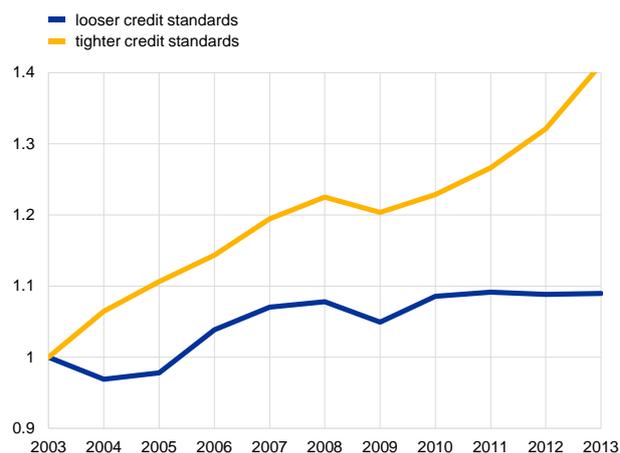
Sources: ECB staff calculations based on CompNet and ECB bank lending survey (BLS) data.
Notes: The euro area countries considered are Belgium, Spain, France and Italy. The credit standards indicator is the first component of a principal component analysis based on the diffusion indices of five BLS questions on credit standards, as in Gamberoni et al., 2016.

4 Policy implications

A core implication of the firm heterogeneity addressed in this article is that aggregate competitiveness outcomes vary depending on the distribution of productivity across firms in each economy. As, typically, only the relatively more productive firms are capable of exporting, the sector-specific density of high-productivity firms in a given country affects its international performance. Trade, in turn, positively affects aggregate productivity growth in a virtuous cycle; conversely, trade restrictions would lower productivity growth as a result of weaker productivity growth of individual firms, and of a less efficient input allocation across firms. The dispersion in the distribution of productivity across firms also determines the aggregate productivity gains of a reallocation of capital and labour. In light of this evidence, a set of broad policy recommendations can be identified which would help countries enhance their competitiveness.[138]

First, policy action aimed at lowering trade costs enhances the scope for export-related activities and firms' ability to switch between domestic and foreign markets. This means, among other things, reducing tariffs and non-tariff barriers, wherever needed. In some countries, it may also be helpful to enhance the activities of export-promotion agencies which provide networks and information to potential exporters and to reduce logistic and trade-related transport infrastructure costs.

Second, measures designed to support firm productivity make it easier for a larger set of firms to access international markets. Potential reforms include incentives for research and development, enhancing the link between (university) research and (firm) innovation, as well as the liberalisation of closed professions and certain closed sectors, which can have positive downstream effects on manufacturing firms.

Third, policies aimed at removing distortions that prevent a productivity-enhancing reallocation of capital and labour across firms can significantly increase aggregate productivity, and thus competitiveness. In order to boost aggregate productivity growth and fully reap the gains of international trade, structural reforms aimed at removing barriers to the flow of production inputs from the least to the most productive firms are warranted. Examples of allocative efficiency-enhancing measures include:

(i) in *product markets*, lowering the entry barriers for firms and promoting the creation of innovative start-ups, enhancing bankruptcy regulations that facilitate the exit of unproductive firms, removing obstacles that prevent firms from reaching their optimal size (e.g. by redesigning size-contingent regulations that set disincentives above a given employee threshold) and making further progress in the establishment of a fully fledged EU internal market for services;

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[138] The specification of the ensuing policy measures would, in turn, hinge on a detailed analysis of institutions, governance and framework conditions, country by country, which falls outside the scope of this article.

(ii) in *labour markets*, avoiding excessively rigid employment protection legislation that prevents firms from adjusting their workforce to optimal levels, setting incentives for labour mobility (both within countries and intra-EU) and enhancing lifelong education to lower skill mismatches;

(iii) in *financial markets*, increasing the opportunities for small and medium-sized enterprises to turn to capital markets (e.g. by promoting equity financing and venture capital markets) and enhancing banks' selection and monitoring procedures in order to reduce forbearance and cut finance to "zombie" firms.

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
2014	3.4	2.4	3.1	0.2	7.3	1.2	1.7	1.8	1.6	1.5	2.7	2.0	0.4
2015	3.3	2.6	2.2	1.3	6.9	2.0	0.6	1.7	0.1	0.0	0.8	1.4	0.0
2016	.	1.6	1.8	1.0	6.7	1.7	1.1	1.8	1.3	0.7	-0.1	2.0	0.2
2016 Q1	0.8	0.2	0.2	0.6	1.3	0.5	1.0	1.9	1.1	0.3	0.0	2.1	0.0
Q2	0.7	0.4	0.6	0.4	1.9	0.3	0.8	1.8	1.0	0.4	-0.4	2.1	-0.1
Q3	0.8	0.9	0.6	0.3	1.8	0.4	1.0	1.8	1.1	0.7	-0.5	1.7	0.3
Q4	.	0.5	0.7	0.2	1.7	0.4	1.6	1.8	1.8	1.2	0.3	2.2	0.7
2016 Sep.	-	-	-	-	-	-	1.2	1.8	1.5	1.0	-0.5	1.9	0.4
Oct.	-	-	-	-	-	-	1.4	1.7	1.6	0.9	0.1	2.1	0.5
Nov.	-	-	-	-	-	-	1.5	1.7	1.7	1.2	0.5	2.3	0.6
Dec.	-	-	-	-	-	-	1.8	1.8	2.1	1.6	0.3	2.1	1.1
2017 Jan.	-	-	-	-	-	-	2.3	1.9	2.5	1.8	0.4	2.5	1.8
Feb. [4]	-	-	-	-	-	-	.	.	.	.	.	.	2.0

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, 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
2014	54.1	57.3	57.9	50.9	51.1	52.7	53.2	54.0	51.5	2.6	3.8	1.7
2015	53.1	55.8	56.3	51.4	50.4	53.8	51.8	53.7	50.4	1.3	3.8	-0.3
2016	51.6	52.4	53.5	50.5	51.4	53.3	51.8	51.9	50.2	0.9	1.2	0.6
2016 Q1	51.1	51.5	54.1	51.2	50.3	53.2	50.8	51.2	49.4	-0.6	0.6	-1.4
Q2	50.7	51.5	52.5	49.0	50.5	53.1	49.9	51.0	48.8	-0.3	0.1	-0.5
Q3	51.3	51.9	51.6	49.6	51.7	52.9	51.7	51.2	50.1	1.1	1.1	1.1
Q4	53.2	54.6	55.6	52.0	53.1	53.8	53.3	53.1	50.6	0.7	-1.3	2.1
2016 Sep.	51.5	52.3	53.9	48.9	51.4	52.6	51.6	51.5	50.2	1.1	1.1	1.1
Oct.	53.0	54.9	54.8	51.3	52.9	53.3	53.3	52.9	50.4	0.9	0.2	1.4
Nov.	53.0	54.9	55.3	52.0	52.9	53.9	53.2	53.0	50.6	0.3	-1.0	1.2
Dec.	53.5	54.1	56.7	52.8	53.5	54.4	53.5	53.5	50.7	0.7	-1.3	2.1
2017 Jan.	53.9	55.8	55.4	52.3	52.2	54.4	53.1	54.1	51.6	.	.	.
Feb.	52.9	54.1	53.8	52.2	52.6	56.0	53.4	52.7	52.2	.	.	.

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
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	-0.32	-0.34	-0.26	-0.17	-0.03	0.74	-0.02
2016 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
Dec.	-0.35	-0.37	-0.32	-0.22	-0.08	0.98	-0.04
2017 Jan.	-0.35	-0.37	-0.33	-0.24	-0.09	1.03	-0.02
Feb.	-0.35	-0.37	-0.33	-0.24	-0.11	1.04	-0.01

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
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	-0.93	-0.82	-0.80	-0.47	0.26	1.08	1.63	1.17	-0.78	-0.75	0.35	1.35
2016 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
Dec.	-0.93	-0.82	-0.80	-0.47	0.26	1.08	1.63	1.17	-0.78	-0.75	0.35	1.35
2017 Jan.	-0.70	-0.70	-0.69	-0.28	0.50	1.20	1.69	1.36	-0.72	-0.60	0.64	1.63
Feb.	-0.87	-0.88	-0.90	-0.54	0.25	1.13	1.56	1.05	-0.92	-0.86	0.34	1.46

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
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	321.6	3,003.7	620.7	250.9	600.1	278.9	148.7	496.0	375.8	248.6	326.9	770.9	2,094.7	16,920.5
2016 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
Dec.	342.6	3,207.3	698.1	253.7	619.1	313.6	165.7	541.6	396.0	237.1	320.9	797.3	2,246.6	19,066.0
2017 Jan.	352.4	3,298.8	720.9	258.4	637.7	321.1	170.1	557.7	412.7	240.1	337.5	817.4	2,275.1	19,194.1
Feb.	353.2	3,293.1	728.9	257.0	644.9	312.5	166.6	563.0	431.7	239.1	334.6	839.5	2,329.9	19,188.7

Source: ECB.

2 Financial developments

2.4 MFI interest rates on loans to and deposits from households (new business) [1], [2]
(Percentages per annum; period average, unless otherwise indicated)

	Deposits				Revolving loans and overdrafts	Extended credit card credit	Loans for consumption			Loans to sole proprietors and unincorporated partnerships	Loans for house purchase					Composite cost-of-borrowing indicator
	Over-night	Redeem-able at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation		APRC [3]		By initial period of rate fixation				APRC [3]	
			Up to 2 years	Over 2 years			Floating rate and up to 1 year	Over 1 year			Floating rate and up to 1 year	Over 1 and up to 5 years	Over 5 and up to 10 years	Over 10 years		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2016 Feb.	0.12	0.60	0.60	0.89	6.66	16.89	5.01	6.13	6.46	2.62	2.00	2.20	2.23	2.33	2.49	2.19
Mar.	0.11	0.58	0.59	0.88	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	5.19	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	0.85	6.54	16.80	4.96	5.87	6.18	2.44	1.81	2.00	1.97	2.01	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	5.43	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	5.75	6.14	2.35	1.80	1.98	1.85	1.85	2.28	1.86
Oct.	0.08	0.49	0.44	0.76	6.43	16.78	5.17	5.69	6.11	2.43	1.78	1.90	1.80	1.81	2.25	1.81
Nov.	0.08	0.49	0.43	0.78	6.40	16.71	4.91	5.74	6.12	2.43	1.76	1.91	1.76	1.79	2.24	1.79
Dec.	0.08	0.49	0.43	0.76	6.34	16.68	4.78	5.48	5.87	2.31	1.77	1.88	1.80	1.76	2.24	1.78
2017 Jan. [(p)]	0.07	0.48	0.42	0.76	6.36	16.67	5.06	5.85	6.21	2.27	1.75	1.87	1.80	1.76	2.29	1.81

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) Including non-profit institutions serving households.
3) Annual percentage rate of charge (APRC).

