EUROPEAN CENTRAL BANK

EUROSYSTEM

Economic Bulletin

Issue 7 / 2016

Contents

Update on economic and monetary developments

Summary

The information that has become available since early September confirmed a continued moderate but steady recovery of the euro area economy and a gradual rise in inflation, in line with previous expectations. The euro area economy has continued to show resilience to the adverse effects of global economic and political uncertainty, aided by the ECB's comprehensive monetary policy measures, which ensure very favourable financing conditions for firms and households. Overall, however, the baseline scenario remains subject to downside risks.

Available global indicators point to a modest rebound in global activity and trade growth in the third quarter. At the same time, global headline inflation has remained at low levels as past energy price declines have weighed on price increases. Risks to the outlook for global activity remain on the downside and relate in particular to political uncertainty and financial imbalances.

Since early September, sovereign yields have risen and the EONIA forward curve has edged upwards, with yields on intermediate maturities in particular reaching levels close to those reached after the UK referendum on EU membership in late June. Corporate bond spreads rose marginally and overall remained significantly lower than in early March 2016, when the corporate sector purchase programme was announced. Equity prices have declined marginally, with valuations in the banking sector remaining particularly depressed relative to early 2016.

The economic recovery in the euro area is continuing. Looking ahead, the economic expansion is expected to proceed at a moderate but steady pace. Domestic demand should be supported by the pass-through of the ECB's monetary policy measures to the real economy. Favourable financing conditions and improvements in corporate profitability continue to promote a recovery in investment. Moreover, still relatively low oil prices and sustained employment gains, which are also benefiting from past structural reforms, provide additional support for households' real disposable income and private consumption. In addition, the fiscal stance in the euro area will be broadly neutral in 2017. However, the economic recovery in the euro area is expected to be dampened by still subdued foreign demand, the necessary balance sheet adjustments in a number of sectors and a sluggish pace of implementation of structural reforms. The risks to the euro area growth outlook remain tilted to the downside and relate mainly to the external environment.

According to Eurostat, euro area annual HICP inflation in September 2016 was 0.4%, up from 0.2% in August. This reflected mainly a continued increase in annual energy inflation, while there are no signs yet of a convincing upward trend in underlying inflation. Looking ahead, on the basis of current oil futures prices, inflation rates are likely to pick up over the next couple of months, in large part owing to base

effects in the annual rate of change of energy prices. Supported by the ECB's monetary policy measures and the expected economic recovery, inflation rates should increase further in 2017 and 2018.

The monetary policy measures put in place since June 2014 have contributed to an improvement in borrowing conditions, as well as credit flows, across the euro area, thereby supporting the economic recovery. In particular, the euro area bank lending survey for the third quarter of 2016 indicated that the ECB's asset purchase programme and the negative deposit facility rate had contributed to more favourable terms and conditions on loans. At the same time, banks have continued to report improving loan demand, amid further declines in bank lending rates that reached historical lows in August 2016. Thus the recovery in loan growth has continued at a moderate pace, despite losing some momentum over the summer period. With respect to market-based financing, the net issuance of debt securities by non-financial corporations strengthened markedly in September 2016.

At its meeting on 20 October 2016, based on the regular economic and monetary analyses, the Governing Council decided to keep the key ECB interest rates unchanged. The Governing Council continues to expect the key ECB interest rates 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 the monthly asset purchases of €80 billion are intended to run until the end of March 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.

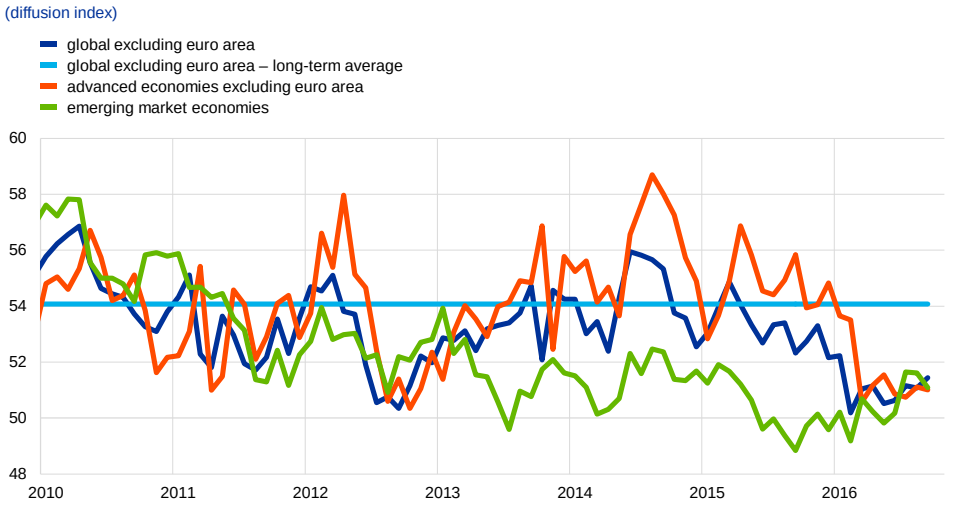
Looking ahead, the Governing Council remains committed to preserving the very substantial degree of monetary accommodation which is necessary to secure a sustained convergence of inflation towards levels below, but close to, 2% over the medium term. To that end, the Governing Council will continue to act, if warranted, by using all the instruments available within its mandate. In December the Governing Council's assessment will benefit from the new staff macroeconomic projections extending through to 2019 and from the work of the Eurosystem committees on the options to ensure the smooth implementation of the purchase programme until March 2017, or beyond, if necessary.

1 External environment

Despite a modest recovery in some emerging market economies (EMEs), the global recovery remains gradual. The global composite output Purchasing Managers' Index (PMI) increased marginally further in September 2016, with a slight decline in manufacturing output being offset by a pick-up in services (see Chart 1). In quarterly terms, the global output PMI rose to 51.5 in the third quarter, up from 51.3 in the previous quarter. Mixed developments were observed in advanced economies, with the index rising in the United States and Japan in the third quarter, but declining in the United Kingdom. Growth prospects for EMEs have improved relative to the first half of the year, with surveys indicating that economic activity may have turned the corner.

Chart 1

Global composite output PMI



Sources: Markit and ECB calculations.
Note: The latest observations are for September 2016.

Global financial conditions have remained favourable. EMEs have continued to benefit from improvements in risk sentiment, with capital flows to such countries proving resilient amid a broad-based improvement in financial conditions. Global risk appetite has, in part, been buoyed by central bank action in some major advanced economies. In August, the Monetary Policy Committee of the Bank of England cut interest rates and announced further quantitative easing. In September, the Bank of Japan's Policy Board decided to increase further its monetary accommodation, introducing what it termed "quantitative and qualitative monetary easing with yield curve control". It also committed itself to expanding the monetary base until the observed rate of inflation exceeds its price stability target and remains above that level in a stable manner. In the United States, on the other hand, the Federal Reserve System's Federal Open Market Committee indicated in September that "the case for an increase in the federal funds rate has strengthened".

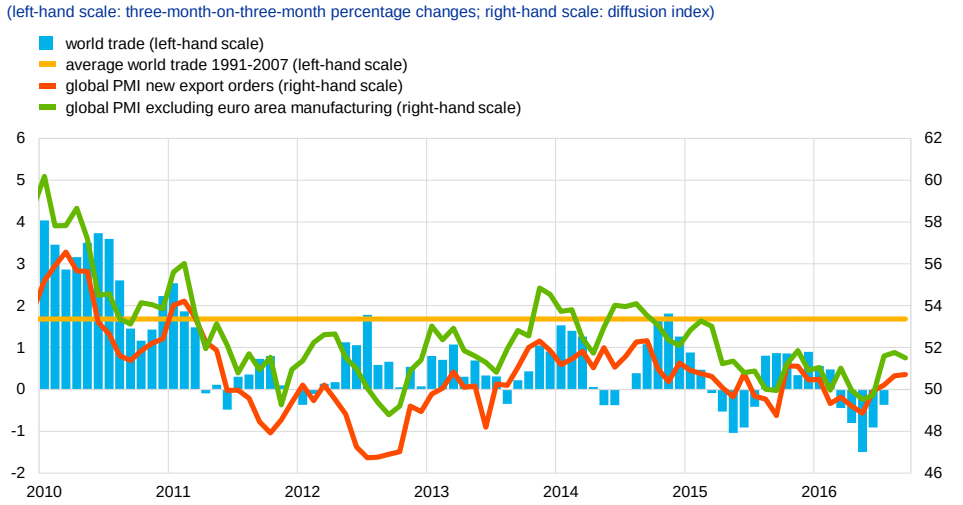
Despite a modest improvement, global trade in goods remains weak. Global trade in goods contracted further in July – the fifth month in a row – but the

underlying momentum continued to improve (see Chart 2). The volume of world imports of goods fell by 0.4% in July on a three-month-on-three-month basis, following a 0.9% decline in June. However, recent figures suggest that global trade growth may have bottomed out, with the global PMI for new export orders increasing in the third quarter.

Low energy price inflation continues to weigh on headline global inflation. Annual CPI inflation in OECD countries picked up slightly to stand at 0.9% in August. Meanwhile, CPI excluding food and energy was unchanged at 1.8%. Energy prices continued falling in August, but at a slower pace than in the previous month, declining by 6.7% year on year, while food prices decreased marginally. While the base effects of past declines in commodity prices are expected to contribute to an increase in headline inflation in the months ahead, the presence of ample spare capacity will continue to weigh on global inflation over the medium term.

Chart 2

World trade in goods



Sources: Markit, CPB and ECB calculations.
Note: The latest observations relate to September 2016 for the PMIs and July 2016 for world trade.

The price of Brent crude oil has risen sharply following OPEC's announcement regarding an agreement to cut oil production. OPEC's decision to reduce production by around 0.5-1.0 million barrels per day – which still needs to be ratified at its next meeting at the end of November – was largely unexpected. However, the fact that inventories are close to record highs will have a dampening effect on the rebalancing of the market. Even if the decision is ratified, OECD countries' stock overhang will only be halved at most over the next six quarters. The prices of non-oil commodities are broadly unchanged since early September.

Indicators suggest that GDP growth in the United States recovered in the third quarter following the soft patch at the start of this year. US real GDP grew at an annualised rate of 1.4% in the second quarter of 2016. However, surveys and hard data suggest that the pace of expansion increased in the third quarter. Consumer spending is expected to remain the primary driver of growth, supported by continued improvements in labour market conditions. The non-farm payroll employment

average monthly increase was 192,000 in the three months to September. Annual headline CPI inflation in the United States increased to 1.5% in September, while CPI excluding food and energy fell to 2.2%.

Economic growth in Japan remains modest. Following some weakness in July, exports and production picked up in August. New construction orders in July also signalled some improvement in the housing market. Meanwhile, household surveys point to some deterioration in private consumption, despite the ongoing improvements in the labour market. The unemployment rate fell to 3% in July, while nominal cash earnings rose by 1.2% in year-on-year terms. Annual headline CPI inflation moved further into negative territory in August, standing at -0.5%. CPI excluding fresh food and energy – the Bank of Japan's preferred measure of core inflation – also declined, standing at 0.4%.

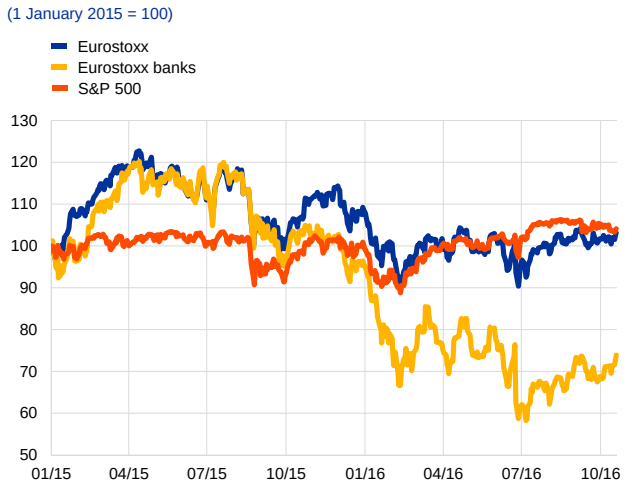
In the United Kingdom, economic growth remains robust. Following strong declines in the immediate aftermath of the UK referendum on EU membership, many short-term indicators rebounded in August and September. However, uncertainty surrounding the negotiations to leave the European Union is expected to dampen domestic demand, particularly investment (see Box 1 in this issue of the Economic Bulletin). Annual CPI inflation accelerated to 1.0% in September and is expected to increase further on the back of the recent depreciation of the pound sterling. Indeed, recent data on input prices point to the build-up of some pipeline pressures.

The Chinese economy is continuing to expand at a robust pace. The latest data confirm stable GDP growth of 6.7% year on year in the third quarter, mainly driven by consumption, while the contribution of gross fixed capital formation decreased slightly compared with the second quarter, in line with a slow rebalancing of the economy. Net exports remained a small drag on growth. House prices in larger cities have been rising sharply, at rates of around 30% year on year. As a result, some local authorities have started to impose restrictions on purchases. Meanwhile, in smaller cities, prices are more stable amid housing stock oversupply. Inflation picked up in September, with annual CPI inflation rising to 1.9%, while annual producer price inflation, which has been in negative territory since March 2012, rose to 0.1%.

2 Financial developments

Long-term euro area government bond yields have risen since early September. During the review period (8 September to 19 October 2016), ten-year sovereign yields increased by between 6 and 30 basis points. Overall, sovereign spreads vis-à-vis the German Bund ten-year rate remained broadly stable in most countries, with the exception of Greece and Italy where they rose by 12 and 21 basis points respectively.

Chart 3
Selected euro area and US equity price indices



Source: Thomson Reuters.
Notes: Daily data. The latest observation is for 19 October 2016.

Euro area equity prices have been broadly stable since early September. At the end of the review period the euro area equity index still remained around 3% below its level just before the UK referendum on EU membership and 2% lower than in early 2016. Profitability concerns, as well as country and bank-specific events, continued to weigh on the euro area banking sector. On 19 October, bank equity prices were around 20% lower than in early 2016 (see Chart 3). Equity prices declined in the United States by around 2% over the review period while they remained broadly stable in Japan and rose by over 2% in the United Kingdom. Market expectations of equity price volatility remained overall stable in the euro area and were significantly lower than the relative peak reached in late June on account of the UK referendum.

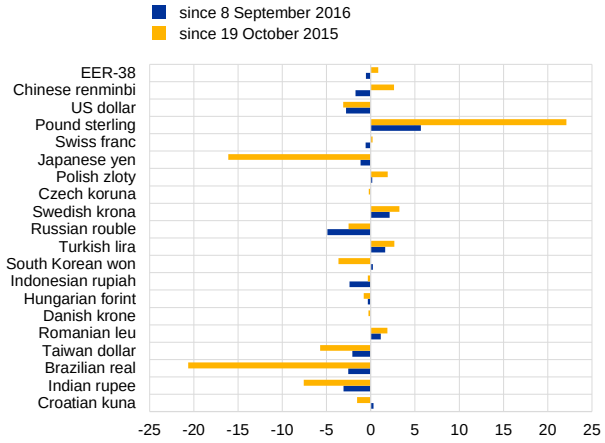
Spreads on bonds issued by non-financial corporations halted the downward trend prevailing since the Governing Council's announcement of the corporate sector purchase programme (CSPP) in March. After a phase of declining yields which started in early March – including a short-lived reversal in June attributable to the tensions sparked by the UK referendum – spreads on issues by euro area non-financial corporations (NFCs) have risen marginally across all rating classes since early September. Nevertheless, on 19 October, NFC bond spreads were, depending on the rating, 15-50 basis points lower than in early March, when the Governing Council announced the launch of the CSPP. In the financial sector, bond spreads also rose slightly across all rating classes during the review period. The diverging behaviour of bank equities – which have recorded a significant decline since early 2016 – and financial bond spreads indicates that profitability concerns, rather than perceptions of increased default risks among financial institutions, continue to be a key factor behind developments in the banking sector.

In foreign exchange markets, the euro was broadly stable in trade-weighted terms. In bilateral terms, since 8 September, the euro has appreciated by 5.7% against the pound sterling, amid continued uncertainty after the outcome of the UK referendum. It also appreciated vis-à-vis the currencies of most non-euro area EU countries. At the same time, the euro depreciated vis-à-vis most other major currencies, including the US dollar (by 2.8%), the Japanese yen (by 1.1%) and the

Swiss franc (by 0.6%), as well as against the currencies of major emerging economies (see Chart 4).

Chart 4

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



Source: ECB.
Notes: EER-38 is the nominal effective exchange rate of the euro against the currencies of 38 of the euro area's most important trading partners. All changes are computed relative to the exchange rates prevailing on 19 October 2016.

The euro overnight index average (EONIA) remained stable during the review period at around -35 basis points. Around the end of the third quarter of 2016, the EONIA rose temporarily up to -32 basis points. Excess liquidity increased by around €28 billion, to around €1,065 billion, in the context of Eurosystem purchases under the expanded asset purchase programme.

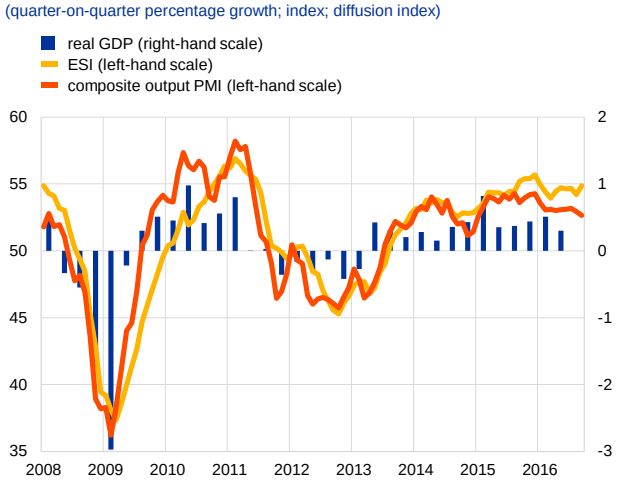
Relative to the lows reached in early September, the EONIA forward curve shifted upwards, especially beyond the one-year horizon. It currently stands close to the level seen in the immediate aftermath of the UK referendum, especially for the maturities up to five years. During the review period, the EONIA forward curve moved upwards by around 6 basis points at the medium-term maturities. The upward shift of the curve has been marginal for maturities below two years and the curve remains below zero for maturities up to summer 2021.

3 Economic activity

The economic recovery in the euro area is continuing, notwithstanding some weather-induced volatility in the first half of 2016. Real GDP increased by 0.3%, quarter on quarter, in the second quarter of 2016 on the back of a modest contribution from domestic demand, alongside a stronger contribution from net trade (see Chart 5). By contrast, changes in inventories contributed negatively to GDP growth in the second quarter. The latest economic indicators, hard data as well as survey results have continued to show resilience and point to ongoing moderate growth in the third quarter.

Chart 5

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



Sources: Eurostat, European Commission, Markit and ECB.
Notes: The ESI is normalised with the mean and standard deviation of the PMI. The latest observations are for the second quarter of 2016 for real GDP and September 2016 for the ESI and the PMI.

Consumer spending, which has been the main driver of the ongoing recovery, continued to contribute positively to GDP growth in the first half of 2016. Private consumption growth eased to 0.2%, quarter on quarter, in the second quarter. This slowdown should be seen in the light of the strong outcome in the first quarter, when consumption rose by 0.6% on a quarterly basis. The lower consumption growth in the second quarter mirrored a rise in the saving ratio as real income growth continued to hold up. Indeed, during the ongoing recovery consumer spending has been benefiting from rising real disposable income among households, which primarily reflects rising employment and low oil prices. Households' real gross disposable income grew in the second quarter of 2016, by 2.5% year on year, which is the highest growth rate in 15 years. Households' balance sheets have also become less constrained. Household debt-to-income ratios have continuously been decreasing in the ongoing recovery, thereby supporting overall consumption growth.

Going forward, consumption should continue to grow at a steady pace. After improving in the second quarter of 2016, consumer confidence declined somewhat in the third quarter – a slowdown that may partly be attributable to the UK referendum outcome and recent terrorist attacks. However, consumer sentiment still remains above its long-term average. Data on retail trade (up to August 2016) and new passenger car registrations (up to September 2016) are in line with positive growth in consumer spending in the third quarter, possibly at a somewhat stronger rate than in the second quarter. Moreover, further employment growth, as suggested by the latest survey indicators, should also continue to support consumer spending.

Investment activity slowed in the second quarter after the positive weather effect on construction activities in the first quarter. Total investment displayed zero growth, quarter on quarter, in the second quarter of 2016 reflecting a rise in non-construction investment, offset by a decline in construction investment. Rising investment in transport equipment made up virtually all of the increase in non-

construction investment in the second quarter, with ICT (information and communication technology) investment contributing the remaining part. Construction investment contracted by 0.4% in the second quarter, following three consecutive quarters of growth. This slowdown was largely driven by investment in Germany as a result of the fading-away of the weather effect that had a strong upward impact on the outcome for the first quarter.