2.5 MFI interest rates on loans to and deposits from non-financial corporations (new business) [1], [2]
(Percentages per annum; period average, unless otherwise indicated)

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Over-night	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2016 Feb.	0.13	0.24	0.70	2.93	3.16	3.28	2.76	1.97	2.11	2.09	1.37	1.48	1.74	2.03
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	2.04
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	2.66	3.01	2.52	1.85	1.91	1.85	1.34	1.60	1.64	1.89
July	0.09	0.16	0.42	2.70	2.73	3.07	2.47	1.87	1.91	1.80	1.28	1.56	1.69	1.87
Aug.	0.09	0.16	0.47	2.74	2.69	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	2.42	1.82	1.85	1.73	1.28	1.61	1.63	1.86
Oct.	0.08	0.15	0.49	2.68	2.63	3.04	2.37	1.81	1.83	1.72	1.28	1.40	1.63	1.83
Nov.	0.07	0.12	0.42	2.64	2.60	2.91	2.38	1.82	1.82	1.68	1.28	1.43	1.52	1.82
Dec.	0.07	0.12	0.59	2.64	2.58	2.84	2.30	1.84	1.84	1.68	1.33	1.46	1.62	1.81
2017 Jan. [(p)]	0.06	0.12	0.51	2.69	2.67	2.83	2.30	1.81	1.85	1.73	1.22	1.45	1.63	1.80

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							
2014	1,320	543	131	.	59	538	50	410	219	34	.	38	93	25
2015	1,278	517	156	.	62	478	65	338	153	37	.	33	82	34
2016	1,241	521	133	.	59	466	62	335	147	45	.	32	79	33
2016 Aug.	1,301	526	151	.	71	484	70	321	142	51	.	24	77	27
Sep.	1,315	540	149	.	69	492	66	355	159	44	.	30	86	36
Oct.	1,291	531	139	.	71	484	67	340	155	43	.	35	69	37
Nov.	1,304	537	145	.	70	487	65	349	139	63	.	33	88	26
Dec.	1,241	521	133	.	59	466	62	303	128	69	.	31	50	25
2017 Jan.	1,273	537	134	.	71	469	62	390	187	37	.	38	88	41
							Long-term							
2014	15,135	4,050	3,167	.	990	6,285	642	220	65	44	.	16	85	10
2015	15,242	3,783	3,285	.	1,055	6,482	637	215	68	45	.	13	81	9
2016	15,255	3,645	3,191	.	1,133	6,635	651	207	59	45	.	17	77	9
2016 Aug.	15,167	3,696	3,125	.	1,078	6,629	640	99	32	17	.	3	42	5
Sep.	15,184	3,677	3,141	.	1,097	6,630	638	217	52	46	.	29	84	7
Oct.	15,214	3,673	3,169	.	1,103	6,618	651	239	56	61	.	22	82	18
Nov.	15,276	3,666	3,177	.	1,129	6,653	652	216	43	64	.	26	76	7
Dec.	15,255	3,645	3,191	.	1,133	6,635	651	156	45	71	.	13	25	2
2017 Jan.	15,311	3,647	3,203	.	1,135	6,679	648	287	94	62	.	15	107	9

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						
2014	16,455.1	4,593.1	3,297.3	.	1,048.8	6,823.2	692.7	5,958.0	591.1	780.6	4,586.3
2015	16,520.7	4,300.6	3,441.5	.	1,116.6	6,960.0	702.1	6,744.7	586.1	910.5	5,248.1
2016	16,496.0	4,165.6	3,324.7	.	1,192.2	7,100.2	713.3	7,029.1	538.7	1,022.8	5,467.6
2016 Aug.	16,468.4	4,221.7	3,276.1	.	1,148.3	7,112.6	709.7	6,535.7	444.7	880.6	5,210.3
Sep.	16,498.3	4,216.3	3,289.9	.	1,165.9	7,122.3	703.9	6,593.0	427.5	877.3	5,288.2
Oct.	16,504.4	4,203.1	3,307.7	.	1,174.4	7,101.5	717.6	6,665.7	479.2	912.2	5,274.4
Nov.	16,579.9	4,203.0	3,321.6	.	1,198.8	7,140.0	716.4	6,651.0	482.3	957.1	5,211.6
Dec.	16,496.0	4,165.6	3,324.7	.	1,192.2	7,100.2	713.3	7,029.1	538.7	1,022.8	5,467.6
2017 Jan.	16,583.7	4,183.7	3,336.8	.	1,205.8	7,147.5	709.9	7,015.2	542.3	1,020.9	5,452.0
					Growth rate						
2014	-0.7	-8.1	0.4	.	4.9	3.1	1.1	1.6	7.2	2.0	0.7
2015	0.3	-7.0	5.7	.	4.7	1.8	0.6	1.1	4.5	1.5	0.6
2016	0.0	-2.9	-2.8	.	6.9	2.0	1.4	0.5	1.2	1.0	0.4
2016 Aug.	0.1	-4.5	0.1	.	3.9	2.1	2.1	0.9	2.8	1.6	0.6
Sep.	0.0	-3.8	-0.9	.	5.5	1.6	1.9	0.9	2.8	1.7	0.6
Oct.	-0.3	-4.0	-1.7	.	6.2	1.3	3.1	0.9	2.8	1.4	0.7
Nov.	-0.2	-4.2	-1.2	.	7.1	1.5	1.0	0.8	2.8	1.0	0.5
Dec.	0.0	-2.9	-2.8	.	6.9	2.0	1.4	0.5	1.2	1.0	0.4
2017 Jan.	0.6	-2.0	-1.7	.	8.6	2.0	1.1	0.6	1.5	1.1	0.4

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
2014	101.8	97.8	97.0	91.9	98.5	100.0	114.7	96.1
2015	92.4	88.4	89.3	83.7	85.0	90.9	106.5	87.8
2016	94.8	90.1	91.4	.	.	.	110.4	90.0
2016 Q1	94.1	89.5	91.0	85.6	85.4	91.9	110.4	90.1
Q2	94.9	90.3	91.7	86.1	85.5	92.2	110.8	90.4
Q3	95.2	90.5	91.7	86.2	86.1	92.2	110.6	90.1
Q4	94.9	90.2	91.1	.	.	.	110.0	89.6
2016 Sep.	95.4	90.6	91.8	-	-	-	110.9	90.3
Oct.	95.5	90.8	91.8	-	-	-	110.6	90.1
Nov.	95.0	90.2	91.1	-	-	-	110.3	89.7
Dec.	94.2	89.6	90.4	-	-	-	109.2	88.9
2017 Jan.	94.4	89.7	90.4	-	-	-	109.7	89.1
Feb.	93.9	89.2	89.8	-	-	-	108.8	88.3
	Percentage change versus previous month							
2017 Feb.	-0.5	-0.5	-0.6	-	-	-	-0.8	-0.9
	Percentage change versus previous year							
2017 Feb.	-0.9	-0.8	-2.0	-	-	-	-2.2	-2.8

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
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
2016	7.352	7.533	27.034	7.445	311.438	120.197	4.363	0.819	4.4904	9.469	1.090	1.107
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
Q4	7.369	7.523	27.029	7.439	309.342	117.918	4.378	0.869	4.5069	9.757	1.080	1.079
2016 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
Dec.	7.298	7.540	27.031	7.436	312.235	122.395	4.436	0.844	4.5164	9.709	1.075	1.054
2017 Jan.	7.319	7.530	27.021	7.435	308.987	122.136	4.367	0.861	4.5018	9.511	1.071	1.061
Feb.	7.314	7.448	27.021	7.435	308.502	120.168	4.308	0.853	4.5136	9.476	1.066	1.064
	Percentage change versus previous month											
2017 Feb.	-0.1	-1.1	0.0	0.0	-0.2	-1.6	-1.4	-1.0	0.3	-0.4	-0.5	0.3
	Percentage change versus previous year											
2017 Feb.	0.7	-2.5	-0.1	-0.4	-0.6	-5.6	-2.0	9.9	0.7	0.7	-3.3	-4.1

Source: ECB.

2 Financial developments

2.10 Euro area balance of payments, financial account
(EUR billions, unless otherwise indicated; outstanding amounts at end of period; transactions during period)

	Total [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 Q4	22,234.9	23,309.5	-1,074.5	9,813.6	8,082.4	7,175.8	10,301.2	-44.6	4,645.8	4,925.9	644.2	13,003.5
2016 Q1	22,100.4	23,177.4	-1,077.0	9,675.5	7,997.6	7,111.3	10,108.7	-21.8	4,660.0	5,071.1	675.3	13,236.7
Q2	22,655.4	23,592.2	-936.9	9,808.6	8,199.1	7,428.4	10,144.1	-54.0	4,750.5	5,249.0	721.8	13,379.8
Q3	22,850.8	23,717.5	-866.6	9,746.7	8,053.4	7,689.8	10,288.3	-49.2	4,736.5	5,375.8	727.0	13,362.6
Outstanding amounts as a percentage of GDP												
2016 Q3	214.0	222.2	-8.1	91.3	75.4	72.0	96.4	-0.5	44.4	50.4	6.8	125.2
Transactions												
2016 Q1	385.6	381.0	4.6	113.8	74.8	134.1	40.6	27.3	109.3	265.6	1.0	-
Q2	205.9	143.7	62.3	-13.5	24.6	122.3	-34.2	-44.6	139.5	153.3	2.2	-
Q3	205.0	39.3	165.7	37.5	-87.8	138.2	-29.6	26.0	-4.4	156.7	7.7	-
Q4	103.1	-52.1	155.2	154.6	1.9	-18.5	-42.0	17.1	-54.5	-12.0	4.3	-
2016 July	135.6	111.2	24.4	5.1	-26.7	53.6	-5.2	14.7	63.0	143.2	-0.9	-
Aug.	126.1	74.2	51.9	44.5	2.3	54.2	-16.2	6.7	18.8	88.1	1.8	-
Sep.	-56.7	-146.1	89.5	-12.2	-63.4	30.4	-8.2	4.6	-86.3	-74.6	6.8	-
Oct.	243.7	252.8	-9.1	95.7	24.7	-12.0	-9.0	8.7	155.3	237.2	-4.1	-
Nov.	43.0	22.7	20.3	51.6	22.3	-20.6	22.4	2.3	7.5	-22.0	2.2	-
Dec.	-183.6	-327.6	144.1	7.3	-45.1	14.2	-55.4	6.1	-217.3	-227.2	6.1	-
12-month cumulated transactions												
2016 Dec.	899.6	511.9	387.8	292.4	13.5	376.2	-65.2	25.9	190.0	563.5	15.2	-
12-month cumulated transactions as a percentage of GDP												
2016 Dec.	8.4	4.8	3.6	2.7	0.1	3.5	-0.6	0.2	1.8	5.3	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)