Incoming information suggests that business investment grew moderately in the third quarter of 2016, while construction investment picked up. The weak growth in business investment is backed up by data on the industrial production of capital goods, which grew only weakly in July and August compared with the second quarter. Moreover, confidence in the capital goods sector was, on average, lower in the third quarter than in the second quarter and the assessment of order books in the capital goods sector remained subdued in the third quarter, particularly for orders from abroad, suggesting some adverse impact from the weak international environment. With regard to construction investment, underlying factors such as building permits granted, the demand situation in the sector and the assessment of order books signal a continuation of the recovery going forward. In addition, more timely monthly production data, alongside survey results, point to a rebound in construction activity in the third quarter of this year.

The recovery in business investment is expected to continue beyond the next quarter. Support to business investment is expected from demand, accommodative monetary policy as well as favourable financing conditions and replacement needs. Improving profits should also support total investment going forward. Downside risks to the business investment outlook relate to the international environment, including uncertainties surrounding “Brexit”.

Euro area total exports showed some strength in the second quarter of 2016, but monthly extra-euro area goods trade data point so far to a weak third quarter. Monthly trade outcomes for August suggest that extra-euro area goods exports rebounded somewhat compared with the same period in 2015 (in three-month-on-three-month moving average terms). However, extra-euro area export growth still remains weak by historical standards. Among the emerging market economies, growth in exports to China decelerated, while goods exports to Russia and Latin America declined. As for the advanced economies, exports to the United States made a negative contribution, whereas exports to non-euro area Europe are likely to have contributed positively. Looking ahead, the slight appreciation of the effective exchange rate of the euro since the beginning of 2016 is expected to weigh on euro area exports. In addition, exports may be negatively affected by the possible consequences for global trade flows of the UK referendum outcome. More timely indicators, such as surveys, signal continued subdued developments in foreign demand, although export orders seem to have improved somewhat in the third quarter.

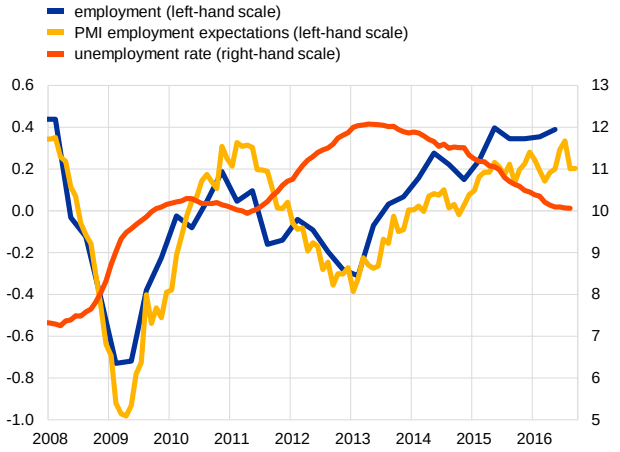
Overall, the latest economic indicators are, on balance, consistent with ongoing moderate real GDP growth in the third quarter of 2016. Industrial production (excluding construction) displayed a strong monthly rise in August 2016 following a smaller decline in July. On average in July and August, industrial

production was 0.1% above its level in the second quarter, when production declined by 0.2% on a quarterly basis. More timely survey data are in line with continued growth in the third quarter, at around the same rate as in the second quarter. The composite output Purchasing Managers' Index (PMI) averaged 52.9 in the third quarter of 2016 versus 53.1 in the second quarter, while the European Commission's Economic Sentiment Indicator (ESI) remained unchanged at 104.3 (see Chart 5). While the ESI remains well above its long-term average, the PMI currently stands somewhat below its historical average.

Chart 6

Euro area employment, PMI employment expectations and unemployment

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



Sources: Eurostat, Markit and ECB calculations.
Notes: The PMI is expressed as a deviation from 50 divided by 10. The latest observations are for the second quarter of 2016 for employment, September 2016 for the PMI and August 2016 for unemployment.

Euro area labour markets continue to improve gradually. Employment increased further by 0.4%, quarter on quarter, in the second quarter of 2016, leading to an annual rise of 1.4%. Since the second quarter of 2013, when employment started to rise, the number of persons employed has risen by an accumulated 3%. The unemployment rate in the euro area remained unchanged at 10.1% in August 2016, which is 2.0 percentage points below its most recent peak in April 2013 (see Chart 6). This decline has been broad-based across gender and age groups. Moreover, long-term unemployment (those who have been unemployed for at least 12 months) continues to decrease slowly, but remains above 5% of the labour force. More timely survey results point to further labour market improvements in the period ahead.

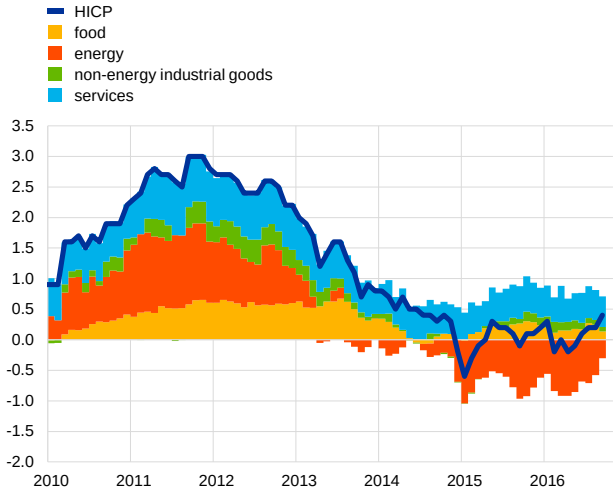
Looking ahead, the economic expansion is expected to proceed at a moderate but steady pace. Domestic demand should be supported by the pass-through of the monetary policy measures to the real economy. Favourable financing conditions and improvements in corporate profitability continue to promote a recovery in investment. Moreover, still relatively low oil prices and sustained employment gains, which are also associated with past structural reforms, provide additional support for households' real disposable income and private consumption. In addition, the aggregate fiscal stance in the euro area will likely be broadly neutral in 2017. However, the economic recovery is expected to be dampened by still subdued foreign demand, the necessary balance sheet adjustments in a number of sectors and a sluggish pace of implementation of structural reforms. The risks to the euro area growth outlook remain tilted to the downside and relate mainly to the external environment. The results of the latest round of the ECB's Survey of Professional Forecasters, conducted in early October, show that private sector GDP growth forecasts were broadly unchanged compared with the previous round conducted in early July.

4 Prices and costs

Headline inflation increased further in recent months. The upward trend in headline inflation observed since the recent low of -0.2% in April 2016 mainly reflects the waning impact of past declines in oil prices (see Chart 7).

Chart 7
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 September 2016.

Most measures of underlying inflation do not show any clear signs of an upward trend. Following increases in the first half of 2015, annual HICP inflation excluding food and energy has hovered around the 1% mark since then. Similarly, other measures of underlying inflation have shown no clear signs of upward momentum either. This may, in part, be due to the indirect downward effects of past sharp declines in the prices of oil and other commodities, which materialise with a lag. More fundamentally, domestic cost pressures – particularly wage growth – have remained subdued.

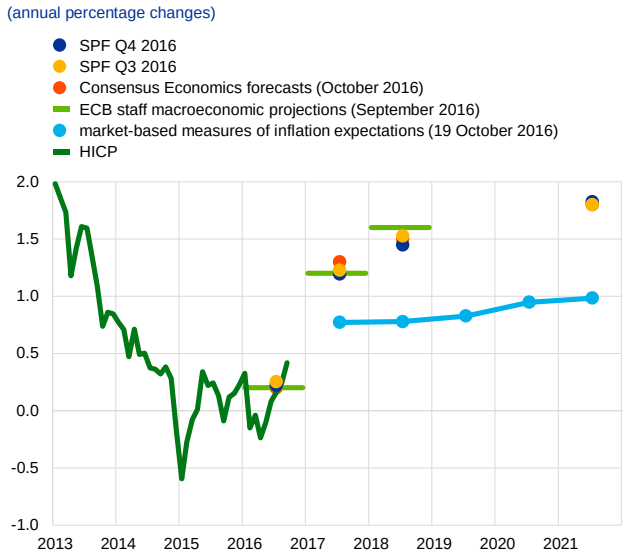
Import price inflation remains negative, while producer price inflation continues to be fairly stable. The annual growth rate of import prices for non-food consumer goods decreased slightly further to stand at -1.4% in August, down from -1.3% in July. Further along the pricing chain, producer prices for domestic sales of non-food consumer goods remained broadly stable, with their annual growth rate standing at 0.1% in August, up slightly from the 0.0% observed in July. While the improvements seen in economic conditions are likely to have exerted upward pressure on producer prices, this may have been offset by low commodity-related input prices and global disinflationary pressures more generally.

Wage growth has remained subdued. Annual growth in compensation per employee declined slightly to stand at 1.1% in the second quarter of 2016, down from 1.2% in the previous quarter. Wage growth probably continued to be dampened by significant slack in the labour market, weak productivity growth, low inflation and the ongoing impact of labour market reforms implemented in some countries during the financial and economic crisis.[1]

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

Chart 8

Market and survey-based measures of inflation expectations



Sources: ECB Survey of Professional Forecasters (SPF), Thomson Reuters, Consensus Economics, ECB staff macroeconomic projections and ECB calculations.
Notes: Realised HICP data are included up to September 2016. The market-based measures of inflation expectations are derived from euro area zero coupon inflation-linked swaps (based on the HICP excluding tobacco).

Market-based measures of longer-term inflation expectations have increased slightly, but continue to stand at low levels, while survey-based measures remain substantially higher than market-based measures (see Chart 8). Since September, market-based measures of inflation expectations have recovered somewhat across all maturities, albeit from record low levels. The five-year forward inflation rate five years ahead increased from 1.29% in early September to 1.43% in mid-October. The low levels currently being observed for market-based measures of inflation expectations partly reflect low inflation expectations among market participants and partly reflect limited demand for protection against inflation in a low-inflation environment. Survey-based measures of longer-term inflation expectations remain substantially higher than market-based measures. The ECB's Survey of Professional Forecasters for the fourth quarter of 2016 indicated that inflation expectations five years ahead remained unchanged at 1.8%. Moreover, market participants remain of the view that inflation rates two and five years ahead are highly unlikely to be negative. Other institutions and surveys are broadly in line with the Survey of Professional Forecasters when it comes to longer-term inflation expectations.

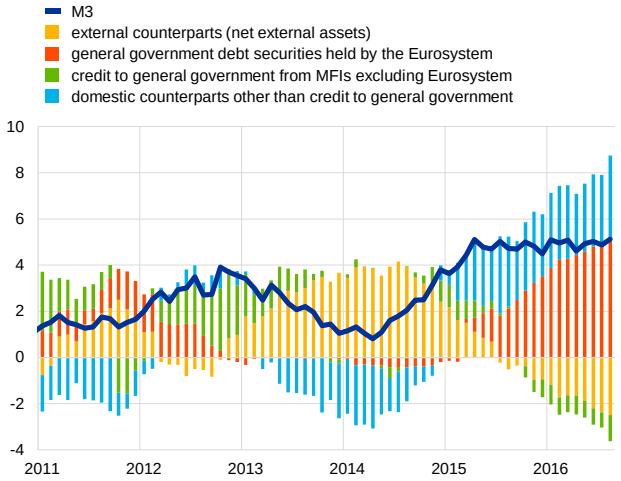
The upturn in euro area house prices that started in early 2014 has continued in the first half of this year. According to the ECB's aggregate residential property price indicator, the annual growth rate in euro area house prices was 3.0% in the second quarter of 2016, up from 2.7% in the first quarter of 2016 and 2.2% in the last quarter of 2015 (see Box 3).

5 Money and credit

Broad money growth remained robust. The annual growth rate of M3 stood at 5.1% in August, after 4.9% in July, having hovered around 5% since April 2015 (see Chart 9). Growth in M3 continued to be driven by its most liquid components, given the low opportunity cost of holding liquid deposits in an environment of very low interest rates and a flat yield curve. After a series of slowdowns from its peak in July 2015, annual M1 growth edged up to 8.9%, from 8.4% in July.

Chart 9
M3 and its counterparts

(12-month accumulated flows in EUR billions; seasonally adjusted)



Source: ECB.
Notes: "Domestic counterparts other than credit to general government" include MFIs' longer-term financial liabilities (including capital and reserves), MFI credit to the private sector and other counterparts. The latest observation is for August 2016.

Broad money growth continued to be driven by domestic sources of money creation. Purchases of debt securities in the context of the public sector purchase programme (PSPP) continued to have a considerable positive impact on M3 growth (see the orange bars in Chart 9). By contrast, the contribution of credit from monetary financial institutions excluding the Eurosystem to general government continued to be negative (see the green bars in Chart 9).

Domestic counterparts other than credit to general government also exerted a positive impact on M3 growth (see the blue bars in Chart 9). On the one hand, this reflects the gradual recovery in the growth of credit to the private sector. On the other hand, the significantly negative annual rate of change in MFIs' longer-term financial liabilities (excluding capital and reserves) continued to support M3 growth. This is partly explained by the flatness of the yield curve, linked to the ECB's monetary policy measures, which has made it less favourable for investors to hold long-term deposits and bank bonds. The attractiveness of the targeted longer-term refinancing operations (TLTROs) as an alternative to longer-term market-based bank funding has also played a role.

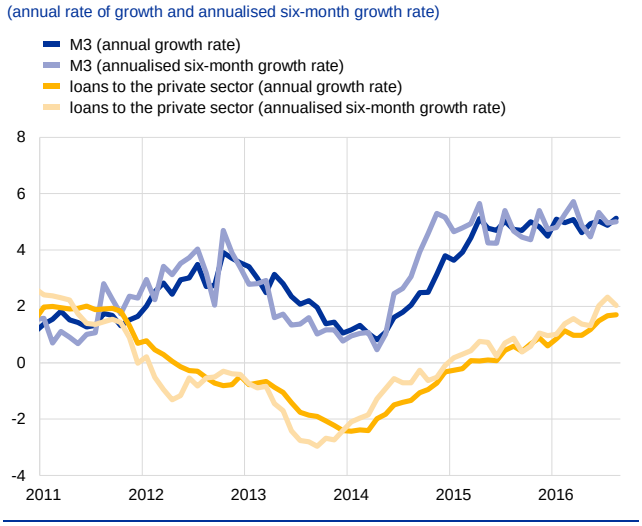
The MFI sector's net external asset position continued to weigh on annual M3 growth (see the yellow bars in Chart 9). This development reflects ongoing capital outflows from the euro area and portfolio rebalancing in favour of non-euro area instruments, in particular euro area government bonds sold by non-residents under the PSPP (see also Box 2 entitled "TARGET balances and the asset purchase programme" in this issue of the Economic Bulletin).

The recovery in loan growth continued at a moderate pace. The annual growth rate of MFI loans to the private sector (adjusted for sales, securitisation and notional cash pooling) was stable in August (see Chart 10), for both loans to non-financial corporations (NFCs) and loans to households. While the gradual recovery in loan dynamics lost some of its momentum over the summer period, it continues to be supported by significant decreases in bank lending rates since summer 2014 (notably owing to the ECB's monetary policy measures), as well as by improvements in the demand for bank loans. At the same time, the ongoing consolidation of

financial and non-financial balance sheets and the need for adjustment of bank business models in some countries remain a drag on loan growth.

Chart 10

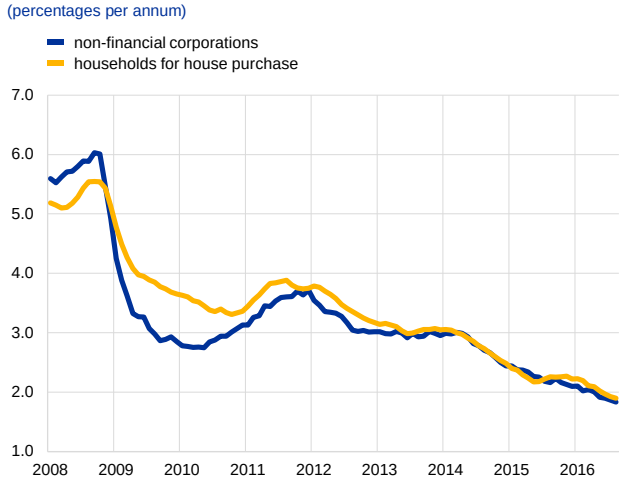
M3 and loans to the private sector



Source: ECB.
Notes: Loans are adjusted for loan sales, securitisation and notional cash pooling. The latest observation is for August 2016.

Chart 11

Composite bank lending rates for NFCs and households



Source: ECB.
Notes: Composite bank lending rates are calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The latest observation is for August 2016.

The October 2016 euro area bank lending survey **suggests that loan growth continued to be supported by increasing demand across all loan categories in the third quarter of 2016.** Credit standards remained unchanged for loans to enterprises, following a net easing from the second quarter of 2014, but eased for loans to households. Competitive pressures and, to a lesser extent, lower risk perceptions continued to have an easing impact on credit standards for loans to both enterprises and households. Banks also indicated that the ECB's asset purchase programme (APP) had had a net easing impact on credit terms and conditions, and that the ECB's negative deposit facility rate had had a positive impact on lending volumes. At the same time, banks reported a negative impact on their margins as a result of the APP and the negative deposit facility rate.

Bank lending rates on loans to NFCs and households fell to a new historical low in August (see Chart 11). Composite lending rates for NFCs and households have decreased by significantly more than market reference rates since the announcement of the ECB's credit easing measures in June 2014. Decreases in banks' composite funding costs, to which the funding cost relief provided by the TLTROs contributed, have supported the decline in composite lending rates.

Between May 2014 and August 2016 composite lending rates on loans to euro area NFCs and households fell by 110 basis points and around 100 basis points respectively. The decline in bank lending rates over this period was stronger in vulnerable euro area countries than in other euro area countries, indicating an improvement in the pass-through of monetary policy measures to bank lending rates. 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 followed a downward path. This generally indicates that small and medium-sized enterprises have benefited to a greater extent than large companies from the decline in lending rates. The declines in banks' funding costs and bank lending rates have helped to mitigate asymmetries that existed across euro area countries and have reduced fragmentation in funding cost and lending conditions.

The net issuance of debt securities by NFCs strengthened markedly in September 2016, after having been rather subdued in July and August. The latest official ECB data show that issuance activity remained muted in July and August. This was due to seasonal factors, and preliminary data suggest that it strengthened markedly again in September 2016, with the rise being broadly based across countries. Overall, the issuance activity from March to September is estimated to have exceeded by a considerable margin the levels observed in the same period of 2015. Issuance was supported by, among other factors, the ECB's corporate bond purchases. The issuance of quoted shares by NFCs has remained fairly modest in recent months.

Financing costs for euro area NFCs remain favourable. Nominal financing costs for euro area NFCs continue to be very favourable, although they are estimated to have increased slightly in August-September 2016, after reaching a new historical low in July. The increase was attributable to a rise in the cost of equity financing. However, the cost of market-based debt financing has stabilised at very low levels in recent months as a consequence of the ECB's latest non-standard monetary policy measures and the overall decline in global bond yields.

Boxes

1 Economic developments in the aftermath of the UK referendum on EU membership

This box analyses recent developments and the outlook for the UK economy and the euro area following the outcome of the referendum on EU membership held on 23 June 2016.[2] A majority of around 52% voted in favour of the United Kingdom leaving the EU. The Prime Minister recently indicated that, by March 2017, the country will formally notify the European Council of its intention to withdraw from the EU. According to Article 50 of the Treaty on European Union, this would start a process culminating in a withdrawal agreement between the EU and the United Kingdom. Failing that, the EU Treaties would cease to apply to the United Kingdom two years after the notification triggering Article 50, unless the European Council, in agreement with the United Kingdom, unanimously decided to extend this period. At present, high uncertainty surrounds the United Kingdom's future economic relationship with the EU, in particular its future access to the Single Market.

Despite heightened uncertainty in the immediate aftermath of the referendum, economic activity in the United Kingdom has so far been resilient. Private consumption appears to have been particularly robust. In fact, the GfK consumer confidence indicators rebounded in August and September, following strong declines immediately after the referendum (see Chart A). Retail sales have also held up relatively well. However, uncertainty appears to have weighed on investment, as shown by the drop in investment sentiment indicators (see Chart B).

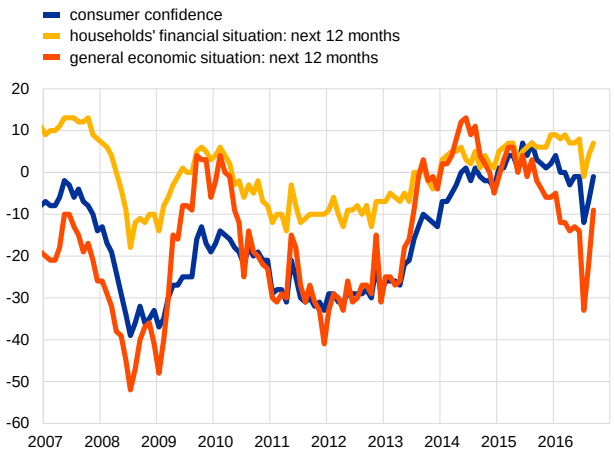
Looking at the foreign exchange markets, the outcome of the referendum took many market participants by surprise. The pound sterling depreciated sharply in the days following the referendum before stabilising somewhat during the summer (see Chart C). In September and, in particular, early October, the pound sterling weakened further, as political announcements in the United Kingdom were widely interpreted as decreasing the likelihood of the country retaining Single Market access in the future. Overall, the pound sterling has depreciated by around 14% in nominal effective terms since the referendum.

[2] See also the box entitled "Impact on the euro area economic outlook of the outcome of the UK referendum on EU membership" in the September 2016 ECB staff macroeconomic projections for the euro area.

Chart A

GfK consumer confidence indicators

(balance of opinions as a percentage)

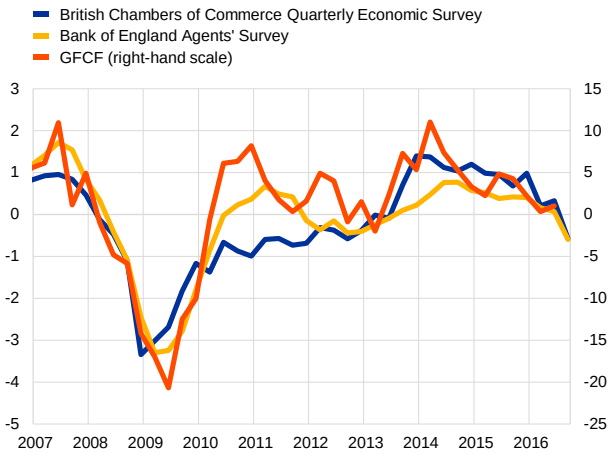


Source: Consumer Confidence Barometer.
Note: GfK stands for Gesellschaft für Konsumforschung.

Chart B

Investment sentiment indicators

(left-hand scale: standardised series; right-hand scale: annual percentage changes)

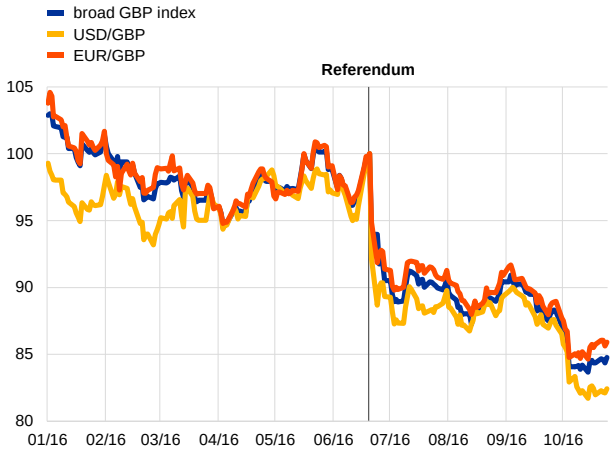


Sources: Bank of England (Agents' Survey), British Chambers of Commerce and Office for National Statistics.
Notes: GFCF stands for gross fixed capital formation. The survey indicators were constructed by aggregating the indices for services and manufacturing, using value added weights. The Agents' Survey is based on monthly data up to August 2016.

Chart C

Exchange rates

(23 June 2016=100, decrease=depreciation of GBP)



Source: ECB.

Other financial markets have weathered the rise in uncertainty relatively well. Stock markets have recovered from their abrupt decline in the days following the referendum. Yields on gilts and private bonds stand below their pre-referendum levels, although they increased somewhat on the back of the above-mentioned political announcements in early October. In August the Bank of England cut Bank Rate by 25 basis points to 0.25%, expanded its asset purchase programme and launched a Term Funding Scheme to support the interest rate pass-through to the economy. Furthermore, the new Chancellor of the Exchequer has abandoned the objective of achieving a fiscal surplus by 2019-20 and stated the government's readiness to reset fiscal policy if needed.

Looking ahead, economic activity is generally expected to slow down. Recent forecasts for real GDP growth have been revised down significantly since the referendum (see Table A). These projections entail a marked economic downturn, with real GDP growth in 2017 falling to levels ranging from 0.8% to 1.1%. Indeed, heightened uncertainty is likely to continue to weigh on investment in the future. Moreover, the recent sharp depreciation of the pound sterling (see Chart C) will gradually erode real incomes, dragging down private consumption while supporting net exports. Over the longer run, output growth is generally expected to remain below the path projected before the referendum. This partly reflects the transition to a less open economy (in terms of trade, migration and foreign direct investment), which adversely affects innovation,

competition, specialisation and allocative efficiency, and hence productivity and potential output.

Table

Forecasts for real GDP growth in the United Kingdom

(annual percentage change; percentage point change from pre-referendum forecasts in brackets)

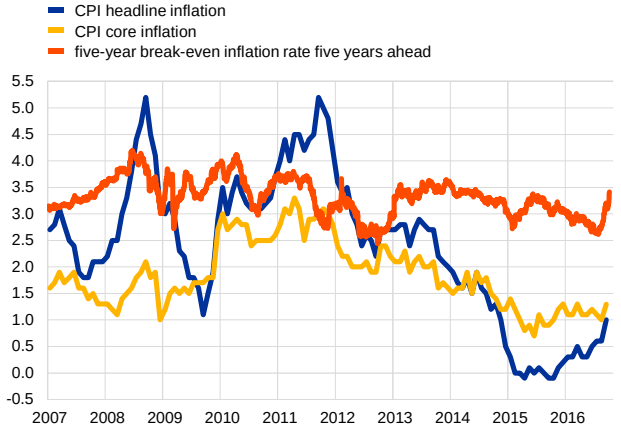
	2016	2017	2018	Latest	Pre-referendum
Bank of England	2.0 (=)	0.8 (-1.5)	1.8 (-0.5)	August 2016	June 2016
International Monetary Fund	1.8 (-0.1)	1.1 (-1.2)	1.7 (-0.6)	October 2016	April 2016
European Commission	1.6 (-0.2)	1.1 (-0.8)	n.a.	July 2016	May 2016

Sources: Bank of England, International Monetary Fund and European Commission.

Chart D

Inflation developments

(year-on-year percentage changes)



Sources: ECB and Office for National Statistics.

While inflation currently stands at low levels, it is expected to rise in the near term. In September annual consumer price inflation increased to 1%, still below the Bank of England's target of 2% (see Chart D). However, indicators of pipeline price pressures, such as the PMI indicator for input prices, have increased over recent months, along with import prices. The pipeline price pressures mainly reflect the sharp depreciation of the pound sterling over recent months. Market-based inflation expectations have also edged up.

Turning to the euro area economy, recent data releases have overall shown resilience and a limited impact of the UK referendum so far. Measures of policy uncertainty in the euro area have declined in recent months and the euro area Economic Sentiment Indicator and the PMI, which declined in August, recovered in September and October.

Looking ahead, adverse medium-term spillover effects to the euro area cannot be excluded. The aggregate impact will critically depend on future euro area trade developments with the United Kingdom and third country spillovers.[3] The impact could vary across euro area countries, for example as a result of differences with regard to the importance of the pound sterling in the economies' effective exchange rates and related to their trade linkages with the United Kingdom. At the same time, activity in the euro area could possibly be stimulated, for instance by the potential relocation of financial services or increased foreign direct investment flows in the euro area redirected from the United Kingdom.

[3] See also the box entitled "Impact on the euro area economic outlook of the outcome of the UK referendum on EU membership" in the September 2016 ECB staff macroeconomic projections for the euro area.

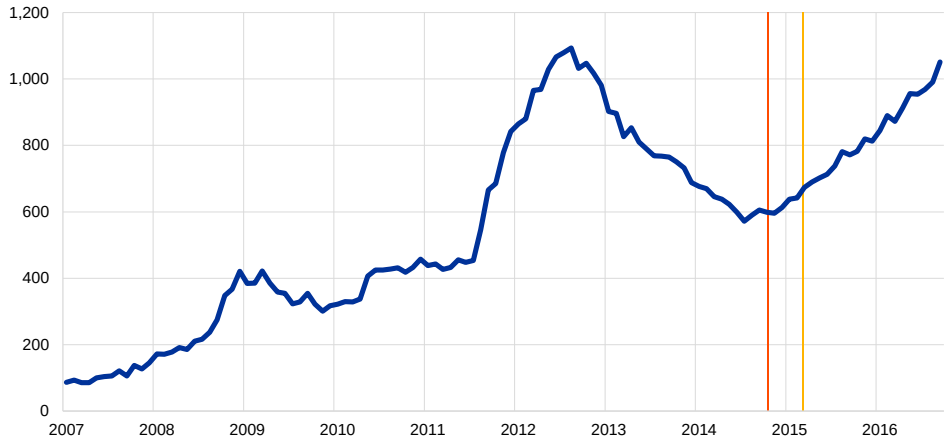
2 TARGET balances and the asset purchase programme

TARGET balances have seen renewed increases since the launch of the Eurosystem's asset purchase programme (APP; see Chart A).[4] TARGET balances are the claims and liabilities of euro area national central banks (NCBs) vis-à-vis the ECB that result from cross-border payments settled in central bank money.[5] Each NCB has either a positive balance (i.e. a claim in TARGET) or a negative balance (i.e. a liability in TARGET). When a country's banking sector receives a cross-border inflow of central bank money, its claim increases or its liability decreases; cross-border outflows have the opposite effect. The total TARGET balance, which is the sum of all positive balances,[6] is only affected when central bank money flows between countries with positive and negative balances.[7] The launch of the APP has led to a rise in cross-border payments by purchasing central banks, which has caused renewed increases in the total TARGET balance.

Chart A

Total TARGET balance

(EUR billions; end-of-month data)



Source: ECB.
Notes: The total TARGET balance is the sum of all positive TARGET balances. The red and yellow vertical lines denote the commencement of purchases under the APP and the PSPP respectively.

Cross-border APP transactions are common owing to the integrated nature of euro area financial markets and give rise to changes in TARGET balances. Securities transactions are not limited by national borders under the APP, with

4 "TARGET" stands for "Trans-European Automated Real-time Gross settlement Express Transfer system". In May 2008, TARGET2 fully replaced the original TARGET system as the real-time gross settlement system owned and operated by the Eurosystem. In the interests of readability, however, the term "TARGET balances" is used here to describe the balances accumulated by central banks in both of those systems, and the TARGET2 payment system is also referred to as "TARGET".

5 For more details, see the box entitled "Publication of TARGET balances", *Economic Bulletin*, Issue 6, ECB, 2015.

6 This is equal in magnitude to the sum of all negative balances. Total claims and liabilities sum to zero, since all obligations resulting from activity in TARGET are owed by and to participants in the system.

7 The total TARGET balance increases if central bank money flows from a country with a liability to a country with a claim, and it decreases if that money flows in the opposite direction. By contrast, flows between two countries with claims (or two countries with liabilities) change the composition, but not the value, of the total TARGET balance.

central banks purchasing securities from a wide range of counterparties located across the euro area and beyond. When a central bank purchases securities, it makes a payment in central bank money to the selling counterparty at the time of settlement, receiving the security in exchange.[8] In the case of a cross-border transaction,[9] that liquidity flow affects the TARGET balances of the sending and receiving NCBs and may potentially alter the total TARGET balance. Consequently, the location of the TARGET accounts used by APP counterparties to receive payment for securities determines the impact that asset purchases have on TARGET balances immediately following the purchase.[10]

Asset purchases from counterparties located in a different country from the purchasing central bank can directly affect TARGET balances. Counterparties whose NCBs are connected to TARGET use their accounts at those NCBs,[11] while counterparties located elsewhere can use an account at a correspondent bank with access to TARGET.[12] Banks based outside the euro area tend to make payments in TARGET via branches or correspondent banks in countries with claims in TARGET, such as Germany or the Netherlands.[13] It follows that when an NCB purchases securities from a non-domestic counterparty, whether it is located in another euro area country or outside the euro area, the purchase is likely to give rise to cross-border flows of central bank money.[14]

A very large majority of APP purchases involve counterparties located in a different country from the purchasing central bank. In volume terms, around 80% of all APP purchases have involved non-domestic counterparties.[15] Furthermore, around 50% of APP purchases have involved sellers resident outside the euro area. This has given rise to substantial cross-border flows of central bank money, affecting national TARGET balances and leading to structural inflows of central bank money in countries hosting large numbers of non-resident counterparties (such as Germany).

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8 The selling counterparty may not necessarily be the legal owner of the security. Counterparties can also act as intermediaries, holding securities and managing transactions on behalf of owners.

9 This is defined as a transaction where money is credited to an account held by the seller at a central bank other than the purchasing NCB.

10 Settlement can take place in the TARGET account used by the selling counterparty or the TARGET account of a custodian bank or central securities depository. The analysis in this box is based on the assumption that liquidity from APP purchases flows to the TARGET account used by the counterparty. This is a simplifying hypothesis adopted in order to simulate liquidity distribution resulting directly from purchases.

11 This includes euro area-resident branches of banking groups headquartered outside the euro area. Furthermore, five non-euro area countries currently participate in TARGET: Bulgaria, Denmark, Croatia, Poland and Romania.

12 Banks with branches that are in the European Economic Area, but outside the euro area, can also hold an account at a Eurosystem NCB as a direct participant in TARGET.

13 For a more detailed discussion on the subject of non-euro area banks with accounts at Eurosystem NCBs, see "The impact of Eurosystem securities purchases on the TARGET2 balances", *Monthly Report*, Deutsche Bundesbank, March 2016. The locations of participation in TARGET by non-euro area banks typically reflect historical relationships with euro area branches or correspondent banks, and have remained largely unchanged since the TARGET2 payment system was set up in 2007/08.

14 The ECB also purchases securities under the APP, which are recorded as flows from the ECB to the sellers' NCBs. As a result, the ECB's liability in TARGET has increased since the launch of the APP.

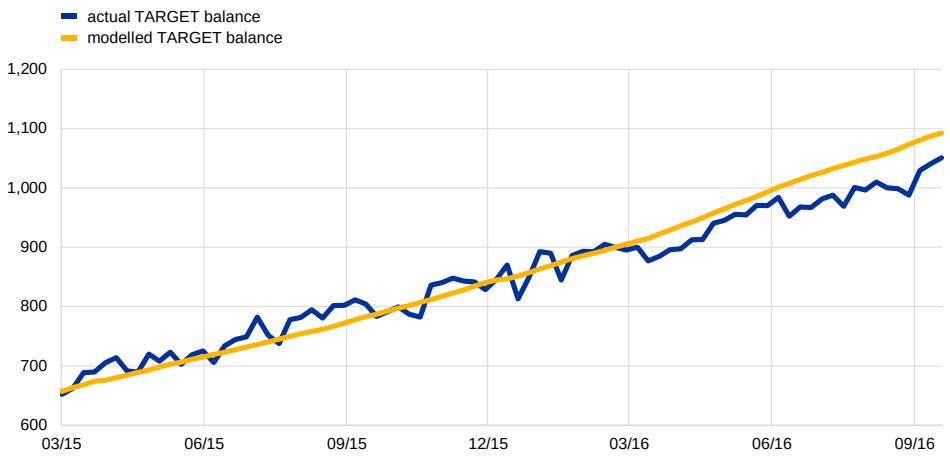
15 In this context, "non-domestic" refers to a counterparty that is located in a country which is different from that of the purchasing NCB. This includes counterparties located in other euro area countries.

Analysis of data on individual APP transactions indicates that the upward trend observed in TARGET balances largely reflects cross-border liquidity flows arising from the settlement of APP purchases. Chart B shows the evolution of the total TARGET balance since the launch of the public sector purchase programme (PSPP) in March 2015, which has led to a sizeable increase in the amount of liquidity being injected via the APP. It also reports a modelled balance, showing how the total TARGET balance would have evolved if the only cross-border payments in the system were the liquidity flows from central banks to counterparties' TARGET accounts resulting from APP purchases. The total TARGET balance has risen in line with the modelled balance. Although subsequent flows of APP liquidity can further affect TARGET balances, the first-round liquidity flows have provided a good approximation to date of the impact of the APP on the total TARGET balance. An analysis of subsequent liquidity flows falls outside the scope of this box.

Chart B

Total TARGET balance since the launch of the PSPP and a modelled balance

(EUR billions; weekly data)



Sources: ECB, TARGET2 and ECB staff calculations.
Notes: The modelled TARGET balance is calculated using APP transaction data and information on the location of APP counterparties' TARGET accounts. The modelled balance shows how the total TARGET balance would have evolved since March 2015 if the only cross-border payments in the system were the liquidity flows from central banks to counterparties' TARGET accounts resulting from APP purchases.

In contrast to previous periods of rising TARGET balances, changes in the TARGET balances immediately after APP purchases are a direct consequence of the implementation of monetary policy decisions, rather than a symptom of renewed stress in financial markets. TARGET balances increased from mid-2007 to late 2008, and again from mid-2011 to mid-2012. The increases in TARGET balances during those periods were rooted in the market stress and fragmentation that resulted from the financial and sovereign debt crises.[16] As banks lost access to market-based funding, they replaced private sources of funding with central bank liquidity obtained from their NCBs through repurchase operations.[17] Those

16 For more information on the evolution of TARGET balances and the implementation of monetary policy during different phases of the financial crisis, see Peter Praet's remarks at BNY Mellon's 20th anniversary dinner in Brussels on 15 September 2016.

17 For a more detailed discussion on this subject, see the article entitled "TARGET balances and monetary policy operations", *Monthly Bulletin*, ECB, May 2013.

repurchase operations had no immediate impact on TARGET balances, as they were settled domestically,[18] but the subsequent redistribution of liquidity, influenced by market stress and fragmentation, did have an impact. The link between the implementation of monetary policy decisions and TARGET balances was therefore indirect. With the APP, however, there is a direct link, since central banks are initiating cross-border payments in order to pay for securities purchased under the programme. The ensuing upward trend in TARGET balances largely reflects the settlement of these cross-border transactions by central banks and, therefore, does not signal renewed stress in financial markets.

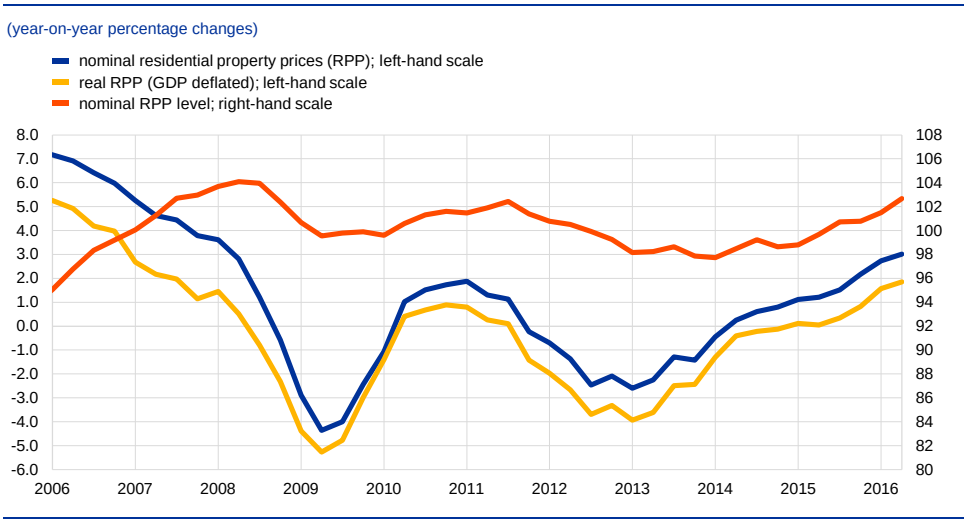
[18] When reserves are injected via repurchase agreements, the NCB records a liability in the form of an increase in current accounts of commercial banks and records an asset in the form of lending operations.

3 Recent developments in euro area residential property prices

The upturn in euro area house prices has continued in the first half of this year. According to the ECB's aggregate residential property price indicator, the annual growth rate in euro area house prices was 3.0% in the second quarter of 2016, up from 2.7% in the previous quarter and 2.2% in the last quarter of 2015.[19] This points to a continuation of the upturn that started in early 2014 after the house price index reached a low (see Chart A). The annual growth rates are now back to the longer-term average.[20] Measured in real terms – here adjusting house prices with the GDP deflator as a measure of underlying inflation – annual real house price growth has in fact moved above longer-term averages.

Chart A

Euro area nominal and real residential property prices



Source: ECB calculations based on national data.
Note: The latest observations are for the second quarter of 2016.