	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	Total construction	Total machinery	Intellectual property products				
	1	2	3	4	5	6	7	8	9	10	11	12
					Current prices (EUR billions)							
2014	10,135.2	9,776.8	5,632.5	2,125.5	1,988.6	1,000.5	598.7	382.2	30.3	358.3	4,532.5	4,174.2
2015	10,459.6	9,986.9	5,743.3	2,164.6	2,066.3	1,018.6	631.9	407.6	12.7	472.7	4,833.4	4,360.7
2016	10,733.2	10,233.2	5,875.7	2,221.5	2,138.1	.	.	.	-2.1	500.0	4,902.6	4,402.6
2016 Q1	2,660.3	2,534.3	1,455.0	551.5	527.1	259.8	163.1	102.0	0.7	126.0	1,200.3	1,074.3
Q2	2,671.4	2,547.7	1,462.9	553.8	534.7	260.2	164.4	107.4	-3.6	123.7	1,215.5	1,091.8
Q3	2,686.7	2,560.7	1,469.9	556.6	533.6	263.2	165.1	102.9	0.6	126.1	1,223.8	1,097.7
Q4	2,707.8	2,586.1	1,483.2	559.6	539.0	.	.	.	4.3	121.8	1,253.4	1,131.7
					as a percentage of GDP							
2016	100.0	95.3	54.7	20.7	19.9	.	.	.	0.0	4.7	-	-
					Chain-linked volumes (prices for the previous year)							
					quarter-on-quarter percentage changes							
2016 Q1	0.5	0.4	0.7	0.7	0.3	1.0	0.0	-0.6	-	-	0.2	-0.1
Q2	0.3	0.3	0.3	0.3	1.2	-0.6	1.0	5.7	-	-	1.3	1.4
Q3	0.4	0.3	0.3	0.1	-0.7	0.9	-0.2	-4.6	-	-	0.3	-0.1
Q4	0.4	0.6	0.4	0.4	0.6	.	.	.	-	-	1.5	2.0
					annual percentage changes							
2014	1.2	1.2	0.8	0.6	1.5	-0.9	4.4	3.1	-	-	4.4	4.9
2015	2.0	1.9	1.8	1.3	3.2	1.3	4.7	5.6	-	-	6.5	6.5
2016	1.7	2.0	2.0	1.8	2.6	.	.	.	-	-	2.9	3.5
2016 Q1	1.7	2.1	2.0	2.0	2.5	2.1	4.1	0.7	-	-	2.5	3.4
Q2	1.6	2.3	1.9	2.0	3.8	2.1	5.2	5.0	-	-	2.5	4.0
Q3	1.8	1.8	1.8	1.6	2.3	2.6	3.9	-1.0	-	-	2.6	2.8
Q4	1.7	1.6	1.8	1.6	1.5	.	.	.	-	-	3.3	3.2
					contributions to quarter-on-quarter percentage changes in GDP; percentage points							
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	0.2	0.1	0.2	-0.1	0.1	0.2	-0.2	0.0	-	-
Q3	0.4	0.2	0.2	0.0	-0.1	0.1	0.0	-0.2	0.2	0.2	-	-
Q4	0.4	0.5	0.2	0.1	0.1	.	.	.	0.1	-0.1	-	-
					contributions to annual percentage changes in GDP; percentage points							
2014	1.2	1.2	0.4	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	0.2	-	-
2016	1.7	1.9	1.1	0.4	0.5	.	.	.	-0.1	-0.1	-	-
2016 Q1	1.7	2.0	1.1	0.4	0.5	0.2	0.2	0.0	0.0	-0.3	-	-
Q2	1.6	2.1	1.0	0.4	0.7	0.2	0.3	0.2	0.0	-0.5	-	-
Q3	1.8	1.7	1.0	0.3	0.5	0.3	0.2	0.0	0.0	0.1	-	-
Q4	1.7	1.5	1.0	0.3	0.3	.	.	.	-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)												
2014	9,100.9	150.0	1,777.2	461.1	1,711.3	415.4	461.5	1,044.9	979.2	1,778.7	321.5	1,034.3
2015	9,387.7	150.6	1,886.6	466.7	1,766.6	428.2	459.9	1,062.9	1,021.8	1,817.6	326.9	1,071.9
2016	9,626.0	145.8	1,923.6	486.1	1,819.8	443.0	451.6	1,090.2	1,063.8	1,865.8	336.4	1,107.1
2016 Q1	2,387.0	36.1	478.9	120.2	450.0	109.6	113.6	269.9	262.7	462.5	83.5	273.4
Q2	2,396.0	36.0	476.7	120.8	452.7	110.5	113.0	271.9	265.4	465.2	83.8	275.5
Q3	2,409.3	36.3	480.3	121.7	455.0	111.0	112.8	273.3	267.0	467.8	84.1	277.5
Q4	2,426.9	37.4	484.8	123.0	460.0	111.5	112.2	275.1	268.1	470.0	84.6	281.0
as a percentage of value added												
2016	100.0	1.5	20.0	5.0	18.9	4.6	4.7	11.3	11.1	19.4	3.5	-
Chain-linked volumes (prices for the previous year)												
quarter-on-quarter percentage changes												
2016 Q1	0.6	-1.3	0.2	1.1	0.9	1.0	0.9	0.2	0.8	0.4	0.5	0.2
Q2	0.3	-0.8	0.1	-0.1	0.4	1.3	-0.6	0.3	1.1	0.2	0.1	0.5
Q3	0.4	-0.7	0.7	0.4	0.4	1.1	0.1	0.2	0.4	0.3	0.4	0.5
Q4	0.4	0.1	0.4	0.6	0.7	0.6	0.0	0.3	0.3	0.2	0.3	0.5
annual percentage changes												
2014	1.2	1.2	2.4	-1.1	1.2	3.5	-1.2	0.5	2.5	0.5	0.1	1.1
2015	1.9	-0.6	4.3	-0.1	2.1	2.8	-0.3	0.8	2.8	1.0	0.0	3.2
2016	1.6	-2.0	1.4	1.8	2.4	3.1	0.2	1.0	2.9	1.1	1.2	2.6
2016 Q1	1.5	-1.7	1.7	1.4	2.2	2.5	0.3	0.8	2.7	0.9	0.9	3.3
Q2	1.5	-1.8	1.1	1.5	2.3	3.1	-0.3	1.0	3.3	1.0	1.3	2.4
Q3	1.7	-2.1	1.2	2.4	2.3	3.6	0.5	1.0	3.1	1.2	1.4	2.6
Q4	1.7	-2.6	1.4	2.1	2.5	4.1	0.4	1.1	2.5	1.1	1.3	1.7
contributions to quarter-on-quarter percentage changes in value added; percentage points												
2016 Q1	0.6	0.0	0.0	0.1	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	0.1	0.0	0.0	0.1	0.0	0.0	-
Q3	0.4	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	-
Q4	0.4	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-
contributions to annual percentage changes in value added; percentage points												
2014	1.2	0.0	0.5	-0.1	0.2	0.2	-0.1	0.1	0.3	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	-
2016	1.6	0.0	0.3	0.1	0.5	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	1.5	0.0	0.2	0.1	0.4	0.1	0.0	0.1	0.4	0.2	0.0	-
Q3	1.7	0.0	0.2	0.1	0.4	0.2	0.0	0.1	0.3	0.2	0.0	-
Q4	1.7	0.0	0.3	0.1	0.5	0.2	0.0	0.1	0.3	0.2	0.0	-

Sources: Eurostat and ECB calculations.

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 Q4	1.2	1.5	-0.3	-1.0	0.3	0.0	1.5	1.7	-0.7	0.2	3.2	1.0	1.6
2016 Q1	1.4	1.7	-0.5	-0.9	0.7	-0.1	1.7	2.4	-0.4	1.1	3.3	1.0	1.9
Q2	1.4	1.6	-0.1	-0.4	0.6	-0.2	1.9	2.0	-0.4	0.3	3.0	1.1	1.6
Q3	1.2	1.4	-0.1	0.3	0.6	-0.1	1.7	1.8	-0.3	1.4	2.6	1.0	1.2
							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 Q4	1.2	1.4	0.2	0.1	0.1	0.7	1.3	2.2	-0.4	-0.6	3.2	1.1	1.6
2016 Q1	1.5	1.8	0.2	0.7	0.9	0.4	1.7	3.0	0.0	1.0	3.9	1.0	1.1
Q2	1.5	1.7	1.0	0.5	1.0	0.0	2.0	2.5	0.4	0.4	3.6	0.9	1.8
Q3	1.1	1.3	-0.1	0.5	0.6	-0.2	1.7	1.7	-0.2	0.1	2.2	0.7	0.7
							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 Q4	0.0	-0.1	0.6	1.1	-0.2	0.7	-0.3	0.4	0.3	-0.8	0.0	0.0	0.0
2016 Q1	0.2	0.1	0.7	1.6	0.3	0.5	0.0	0.6	0.3	-0.1	0.6	-0.1	-0.8
Q2	0.2	0.0	1.1	0.8	0.4	0.2	0.0	0.4	0.8	0.2	0.6	-0.2	0.2
Q3	-0.2	-0.1	0.0	0.2	0.0	-0.1	0.0	-0.1	0.1	-1.3	-0.4	-0.3	-0.4

Sources: Eurostat and ECB calculations.
1) Data for employment are based on the ESA 2010.

3 Economic activity

3.4 Labour force, unemployment and job vacancies
(seasonally adjusted, unless otherwise indicated)

	Labour force, millions [1]	Under-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	% of total posts
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
% of total in 2016			100.0			81.8		18.2		52.2		47.8		
2014	160.334	4.6	18.636	11.6	6.1	15.216	10.4	3.421	23.7	9.933	11.5	8.703	11.8	1.5
2015	160.600	4.6	17.443	10.9	5.6	14.293	9.8	3.149	22.3	9.252	10.7	8.190	11.0	1.5
2016	.	.	16.233	10.0	.	13.283	9.0	2.950	20.9	8.471	9.7	7.761	10.4	1.7
2016 Q1	161.013	4.5	16.633	10.3	5.2	13.627	9.2	3.006	21.5	8.712	10.0	7.921	10.6	1.7
Q2	161.849	4.5	16.387	10.1	5.1	13.406	9.1	2.981	21.0	8.518	9.8	7.869	10.5	1.7
Q3	162.465	4.1	16.130	9.9	4.8	13.202	8.9	2.929	20.7	8.389	9.6	7.741	10.3	1.6
Q4	.	.	15.779	9.7	.	12.897	8.7	2.882	20.4	8.265	9.4	7.514	10.0	1.7
2016 Aug.	-	-	16.153	9.9	-	13.218	8.9	2.936	20.7	8.386	9.6	7.767	10.4	-
Sep.	-	-	16.042	9.9	-	13.148	8.9	2.894	20.5	8.361	9.6	7.680	10.2	-
Oct.	-	-	15.860	9.8	-	12.990	8.8	2.870	20.4	8.305	9.5	7.555	10.1	-
Nov.	-	-	15.802	9.7	-	12.899	8.7	2.903	20.5	8.295	9.5	7.507	10.0	-
Dec.	-	-	15.676	9.6	-	12.803	8.6	2.874	20.3	8.195	9.3	7.481	10.0	-
2017 Jan.	-	-	15.620	9.6	-	12.794	8.6	2.826	20.0	8.152	9.3	7.468	10.0	-