Developments in euro area residential property prices are still heterogeneous across countries, but the differences are narrowing. The dispersion appears to have diminished over time, reflecting the fading-out of adjustments and corrections in housing markets in a number of countries after the 2007-08 financial crisis. This narrowing dispersion not only reflects the fact that fewer countries have recorded extreme high or low growth rates than previously, but also that the core of the distribution of residential property price growth rates is more compact (see Chart B). Nevertheless, the upturn in house prices has been taking place at different growth rates across countries. Looking beyond shorter-term volatility in house price growth, countries that have been at the upper end of the spectrum of average annual growth rates in nominal house prices since early 2014 include Germany, Estonia, Ireland,

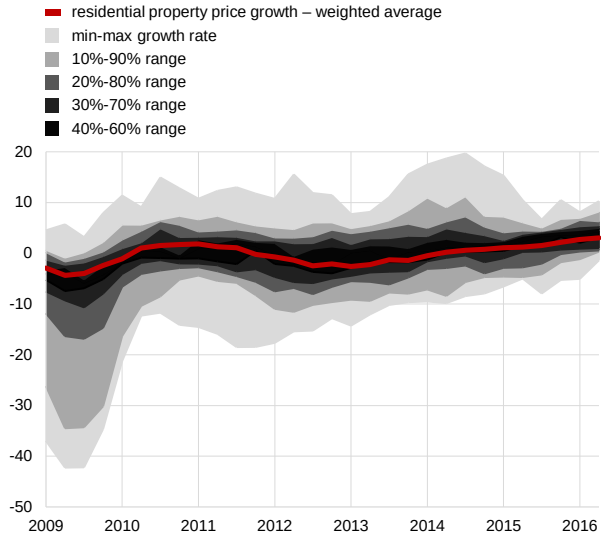
[19] According to Eurostat's House Price Index (HPI) released in October, house prices in the euro area increased by 2.9% year on year in the second quarter of 2016, decelerating slightly from 3.1% in the first quarter. While Eurostat's HPI is broadly similar to the ECB's residential property price indicator, the HPI refers to different country indicators for some euro area countries.

[20] The average has been calculated over the period since 1999.

Luxembourg, Austria and Portugal (see Chart C). Overall, this upturn is currently supported by strong growth both in countries that did not experience a collapse in the housing market in the aftermath of the financial crisis (e.g. Germany, Austria) and in countries that did suffer from such a bust but that have in the meantime seen corrections that facilitate a recovery going forward (e.g. Ireland, Spain, Latvia and Lithuania). In Greece, Italy and Cyprus, however, average growth has remained negative even after 2014.

Chart B

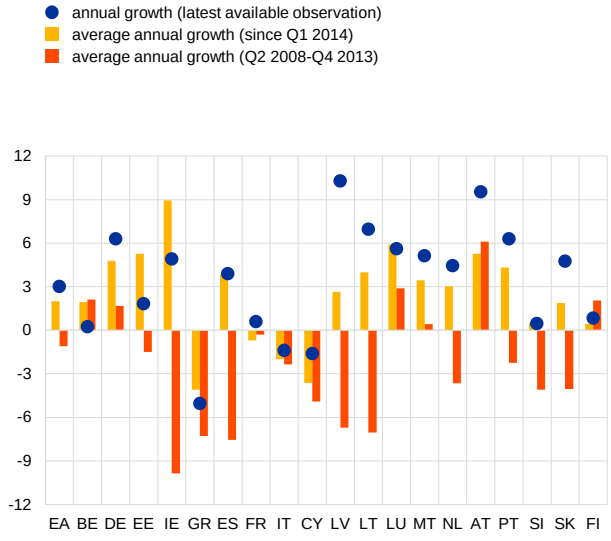
Cross-country dispersion of euro area residential property price growth rates over time



Source: ECB calculations based on national data.
Note: Shaded areas denote the band of house price growth rates by country in a given growth decile. The deciles are based on the house price growth rates in the respective quarter. The latest observations are for the second quarter of 2016 for all countries apart from Greece, Cyprus and Lithuania, where they are for the first quarter of 2016.

Chart C

Residential property price growth rates across euro area countries



Source: ECB calculations based on national data.
Note: The latest observations are for the second quarter of 2016 for all countries apart from Greece, Cyprus and Lithuania, where they are for the first quarter of 2016. Euro area (EA) is aggregated based on GDP weights.

The current recovery has lasted for just over two years and so is still at a fairly early stage. The average duration of major upturns in historical data is close to nine years.[21] Upturns in house price cycles have often come to an end because expansions developed into outright booms with unsustainable valuations. Valuation measures applied to euro area aggregate data suggest that prices are currently broadly in line with fundamentals and show no signs of the excess seen in 2007, i.e. at the end of the previous major upturn (see Chart D).[22] However, this aggregate perspective does not rule out excessive valuations and corresponding vulnerabilities

21 This calculation applies a standard methodology to detect peaks and troughs in real house prices. The peak/trough identification uses the "BBQ" algorithm of Harding, D. and Pagan, A., "Dissecting the cycle: a methodological investigation", *Journal of Monetary Economics*, Vol. 49, Issue 2, 2002, pp. 365-381. See also the article entitled "The state of the house price cycle in the euro area", *Economic Bulletin*, Issue 6, ECB, 2015.

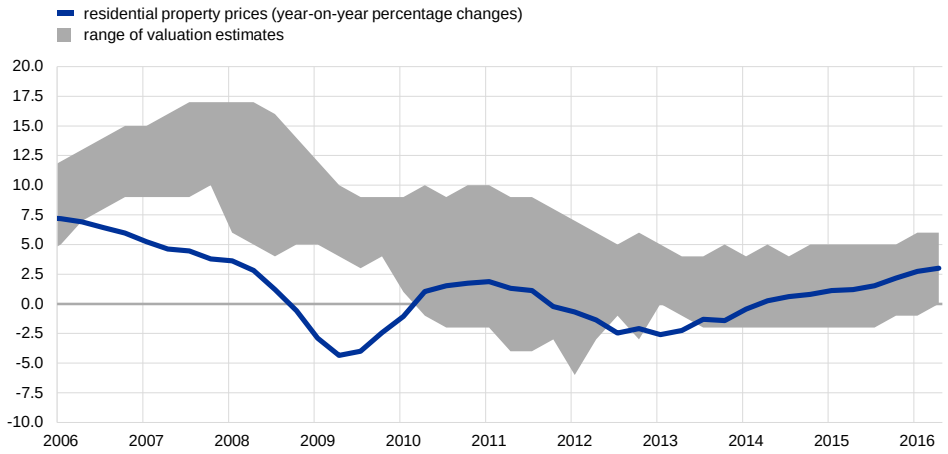
22 Estimates of valuations tend to be surrounded by considerable uncertainty and large differences across approaches. For further details see the box entitled "Tools for detecting a possible misalignment of residential property prices from fundamentals", *Financial Stability Review*, ECB, June 2011, and the box entitled "A model-based valuation metric for residential property markets", *Financial Stability Review*, ECB, November 2015.

at the country or regional level, especially when house price dynamics are combined with strong mortgage growth and high leverage. In the context of the current low-yield environment and the related ongoing search for yield, such vulnerabilities should be carefully monitored.[23]

Chart D

Valuation estimates of residential property prices

(year-on-year percentage changes; range of percentage deviations from valuations across different valuation estimates)



Source: ECB calculations based on national data.
Note: Estimates are based on four different valuation methods: the price-to-rent ratio, the price-to-income ratio, an asset pricing approach and an inverted demand model.

[23] See also the *Financial Stability Review*, ECB, May 2016.

Articles

1 Exchange rate pass-through into euro area inflation

Exchange rate movements are one factor affecting inflation in the euro area. The exchange rate can influence euro area inflation both directly via the price of imported final consumer goods, and indirectly via the price of imported intermediate goods used in euro area domestic production. Empirical studies have shown that exchange rates have a stronger and more immediate effect on import prices than on final consumer prices. Moreover, the size and speed of the exchange rate effects differ across product categories. The macroeconomic environment, factors affecting pricing decisions at the firm level and the shocks driving the exchange rate movements determine the strength of the exchange rate effects on inflation. Over time, the size of exchange rate pass-through is documented to have declined in the euro area and other advanced economies. This decline can be attributed to several factors, including the low inflation environment prevailing in many economies over the past two decades and the changing composition of imports.

Introduction

The degree to which exchange rate changes are transmitted to import prices and subsequently to final consumer prices is commonly referred to as the "exchange rate pass-through". Understanding the role of exchange rates in shaping economic outcomes is important from a monetary policy perspective. In particular, assessing the degree of pass-through of exchange rate movements to import or domestic prices is essential for monitoring and forecasting domestic inflation.

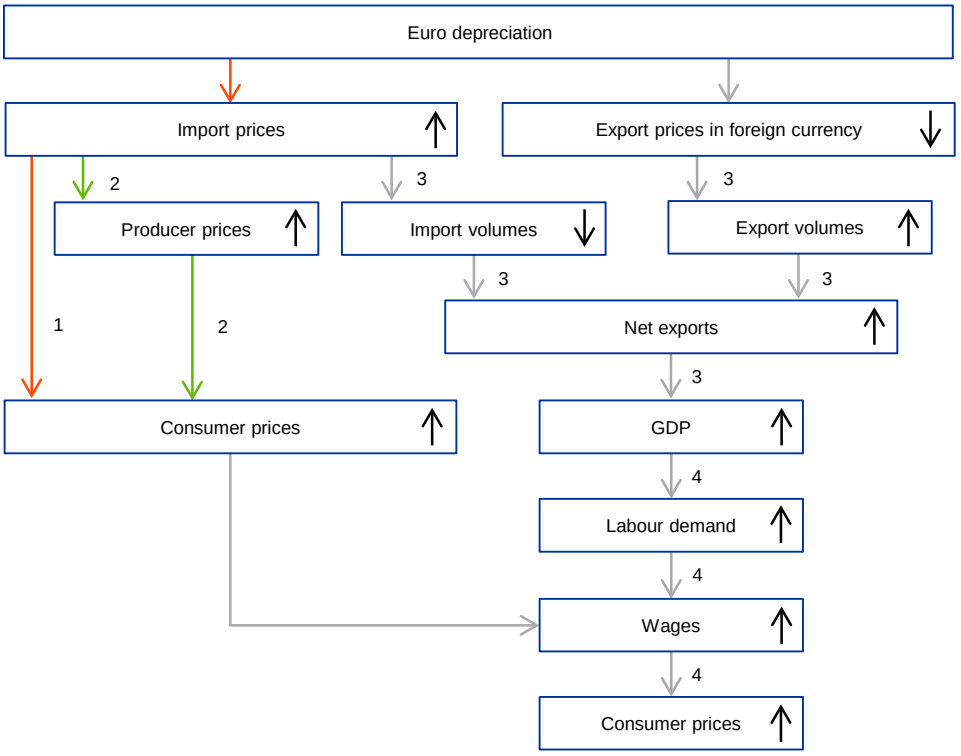
Exchange rate changes are transmitted to HICP inflation via a number of channels, both direct and indirect. Exchange rate movements are passed on directly to consumer prices via their impact on the import prices of final consumer goods. Following an exchange rate depreciation, imported final consumer goods become more expensive ("first stage pass-through"), pushing up overall HICP inflation. Figure 1 provides an overview of the direct and indirect effects of a depreciation in the euro nominal effective exchange rate (NEER). The direct channel is depicted by the arrow labelled "1", which joins import prices directly with consumer prices and depends on the pricing decisions of foreign producers exporting to the euro area.

Indirect effects, which can take longer to trickle through the economy, work via production costs and real channels. The euro depreciation translates into higher production costs due to more expensive imported inputs, and these feed through the different stages of domestic intermediate and final goods production ("second stage pass-through"), with an inflationary impact on domestic consumer prices. This channel is depicted by the arrows labelled "2", which connect import prices with

producer prices and then consumer prices, and depends, inter alia, on the pricing behaviour of domestic firms. The latter might pass on the increase in costs resulting from the euro depreciation in order to keep mark-ups and profits constant, or they might keep prices constant and accept lower profits, thus dampening the pass-through to final consumer prices.

As regards the real channels, the euro depreciation decreases euro area export prices denominated in foreign currency and increases import prices in euro. This, in turn, leads to an increase in net exports and higher GDP growth (indicated by the arrows labelled "3"). As the increase in real GDP growth leads to higher labour demand and higher wages, this puts upward pressure on consumer prices (indicated by the arrows labelled "4"). These indirect effects can be reinforced by expectations of a positive loop of future higher growth and inflation.

Figure 1
Schematic overview of direct and indirect effects of a depreciation in the NEER



Note: The arrows connecting the boxes indicate causality, while the arrows inside the boxes refer to the direction of movement of the variable.

The composition of the consumption basket is also relevant for understanding how exchange rate changes affect HICP inflation. The harmonised index of consumer prices (HICP) is a weighted average of a representative basket of goods and services consumed by households in the euro area. This basket covers a wide range of items, from food and clothing to accommodation services, which have different shares of imported inputs in their production structure.[24] The aggregate

[24] An overview of the product categories included in the HICP basket is available on the ECB's website.

effect depends on the composition of the consumption basket, which can change over time.

Exchange rate pass-through also depends on what shocks drive exchange rates and inflation at each point in time. The exchange rate pass-through is usually understood as a correlation between exchange rate changes and inflation, without any meaningful economic interpretation. However, from an economic point of view, the pass-through is related to the nature of the shocks driving the exchange rate and prices, as this is one of the factors that affect how firms react and adjust their prices.

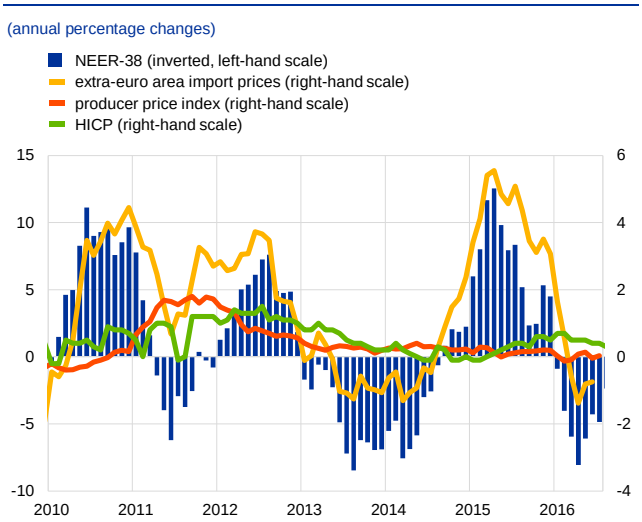
The article is structured as follows: The next section illustrates the responsiveness of various prices to exchange rate changes and shows how sequences of appreciations and depreciations highly complicate the dynamics of the exchange rate-price relation. The third section discusses determinants of exchange rate pass-through in the theoretical literature and their empirical relevance for the euro area. The fourth section presents estimates of pass-through to import and consumer prices in the euro area across various studies and discusses the importance of looking at underlying macroeconomic shocks when assessing exchange rate impacts. The last section concludes.

Exchange rate movements and inflation along the pricing chain

Changes in the exchange rate of the euro against its trading partners are reflected more quickly and more sizeably in movements in import price inflation, and less so in producer and consumer price inflation. The nominal effective exchange rate of the euro against 38 of its main trading partners (NEER-38) has depreciated by around 4% since the second quarter of 2014 (i.e. when the period of depreciation started). This depreciation, the combined result of an initial 10% depreciation (up to mid-2015) and a smaller subsequent appreciation, put substantial upward pressure on import prices for consumer goods excluding energy and food. The price of these goods increased by roughly 3.5% over the same period and has, in recent years, displayed a strong contemporaneous correlation with the NEER-38 (see Chart 1). Recent movements in the NEER-38 have also lifted domestic inflation somewhat. The effects of exchange rate developments on inflation are expected to remain positive for a while longer because changes in the exchange rate take around two years to fully pass through (see Box 1 in this article).

Chart 1

Prices and the exchange rate in the euro area



Sources: Eurostat, ECB and ECB staff calculations.
Note: The latest observation is for June 2016 for import prices of non-food and non-energy consumer goods, and July 2016 for the NEER-38, producer prices and the HICP of non-energy industrial goods.

The strong correlation of euro exchange rate changes with import price inflation reflects the direct effects of movements in the exchange rate, while the weaker relation with producer prices and HICP reflects indirect effects that take time to materialise, as well as dampening effects along the pricing chain. Producer price inflation is expected to react more and faster than consumer price inflation after an exchange rate change. An exchange rate depreciation will directly affect the price of imported goods, both intermediate and final. More expensive imported final goods put direct upward pressure on HICP inflation (indicated by the arrow labelled "1" in Figure 1).[25] However, a larger share of the imported goods is used as inputs by euro area producers than is directly consumed. Euro area producers combine the imported inputs with domestic inputs to deliver domestic intermediate and final consumption goods (arrows labelled "2"). They also charge a mark-up in the final price of the goods they sell. This indirect effect on the HICP via domestic production takes more time to materialise compared with the effect on producer price inflation. Besides the exchange rate movements, other factors play an important role in driving domestic inflation, such as the amount of slack in the economy.

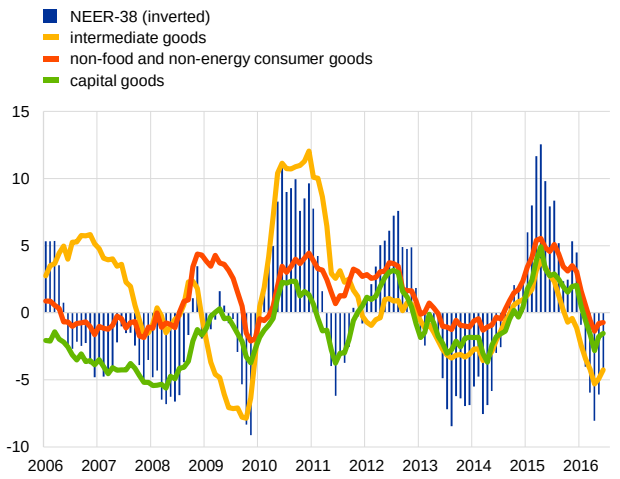
Simple correlations reveal that import prices tend to be more volatile and more closely related to exchange rate movements than producer prices (see Charts 2 and 3). The correlation between the annual growth rates of the NEER-38 and import prices across product categories is quite strong, ranging from 0.6 to 0.8 over the past ten years. Where domestic producer price indices are concerned, the correlation with the exchange rate is strongest for the producer price index (PPI) of intermediate goods, and weaker for capital and consumer goods. For the period 1997-2006, the correlation between the annual growth rates of the NEER-38 and the producer prices for intermediate goods is 0.21, whereas it is almost zero for consumer and capital goods.

[25] The size of the direct effect is small, as the imported goods used directly for consumption represent around 15% of the overall HICP (5% from the non-energy industrial goods component and almost 10% from energy).

Chart 2

Extra-euro area import prices for different categories of goods

(annual percentage changes)

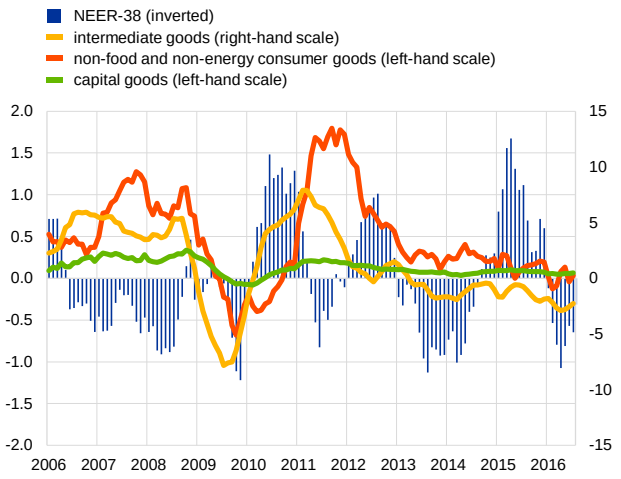


Sources: Eurostat, ECB and ECB staff calculations.
Note: The latest observation is for June 2016.

Chart 3

Domestic producer prices for different categories of goods

(annual percentage changes)



Sources: Eurostat, ECB and ECB staff calculations.
Note: The latest observation is for July 2016.

The empirical literature has shown that the observed relationship between the exchange rate and producer prices depends on sector and product characteristics. Intermediate goods tend to be more homogeneous, with more elastic demand and a higher share of imported inputs than capital goods. Homogeneous products can easily be substituted if they become relatively more expensive and this implicit higher degree of competition means that their price tends to be common across markets. As a consequence, exchange rate changes are more directly reflected in euro prices for intermediate goods. In the case of capital goods, exchange rate pressures feeding into PPI inflation can be expected to be negligible, as their cost is not immediately reflected in the prices set by firms but is amortised over several time periods. Finally, the pass-through to the PPI for consumer goods is found to lie between that for intermediate and capital goods. Consumer goods markets tend to be less competitive than those for intermediates because consumer goods are less homogeneous, for example because of the importance of branding. Furthermore, pass-through can differ between sub-categories of consumer goods, as these contain different shares of imported inputs. For instance, the item “jewellery and watches” embodies a larger share of imported inputs (gold) in production compared with the item “newspapers”, which depends more on domestic production costs. This translates into a higher pass-through for “jewellery and watches” compared with “newspapers”.[26]

The long time lags involved in the transmission of an exchange rate change to HICP inflation via the pricing chain imply that, at each point in time, the net effect reflects a combination of lagged effects from past exchange rate movements. For instance, the recent impact of the exchange rate on inflation

[26] For more details, see the section entitled “Determinants of exchange rate pass-through”.

reflects a combination of the boosting effects from the strong euro depreciation in 2014/15, and the dampening effects of the recent appreciation as illustrated in Box 1 of this article. This dynamic overlap of the effects of past and current exchange rate movements makes it difficult to quantify the pass-through to HICP inflation.

Box 1

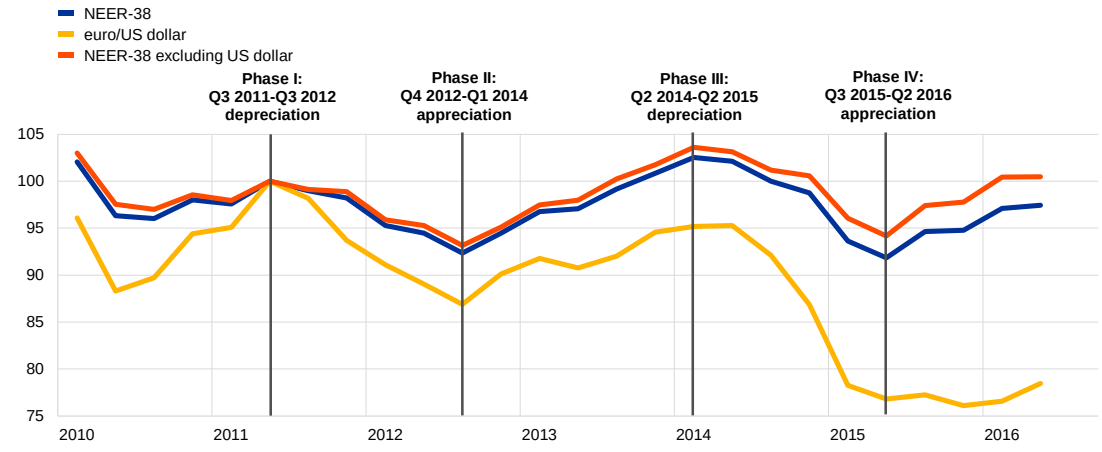
Overlapping dynamics of euro/US dollar exchange rate changes from 2010-16 and the effects on HICP inflation

Given delays in pass-through, volatile exchange rate movements generate overlapping lagged upward and downward impacts. This box presents a mechanical estimate of the impact of this dynamic overlap on inflation, based on the euro/US dollar exchange rate developments of the last six years. Looking at quarterly averages since 2011, it is possible to identify four clear phases of appreciation and depreciation in the euro NEER, which were mainly driven by the US dollar (see Chart A). The euro/US dollar exchange rate is particularly relevant for euro area inflation compared with other currencies because commodity prices are set in dollars. As a consequence, large swings in the euro/US dollar exchange rate affect headline inflation directly via imports of energy and other commodities. This box therefore focuses on the overlapping effects of successive waves of appreciation and depreciation of the euro against the US dollar.

Chart A

NEER-38 and euro/US dollar exchange rate changes

(index Q2 2011 = 100)



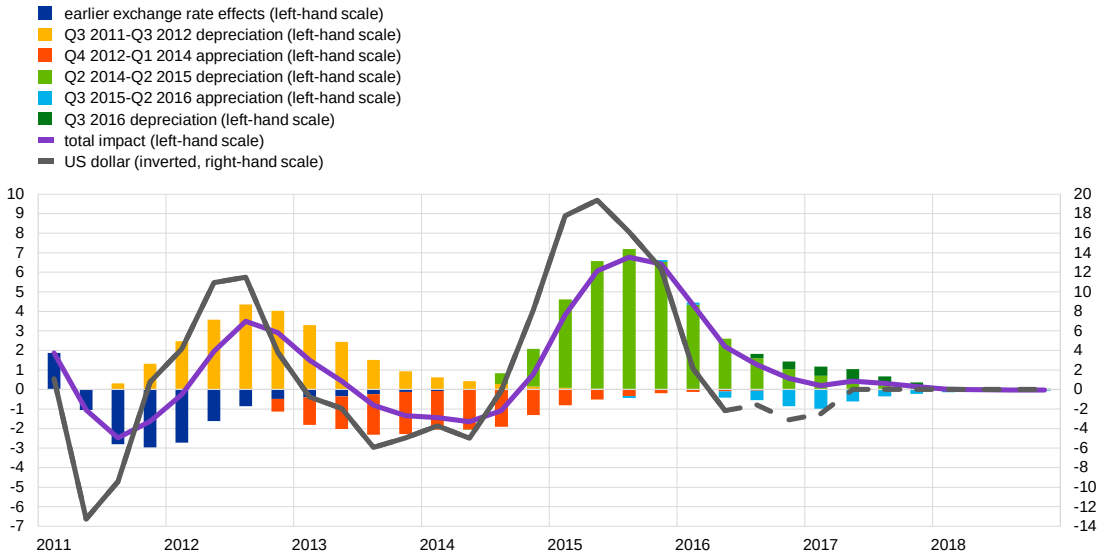
Sources: ECB and ECB staff calculations.

From mid-2011 to the third quarter of 2012, the euro depreciated by around 13% against the US dollar and by around 7.6% in nominal effective terms vis-à-vis 38 trading partners (NEER-38). Subsequently, the euro appreciated by 9.5% against the US dollar, from the end of 2012 to the first quarter of 2014 (11% in NEER-38 terms). After peaking in the period between the second quarter of 2014 and mid-2015, it depreciated by 19% against the US dollar (-10.4% in NEER-38 terms). That decline was partially reabsorbed from mid-2015 to mid-2016 as the euro appreciated again by around 2% against the US dollar, and even more strongly, by 6%, in effective terms. As a result, the euro/US dollar exchange rate, which has a weight of around 12% in the NEER-38, has contributed almost entirely to the lower level of the NEER-38 so far in the third quarter of 2016 compared with five years earlier.

Chart B

Exchange rate pass-through of US dollar to import prices

(percentage points)

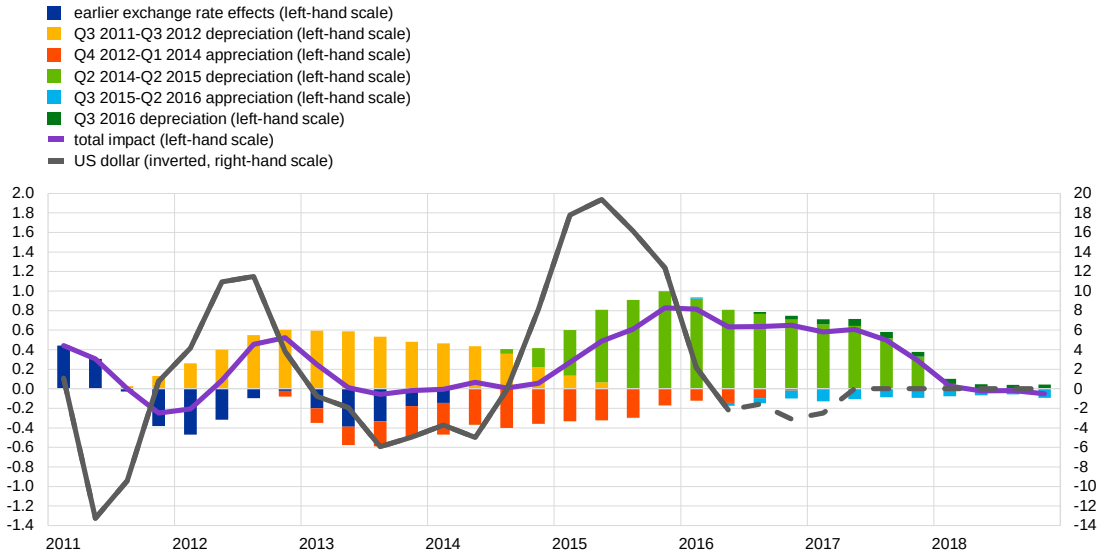


Sources: Eurostat, ECB and ECB staff calculations.
Notes: Calculations are based on an updated version of the model presented in ECB Working Paper No 243. The latest observation for the US dollar for the third quarter of 2016 is 28 August. The US dollar is assumed to remain at the same level recorded for the third quarter of 2016 until 2018.

Chart C

Exchange rate pass-through of US dollar to HICP inflation

(percentage points)



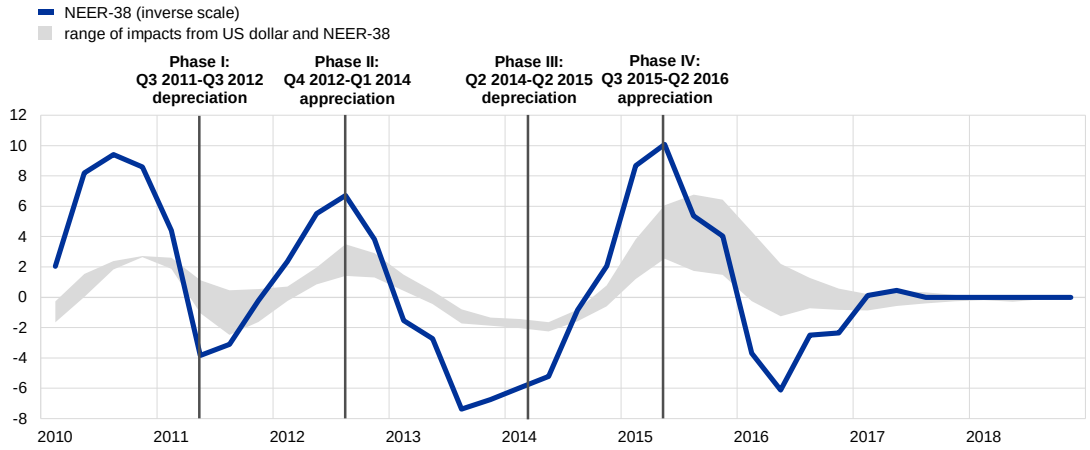
Sources: Eurostat, ECB and ECB staff calculations.
Notes: Calculations are based on an updated version of the model presented in ECB Working Paper No 243. The latest observation for the US dollar for the third quarter of 2016 is 28 August. The US dollar is assumed to remain at the same level recorded for the third quarter of 2016 until 2018.

The compound effects of successive euro/US dollar exchange rate movements can be estimated based on the results of the model presented in Hahn[27], modified by substituting the NEER with the euro/US dollar exchange rate. HICP inflation continues to be positively affected by the large depreciation of the euro against the US dollar that began in 2014. According to this mechanical calculation, the contribution of the euro/US dollar exchange rate to headline inflation reached an initial peak of 0.5 percentage point in the last quarter of 2012 as a result of the first depreciation phase mentioned above. The following appreciation phase led to an overall neutral impact in 2013 and 2014, which was offset in 2015 and 2016 by the 19% depreciation that took place between the second half of 2014 and the first half of 2015. The lagged effect of this depreciation phase is also expected to positively affect inflation in 2017. With the fading-out of the past depreciation, if the euro/US dollar exchange rate remains constant at the level recorded so far for the third quarter of 2016, it should stop supporting inflation at the beginning of 2018.

Chart D

Exchange rate pass-through to euro area import prices

(percentage points)



Sources: Eurostat, ECB and ECB staff calculations.

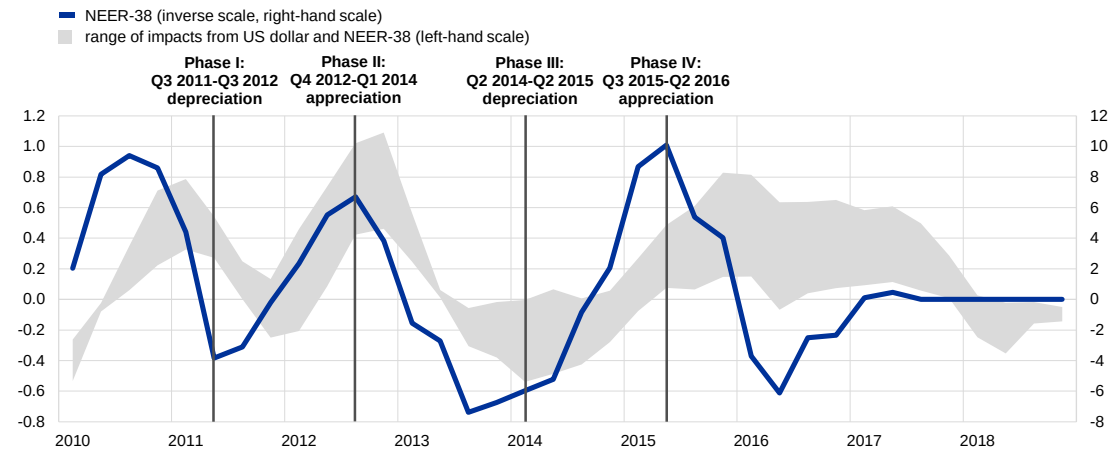
The final effect of the exchange rate movements on import prices and HICP inflation depends on both the exchange rate index and the model used. As can be observed in Charts D and E, there is a wide range of estimates of exchange rate pass-through to import prices and euro area inflation across models, indicating some degree of uncertainty in pinning down an exact number for this estimate.

[27] Hahn, E., "Pass-through of external shocks to euro area inflation", *Working Paper Series*, No 243, ECB, July 2003.

Chart E

Exchange rate pass-through to euro area HICP

(percentage points)



Sources: Eurostat, ECB and ECB staff calculations.

Determinants of exchange rate pass-through

There are many reasons why exchange rate pass-through is incomplete, i.e. less than proportional, at the level of import prices and, to a greater extent, at the level of consumer prices. Some of these reasons relate to the microeconomic structure and behaviour of firms while others concern the general macroeconomic environment. Exporting firms' decisions as to how they price their exports to the euro area are affected by structural conditions, such as the currency in which they invoice, the degree of competition in the euro area market and the costs resulting from changing prices. Macroeconomic factors involve changes in the degree of openness, the structure of imports and the expected persistence of the exchange rate change. Some sources of incomplete pass-through correspond to the import price stage; others can be traced to the behaviour of firms at successive stages in the pricing chain.

At the import price stage, the exchange rate pass-through is related to the degree of competition across industries. Following a euro depreciation, foreign products mechanically become relatively more expensive in euro. This is referred to as producer currency pricing and corresponds to full pass-through to import prices in euro. In a competitive market, where the number of domestic and foreign producers is relatively high, foreign firms tend to lose market share in the euro area following a depreciation of the euro; to retain this share, they need to keep their prices in euro as stable as possible, thus reducing their margins. This can go as far as local currency pricing, i.e. zero pass-through to euro area import prices. In a market with low competition, firms that export to the euro area can more easily adjust their prices in euro and nevertheless keep their market share. Indeed, the theoretical literature has shown that the degree to which firms can adjust their mark-up in response to an exchange rate change depends on (i) their pricing power, which is a function of how easily their product can be substituted with other similar ones, and (ii) the degree of

market concentration, namely the number of firms present in the industry.[28] As a consequence, the greater the capacity for substitution between domestic and imported products and the higher the number of producers servicing the euro area market, the lower the pass-through to import prices in euro. Furthermore, pricing decisions on the part of exporters to the euro area can interact with distribution margins set by euro area local distributors in the supply chain. Regardless of the strength of sensitivity of euro area import prices to exchange rates, if local distributors absorb exchange rate fluctuations in their own margins, consumer prices will experience less pass-through than those at the border.[29]

Empirical research for the euro area has confirmed diverse impacts on prices at the industrial sector level. Differences in exchange rate pass-through can be explained by the import structure, as discussed in Box 2 of this article. Osbat and Wagner[30] report wide ranges of exchange rate pass-through across manufacturing sectors that can be explained by sectoral variables such as import penetration and firm concentration. Campa and Goldberg[31] show that pass-through to import prices is found to be higher in energy and lower in manufacturing across several euro area countries and the United States. Campa et al.[32] also find that exporters price discriminate to a larger extent between markets for manufacturing goods than between those for commodities. Hahn[33] similarly reports that, among the sub-sectors of industry (excluding construction), the exchange rate pass-through is highest in electricity, gas and water supply, as well as in the energy sector. The lowest pass-through is found for capital goods. As mentioned in the previous section, the reason lies with the product characteristics: energy products are more homogeneous, entailing a higher degree of competition, and their price is set in international markets. By contrast, capital goods are less homogeneous and less substitutable, leading to less competition; hence they are priced more locally.

The currency of invoice for imports of goods and services also determines the degree and speed of pass-through and can depend on many structural factors. Foreign producers that export to the euro area might sell their products by charging one common price across all customers in their own currency. Under this scenario, movements in the exchange rate pass directly into euro area import prices and the pass-through is complete. If, instead, foreign producers charge a different price in

28 See Dornbusch, R., "Exchange rates and prices", *The American Economic Review*, Vol. 77, No 1, March 1987, pp. 93-106.

29 See Burstein, A.T., and Gopinath, G., "International prices and exchange rates", *NBER Working Paper Series*, No 18829, February 2013; Burstein, A.T., Neves, J.C. and Rebelo, S., "Distribution costs and real exchange rate dynamics during exchange-rate-based stabilizations", *Journal of Monetary Economics*, Vol. 50, Issue 6, September 2003, pp. 1189-1214; and Campa, J.M. and Goldberg, L.S., "Distribution margins, imported inputs, and the sensitivity of the CPI to exchange rates", *NBER Working Paper Series*, No 12121, March 2006.

30 See Osbat, C. and Wagner, M., "Sectoral exchange rate pass-through in the euro area", ECB, 2006.

31 See Campa, J.M. and Goldberg, L.S., "Pass-through of exchange rates to consumption prices: what has changed and why?", in Ito, T. and Rose, A.K. (eds.), *International Financial Issues in the Pacific Rim: Global Imbalances, Financial Liberalization, and Exchange Rate Policy*, University of Chicago Press, Chicago, 2008, pp. 139-176.

32 Campa, J.M., Goldberg, L.S. and González-Mínguez, J.M., "Exchange-rate pass-through to import prices in the euro area", *NBER Working Paper Series*, No 11632, September 2005.

33 Hahn, E, "The impact of exchange rate shocks on sectoral activity and prices in the euro area", *ECB Working Paper Series*, No 796, August 2007.

each export market, the effect of the exchange rate on import prices in euro may be incomplete. The decision to price imports in producer or local currency depends primarily on the state of local competition.[34] It can also depend on the existence of strategic complementarities, as exporters tend to use the currency of the country that dominates their industry or that their main competitors use.[35] More homogeneous goods, meanwhile, are priced in US dollars.[36]

The role of the euro as a currency of invoice has increased in the 21st century. The introduction of the euro resulted in a larger share of euro area imports denominated in euro; consequently, foreign producers exporting to the euro area have been using the euro (local currency) more actively in their transactions with euro area importers. The expected result would be a lower exchange rate pass-through to domestic euro area prices.[37] Indeed, in 2013, 52% of extra-euro area imports in goods were settled in euro, compared with 49% in 2006; the same figures for extra-euro area imports in services are 62% and 54% respectively.[38] The results presented in Box 2 support the conclusion that Member States with a higher share of extra-euro area imports invoiced in euro experience a lower degree of exchange rate pass-through.

The extent to which firms hedge themselves against exchange rate movements also determines the degree of exchange rate pass-through to import prices. Hedging against exchange rate movements can take place in two ways: one occurs naturally via the increased integration of firms into global value chains and the growing use of imported inputs from various source countries[39]; the other is a specifically financial strategy. Larger firms with access to hedging are more likely to invoice in the importer's currency and pass through the changes in the exchange rate to a lesser extent.[40]

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34 See Bacchetta, P. and van Wincoop, E., "A theory of the currency denomination of international trade", *Journal of International Economics*, Vol. 67, Issue 2, December 2005, pp. 295-319. The authors give prominence to the role of price elasticity of demand.

35 See Goldberg, L.S. and Tille, C., "Vehicle currency use in international trade", *Journal of International Economics*, Vol. 76, Issue 2, December 2008, pp.177-192; Goldberg, L.S. and Tille, C., "Micro, macro, and strategic forces in international trade invoicing", *NBER Working Paper Series*, No 15470, November 2009; Bacchetta, P. and van Wincoop, E., op. cit. ; Gopinath, G., Itskhoki, O. and Rigobon, R., "Currency choice and exchange rate pass-through", *American Economic Review*, Vol. 100, No 1, March 2010, pp. 304-336; Devereux, M.B., Engel, C. and Storgaard, P.E., "Endogenous exchange rate pass-through when nominal prices are set in advance", *Journal of International Economics*, Vol. 63, Issue 2, July 2004, pp. 263-291.

36 See Goldberg, L.S. and Tille, C., "Vehicle currency use in international trade", op. cit.

37 Evidence supporting this hypothesis is provided by Campa, J.M., Goldberg, L.S. and González Mínguez, J.M., ,op. cit. However, there are also forces that might work in the opposite direction: the share of euro area imports as a percentage of GDP has increased enormously since 1970, which could have led to an increase in the exchange rate pass-through over time due to the increased share of imports in consumption.