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							
2014	0.9	1.8	1.3	1.8	2.6	-5.3	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	0.8	-0.8	3.6	2.7	1.7	3.5	2.4	8.8
2016	1.4	1.5	1.7	1.7	1.0	-0.1	1.9	0.4	1.9	1.3	2.5	1.8	7.2
2016 Q1	1.3	2.0	1.9	2.9	1.0	-3.7	2.6	0.4	2.2	1.7	2.8	1.4	9.5
Q2	1.1	1.1	1.2	1.3	1.1	-0.9	-0.1	-2.3	1.8	0.6	2.8	2.2	8.5
Q3	1.0	1.2	1.5	0.9	1.3	-0.5	3.1	0.2	1.4	1.3	1.5	2.3	6.5
Q4	2.0	1.6	2.3	1.6	0.7	4.8	2.2	3.3	2.2	1.5	3.1	1.3	4.0
2016 Aug.	2.4	2.5	2.7	3.4	0.6	2.1	2.1	2.0	1.2	0.5	1.9	1.7	3.9
Sep.	1.3	1.3	1.5	1.2	1.3	1.4	1.8	1.8	1.1	1.9	0.3	2.3	9.4
Oct.	0.8	0.6	0.9	1.3	-0.8	2.0	1.7	3.2	2.9	2.4	3.9	1.4	4.2
Nov.	3.2	2.8	2.9	3.3	2.5	5.8	0.6	2.4	2.7	1.7	3.7	2.2	4.5
Dec.	2.0	1.3	3.4	-0.1	0.5	6.5	3.2	4.1	1.2	0.6	1.9	0.2	3.1
2017 Jan.	.	.	.	.	.	.	.	.	1.2	0.3	2.2	0.6	3.0
						month-on-month percentage changes (s.a.)							
2016 Aug.	2.0	2.1	1.8	4.2	0.0	3.5	0.2	2.4	-0.2	-0.1	0.1	0.0	-0.6
Sep.	-0.8	-1.0	-0.5	-2.1	-0.7	-0.1	-0.9	-1.1	-0.1	0.5	-1.1	0.0	4.1
Oct.	0.2	0.0	-0.3	1.4	-0.9	0.8	0.7	2.6	1.2	0.2	2.6	-0.7	-3.9
Nov.	1.5	1.6	1.9	0.2	1.7	1.3	0.9	-0.2	-0.2	-0.4	-0.4	0.5	2.4
Dec.	-1.6	-1.7	-0.2	-3.3	-0.8	-1.4	-0.2	2.4	-0.5	-0.2	-0.4	-0.5	2.3
2017 Jan.	.	.	.	.	.	.	.	.	-0.1	-0.1	-0.2	0.8	0.8

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 manu-facturing	Manu-facturing 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	7.0	-	51.0	52.4	52.9	52.7
2014	101.4	-3.8	80.5	-10.2	-26.6	-3.1	4.9	87.7	51.8	53.3	52.5	52.7
2015	104.2	-3.1	81.4	-6.2	-22.4	1.6	9.3	88.4	52.2	53.4	54.0	53.8
2016	104.8	-2.6	81.9	-7.7	-16.6	1.5	11.2	89.1	52.5	53.6	53.1	53.3
2016 Q1	103.9	-3.8	81.7	-8.3	-18.9	2.0	10.7	88.8	51.7	52.9	53.3	53.2
Q2	104.2	-3.4	81.6	-7.8	-18.4	1.8	11.2	89.0	52.0	53.0	53.1	53.1
Q3	104.2	-2.9	82.0	-8.2	-16.0	0.3	10.3	89.2	52.1	53.7	52.6	52.9
Q4	106.9	-0.6	82.4	-6.4	-13.1	1.8	12.4	89.4	54.0	54.9	53.5	53.8
2016 Sep.	104.8	-1.8	-	-8.2	-15.7	0.5	9.9	-	52.6	53.8	52.2	52.6
Oct.	106.3	-0.7	82.3	-8.0	-14.4	0.4	12.1	89.4	53.5	54.6	52.8	53.3
Nov.	106.5	-1.1	-	-6.2	-12.9	1.5	12.2	-	53.7	54.1	53.8	53.9
Dec.	107.8	0.0	-	-5.1	-12.1	3.5	12.9	-	54.9	56.1	53.7	54.4
2017 Jan.	107.9	0.8	82.5	-4.8	-12.9	2.3	12.8	89.4	55.2	56.1	53.7	54.4
Feb.	108.0	1.3	-	-6.2	-10.3	1.9	13.8	-	55.4	57.3	55.5	56.0

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]	Hous-ing wealth	Profit share [3]	Saving ratio (net)	Debt ratio [4]	Financial investment	Non-financial investment (gross)	Finan-cing
	Percentage of gross disposable income (adjusted)		Annual percentage changes					Percentage of net value added		Percent-age of GDP	Annual percentage changes		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2013	12.5	95.6	-0.5	1.2	-4.9	0.9	-1.4	32.5	4.2	129.6	2.0	-0.1	0.7
2014	12.5	94.7	0.7	1.8	0.6	2.6	1.0	33.0	4.8	130.9	2.4	6.5	1.3
2015	12.3	94.1	1.8	2.0	2.4	3.4	2.7	34.2	6.1	133.4	3.8	2.5	2.1
2015 Q4	12.3	94.1	1.8	2.0	5.4	3.4	2.7	34.2	6.1	133.4	3.8	4.6	2.1
2016 Q1	12.3	93.5	2.4	1.9	3.7	2.1	3.4	33.5	5.8	132.8	3.7	4.8	2.1
Q2	12.5	93.6	2.5	2.3	5.6	3.2	3.8	33.7	6.1	133.4	3.9	4.5	2.2
Q3	12.5	93.5	1.7	2.2	5.7	4.4	4.3	33.5	6.1	131.8	3.5	3.0	1.9

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
2016 Q1	878.7	793.7	84.9	515.4	426.1	194.6	177.5	143.6	135.6	25.1	54.6	9.8	11.1
Q2	887.3	792.2	95.1	518.8	421.3	191.0	178.0	152.1	140.4	25.4	52.6	7.3	6.9
Q3	896.4	807.5	88.8	524.4	427.6	196.0	175.8	150.5	141.7	25.5	62.4	6.5	5.7
Q4	913.9	818.2	95.8	541.5	452.9	197.4	178.5	151.9	128.1	23.2	58.6	13.8	7.8
2016 July	294.6	264.5	30.1	171.8	142.2	63.2	57.2	50.7	46.4	8.9	18.6	2.6	2.0
Aug.	300.7	271.2	29.5	176.4	143.7	65.5	58.7	50.5	47.6	8.4	21.1	1.7	1.7
Sep.	301.1	271.8	29.3	176.3	141.7	67.3	59.8	49.3	47.7	8.2	22.6	2.2	2.0
Oct.	297.2	268.8	28.4	174.9	148.9	66.4	57.5	48.5	42.1	7.4	20.3	3.1	2.0
Nov.	311.1	274.7	36.4	182.5	151.7	66.0	60.7	55.1	42.9	7.5	19.3	3.4	2.0
Dec.	305.6	274.6	31.0	184.1	152.3	64.9	60.3	48.3	43.0	8.4	19.0	7.3	3.8
12-month cumulated transactions													
2016 Dec.	3,576.3	3,211.7	364.7	2,100.1	1,727.9	779.0	709.9	598.1	545.7	99.1	228.1	37.4	31.5
12-month cumulated transactions as a percentage of GDP													
2016 Dec.	33.3	29.9	3.4	19.6	16.1	7.3	6.6	5.6	5.1	0.9	2.1	0.3	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.) | | | | Memo item: | Imports (c.i.f.) | | | | Memo items: | |
| | Exports | Imports | Total | Intermediate goods | Capital goods | Consump-tion goods | Manu-facturing | Total | 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)												
2016 Q1	-0.9	-2.5	502.2	233.1	104.2	151.2	421.6	438.5	240.8	72.5	116.8	326.7	37.4
Q2	0.0	-3.7	502.9	231.1	106.1	153.6	432.9	431.9	236.8	71.7	115.4	325.7	42.4
Q3	-0.2	-2.2	506.5	236.6	102.9	153.7	427.5	440.8	242.5	71.2	116.7	326.9	43.7
Q4	2.2	1.9	523.9	.	.	.	438.7	457.4	.	.	.	332.7	.
2016 July	-9.4	-8.0	166.4	77.6	33.6	50.4	135.1	146.6	80.6	23.6	38.8	104.8	15.0
Aug.	8.4	3.8	170.5	79.3	35.0	52.0	147.1	147.7	81.2	24.1	39.2	112.0	14.4
Sep.	2.2	-1.7	169.7	79.7	34.3	51.3	145.3	146.5	80.7	23.6	38.8	110.0	14.4
Oct.	-4.5	-3.0	169.5	78.9	34.7	51.2	136.4	149.8	82.4	24.9	39.3	107.0	15.6
Nov.	5.7	4.9	174.7	82.2	34.7	52.8	148.3	152.5	85.1	24.1	39.7	112.5	16.4
Dec.	5.9	4.2	179.6	.	.	.	154.0	155.1	.	.	.	113.1	.
	Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)												
2016 Q1	-0.8	2.5	118.3	115.6	117.5	121.7	116.9	109.9	110.8	107.0	110.0	111.3	110.7
Q2	2.3	4.5	118.3	114.2	119.8	124.0	120.1	107.7	107.0	105.7	110.7	112.5	101.2
Q3	0.5	1.1	118.3	115.6	115.1	123.6	117.9	108.4	107.4	105.0	110.8	111.9	100.1
Q4	.	.	.	.	.	.	.	.	.	.	.	.	.
2016 June	0.1	2.7	117.6	112.8	118.3	124.5	120.8	107.6	106.8	106.4	110.6	113.5	97.0
July	-8.3	-3.7	116.9	113.9	113.6	121.7	112.0	108.7	107.5	105.0	110.6	108.1	102.4
Aug.	9.1	7.1	119.1	116.1	116.5	125.0	121.3	109.0	108.1	106.4	111.5	114.8	99.8
Sep.	2.4	0.5	119.0	116.9	115.2	124.2	120.5	107.6	106.6	103.5	110.3	112.8	98.2
Oct.	-4.8	-2.6	118.3	114.8	115.6	124.0	112.8	108.8	107.3	108.4	111.5	108.9	100.5
Nov.	4.8	4.0	121.1	119.3	115.9	125.6	121.8	109.9	109.7	104.2	111.8	113.7	107.3

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	Total excluding food and energy	Goods	Services	Total	Processed food	Unprocessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Administered prices
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2017	100.0	100.0	70.9	55.4	44.6	100.0	12.1	7.5	26.3	9.5	44.6	86.8	13.2
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
2016	100.2	0.2	0.9	-0.4	1.1	-	-	-	-	-	-	0.2	0.2
2016 Q1	99.2	0.0	1.0	-0.8	1.1	-0.4	0.1	-1.0	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	0.8	0.1	2.0	0.3	-0.1	0.0
Q3	100.3	0.3	0.8	-0.4	1.1	0.3	0.1	1.2	0.1	0.3	0.4	0.3	0.3
Q4	101.0	0.7	0.8	0.4	1.1	0.4	0.3	0.0	0.1	2.4	0.3	0.8	0.3
2016 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	0.0	0.0	1.6	0.1	0.6	0.2
Nov.	100.8	0.6	0.8	0.2	1.1	0.0	0.2	0.1	0.1	-0.2	0.0	0.6	0.3
Dec.	101.3	1.1	0.9	1.0	1.3	0.4	0.1	0.7	0.1	1.8	0.2	1.3	0.3
2017 Jan.	100.5	1.8	0.9	2.2	1.2	0.3	0.1	0.8	0.1	2.5	0.0	2.0	0.4
Feb. [3]	100.8	2.0	0.9	.	1.3	0.1	0.1	1.6	-0.2	-0.2	0.2	.	.

	Goods						Services					
	Food (including alcoholic beverages and tobacco)			Industrial goods			Housing		Transport	Communi-cation	Recreation and personal	Miscel-laneous
	Total	Processed food	Unpro-cessed food	Total	Non-energy industrial goods	Energy		Rents				
	14	15	16	17	18	19	20	21	22	23	24	25
% of total in 2017	19.6	12.1	7.5	35.8	26.3	9.5	10.7	6.5	7.3	3.2	15.1	8.2
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
2016	0.9	0.6	1.4	-1.1	0.4	-5.1	1.1	1.1	0.8	0.0	1.4	1.2
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
Q4	0.8	0.6	1.0	0.2	0.3	0.2	1.2	1.2	1.2	-0.1	1.3	1.2
2016 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.	0.7	0.7	0.7	-0.1	0.3	-1.1	1.2	1.2	1.1	-0.1	1.1	1.2
Dec.	1.2	0.7	2.1	0.9	0.3	2.6	1.2	1.3	1.4	-0.3	1.6	1.2
2017 Jan.	1.8	0.7	3.5	2.5	0.5	8.1	1.3	1.3	1.3	-1.0	1.7	0.7
Feb. [3]	2.5	0.9	5.2	.	0.2	9.2	.	.	.	.	.	.

Sources: Eurostat and ECB calculations.
1) Data refer to the changing composition of the euro area.
2) In May 2016 the ECB started publishing enhanced seasonally adjusted HICP series for the euro area, following a review of the seasonal adjustment approach as described in Box 1, *Economic Bulletin*, Issue 3, ECB, 2016 (https://www.ecb.europa.eu/pub/pdf/ecbu/eb201603.en.pdf).
3) Estimate based on provisional national data, as well as on early information on energy prices.

4 Prices and costs

4.2 Industry, construction and property prices
(annual percentage changes, unless otherwise indicated)

	Industrial producer prices excluding construction										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			
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
2016	101.6	-2.3	-1.5	-0.5	-1.7	0.4	0.0	-0.1	0.1	-6.9	.	.	.
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	3.1	3.5
Q3	101.9	-2.0	-1.3	-0.6	-1.8	0.4	0.0	-0.1	0.1	-5.9	0.5	3.4	.
Q4	103.1	0.4	1.0	0.4	0.0	0.5	0.8	1.2	0.1	0.4	.	.	.
2016 Aug.	101.8	-1.9	-1.3	-0.7	-1.8	0.5	0.0	-0.1	0.1	-5.7	-	-	-
Sep.	101.9	-1.5	-0.7	-0.3	-1.4	0.4	0.1	0.2	0.1	-4.5	-	-	-
Oct.	102.6	-0.5	0.3	0.0	-0.8	0.5	0.6	0.6	0.2	-1.6	-	-	-
Nov.	102.9	0.0	0.5	0.4	0.1	0.5	0.7	1.1	0.1	-0.8	-	-	-
Dec.	103.7	1.6	2.3	0.9	0.8	0.6	1.2	1.7	0.1	3.8	-	-	-
2017 Jan.	104.4	3.5	3.7	1.5	2.1	0.8	1.5	2.1	0.3	9.7	-	-	-

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
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	105.8	1.1	0.3	0.1	0.5	0.7	0.1	-1.9	47.1	0.0	4.2	-4.5	2.9	7.0	-2.7
2016	106.7	0.9	0.5	0.3	0.8	0.8	-1.4	-2.5	39.9	-3.6	-3.9	-3.2	-7.3	-10.3	-2.9
2016 Q1	106.4	1.1	0.4	0.3	0.9	0.7	-1.5	-3.3	31.2	-12.2	-8.5	-16.4	-12.9	-11.1	-15.4
Q2	106.5	0.9	0.2	0.1	0.7	0.7	-2.3	-4.1	40.8	-9.0	-5.7	-12.5	-12.5	-12.6	-12.3
Q3	106.7	0.8	0.6	0.3	0.9	0.9	-1.5	-2.2	41.0	-0.5	-2.1	1.4	-5.8	-10.6	1.3
Q4	107.1	0.7	0.9	0.7	0.8	1.0	-0.1	0.0	46.5	9.1	1.1	18.6	3.3	-6.7	18.5
2016 Sep.	-	-	-	-	-	-	-	-	41.2	1.2	0.7	1.7	-4.5	-8.9	1.9
Oct.	-	-	-	-	-	-	-	-	45.1	3.1	-0.3	7.1	-2.9	-10.3	8.3
Nov.	-	-	-	-	-	-	-	-	43.1	8.5	-0.1	19.0	2.4	-8.1	18.7
Dec.	-	-	-	-	-	-	-	-	51.3	15.7	3.9	30.2	10.6	-1.4	28.8
2017 Jan.	-	-	-	-	-	-	-	-	51.6	19.4	7.5	34.0	13.3	1.0	32.0
Feb.	-	-	-	-	-	-	-	-	52.2	21.0	7.7	37.0	15.2	1.7	35.6

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	4.7	-	-	-2.0	34.0	57.7	56.7	-	49.9
2014	-0.9	-1.5	0.9	-17.4	14.2	49.6	53.5	49.7	48.2
2015	-2.8	1.3	2.6	-13.2	-1.2	48.9	53.5	49.6	49.0
2016	-0.4	1.7	4.4	-7.3	-0.7	49.8	53.9	49.3	49.6
2016 Q1	-4.8	0.7	3.7	-9.1	-1.8	41.5	52.5	47.7	49.0
Q2	-1.0	1.9	4.6	-8.1	-2.2	47.5	54.4	48.5	49.0
Q3	-0.2	1.0	4.5	-6.6	-0.3	51.4	54.0	49.6	49.8
Q4	4.6	3.1	4.9	-5.4	1.6	58.6	54.9	51.6	50.5
2016 Sep.	-0.1	0.9	4.5	-7.5	0.4	52.4	54.0	49.9	50.0
Oct.	3.5	2.6	4.5	-5.0	0.0	53.9	54.3	50.8	49.7
Nov.	4.9	2.8	5.3	-6.0	1.8	58.8	54.4	51.4	50.3
Dec.	5.4	4.0	4.9	-5.1	2.8	63.2	56.0	52.5	51.4
2017 Jan.	8.3	4.9	6.7	-5.1	8.3	67.0	56.4	54.0	50.9
Feb.	9.0	6.1	6.4	-3.1	12.9	68.3	56.9	55.4	51.1

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	
2014	102.7	1.3	1.3	1.1	1.3	1.2	1.7
2015	104.3	1.6	2.0	0.6	1.6	1.6	1.5
2016	.	.	.	.	.	.	1.4
2016 Q1	99.0	1.5	1.6	1.4	1.6	1.6	1.4
Q2	109.3	1.0	0.8	1.4	0.9	1.2	1.5
Q3	102.6	1.6	1.7	1.2	1.4	1.7	1.5
Q4	.	.	.	.	.	.	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	-0.6	2.1	1.8	1.2	1.6	1.4
2015	104.8	0.2	1.4	-2.3	1.1	0.5	0.8	0.2	2.6	1.8	1.1	2.1
2015 Q4	105.3	0.4	0.8	-2.1	-0.1	1.4	1.6	0.3	2.7	1.9	1.3	2.3
2016 Q1	105.4	1.0	2.6	0.4	-0.1	0.7	1.1	1.3	4.0	2.0	1.4	2.5
Q2	105.6	0.9	3.9	0.5	-0.3	0.9	0.2	1.4	2.4	0.8	1.4	1.3
Q3	105.8	0.8	3.7	0.8	-0.8	0.6	-0.6	0.9	2.6	0.7	1.4	1.3
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 Q4	108.5	1.2	2.0	1.5	0.8	1.7	1.9	0.3	3.4	1.5	1.2	1.1
2016 Q1	108.9	1.3	1.8	1.4	1.4	1.3	1.3	1.9	3.8	1.5	1.3	1.5
Q2	109.0	1.1	2.4	1.0	1.4	1.3	1.2	1.5	3.1	1.2	1.3	0.9
Q3	109.5	1.3	1.2	1.4	1.7	1.2	1.1	1.8	2.2	1.2	1.6	1.5
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	2.8	0.6	0.5	2.8	-0.4	-0.3	0.4	-0.5	-0.3
2015	102.9	1.0	0.3	4.1	-0.2	0.9	1.6	0.2	0.0	-0.2	0.1	-1.0
2015 Q4	103.1	0.8	1.2	3.7	0.9	0.3	0.3	0.1	0.7	-0.3	-0.1	-1.2
2016 Q1	103.3	0.3	-0.8	1.0	1.5	0.5	0.2	0.7	-0.3	-0.5	-0.1	-1.0
Q2	103.3	0.3	-1.4	0.5	1.7	0.3	1.0	0.1	0.7	0.4	-0.1	-0.4
Q3	103.5	0.5	-2.4	0.6	2.5	0.6	1.7	0.8	-0.3	0.4	0.2	0.2
Compensation per hour worked												
2013	107.2	2.3	2.4	2.8	2.8	1.9	0.7	2.1	1.5	2.4	1.9	2.3
2014	108.5	1.2	1.1	1.5	1.3	1.2	2.0	1.6	1.3	1.2	0.9	1.2
2015	109.7	1.1	1.2	1.3	0.3	1.5	1.4	0.5	2.2	1.2	1.0	1.2
2015 Q4	110.2	1.3	1.4	1.6	0.4	2.0	1.3	0.2	3.3	1.3	1.3	1.2
2016 Q1	110.5	1.2	0.2	1.1	1.2	1.2	0.8	1.5	3.3	0.8	1.4	2.4
Q2	110.6	1.1	1.8	0.7	1.5	1.3	0.7	1.0	2.8	0.8	1.6	0.8
Q3	111.2	1.5	1.3	1.4	2.0	1.2	1.1	1.7	3.4	1.3	1.8	2.0
Hourly labour productivity												
2013	103.4	1.1	4.0	0.8	1.4	0.8	1.8	2.4	4.2	1.0	0.4	0.1
2014	104.1	0.7	1.8	2.4	0.3	0.9	2.8	-0.3	-0.1	0.3	-0.6	0.0
2015	105.0	0.9	-0.8	3.8	-0.7	1.2	0.7	0.2	-0.3	-0.4	-0.1	-1.0
2015 Q4	105.0	0.8	0.1	3.9	0.2	0.6	-0.2	-0.2	1.4	-0.3	-0.1	-1.2
2016 Q1	105.2	0.2	-2.4	0.7	1.0	0.5	-0.4	0.3	-0.2	-1.1	0.0	-0.2
Q2	105.0	0.1	-2.2	0.1	1.5	0.3	0.6	-0.7	0.5	-0.2	0.1	-0.6
Q3	105.5	0.7	-2.6	0.6	2.6	0.6	1.9	0.7	0.9	0.9	0.5	0.7