38 See *The international role of the euro*, ECB, July 2014.

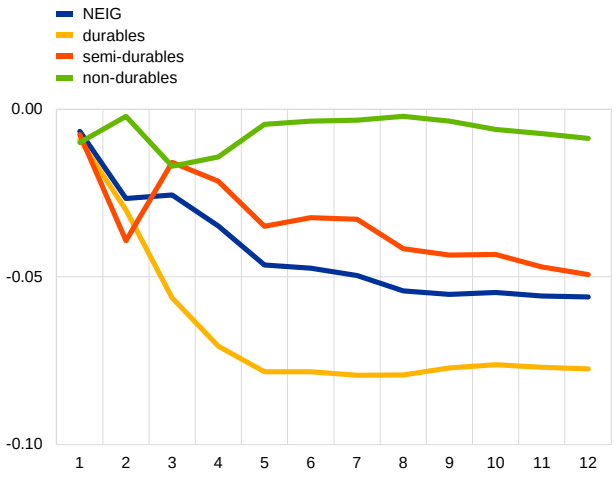
39 See di Mauro, F. and Ronchi, M., *Assessing European competitiveness: the contribution of CompNet research*, ECB, June 2015.

40 Martin, J., and Mejean, I., "Invoicing currency, firm size, and hedging", *CEPII Working Paper*, No 2012-28, 2012.

Chart 4

Impact of a 1% NEER appreciation on NEIG and sub-components

(deviation from baseline level, percentage points)



Sources: Eurostat and ECB staff calculations.
Note: Estimates are based on an amended version of the VAR model by Hahn (see footnote 4).

Focusing on the last stage of the pricing chain, namely consumer prices, pass-through tends to be higher for durable goods and lower for non-durable goods. The impact of an exchange rate change on non-energy industrial goods (NEIG) inflation is, to a large extent, transmitted via the prices of durable NEIG (see Chart 4).[41] In response to a 1% appreciation of the NEER, the inflation rate of durable NEIG is estimated to decline by about 0.08 percentage point. This pass-through is relatively quick, with the full effect expected to materialise after about a year. Semi-durable NEIG prices are affected as well, but these effects are significant only in the short term. The percentage point estimates show a smaller response for semi-durable prices than for durable NEIG prices, with a more protracted pass-through. Semi-durable NEIG prices are estimated to decrease by 0.05 percentage point following a 1% appreciation, with the full effect passed through only after about three years. The prices of non-durable NEIG, by contrast, seem hardly to respond to an exchange rate shock at all (about 0.01 percentage point). For semi-durable NEIG prices, the exchange rate pass-through is significant only in the short term; for non-durable NEIG prices, it is insignificant.

Wider macroeconomic factors, such as the degree of openness, affect the impact of exchange rates on consumer prices. The more open an economy or a sector, the higher the degree of pass-through. Imported foreign inputs need to be combined with domestic inputs to produce final domestic consumption goods. A higher share of imported inputs or final goods relative to domestically produced ones amplifies the impact of exchange rate movements on domestic prices, and open economies tend to experience a higher and quicker pass-through. This is supported by evidence that pass-through in the euro area is found to be higher compared with that in the United States, as the share of imported inputs across industries tends to be higher in the euro area.[42] Naturally, this share tends to be higher in euro area small economies such as Austria, Ireland and Belgium than in larger economies, for example France. However, the analysis in Box 2 finds only a small role for the degree of openness in explaining differences in exchange rate pass-through across euro area countries.

Finally, the size of exchange rate pass-through is affected by price rigidities and by the perceived persistence of shocks.[43] If there are "menu" costs to

41 The applied vector autoregression (VAR) model is an adjusted, smaller version of the VAR model of the pricing chain applied in Hahn, E., "Pass-through of external shocks to euro area inflation", op. cit. The model is estimated in turn for the different price variables of interest, namely total NEIG and its sub-components, based on quarterly data over the period 2001-15.

42 See Campa, J.M. and Goldberg, L.S., "Pass-through of exchange rates to consumption prices: what has changed and why?", op. cit.

43 Burstein, A.T. and Gopinath, G., op. cit.

adjusting prices, then it might not make sense for importers and exporters to change their prices in response to small currency movements. If firms perceive the exchange rate shock as non-lasting, they will adjust prices only partially. Therefore, a lower (perceived) persistence of exchange rate shocks can result in low pass-through. Indeed, the stable inflation environment that has been achieved in many euro area economies has reduced the persistence of price and exchange rate shocks, thus also reducing the frequency of price changes and the degree of exchange rate pass-through.[44] As with openness, however, the regression analysis in Box 2 indicates that, once many other factors are taken into account, the inflation rate explains only a small part of the differences in the degree of exchange rate pass-through across euro area countries.

Box 2

Currency invoicing and exchange rate pass-through

This box looks at the role of currency invoicing in exchange rate pass-through.[45] Recent empirical studies based on micro-level (i.e. goods-level) data have found that the transmission of exchange rate movements to import prices differs sizeably depending on the currency chosen to invoice import transactions, and that the pass-through is lower when a higher share of local currency is used to invoice imports.[46] Translating this finding to the macro level, this box relates differences in country-specific degrees of long-run exchange rate pass-through across euro area economies to the relative use of the euro as an invoicing currency.

Estimated degrees of exchange rate pass-through vary markedly across euro area economies.[47] According to pass-through estimates based on a standard log-linear regression model, for the euro area aggregate a 1% nominal effective appreciation of the euro has, on average, resulted in a 0.51% decline in aggregate import prices. However, this finding masks substantial heterogeneity in exchange rate pass-through across euro area economies. Indeed, long-run exchange rate pass-through is estimated to range from 0.29% in Austria to 0.75% in Ireland.

44 Taylor, J.B., "Low inflation, pass-through, and the pricing power of firms", *European Economic Review*, Vol. 44, Issue 7, June 2000, pp. 1389-1408.

45 This box is based on special feature article A in *The international role of the euro*, ECB, July 2015.

46 Gopinath, G., Itskhoki, O. and Rigobon, R., op. cit.

47 Following the literature, country-specific degrees of long-run exchange rate pass-through for euro area countries are estimated using a standard log-linear regression model:

$$\Delta p_{it} = \alpha + \sum_{j=0}^{4} \beta_{ij} \Delta e_{t-j} + \sum_{j=0}^{4} \gamma_{ij} \Delta Cost_{t-j} + \delta_{ij} \Delta IP_{it} + \varepsilon_{it} \quad (1),$$

where Δp is the quarterly log change in import price unit values of euro area economy i, Δe is the quarterly change of the standard broad measure of the NEER-38 of the euro, $\Delta Cost$ is a quarterly effective measure of inflation in production costs of the euro area's major trading partners and ΔIP is the quarterly log change in industrial production (excluding construction) of euro area economy i. The estimation sample has a quarterly frequency, spans the time period from the first quarter of 2000 to the last quarter of 2014, and covers 17 euro area countries. It is also possible to use NEERs calculated with country-specific weights instead of the standard NEER-38. In this case, the estimates remain qualitatively unchanged, which is unsurprising given the high and statistically significant correlation (around 80%) in log differences between the standard and country-specific NEERs.

Standard determinants of exchange rate pass-through explain only a fraction of the total variation in pass-through across euro area economies.[48] The existing literature that aims to explain cross-country differences in pass-through focuses on a combination of macroeconomic and microeconomic structural determinants, including the level of inflation, the degree of openness and the micro-structure of imports.[49] Following the standard regression approach, results suggest that inflation and openness, the standard macroeconomic determinants, explain around only 4% of the pass-through heterogeneity across euro area economies. The R-squared increases to 24% when agricultural and raw material imports are included in total imports, suggesting that the import structure of an economy is an important determinant of cross-country differences in pass-through.

The cross-country variation in the use of the euro as an invoicing currency for extra-euro area imports is substantial. The role of local currency invoicing is a determinant that has received little attention in existing studies on cross-country differences in pass-through. Table A displays the share of the euro as an invoicing currency or settlement currency for the extra-euro area imports of 15 Member States. Euro invoicing shares in extra-euro area imports range from just over 20% in Greece to more than 70% in Estonia. The variation in the use of the euro may mainly reflect different ratios of intra-euro area exports to total exports. Euro area economies tend to invoice a larger share of their extra-euro area imports in euro if they export mainly to other euro area countries, partly reflecting the need for foreign exchange hedging, along with other motives such as reducing transaction costs. Since balancing costs and revenues in the same currency is a cost-efficient way to hedge against exchange rate risk, euro area economies that predominantly rely on intra-euro area exports, and whose revenues are hence mainly denominated in euro, can be expected to be more likely to invoice extra-euro area imports in euro.

Table A

The share of the euro as an invoicing or settlement currency in extra-euro area imports

BE	DE	EE	IE	GR	ES	FR	IT	CY	LU	NL	AT	PT	SI	SK
57%	57%	72%	33%	23%	48%	54%	46%	12%	44%	37%	55%	36%	59%	67%

Source: *The international role of the euro*, ECB, July 2015.
Notes: The latest available data are for 2012 for Belgium, Germany, Ireland, Italy, Luxembourg, the Netherlands and Austria, 2010 for Cyprus and 2013 for the remaining countries. Malta and Finland do not report data.

Estimated degrees of exchange rate pass-through are closely correlated with the relative use of the euro as an invoicing currency. Chart A plots the relative use of the euro as an invoicing currency for extra-euro area imports against the estimated degree of long-run pass-through. The results show that Member States with a larger share of extra-euro area imports invoiced in euro typically have a substantially lower degree of exchange rate pass-through.

[48] Following the literature, the estimated exchange rate pass-through β_i is related to a set of macro and micro variables:

$$\beta_i = \alpha + \gamma_1 \text{Openness}_{it} + \gamma_2 \text{HICP}_{it} + \gamma_3 \text{LowTech}_{it} + \varepsilon_{it} \quad (2),$$

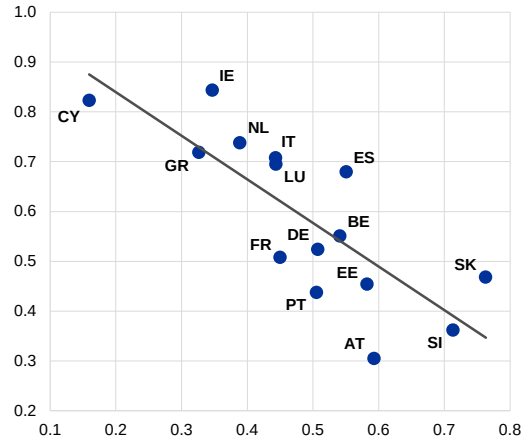
where Openness of euro area economy i is measured as the ratio of imports to GDP, HICP is the logarithm of annualised HICP inflation, and LowTech is the ratio of agricultural and raw material imports to total imports, which is a proxy for the degree of product differentiation. The estimation sample has an annual frequency, spans the time period 2000-13, and covers the 15 euro area countries for which data on currency invoicing is available.

[49] See Campa, J.M. and González Mínguez, J.M., "Differences in exchange rate pass-through in the euro area," *European Economic Review*, Vol. 50, Issue 1, 2006, pp. 121-145.

Chart A

Relation between estimated long-run exchange rate pass-through and share of local currency invoicing

(x-axis: local currency share; y-axis: long-run exchange rate pass-through)



Source: *The international role of the euro*, ECB, July 2015.
Note: The share of local currency invoicing reported on the x-axis is the average over the sample period.

Euro invoicing shares explain a large part of the cross-country variation in pass-through, including when controlling for standard determinants of pass-through. In order to control for other factors that affect the choice of invoicing currency, equation (1) (reported in footnote 24) is modified to include the share of local currency invoicing of extra-euro area imports in the euro area economy. The share of local currency invoicing strongly correlates with long-run pass-through and is statistically highly significant, even when controlling for standard determinants of pass-through heterogeneity. Moreover, the R-squared increases markedly, by more than 30 percentage points.[50]

In sum, the results suggest a strong link between invoicing currency choice and exchange rate pass-through. Euro area economies with a smaller share of the euro as an invoicing currency for extra-euro area imports tend to experience a significantly higher degree of exchange rate pass-through to import prices.

Estimates of the aggregate exchange rate pass-through in the euro area

The previous sections described the mechanisms whereby movements in exchange rates affect import prices and the HICP, and the factors that determine the magnitude and the speed of this effect. This section presents empirical evidence on the size and speed of the exchange rate pass-through to import and consumer prices for the euro area and euro area Member States.

Aggregate exchange rate pass-through estimates for the euro area vary depending on the models and samples used in the analysis. Given that the size of the exchange rate pass-through depends on sectoral and firm-level factors, which vary over time, and on aggregates, which change their composition, it comes as no surprise that ad hoc specifications using country-level aggregates yield different estimates – according to country and time. Hahn[51] estimated a vector autoregression (VAR) including the NEER of the euro and the pricing chain. Updated estimates of

[50] If country-specific NEERs are used to estimate equation (1), the coefficient estimate for local currency invoicing increases further (from 0.7 to 1.4), which points to an even stronger relation between invoicing and pass-through. Moreover, even after controlling for extra-euro area import shares, the increase in R-squared is larger when local currency invoicing is included in the regression.

[51] See footnote 4.

this model show that a 1% depreciation of the euro increases HICP inflation by 0.10% after one year and 0.23% after three years (see Table 1). Other models tend to report similar results for the HICP.[52] More recently, Comunale and Kunovac[53] have used a Bayesian VAR and a different approach to identify an exchange rate shock. They found that, after a one-year period following a 1% depreciation in the NEER of the euro, import prices in the euro area would rise by 0.50%, producer prices by 0.37% and consumer prices by 0.11%. Regarding the four largest euro area economies, they found that an exchange rate shock would have a similar impact on HICP inflation in Germany, France and Italy to HICP inflation in the euro area, whereas they estimated a much greater effect for Spain (see Table 2). Studies focusing only on import prices produce a range of estimates across countries.[54]

Table 1

Exchange rate pass-through estimates in the euro area after a 1% depreciation in the exchange rate

Author	Price variable	one year	three years
Hahn (2003) update	Import prices	0.71%	0.81%
	Producer prices	0.27%	0.39%
	HICP	0.10%	0.23%
Comunale and Kunovac (forthcoming)	Import prices	0.50%	0.46%
	Producer prices	0.37%	0.36%
	HICP	0.11%	0.12%
New area-wide model (NAWM)	Import prices	0.55%	0.89%
	HICP	0.02%	0.20%
New multi-country model (NMCM)	Import prices	0.30%	0.44%
	HICP	0.09%	0.25%

Notes: "Hahn (2003) update" refers to updated estimates using the 2003 Hahn model with data from the first quarter of 1980 to the first quarter of 2016; it reports cumulated impulse responses to a 1% depreciation in the NEER of the euro. Comunale and Kunovac (forthcoming) report the ratios of cumulated impulse responses of each price indicator to the cumulated impulse response of the exchange rate. The estimation uses data from the first quarter of 1992 to the second quarter of 2016. The NAWM and NMCM results are generated under a scenario where the interest rates are assumed to stay unchanged. In the case of the NAWM, the import deflator effects refer to extra-euro area imports. For more details on the NAWM and NMCM, see footnote 29.

52 For the NAWM, see Christoffel, K., Coenen, G. and Warne, A., "The new area-wide model of the euro area: a micro-founded open-economy model for forecasting and policy analysis", *Working Paper Series*, No 944, ECB, October 2008; for the NMCM, see Dieppe, A., Pandiella, A.G., Hall, S. and Willman, A., "Limited information minimal state variable learning in a medium-scale multi-country model", *Economic Modelling*, Vol. 33, Issue C, 2013, pp. 808-825.

53 Comunale, M. and Kunovac, D., "Exchange rate pass-through in the euro area", forthcoming.

54 See An, L. and Wang, J., "Exchange rate pass-through: evidence based on vector autoregression with sign restrictions", *Federal Reserve Bank of Dallas Working Paper*, No 70, 2011; Campa, J.M. and Goldberg, L.S., "Pass-through of exchange rates to consumption prices: what has changed and why?", op. cit.; Campa, J.M. and González Mínguez, J.M., "Differences in exchange rate pass-through in the euro area", op. cit.

Table 2

Exchange rate pass-through estimates in euro area countries after a 1% depreciation in the exchange rate

Author	Price variable	Germany	France	Spain	Italy
Comunale and Kunovac (forthcoming)	Import prices	0.74%	0.58%	1.00%	1.00%
	PPI	0.54%	0.49%	0.64%	0.64%
	HICP	0.19%	0.15%	0.35%	0.20%
An and Wang (2011)	Import prices			1.00%	0.94%
	PPI			0.44%	0.15%
	HICP			0.02%	0.05%
Campa et al. (2008)	Import prices	0.80%	0.90%	0.70%	0.35%
Campa and González Mínguez (2006)	Import prices	0.66%	0.68%	0.98%	0.74%

Notes: Comunale and Kunovac (forthcoming) and An and Wang (2011) report the ratios of cumulated impulse responses of each price indicator to the cumulated impulse response of the exchange rate after three years. Campa et al. (2008) and Campa and González Mínguez (2006) report the cumulative effect after four quarters.

Estimates of exchange rate pass-through in the euro area based on the NEER tend to be lower than those based on the euro/US dollar bilateral exchange rate. The bilateral euro/US dollar exchange rate has recently exhibited larger movements compared with the NEER-38 of the euro, as illustrated in Chart A in Box 1. This is because the changes in the euro/US dollar exchange rate are counteracted by changes in other currencies included in the basket of currencies comprising the NEER. Moreover, the US dollar has a strong impact because it is the invoicing currency of commodities; it thus tends to pass through to import prices of food and energy quickly and completely.

Some empirical studies argue that pass-through may have declined in the euro area since the 1990s. Campa et al.[55] investigated changes in the pass-through to import prices in euro area countries based on sectoral data up to 2004. They detected declines in the estimates of the exchange rate pass-through to import prices in around two-thirds of the industries in their sample, but most of this evidence is not statistically significant. Only manufacturing industries present statistically significant effects. ECB researchers[56] found tentative evidence of a decline in the exchange rate pass-through for the euro area based on a panel VAR and the Area Wide Model, with data up to 2007. Clearer evidence of changes in the exchange rate pass-through for several Member States has been reported by the IMF and Sekine.[57] Both studies note a substantial decline in the exchange rate pass-through to import prices and consumer prices for a number of advanced economies. When the model proposed by Hahn is estimated over rolling windows of 20 years, a decline in pass-through since 1980 is found for both import prices and HICP inflation. In particular, while the model estimated over the full sample (the first quarter of 1980 to the first

55 See Campa, J.M., Goldberg, L.S. and González Mínguez, J.M., "Exchange-rate pass-through to import prices in the euro area", op. cit.

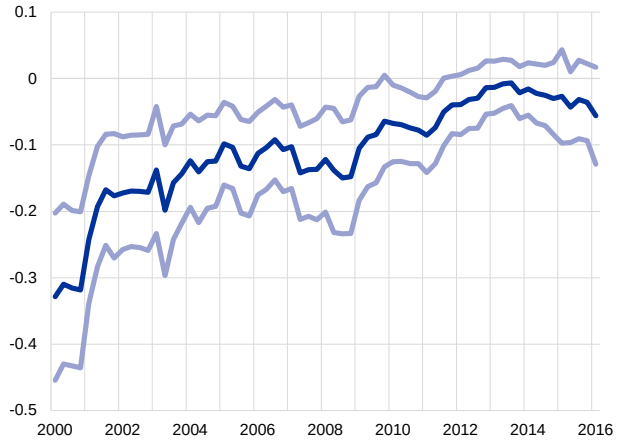
56 See di Mauro, F., Rüffer, R. and Bunda, I., "The changing role of the exchange rate in a globalised economy", *Occasional Paper Series*, No 94, ECB, September 2008.

57 See *World Economic Outlook*, IMF, 2006; Sekine, T., "Time-varying exchange rate pass-through: experiences of some industrial countries", *BIS Working Papers*, No 202, March 2006.

quarter of 2016) finds that a 1% appreciation in the NEER would lead to a 0.23% decline in HICP inflation after three years, the same model estimated over a rolling sample finds that this effect would be negligible in the most recent iteration (the second quarter of 1996 to the first quarter of 2016) of the rolling window estimation (see Chart 5).

Chart 5

Exchange rate pass-through to HICP inflation over time



Sources: Eurostat and ECB staff calculations.
Notes: The chart shows the cumulated impulse response (dark blue line) of HICP inflation to a 1% appreciation in the NEER after three years over time and the respective 95% confidence bands (light blue lines). The cumulated impulse response is based on the updated estimation of Hahn (2003) over a 20-year rolling window from the first quarter of 1980 to the first quarter of 2016. Each point on the dark blue line refers to the end point of each 20-year rolling sample, with the first sample referring to the period from the second quarter of 1981 to the first quarter of 2000 and the last sample to the period from the second quarter of 1996 to the first quarter of 2016.