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												
2014	969.5	4,970.5	5,939.9	1,581.7	2,149.8	3,731.5	9,671.4	121.5	422.2	107.0	650.7	10,322.1
2015	1,036.5	5,566.3	6,602.8	1,439.2	2,161.8	3,601.0	10,203.8	74.6	479.0	73.6	627.2	10,831.1
2016	1,073.1	6,117.1	7,190.2	1,320.3	2,175.8	3,496.1	10,686.3	70.4	521.5	96.4	688.4	11,374.7
2016 Q1	1,049.6	5,711.9	6,761.6	1,421.0	2,164.8	3,585.8	10,347.3	85.3	465.5	94.9	645.8	10,993.1
Q2	1,054.6	5,821.2	6,875.8	1,411.0	2,171.9	3,582.9	10,458.7	84.2	481.7	94.8	660.7	11,119.4
Q3	1,066.6	5,946.7	7,013.3	1,393.3	2,174.5	3,567.8	10,581.1	80.5	496.0	93.8	670.2	11,251.3
Q4	1,073.1	6,117.1	7,190.2	1,320.3	2,175.8	3,496.1	10,686.3	70.4	521.5	96.4	688.4	11,374.7
2016 Aug.	1,061.5	5,922.6	6,984.1	1,393.0	2,173.9	3,566.9	10,551.0	82.3	481.0	98.8	662.1	11,213.1
Sep.	1,066.6	5,946.7	7,013.3	1,393.3	2,174.5	3,567.8	10,581.1	80.5	496.0	93.8	670.2	11,251.3
Oct.	1,072.4	5,981.7	7,054.1	1,361.2	2,175.0	3,536.2	10,590.3	74.4	503.7	91.4	669.5	11,259.8
Nov.	1,075.2	6,069.9	7,145.1	1,350.4	2,171.9	3,522.4	10,667.5	72.5	506.1	98.7	677.3	11,344.7
Dec.	1,073.1	6,117.1	7,190.2	1,320.3	2,175.8	3,496.1	10,686.3	70.4	521.5	96.4	688.4	11,374.7
2017 Jan. (p)	1,081.8	6,156.0	7,237.9	1,329.6	2,178.3	3,507.9	10,745.8	75.1	517.4	98.1	690.6	11,436.4
Transactions												
2014	59.0	374.9	433.9	-91.8	3.7	-88.1	345.8	3.6	10.4	13.3	27.3	373.1
2015	65.9	562.6	628.5	-135.4	12.2	-123.2	505.3	-48.0	51.4	-26.3	-22.9	482.5
2016	36.7	544.7	581.4	-108.5	16.0	-92.5	488.8	-4.3	42.3	17.6	55.7	544.5
2016 Q1	13.3	156.1	169.4	-14.0	3.1	-10.9	158.6	11.2	-13.4	19.2	17.0	175.6
Q2	5.0	104.4	109.3	-12.7	7.2	-5.5	103.8	-1.4	15.5	-1.4	12.7	116.6
Q3	12.0	127.9	139.9	-15.7	2.3	-13.4	126.5	-3.7	14.7	-2.4	8.6	135.2
Q4	6.5	156.2	162.7	-66.2	3.4	-62.8	99.9	-10.4	25.5	2.1	17.3	117.2
2016 Aug.	3.3	44.6	47.9	-11.8	1.0	-10.8	37.1	-0.1	-5.7	1.0	-4.7	32.4
Sep.	5.0	25.1	30.2	0.6	0.3	0.9	31.0	-1.8	15.0	-5.7	7.5	38.5
Oct.	5.9	28.4	34.2	-25.0	0.7	-24.3	9.9	-6.2	7.7	-3.8	-2.3	7.7
Nov.	2.8	81.3	84.0	-12.8	-1.2	-14.0	70.0	-2.1	2.4	8.1	8.4	78.3
Dec.	-2.1	46.6	44.5	-28.3	3.9	-24.5	20.0	-2.1	15.4	-2.1	11.2	31.2
2017 Jan. (p)	8.7	42.7	51.4	11.9	2.4	14.3	65.7	4.8	-4.1	0.9	1.7	67.4
Growth rates												
2014	6.5	8.4	8.0	-5.4	0.2	-2.3	3.7	2.9	2.5	19.9	4.4	3.8
2015	6.8	11.3	10.5	-8.6	0.6	-3.3	5.2	-39.1	12.0	-25.3	-3.5	4.7
2016	3.5	9.8	8.8	-7.6	0.7	-2.6	4.8	-5.8	8.8	23.8	8.8	5.0
2016 Q1	6.0	11.1	10.3	-6.2	0.6	-2.2	5.6	-25.9	6.6	-1.1	-0.4	5.2
Q2	4.0	9.7	8.8	-4.1	0.6	-1.3	5.1	1.1	9.2	-3.0	6.1	5.1
Q3	3.7	9.3	8.4	-3.3	0.5	-1.0	5.0	-12.8	8.4	13.7	5.9	5.1
Q4	3.5	9.8	8.8	-7.6	0.7	-2.6	4.8	-5.8	8.8	23.8	8.8	5.0
2016 Aug.	3.6	9.6	8.6	-4.1	0.5	-1.3	5.0	-8.0	5.0	19.0	5.0	5.0
Sep.	3.7	9.3	8.4	-3.3	0.5	-1.0	5.0	-12.8	8.4	13.7	5.9	5.1
Oct.	4.0	8.8	8.0	-4.7	0.6	-1.5	4.6	-27.3	6.8	13.6	2.2	4.5
Nov.	3.8	9.4	8.5	-5.5	0.6	-1.9	4.9	-15.8	4.9	12.1	3.1	4.8
Dec.	3.5	9.8	8.8	-7.6	0.7	-2.6	4.8	-5.8	8.8	23.8	8.8	5.0
2017 Jan. (p)	3.6	9.3	8.4	-6.8	0.8	-2.2	4.7	-7.3	9.3	11.2	7.5	4.9

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

5 Money and credit

5.2 Deposits in M3 [1]

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

	Non-financial corporations [2]					Households [3]					Financial corporations other than MFIs and ICPFs [2]	Insurance corporations and pension funds	Other general government [4]
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Outstanding amounts													
2014	1,845.1	1,349.1	365.1	111.6	19.4	5,557.7	2,749.5	812.1	1,993.2	2.8	865.5	222.2	332.9
2015	1,930.5	1,483.9	321.7	116.4	8.4	5,750.9	3,059.7	695.1	1,993.7	2.4	970.1	225.8	364.7
2016	2,056.1	1,636.7	293.9	117.0	8.6	6,049.7	3,399.7	643.6	2,004.8	1.7	1,000.7	196.5	380.6
2016 Q1	1,984.8	1,536.6	322.7	116.0	9.4	5,829.7	3,137.1	693.6	1,996.3	2.7	973.7	218.9	375.9
Q2	2,013.7	1,574.3	314.0	117.1	8.4	5,906.0	3,214.2	688.8	2,000.0	3.0	978.0	210.7	379.9
Q3	2,047.5	1,602.5	317.8	118.1	9.1	5,979.5	3,301.8	672.0	2,003.1	2.6	975.5	206.2	386.3
Q4	2,056.1	1,636.7	293.9	117.0	8.6	6,049.7	3,399.7	643.6	2,004.8	1.7	1,000.7	196.5	380.6
2016 Aug.	2,032.2	1,596.3	310.1	117.0	8.7	5,960.8	3,277.2	677.6	2,003.2	2.8	979.4	213.4	386.0
Sep.	2,047.5	1,602.5	317.8	118.1	9.1	5,979.5	3,301.8	672.0	2,003.1	2.6	975.5	206.2	386.3
Oct.	2,037.3	1,604.6	307.6	118.1	7.0	6,001.8	3,334.4	660.0	2,004.6	2.8	953.4	206.5	393.2
Nov.	2,064.6	1,634.0	305.1	117.1	8.5	6,029.6	3,372.2	652.0	2,002.9	2.5	981.1	206.3	383.1
Dec.	2,056.1	1,636.7	293.9	117.0	8.6	6,049.7	3,399.7	643.6	2,004.8	1.7	1,000.7	196.5	380.6
2017 Jan. (p)	2,099.4	1,677.3	299.1	116.0	7.0	6,087.9	3,438.5	636.1	2,010.7	2.7	962.6	194.5	394.5
Transactions													
2014	68.7	91.1	-26.7	1.5	2.8	140.7	208.8	-65.0	-1.4	-1.7	52.7	7.3	21.0
2015	81.8	121.7	-33.5	4.9	-11.2	193.4	303.0	-109.9	0.8	-0.4	86.1	-0.1	30.3
2016	128.9	152.8	-24.1	0.0	0.2	301.4	335.5	-46.8	13.4	-0.8	29.7	-29.3	17.1
2016 Q1	61.2	57.8	2.7	-0.4	1.1	80.9	78.5	-0.6	2.8	0.3	8.8	-6.5	12.1
Q2	27.3	36.3	-8.9	1.0	-1.1	75.5	76.2	-5.1	4.0	0.4	-0.5	-8.5	3.7
Q3	34.8	29.5	4.0	0.6	0.7	73.7	87.7	-16.6	3.1	-0.5	0.4	-4.2	6.2
Q4	5.6	29.3	-21.9	-1.3	-0.5	71.3	93.1	-24.4	3.5	-0.9	21.1	-10.0	-4.9
2016 Aug.	2.5	5.5	-3.9	0.5	0.3	28.2	32.1	-6.4	2.6	-0.1	4.1	-1.2	0.2
Sep.	15.7	6.8	7.8	0.7	0.4	18.7	24.6	-5.5	-0.1	-0.2	-3.4	-7.0	0.2
Oct.	-9.3	0.6	-7.8	-0.1	-2.1	23.4	29.1	-7.3	1.4	0.2	-23.9	0.2	7.5
Nov.	23.8	26.4	-3.0	-1.1	1.5	28.1	36.8	-8.6	0.2	-0.3	23.7	-0.4	-10.1
Dec.	-8.8	2.2	-11.1	-0.1	0.1	19.8	27.3	-8.5	1.9	-0.8	21.2	-9.8	-2.4
2017 Jan. (p)	45.9	42.4	6.1	-1.0	-1.6	38.9	39.4	-7.3	5.8	1.0	-35.2	-1.8	14.0
Growth rates													
2014	4.0	7.6	-6.7	1.3	15.9	2.6	8.2	-7.4	-0.1	-37.8	6.5	3.9	7.0
2015	4.4	9.0	-9.4	4.4	-57.4	3.5	11.0	-13.6	0.0	-15.1	9.8	0.0	9.1
2016	6.7	10.3	-7.6	0.0	2.2	5.2	11.0	-6.8	0.7	-31.2	3.1	-13.0	4.7
2016 Q1	7.4	11.0	-4.5	3.8	-31.3	4.2	10.7	-8.8	0.2	-30.6	6.2	-3.3	10.3
Q2	8.0	11.1	-2.9	3.9	-27.8	4.6	10.4	-5.9	0.1	0.3	4.2	-8.5	10.3
Q3	7.4	9.9	-1.3	1.7	-8.5	5.1	10.6	-4.9	0.4	-18.2	1.1	-5.7	7.7
Q4	6.7	10.3	-7.6	0.0	2.2	5.2	11.0	-6.8	0.7	-31.2	3.1	-13.0	4.7
2016 Aug.	7.3	10.2	-4.1	2.2	11.9	5.2	10.8	-4.8	0.4	-12.1	1.4	-6.2	8.9
Sep.	7.4	9.9	-1.3	1.7	-8.5	5.1	10.6	-4.9	0.4	-18.2	1.1	-5.7	7.7
Oct.	5.5	7.9	-2.8	0.9	-29.6	5.2	10.7	-5.5	0.6	-19.8	-1.0	-9.4	7.8
Nov.	7.1	10.1	-3.7	-0.1	-5.3	5.4	11.1	-6.0	0.7	-32.6	0.5	-8.0	3.1
Dec.	6.7	10.3	-7.6	0.0	2.2	5.2	11.0	-6.8	0.7	-31.2	3.1	-13.0	4.7
2017 Jan. (p)	7.1	10.5	-5.5	-0.2	-26.8	5.5	11.4	-7.7	1.0	-19.6	-1.1	-13.5	6.0

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).
3) Including non-profit institutions serving households.
4) Refers to the general government sector excluding central government.