The composition of imports is one factor that has been put forward to explain the potential decline in exchange rate pass-through. Indeed, the compositional shift from sectors with high pass-through (such as energy) to sectors with lower pass-through, (such as manufacturing and food) has been proposed as one of the reasons for a decline in the pass-through to import prices.[58] ECB researchers[59] have compared aggregate exchange rate pass-through estimates, computed by aggregating sectoral estimates using the import shares of each sector in 1988 and 2005 as weights, to show that this would mechanically result in a decline in overall import price pass-through from 0.83 to 0.74.

Another proposed explanation for the secular decline in exchange rate pass-through to import prices is globalisation and the emergence of low-cost exporters. Gust, Leduc and Vigfusson[60] suggest that part of the decline in the exchange rate pass-through might be related to increased trade integration, as firms have become more responsive to competitors' prices. This competitive pressure is further increased by the rising prominence of low-cost producers in international trade.

Several factors at the firm level may also have contributed to the declining exchange rate pass-through. First, as illustrated in Box 2 of this article, an increasing share of extra-euro area imports is invoiced in euro, meaning that an increasing proportion of foreign exporters choose to price their exports to the euro area in euro. According to the results shown in the box, this can lead to lower pass-through. The increasing import content of exports and the lower cost of hedging per unit of risk may also have dampened the response of import prices to exchange rate movements.[61]

An influential explanation for the decline of exchange rate pass-through at both the import price and final consumer price stages is that the low inflation

58 See also footnotes 7, 8 and 31.

59 See footnote 33.

60 See Gust, C., Leduc, S. and Vigfusson, R., "Trade integration, competition, and the decline in exchange-rate pass-through", *Journal of Monetary Economics*, Vol. 57, Issue 3, April 2010, pp. 309-324.

61 See footnote 33.

environment supported by credible monetary policy has led to a reduction in the perceived persistence of shocks and that, as a result, firms have tended to adjust prices less frequently. Taylor[62] notes that the low inflation environment achieved in many countries has resulted in lower pass-through. Lower inflation leads to a reduction in the expected persistence of cost and price shocks and consequently to lower exchange rate pass-through to prices, as producers have less incentive to change their prices in the face of less persistent shocks.

A way to reconcile the different estimates presented so far across models, countries and samples is to recognise that, far from being a structural parameter at the macroeconomic level, exchange rate pass-through depends on the nature of the shocks driving exchange rates. This has been shown in theoretical models where exchange rate pass-through is a function of the underlying shocks in the economy and the competitive structures of the industries involved.[63] Empirically, however, most approaches are based either on simple regressions or on identifying exchange rate shocks in a manner that does not take into account the full economic structure and consequently the most important shocks that drive the economy.[64]

A more economically meaningful approach to study the impact of the exchange rate on inflation would be to employ a method similar to that used when looking at the impact of other variables (for example, oil prices), in order to determine what shocks move exchange rates in the first place. In reality, the exchange rate does not move as a consequence of one particular shock, but is instead influenced by various driving forces. The entire constellation of macroeconomic shocks affecting the exchange rate at each point in time should be considered. The fact that pass-through can be shock-dependent has long been discussed in the literature.[65] However, in empirical terms, disentangling the underlying economic forces driving the exchange rate is difficult, as this is a highly endogenous variable. The key question revolves around what moves exchange rates. Is it a domestic supply shock? Could it be global demand? Or is it monetary policy, either domestic or foreign?

Depending on the shock, the response of consumer prices to an exchange rate movement will be different. For instance, an expansionary domestic monetary policy shock will be followed by a euro depreciation, with a direct inflationary effect on import prices. This direct effect will feed into consumer prices and be amplified by

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62 Taylor, J.B., op. cit.

63 These are micro-based open-economy general equilibrium models. See, for instance, Corsetti, G. and Dedola, L., "A macroeconomic model of international price discrimination", *Journal of International Economics*, Vol. 67, Issue 1, September 2005, pp. 129-155; Corsetti, G., Dedola, L. and Leduc, S., "High exchange-rate volatility and low pass-through", *Journal of Monetary Economics*, Vol. 55, Issue 6, September 2008, pp. 1113-1128.

64 Using a Choleski decomposition as described in e.g. Hahn, E., "Pass-through of external shocks to euro area inflation", op. cit.

65 See Klein, M., "Macroeconomic aspects of exchange rate pass-through", *Journal of International Money and Finance*, Vol. 9, Issue 4, December 1990, pp. 376-387; Shambaugh, J., "A new look at pass-through", *Journal of International Money and Finance*, Vol. 27, Issue 4, June 2008, pp. 560-591; Astley, M., Pain, D. and Smith, J., "Interpreting recent movements in sterling", *Quarterly Bulletin*, Bank of England, 2009 Q3, pp. 202-214.

the other transmission channels of monetary policy, leaving "room" for mark-ups to adjust. It could therefore be expected that such a shock would lead to a higher correlation between exchange rate and HICP movements, i.e. to a higher pass-through, than would be observed after a depreciation caused by, for example, a negative domestic supply shock such as lower productivity. Instead of being accompanied by the amplifying effects of an expansionary shock, such a depreciation caused by a negative domestic supply shock would occur in an environment where firms found little space to maintain or increase their mark-ups and the pass-through down the pricing chain would be contained. Similarly, the euro could also depreciate because of a foreign monetary policy tightening; in this case, however, any fall in foreign demand due to the restrictive policy abroad, other things being equal, would be a drag for euro area growth and would not foster a domestic inflationary environment.

In other words, while some shocks lead to self-reinforcing exchange rate and price dynamics, others lead to counterbalancing effects on inflation. In the case of a negative domestic demand shock, which could cause the exchange rate to depreciate, the overall "pass-through" could easily lead to an apparently perverse correlation between exchange rates and consumer price inflation, as found by Comunale and Kunovac[66] for the euro area, and Forbes et al.[67] for the United Kingdom.

A common result from the existing studies that adopt this approach is that the exchange rate pass-through following a monetary shock is relatively high. This is observed by Comunale and Kunovac for the exchange rate pass-through following a monetary policy shock or an exogenous exchange rate shock modelled as a risk premium shock. The exchange rate channel can thus be considered active in the transmission of monetary policy. Bobeica and Jarociński[68] look at a similar set of shocks for the euro area and disentangle the effects of interest rate shocks and the shocks that affect the spread between short-term and long-term rates.

Research on quantifying exchange rate pass-through based on macroeconomic shocks is still in an incipient phase, as indicated by the wide variations not only in quantification, but also in the perceived contribution of economic shocks to exchange rate movements. A better understanding of the relevance of the prevailing current shocks for quantifying the responsiveness of HICP inflation to exchange rate changes is necessary for understanding the effects of any policy mix.

66 See Comunale, M. and Kunovac, D., op. cit.

67 Forbes, K., Hjortsoe, I. and Nenova, T., "The shocks matter: improving our estimates of exchange rate pass-through", *Bank of England Discussion Paper*, No 43, November 2015.

68 Bobeica, E. and Jarociński, M., "'Missing disinflation' and 'missing inflation' since the Great Recession: a VAR perspective", forthcoming.

Conclusions

Understanding the way exchange rates shape the outlook for inflation is crucial for conducting monetary policy effectively and understanding the strength of its transmission mechanism. Drawing on evidence from the available data, models and existing literature, this article contributes to a better understanding of the complex role of the exchange rate in affecting prices in the euro area. A number of conclusions can be drawn from this evidence.

First, the effect of the exchange rate is strongest and most immediate for import prices, and declines along the pricing chain. Simple graphical correlations illustrate that import prices tend to correlate with exchange rate movements, whereas this effect is more muted for producer prices and final HICP inflation. The presence of local distribution costs, a lower share of imported inputs in the final HICP, and the relatively long time taken for the indirect effects of exchange rate shocks to feed through the economy are the main factors contributing to this pattern.

Second, the size and speed of the exchange rate pass-through seems to differ across product categories, indicating that cost structures and pricing decisions at the firm level are important for gauging the exchange rate effects at the aggregate price level. Empirical results show that pass-through to producer prices of intermediate goods is higher while pass-through to prices of capital goods is lower. The impact on consumer goods tends to lie somewhere in-between. Within the non-energy industrial goods components, pass-through tends to be highest for durable consumer goods. These differences at the goods category level can be related to different industry characteristics.

Third, estimates of exchange rate pass-through for the euro area vary considerably across models and across time periods. The exchange rate pass-through estimates based on the bilateral euro/US dollar exchange rate are found to be proportionally higher than those based on the NEER against the euro area's 38 main trading partners. Moreover, empirical studies have provided some evidence that, since the 1990s, the sensitivity of import and domestic prices to the nominal exchange rate has declined. Several explanations have been put forward, such as the change in the composition of imports towards less exchange rate-sensitive sectors, more currency invoicing of extra-euro area imports in euro, natural and financial hedging against exchange rates via participation in global value chains and financial instruments, and the contribution of the low inflation environment.

Last, recent studies advocate looking at the underlying economic shocks when analysing the responsiveness of import and domestic prices to exchange rate changes. The studies are far from reaching a consensus on the importance of each shock in driving the exchange rate and on the size of pass-through following each shock. However, they seem to agree that when a monetary policy shock drives the nominal exchange rate, a relatively larger pass-through tends to be generated. The fact that the exchange rate pass-through is shock-dependent can explain why, in some periods, the reaction of final prices to exchange rates is smaller or larger than would be expected based on simple historical regularities.

2 Business investment developments in the euro area since the crisis

Business investment is both an important driver of the business cycle and a determinant of future growth prospects. While recovering less than in other advanced economies, the ratio of euro area real business investment to value added has recently surpassed its historical average. The recovery in investment is being driven by a combination of improving demand, profit expectations and financing conditions, as well as declining uncertainty. However, weak absolute investment growth in the euro area has slowed growth of the capital stock, which has weighed on potential and productivity growth since the crisis. Moreover, euro area gross corporate debt remains historically high and several regulatory and institutional factors continue to drag on business investment, despite a number of reforms in recent years. At this stage, policies aimed at improving the regulatory environment and credit conditions, reducing entry barriers, increasing the overall flexibility of labour and product markets and providing an efficient debt restructuring framework are particularly important for fostering investment. Finally, targeted and efficient infrastructure investment can support business investment.

Stylised facts on business investment

Investment is a key driver of the business cycle and determines future growth prospects. As an important expenditure component of GDP, making up about 20%, real investment, through cyclical swings, drives the business cycle. Investment decisions also crucially determine the capital stock and hence potential growth[69]. Without sufficient investment, the capital stock cannot be renewed regularly, impeding technological progress and hindering structural change in the economy as a whole. Investment – and primarily business investment (proxied by real non-construction investment, see Box 1) – also increases the productive capacity of labour by boosting capital deepening.

This article focuses on the recovery in euro area real business investment over the past three years, assessing its drivers and the policy responses required in order to improve investment conditions. Following a period of substantial contraction during the crisis, real business investment has recovered visibly since early 2013 (see Chart 1). The strong fall in euro area total investment witnessed during the Great Recession and the decline in investment in 2011-12 were the consequences of lower business investment, but also a strong downward correction in overheating housing markets and persisting budgetary constraints that resulted in lower construction and public investment in some countries. The general increase recorded in total fixed capital formation since early 2013 has been driven by non-construction investment, while construction investment started to rise only in 2015 (see Chart 2). In recent quarters, real investment – and primarily business

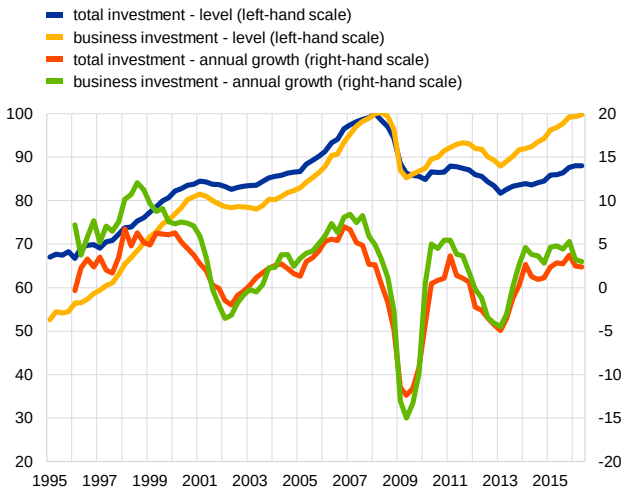
[69] See Anderton, R., Aranki, T., Dieppe, A., Elding, C., Haroutunian, S., Jacquinot, P., Jarvis, V., Labhard, V., Rusinova, D. and Szörfi, B., "Potential output from a euro area perspective", *Occasional Paper Series,* No 156, ECB, Frankfurt am Main, November 2014.

investment – has become an important driver of the euro area recovery in addition to private consumption.

Chart 1

Real total and business investment in the euro area

(index: Q1 2008 = 100; annual percentage changes)

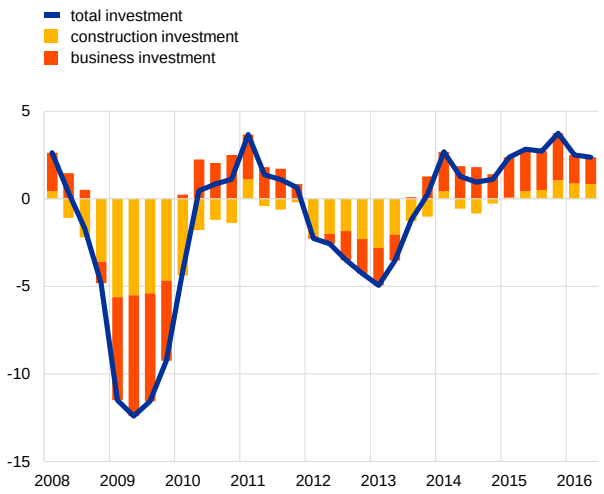


Sources: Eurostat and ECB calculations.
Notes: The latest observation is for the second quarter of 2016. Real business investment refers to non-construction investment.

Chart 2

Breakdown of real total investment in the euro area

(annual percentage changes; percentage points)



Sources: Eurostat and ECB calculations.
Notes: The latest observation is for the second quarter of 2016. Real business investment refers to non-construction investment.

Box 1

Data on real business investment and capital stock in the euro area

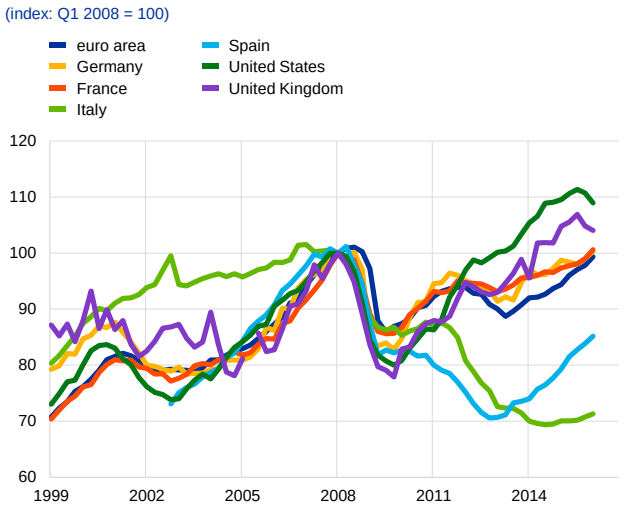
Non-construction investment values, calculated from Eurostat national accounts data, are used as a proxy for business investment in this article. Total investment values are available from the quarterly national accounts, released by Eurostat, for the euro area and its member countries, where total investment is also available broken down by main asset classes at a quarterly frequency. Adjusting total investment for construction (i.e. dwellings and non-residential investment), the resulting non-construction investment covers (i) machinery, equipment and weapons systems, (ii) intellectual property products and (iii) agricultural products. The first component is, in turn, made up of transport investment, information and communication technology (ICT) equipment, other machinery and equipment, and weapons systems. However, the latter two components are not mandatory for the European national statistical institutes to report under the ESA 2010 transmission programme and hence relevant data are not available for the euro area and most countries at a quarterly frequency. Better data availability exists at an annual frequency, although it is not sufficiently frequent for the analysis presented in this article. From a sectoral perspective, Eurostat does not compute quarterly real business investment in the national accounts, as official sector investment data by main asset classes are only available in value terms on a quarterly basis. Moreover, total investment by government and by non-financial companies is currently only expressed in nominal – and predominantly – non-seasonally adjusted terms. The OECD computes private non-residential investment for many, but not all, OECD countries. For reasons of data availability, this article will mostly use real non-construction investment data

computed from total investment data adjusted for construction investment released by Eurostat, as a proxy for real business investment[70].

Data on the capital stock for the whole economy, available from the European Commission (AMECO), are used in this article. Data on the capital stock for the whole economy generally become available with a lag of at least two years and are available in annual terms from Eurostat based on data collected from national statistical institutes. The European Commission (AMECO) also computes annual data on total economy net capital stock using the "perpetual inventory" method, whereby the capital stock of the previous year is taken and that part of the stock that has reached the end of its service life is subtracted (depreciation), together with the retirement rate, and the gross fixed capital formation in the current year is added. AMECO data are used in this article.

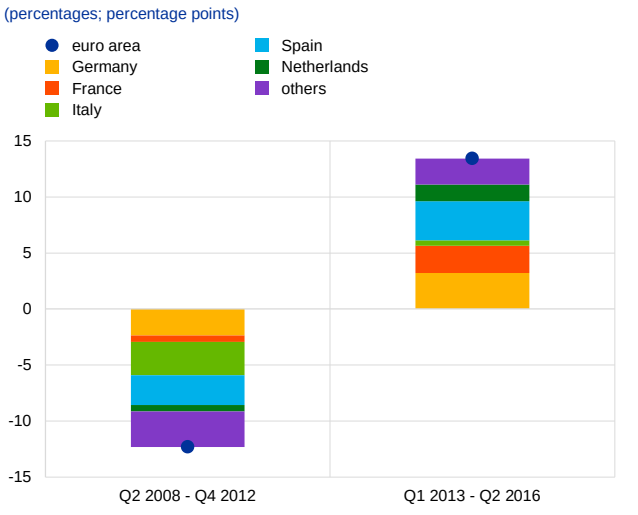
Euro area business investment is now back to the pre-crisis peak recorded in 2008, while business investment in other advanced economies has recovered more markedly (see Chart 3). In the euro area, business investment declined in 2008 and again from 2011. Its recovery began in 2013, albeit with lower average growth rates than observed in the period prior to the crisis. In the United Kingdom and the United States, the trough in investment was recorded in 2009. There is also heterogeneity across euro area countries. Of the almost 15% increase in the level of business investment observed in the euro area since the trough, Germany, Spain and France have contributed considerably, while there was a limited contribution from Italy (see Chart 4).

Chart 3
Real business investment levels in selected advanced economies



Sources: OECD and Eurostat (euro area).
Notes: The latest observation is for the second quarter of 2016. All OECD business investment series refer to private non-residential investment, except for series for Spain and Italy, which include government investment.

Chart 4
Contributions to euro area real business investment dynamics from the euro area countries

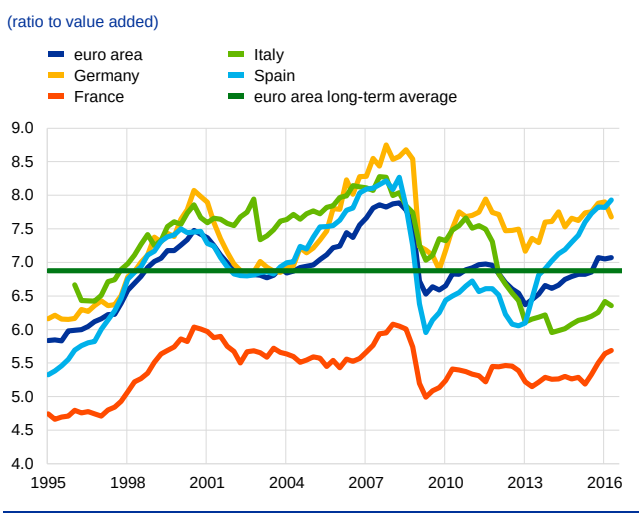


Source: Eurostat.

[70] Non-construction investment would then contain a limited share of public investment (about 10% of total investment, with some variation across countries).

Chart 5

Ratio of real business investment to value added in the euro area and the largest euro area countries



Source: Eurostat and ECB calculations.
Notes: The latest observation is for the second quarter of 2016. The long-term average ratio calculated over the period is 6.9. Business investment is proxied by investment in machinery, equipment and weapons systems (the latter cannot be deducted).