5 Money and credit

5.3 Credit to euro area residents [1]
(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Credit to general government			Credit to other euro area residents								
	Total	Loans	Debt securities	Total	Loans						Debt securities	Equity and non-money market fund investment fund shares
					Total		To non-financial corpor-ations [3]	To house-holds [4]	To financial corporations other than MFIs and ICPFs [3]	To insurance corporations and pension funds		
						Adjusted loans [2]						
	1	2	3	4	5	6	7	8	9	10	11	12
						Outstanding amounts						
2014	3,615.6	1,135.0	2,478.5	12,504.8	10,454.5	10,726.7	4,299.6	5,200.7	825.1	129.0	1,280.0	770.3
2015	3,904.2	1,112.3	2,789.5	12,599.4	10,512.0	10,807.4	4,274.5	5,307.6	806.3	123.5	1,305.1	782.3
2016	4,397.5	1,082.0	3,302.3	12,846.6	10,675.2	10,982.9	4,302.2	5,409.6	851.0	112.5	1,385.2	786.2
2016 Q1	4,053.6	1,115.9	2,924.6	12,629.6	10,561.2	10,824.5	4,288.8	5,338.9	824.8	108.8	1,312.2	756.2
Q2	4,191.8	1,112.5	3,066.2	12,664.0	10,566.1	10,870.4	4,297.1	5,348.3	816.8	103.9	1,342.5	755.4
Q3	4,272.2	1,105.2	3,153.6	12,769.1	10,623.5	10,927.4	4,289.6	5,379.3	845.5	109.1	1,365.2	780.5
Q4	4,397.5	1,082.0	3,302.3	12,846.6	10,675.2	10,982.9	4,302.2	5,409.6	851.0	112.5	1,385.2	786.2
2016 Aug.	4,255.8	1,107.7	3,134.8	12,744.2	10,602.0	10,907.7	4,296.1	5,366.0	829.4	110.5	1,364.5	777.7
Sep.	4,272.2	1,105.2	3,153.6	12,769.1	10,623.5	10,927.4	4,289.6	5,379.3	845.5	109.1	1,365.2	780.5
Oct.	4,291.1	1,099.6	3,178.1	12,810.3	10,656.5	10,956.9	4,302.9	5,388.3	850.8	114.5	1,373.1	780.7
Nov.	4,320.9	1,092.5	3,215.0	12,851.3	10,699.4	10,981.8	4,321.0	5,407.2	855.3	115.9	1,379.0	772.9
Dec.	4,397.5	1,082.0	3,302.3	12,846.6	10,675.2	10,982.9	4,302.2	5,409.6	851.0	112.5	1,385.2	786.2
2017 Jan. (p)	4,388.3	1,087.3	3,287.3	12,882.9	10,692.5	10,988.4	4,313.0	5,422.7	842.4	114.5	1,403.2	787.2
						Transactions						
2014	73.8	16.4	57.4	-102.0	-47.1	-33.3	-61.1	-14.9	17.2	11.7	-89.8	35.0
2015	284.9	-21.1	305.7	86.7	58.1	73.2	-13.1	98.2	-21.4	-5.7	25.1	3.5
2016	458.9	-34.9	493.7	318.1	232.2	250.8	81.7	119.0	42.7	-11.1	80.6	5.3
2016 Q1	120.0	1.5	118.5	69.3	79.3	52.2	35.9	36.2	21.8	-14.6	11.0	-21.0
Q2	116.4	-8.9	125.2	54.8	22.1	64.6	19.5	14.5	-6.9	-5.0	31.1	1.6
Q3	69.3	-7.3	76.3	113.3	70.3	72.1	6.6	33.8	24.8	5.2	20.9	22.1
Q4	153.2	-20.3	173.7	80.7	60.6	61.8	19.7	34.5	3.1	3.3	17.6	2.6
2016 Aug.	9.0	-1.5	10.5	35.7	13.3	18.2	-4.0	11.5	5.7	0.1	4.7	17.7
Sep.	12.2	-2.6	14.8	24.2	20.7	22.2	-1.3	14.7	8.7	-1.4	1.2	2.3
Oct.	38.8	-5.5	44.3	44.0	33.7	30.0	16.0	7.2	5.0	5.5	7.7	2.6
Nov.	45.3	-7.0	52.3	36.3	37.6	20.6	16.1	18.9	1.3	1.3	5.5	-6.8
Dec.	69.0	-7.8	77.1	0.4	-10.7	11.1	-12.4	8.3	-3.2	-3.5	4.3	6.8
2017 Jan. (p)	15.8	5.3	10.1	54.8	29.6	23.4	17.6	14.1	-4.2	2.1	18.7	6.5
						Growth rates						
2014	2.1	1.5	2.4	-0.8	-0.4	-0.3	-1.4	-0.3	1.8	11.9	-6.6	4.4
2015	7.9	-1.9	12.3	0.7	0.6	0.7	-0.3	1.9	-2.6	-4.4	2.0	0.4
2016	11.7	-3.1	17.6	2.5	2.2	2.3	1.9	2.2	5.3	-9.0	6.2	0.7
2016 Q1	10.2	-2.8	16.1	1.2	1.2	1.1	0.9	2.2	0.1	-19.2	3.1	-2.3
Q2	11.7	-2.8	18.1	1.5	1.2	1.6	1.3	1.9	0.3	-23.6	7.2	-2.9
Q3	10.1	-2.5	15.3	2.0	1.9	2.1	1.5	2.1	4.9	-10.7	3.5	0.8
Q4	11.7	-3.1	17.6	2.5	2.2	2.3	1.9	2.2	5.3	-9.0	6.2	0.7
2016 Aug.	10.9	-2.8	16.7	1.6	1.5	1.9	1.2	2.0	1.7	-14.0	4.1	-0.5
Sep.	10.1	-2.5	15.3	2.0	1.9	2.1	1.5	2.1	4.9	-10.7	3.5	0.8
Oct.	10.6	-2.6	16.0	2.3	2.0	2.2	1.7	1.9	5.6	-7.8	5.4	0.5
Nov.	10.7	-3.0	16.3	2.4	2.1	2.2	1.8	2.1	4.2	-6.7	7.4	-0.7
Dec.	11.7	-3.1	17.6	2.5	2.2	2.3	1.9	2.2	5.3	-9.0	6.2	0.7
2017 Jan. (p)	10.5	-2.9	15.8	2.7	2.2	2.4	1.7	2.4	4.5	-8.6	7.0	3.0

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) Adjusted for loan sales and securitisation (resulting in derecognition from the MFI statistical balance sheet) as well as for positions arising from notional cash pooling services provided by MFIs.
3) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).
4) Including non-profit institutions serving households.

5 Money and credit

5.4 MFI loans to euro area non-financial corporations and households [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										
2014	4,299.6	4,253.9	1,109.8	720.7	2,469.1	5,200.7	5,546.1	563.5	3,860.9	776.4
2015	4,274.5	4,257.7	1,038.4	758.5	2,477.6	5,307.6	5,640.6	595.9	3,948.4	763.3
2016	4,302.2	4,303.0	997.8	796.4	2,508.0	5,409.6	5,726.2	616.6	4,042.7	750.3
2016 Q1	4,288.8	4,261.6	1,048.5	768.6	2,471.6	5,338.9	5,659.1	602.6	3,974.9	761.4
Q2	4,297.1	4,278.6	1,040.4	774.9	2,481.8	5,348.3	5,683.5	604.1	3,986.3	757.9
Q3	4,289.6	4,279.7	1,009.4	786.9	2,493.3	5,379.3	5,701.1	608.5	4,018.2	752.6
Q4	4,302.2	4,303.0	997.8	796.4	2,508.0	5,409.6	5,726.2	616.6	4,042.7	750.3
2016 Aug.	4,296.1	4,279.5	1,023.0	782.4	2,490.8	5,366.0	5,700.1	607.8	4,003.4	754.8
Sep.	4,289.6	4,279.7	1,009.4	786.9	2,493.3	5,379.3	5,701.1	608.5	4,018.2	752.6
Oct.	4,302.9	4,288.6	1,022.9	787.3	2,492.7	5,388.3	5,712.5	612.8	4,019.3	756.2
Nov.	4,321.0	4,298.0	1,030.8	794.8	2,495.3	5,407.2	5,723.1	614.9	4,035.8	756.5
Dec.	4,302.2	4,303.0	997.8	796.4	2,508.0	5,409.6	5,726.2	616.6	4,042.7	750.3
2017 Jan. [(p)]	4,313.0	4,304.4	1,010.7	796.5	2,505.8	5,422.7	5,743.5	618.7	4,050.6	753.4
Transactions										
2014	-61.1	-68.4	-14.2	2.3	-49.2	-14.9	5.6	-3.0	-3.2	-8.7
2015	-13.1	21.1	-64.3	32.4	18.9	98.2	76.1	21.9	79.9	-3.6
2016	81.7	97.1	-17.4	45.2	54.0	119.0	110.9	23.4	105.9	-10.4
2016 Q1	35.9	28.1	19.2	13.2	3.5	36.2	24.7	8.0	28.6	-0.4
Q2	19.5	28.5	-4.1	8.6	15.0	14.5	29.5	1.6	13.5	-0.6
Q3	6.6	10.8	-23.1	14.9	14.8	33.8	27.4	5.1	32.5	-3.8
Q4	19.7	29.7	-9.4	8.5	20.6	34.5	29.2	8.7	31.4	-5.6
2016 Aug.	-4.0	1.3	-5.9	2.2	-0.3	11.5	8.4	3.3	9.3	-1.1
Sep.	-1.3	1.9	-11.8	5.8	4.7	14.7	9.9	1.3	14.8	-1.5
Oct.	16.0	11.4	13.3	0.9	1.8	7.2	9.7	4.4	4.5	-1.7
Nov.	16.1	8.3	6.7	6.9	2.6	18.9	10.8	2.2	16.1	0.6
Dec.	-12.4	9.9	-29.3	0.7	16.3	8.3	8.8	2.1	10.8	-4.5
2017 Jan. [(p)]	17.6	12.3	16.0	1.3	0.3	14.1	18.9	2.4	8.1	3.7
Growth rates										
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	4.5	0.8	1.9	1.4	3.9	2.1	-0.5
2016	1.9	2.3	-1.7	6.0	2.2	2.2	2.0	3.9	2.7	-1.4
2016 Q1	0.9	1.2	-2.1	5.2	0.9	2.2	1.6	5.0	2.3	-0.4
Q2	1.3	1.9	-2.1	5.3	1.6	1.9	1.8	3.5	2.1	-0.4
Q3	1.5	2.1	-2.9	6.7	1.8	2.1	1.8	3.4	2.4	-0.9
Q4	1.9	2.3	-1.7	6.0	2.2	2.2	2.0	3.9	2.7	-1.4
2016 Aug.	1.2	2.1	-3.9	6.4	1.9	2.0	1.8	3.5	2.3	-0.7
Sep.	1.5	2.1	-2.9	6.7	1.8	2.1	1.8	3.4	2.4	-0.9
Oct.	1.7	2.2	-1.1	5.6	1.8	1.9	1.8	3.7	2.2	-1.1
Nov.	1.8	2.1	-1.8	6.6	1.9	2.1	1.9	3.6	2.5	-1.2
Dec.	1.9	2.3	-1.7	6.0	2.2	2.2	2.0	3.9	2.7	-1.4
2017 Jan. [(p)]	1.7	2.3	-1.8	5.4	2.1	2.4	2.2	4.1	2.7	-0.8

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).
3) Including non-profit institutions serving households.
4) 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										
2014	269.4	7,127.8	2,186.6	92.2	2,388.1	2,460.8	1,381.1	217.8	184.5	139.7
2015	284.8	6,996.4	2,119.7	79.8	2,254.0	2,543.0	1,331.6	277.1	205.9	135.6
2016	318.8	6,920.3	2,054.4	70.6	2,140.8	2,654.5	1,131.5	238.2	205.9	121.6
2016 Q1	314.7	6,962.3	2,113.6	76.9	2,179.5	2,592.3	1,282.0	304.9	247.1	152.1
Q2	319.3	7,006.3	2,094.1	74.6	2,175.8	2,661.8	1,275.3	313.9	238.0	144.0
Q3	310.1	6,960.6	2,068.5	72.4	2,125.1	2,694.6	1,171.0	309.7	209.2	129.1
Q4	318.8	6,920.3	2,054.4	70.6	2,140.8	2,654.5	1,131.5	238.2	205.9	121.6
2016 Aug.	318.8	6,967.2	2,077.7	73.2	2,142.1	2,674.3	1,182.9	316.2	215.4	134.6
Sep.	310.1	6,960.6	2,068.5	72.4	2,125.1	2,694.6	1,171.0	309.7	209.2	129.1
Oct.	324.1	6,950.9	2,071.2	72.4	2,123.5	2,683.9	1,113.4	320.1	193.0	133.7
Nov.	296.6	6,934.5	2,061.6	71.9	2,136.6	2,664.4	1,083.9	319.7	194.7	121.3
Dec.	318.8	6,920.3	2,054.4	70.6	2,140.8	2,654.5	1,131.5	238.2	205.9	121.6
2017 Jan. (p)	302.9	6,871.9	2,036.9	70.0	2,127.4	2,637.6	1,120.2	219.7	176.5	106.3
Transactions										
2014	-4.0	-165.5	-120.8	2.0	-154.5	107.8	237.7	-5.9	0.7	17.8
2015	9.2	-221.6	-106.2	-13.5	-209.3	107.3	-98.6	-3.0	21.4	-4.0
2016	31.0	-148.7	-72.5	-9.1	-120.6	53.6	-295.4	-54.7	12.8	-12.0
2016 Q1	29.4	-56.6	-3.5	-2.8	-45.9	-4.4	-74.8	33.9	41.3	17.3
Q2	4.2	-13.0	-22.3	-1.8	-15.9	27.1	-71.6	8.2	-9.2	-8.1
Q3	-9.2	-53.8	-25.8	-2.0	-41.5	15.5	-106.2	-4.2	-19.2	-13.7
Q4	6.6	-25.3	-20.8	-2.6	-17.3	15.4	-42.8	-92.7	-0.2	-7.5
2016 Aug.	-7.6	-7.7	-7.1	-0.7	-7.2	7.3	-32.8	5.2	2.5	6.4
Sep.	-8.7	-21.3	-9.4	-0.6	-15.8	4.4	-18.7	-9.2	3.4	-4.3
Oct.	13.1	0.8	-1.3	-0.8	-8.7	11.6	-52.7	-8.6	-13.1	4.7
Nov.	-27.6	-10.2	-11.7	-0.5	-5.4	7.3	-11.6	-29.5	1.7	-12.4
Dec.	21.0	-15.9	-7.8	-1.3	-3.3	-3.5	21.5	-54.6	11.2	0.3
2017 Jan. (p)	-16.3	-22.2	-11.2	-0.6	-5.6	-4.8	11.8	-53.6	-28.3	-14.7
Growth rates										
2014	-1.6	-2.2	-5.1	2.2	-6.1	4.5	-	-	0.4	14.6
2015	3.6	-3.1	-4.8	-14.5	-8.6	4.3	-	-	11.6	-2.9
2016	10.9	-2.1	-3.4	-11.5	-5.4	2.0	-	-	6.3	-9.0
2016 Q1	11.0	-3.3	-3.5	-15.2	-8.4	2.0	-	-	3.8	-5.9
Q2	20.1	-2.3	-2.9	-13.3	-6.8	2.8	-	-	3.6	-2.9
Q3	5.3	-2.5	-4.3	-12.2	-6.4	2.7	-	-	1.5	-8.2
Q4	10.9	-2.1	-3.4	-11.5	-5.4	2.0	-	-	6.3	-9.0
2016 Aug.	15.4	-2.5	-3.9	-12.3	-6.6	2.8	-	-	1.4	1.1
Sep.	5.3	-2.5	-4.3	-12.2	-6.4	2.7	-	-	1.5	-8.2
Oct.	-7.2	-2.1	-3.4	-11.8	-6.0	2.8	-	-	4.5	-6.3
Nov.	0.1	-2.1	-3.2	-10.7	-5.9	2.5	-	-	-4.9	-15.6
Dec.	10.9	-2.1	-3.4	-11.5	-5.4	2.0	-	-	6.3	-9.0
2017 Jan. (p)	-1.4	-2.0	-3.6	-11.0	-4.8	1.8	-	-	-12.2	-23.8

Source: ECB.
1) Data refer to the changing composition of the euro area.
2) Comprises central government holdings of deposits with the MFI sector and of securities issued by the MFI sector.
3) Not adjusted for seasonal effects.

6 Fiscal developments

6.1 Deficit/surplus
(as a percentage of GDP; flows during one-year period)

	Deficit (-)/surplus (+)					Memo item: Primary deficit (-)/ surplus (+)
	Total	Central government	State government	Local government	Social security funds	
	1	2	3	4	5	6
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 Q4	-2.1	.	.	.	.	0.3
2016 Q1	-1.9	.	.	.	.	0.4
Q2	-1.8	.	.	.	.	0.5
Q3	-1.7	.	.	.	.	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						Capital expenditure
	Total	Current revenue				Capital revenue	Total	Current expenditure					
		Total	Direct taxes	Indirect taxes	Net social contributions			Total	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 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	3.9
Q2	46.4	45.9	12.5	13.1	15.4	0.5	48.1	44.3	10.0	5.2	2.3	22.9	3.9
Q3	46.4	45.9	12.6	13.1	15.4	0.5	48.1	44.3	10.0	5.2	2.2	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		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
						MFIs								
	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 Q4	90.4	2.8	16.2	71.4	.	.	.	.	.	.	.	.	.	.
2016 Q1	91.3	2.7	16.1	72.4	.	.	.	.	.	.	.	.	.	.
Q2	91.2	2.7	16.0	72.6	.	.	.	.	.	.	.	.	.	.
Q3	90.1	2.7	15.6	71.8	.	.	.	.	.	.	.	.	.	.

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 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
Q3	-1.4	-0.5	-0.5	-0.1	0.2	-0.2	-0.2	0.0	-0.3	-0.1	-0.4	1.5

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

6.5 Government debt securities [1]
(debt service as a percentage of GDP; flows during debt service period; average nominal yields in percentages per annum)

	Debt service due within 1 year [2]					Average residual maturity in years [3]	Average nominal yields [4]						
	Total	Principal		Interest			Outstanding amounts					Transactions	
			Maturities of up to 3 months		Maturities of up to 3 months		Total	Floating rate	Zero coupon	Fixed rate		Issuance	Redemption
											Maturities of up to 1 year		
	1	2	3	4	5	6	7	8	9	10	11	12	13
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
2016	14.6	12.8	4.7	1.8	0.5	6.7	2.6	1.1	-0.1	3.0	2.9	0.2	1.2
2015 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	15.3	13.5	5.0	1.8	0.5	6.7	2.7	1.1	-0.1	3.1	2.9	0.3	1.1
Q3	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
2016 Aug.	15.0	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.	14.9	13.1	3.9	1.8	0.5	6.9	2.6	1.1	-0.1	3.0	2.9	0.2	1.3
Nov.	14.9	13.1	4.5	1.8	0.5	6.9	2.6	1.1	-0.1	3.0	2.9	0.2	1.3
Dec.	14.6	12.8	4.7	1.8	0.5	6.9	2.6	1.1	-0.1	3.0	2.9	0.2	1.2
2017 Jan.	14.8	13.0	5.0	1.8	0.5	6.9	2.6	1.1	-0.1	3.0	2.9	0.2	1.2

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 Q4	-2.5	0.7	0.1	-1.9	-7.5	-5.1	-3.5	-2.6	-1.1
2016 Q1	-2.6	0.8	0.7	-1.5	-6.3	-5.1	-3.3	-2.5	-0.2
Q2	-2.8	0.8	0.8	-1.4	-5.2	-5.3	-3.1	-2.3	-1.2
Q3	-3.2	0.6	0.6	-1.8	-3.2	-4.8	-3.2	-2.3	-0.9
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 Q4	106.0	71.2	10.1	78.6	177.4	99.3	96.2	132.3	108.9
2016 Q1	109.1	70.9	9.9	80.0	176.4	101.1	97.5	135.0	107.9
Q2	109.6	70.2	9.7	77.7	179.8	101.0	98.3	135.5	107.6
Q3	108.8	69.4	9.6	77.1	176.9	100.3	97.5	132.7	110.6

	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 Q4	-1.3	-0.2	1.6	-1.4	-1.9	-1.0	-4.4	-2.7	-2.7	-2.8
2016 Q1	-1.0	-0.1	1.6	-0.2	-1.6	-0.8	-3.8	-2.5	-2.6	-2.0
Q2	-0.7	0.4	1.5	0.4	-0.8	-1.0	-3.5	-1.7	-2.5	-2.2
Q3	-0.2	0.3	1.5	0.6	-0.3	-0.4	-3.6	-1.5	-2.3	-2.1
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 Q4	36.3	42.7	22.1	64.0	65.1	85.5	129.0	83.1	52.9	63.6
2016 Q1	36.1	40.0	22.4	62.1	64.8	86.5	128.9	83.6	51.8	64.2
Q2	38.8	40.1	22.0	61.4	63.7	86.7	131.7	82.4	52.9	61.6
Q3	37.9	41.3	21.5	60.4	61.9	84.4	133.4	82.6	52.7	61.6

Source: Eurostat.

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