The ratio of euro area real business investment to value added has now surpassed its long-term average. The real investment share to value added, which gives a measure of the size of investment in the overall economy, tends to be pro-cyclical over time (see Chart 5). The business investment ratio has also been generally higher in Germany and Spain than in France, as the latter is a more service-intensive economy. The dispersion across the ratios of the largest euro area countries peaked before the crisis but has since fallen back to a lower constant level. From a longer perspective, the euro area ratio and those of other advanced economies trended upwards prior to the crisis for several reasons.[71] A combination of lower cost of finance, increases in replacement investment and technological progress in ICT and the investment goods sector – leading to a fall in the relative price of investment goods – spurred investment in real terms. In some countries, such as Spain, the increase may have also reflected higher expected marginal returns on investment related to a perceived strength in the underlying trend growth rate of the economy. In some countries "over-investment" may have occurred, for instance during the widespread ICT boom in the late 1990s, resulting in "excess capital stock" on the back of unrealistic expectations of firms' marginal returns. During the global financial crisis – and again in the sovereign debt crisis – investment fell much more than value added. In the aftermath of the crisis the ratio started to rise in the euro area, as a normal feature of the cyclical recovery, and has now surpassed its long-term average.[72]

A breakdown of euro area investment by asset classes shows that changes in investment in machinery and equipment contributed mostly to the swings in business investment over the past decade. Machinery and equipment investment arises largely in the corporate sector and is hence a close proxy for business investment. During the recovery since 2013, investment in machinery and equipment (of which transport equipment constitutes about one-quarter) made up most of the total increase in investment, while intellectual property products contributed to the remaining share (see Chart 6). Investment in equipment is gradually recovering and

71 See also Rodriguez Palenzuela, D. and Dees, S., "Savings and investment behaviour in the euro area", *Occasional Paper Series*, No 167, ECB, Frankfurt am Main, January 2016.

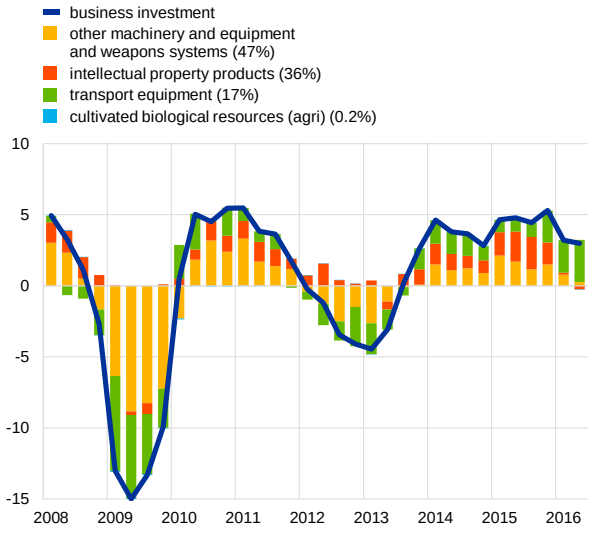
72 Long-term averages are not to be confused with "optimal" investment levels, and comparisons between countries and across time warrant caution. Countries have different equilibrium ratios of investment to value added, reflecting diverse levels of economic development and different economic structures. Economies are also subject to structural changes over time. For instance, there may be a structural compositional change of value added by which the share of labour income increases as the economies become more service-intensive and less capital-intensive (see OECD Economic Outlook, Vol. 2015/01).

is expected to return to its pre-crisis level, while investment in intellectual property products[73] has proved relatively resilient throughout the past decade.

Chart 6

Breakdown of euro area real business investment by asset classes

(annual percentage changes; percentage points)



Sources: Eurostat and ECB calculations.
Notes: The latest observation is for the second quarter of 2016. The relative shares in business investment for 2015 are given in brackets.

The decline in the growth rate of fixed capital formation has led to a deceleration in the growth of euro area capital stock since 2008, which is unprecedented in a historical perspective (see Chart 7). The capital stock, measuring the value of all fixed assets in use, can be derived from cumulated investment adjusted for the technological content of capital goods, relative price trends of capital goods and the depreciation rate. The growth rate of the total economy capital stock for Italy and Spain slowed significantly after the crisis, particularly in Italy, where the capital stock has declined since 2013. Diminishing contributions from the capital stock have weighed on potential output growth in these countries over recent years. The slowdown in capital stock growth has been less pronounced in France and hardly visible in Germany.

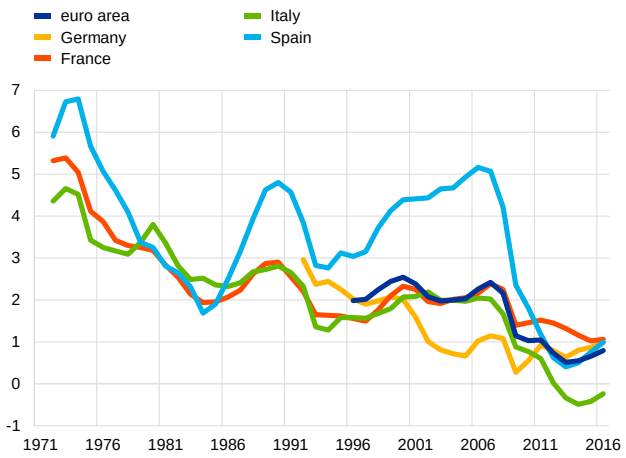
Meanwhile, the capital stock depreciation rate has flattened somewhat since the crisis, suggesting a slowdown in the consumption of fixed capital (see Chart 8). Depreciation rates are generally higher for ICT goods than for machinery and equipment (which in turn are higher than for dwellings). Regarding their dynamics, the depreciation rates for the whole economy have levelled out since 2008 in France and Italy, and also in the euro area, albeit in a less pronounced manner. In Germany the flattening took place somewhat later – around 2012. Only in Spain does the depreciation rate seem to have risen since 2008, which may be related to compositional changes in the capital stock, associated with the shrinking construction sector. The change in the euro area depreciation rate with respect to its pre-crisis dynamics may be related to the decline in the capacity utilisation rate and the decreased “wear and tear” of assets. Lower or slower-growing depreciation rates, ceteris paribus, would suggest less need for replacement investment to maintain the level of the capital stock.

[73] Shares of intellectual property products to value added have constantly increased in the euro area countries over recent decades and currently range from above 5% of value added in France to about 3% in Italy. According to ESA 2010, investment in intellectual property products mainly comprise research and development expenditure, as well as computer software, databases, literary or artistic originals and mineral exploration.

Chart 7

Total net capital stock growth in the euro area and the largest euro area countries

(annual percentage changes)

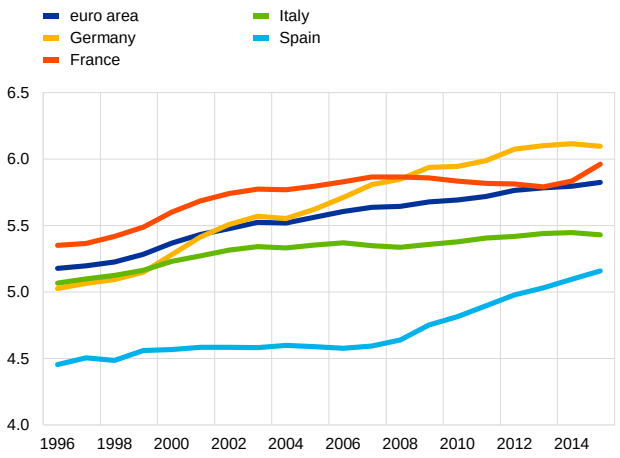


Source: European Commission (AMECO).
Notes: The latest observation is for 2016 (partial projection) for European Commission data. The total net capital stock at constant prices is derived from the previous year's capital stock adjusted for real consumption of capital.

Chart 8

Derived depreciation rates for total economy for the euro area and the largest euro area countries

(percentages)



Sources: European Commission (AMECO) and ECB calculations.
Notes: Derived from the net capital stock equation in which the capital stock at (t) equals capital stock (t-1)*(1-delta (t)) + investment (t), where delta is a proxy of the depreciation rate, although also covering the retirement rate.

Fixed capital formation also increases the productive capacity of the economy by boosting labour productivity. During the crisis, productivity growth in the euro area was dampened by the weak contribution of investment to capital deepening (see Box 2).

Box 2

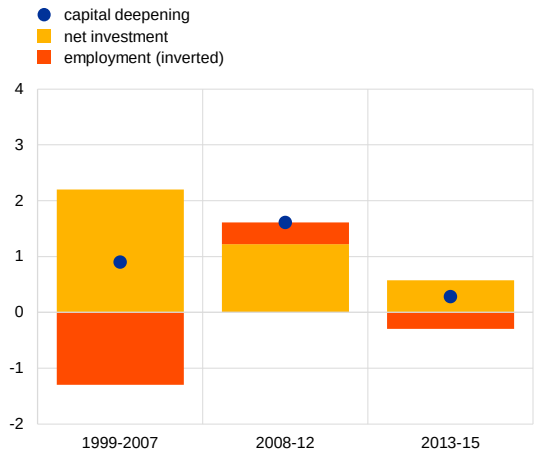
Investment and productivity – a comparison of the euro area and the United States

In the aftermath of the crisis, the slow rebound in euro area investment may further constrain the euro area's ability to boost its long-term lacklustre productivity growth, as investment is a major driver of capital deepening and thus, in turn, an important driver of labour productivity growth. Capital deepening refers to the process of increasing the capital-labour ratio by giving labour more capital to work with. However, capital deepening may also occur with little net investment in times when strong labour shedding mechanically increases the ratio of the capital stock to a depleted workforce. Charts A and B show that, in advance of the crisis, US capital deepening had been increasing at roughly twice the pace of that of the euro area owing, in part, to a markedly higher rate of investment in the United States over the pre-crisis years. With the onset of the crisis, strong labour shedding in both economies helped to mitigate the impact of the notable slowdown in the rate of investment on capital deepening on both sides of the Atlantic. Indeed, for the euro area, the marked reversal in the earlier robust rate of employment growth led to an *increase* in the rate of capital deepening over the course of the main crisis years, despite the strong decline in the rate of investment.

Chart A

Capital deepening in the euro area

(annual percentage changes)

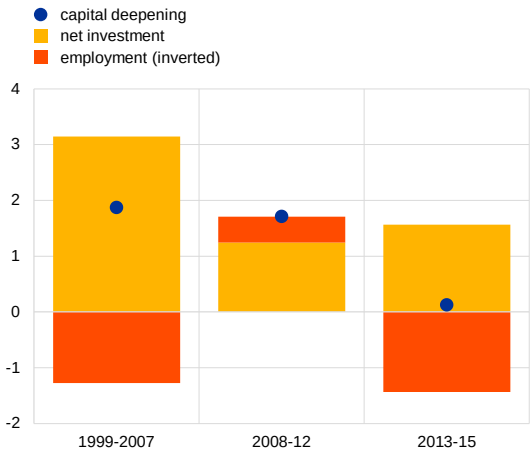


Sources: European Commission (AMECO) and ECB calculations.

Chart B

Capital deepening in the United States

(annual percentage changes)



Sources: European Commission (AMECO) and ECB calculations.

Despite the rebound in euro area activity since the first quarter of 2013, euro area capital deepening has barely increased during the economic recovery. A similar stagnation has also occurred in the United States. As the charts show, US investment rebounded more strongly towards pre-crisis rates of increase, while euro area investment remains markedly subdued. In part, this reflects the longer, and stronger, recovery in broader activity in the United States, following the deep but short-lived contraction experienced during the Great Recession of 2008-09. Despite this difference, however, the rate of capital deepening in both economies has been limited, since 2013, by proportionally similar offsetting effects from robust employment growth.[74]

Labour productivity growth in the euro area has been weak due to both capital deepening and growth in total factor productivity. Overall, it is the combined effects of capital deepening and wider "intangible" technological and organisational progress, known as total factor productivity, which determine the pace of an economy's labour productivity growth. The euro area's lacklustre productivity performance in comparison with that of the United States has been a matter of concern to policymakers for the best part of two decades.[75] Charts C and D use a standard growth accounting framework to decompose euro area and US labour productivity growth over the course of Economic and Monetary Union (EMU) into the respective contributions stemming from capital deepening and total factor productivity. These show that, in the post-crisis period, a marked decline in capital deepening has contributed significantly to the slowing in productivity growth in both economies compared with pre-crisis rates.

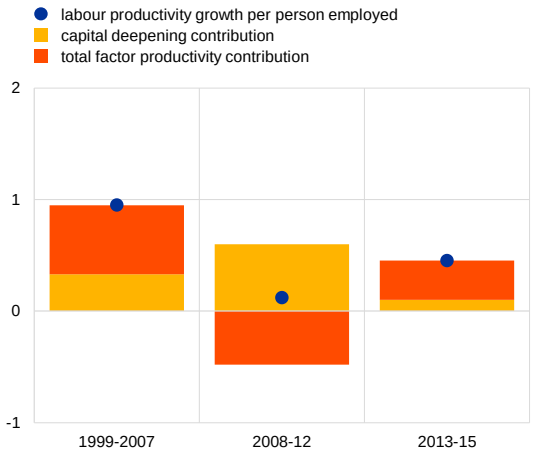
74 See the article entitled "The employment-GDP relationship since the crisis", *Economic Bulletin*, Issue 6, ECB, 2016. In the United States, the contribution to labour productivity growth from capital deepening – when measured in five-year rolling averages – was negative in 2014 and 2015.

75 Taking a longer-term perspective, the picture looks bleaker still, as productivity growth – measured as a five-year rolling average – has been slowing in both economies since the early 2000s. In the United States, the last five years represent the period with the lowest rate of productivity growth since the 1950s.

Chart C

Labour productivity growth decomposition for the euro area

(percentage changes; contributions in percentage points)

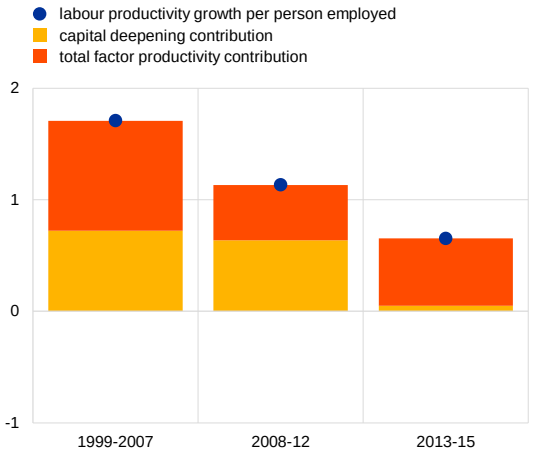


Sources: European Commission (AMECO) and ECB calculations.

Chart D

Labour productivity growth decomposition for the United States

(percentage changes; contributions in percentage points)



Sources: European Commission (AMECO) and ECB calculations.

Drivers of investment

In the most common economic theories[76], the level of firms' desired capital stock is determined by expectations of returns or planned production levels, the cost of financing and the availability of funding, but also industrial structure and business friendliness. In reality, business investment is determined by a range of factors with complex and multiple interactions, which are not easy to disentangle. In this section we will review some of these factors, notably growth expectations, capacity utilisation, profits, uncertainty, financing conditions and institutional and regulatory variables, and the extent to which they have contributed to the recovery in business investment.

The cyclical upturn in demand, shrinking spare capacity and improving corporate profits are supporting business investment. The decline in expected long-term GDP growth in the euro area – which accelerated during the crisis and is likely to have contributed to the decline in investment – seems to have come to a halt in recent years (see Chart 9). Demand conditions, as reflected in overall activity and capacity utilisation, also matter significantly for investment decisions throughout the business cycle. The perceived large spare capacity during the crisis has gradually shrunk, particularly in the manufacturing industry (see Chart 10). In addition,

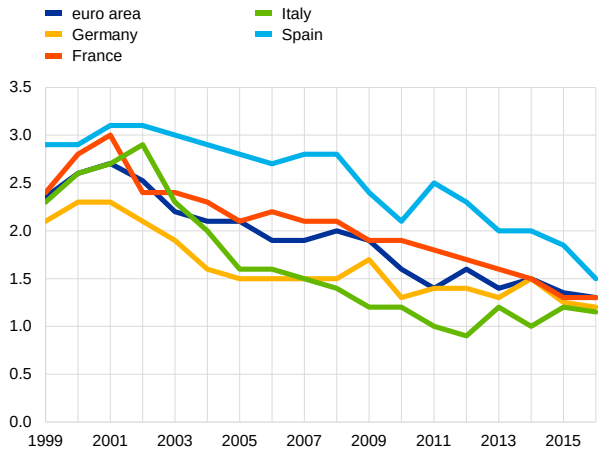
[76] For instance, according to Keynes, investment decisions are driven by firms' expectations of the profitability of investment. The accelerator model predicts that investment is proportional to the increase in output in the coming period. The financial accelerator model features capital markets operating under imperfect information, resulting in firms' preferring to retain funds to finance investment projects. Tobin argued that firms' investment levels should depend on the ratio of the present value of installed capital to the replacement cost of capital, a ratio called Tobin's q.

corporate profits have grown over recent years, pointing to firms' increased capacity to finance investment with internal means (see Chart 11). Such increases are widespread across the largest euro area countries and suggest readily available cash when investment opportunities occur.[77] Higher retained earnings have been enabled by lower net interest payments, wage moderation and conservative dividend payments.[78] Moreover, the high financial uncertainty[79] that could also lead firms to postpone investment decisions[80] and that prevailed during the recent crisis has now significantly diminished (see Chart 12).

Chart 9

Expected real GDP growth in six to ten years in the euro area and the largest euro area countries

(annual percentage changes)

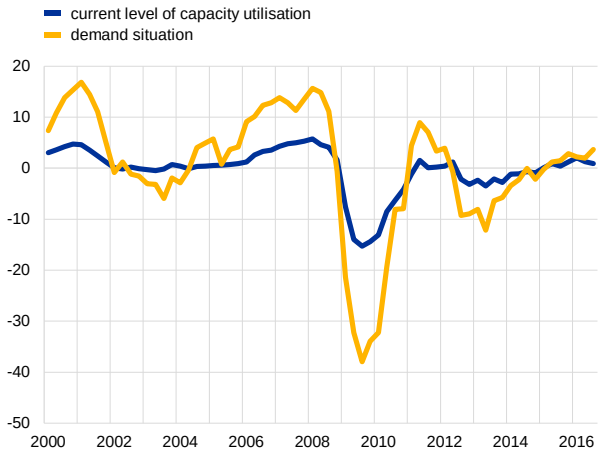


Source: Consensus Economics.
Note: The latest observation is for October 2016.

Chart 10

Surveys on capacity utilisation and the demand situation in the euro area capital goods sector

(deviations from long-term averages)



Sources: European Commission and ECB calculations.
Notes: The series on the demand situation is derived as the inverse of the European Commission's series on demand as a constraining factor for production in the capital goods sector. The latest observation is for the third quarter of 2016.

77 NFCs have continued to increase their cash holdings in recent quarters to a new record high (see Chart 19). See also the box entitled "Trends in the external financing structure of euro area non-financial corporations", *Economic Bulletin*, Issue 5, ECB, 2016.

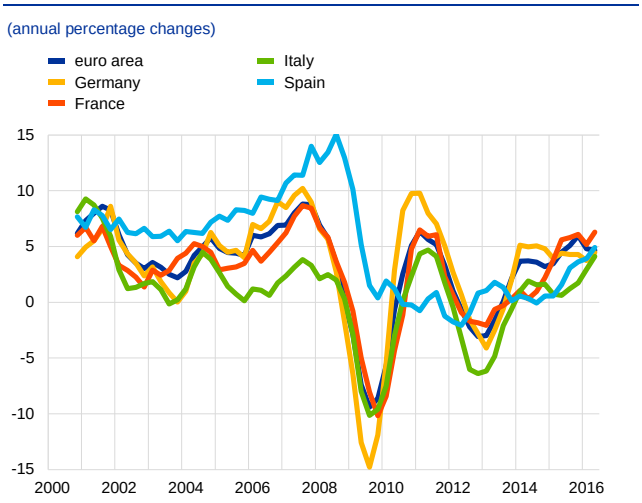
78 See European Commission, *Quarterly report on the euro area*, Volume 13, Issue 1, April 2014.

79 See Bloom, N. et al., "Uncertainty and Investment Dynamics", 2007.

80 See, for instance, Bonciani, D. and van Roye, B., "Uncertainty shocks, banking frictions and economic activity", *Working Paper Series,* No 1825, ECB, Frankfurt am Main, July 2015.

Chart 11

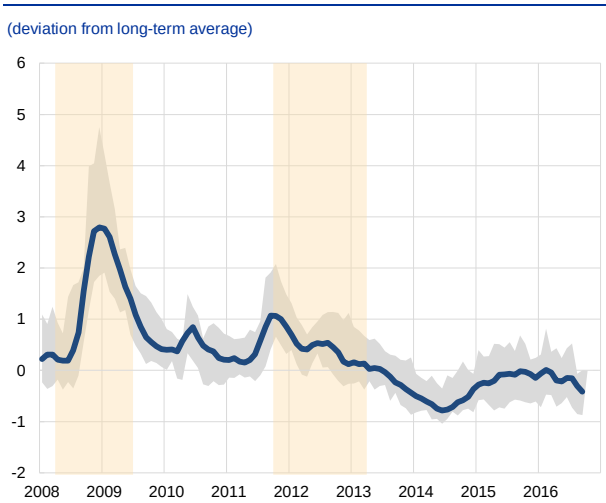
Total economy gross operating surplus in the euro area and the largest euro area countries



Sources: Eurostat and ECB calculations.
Note: The latest observation is for the second quarter of 2016.

Chart 12

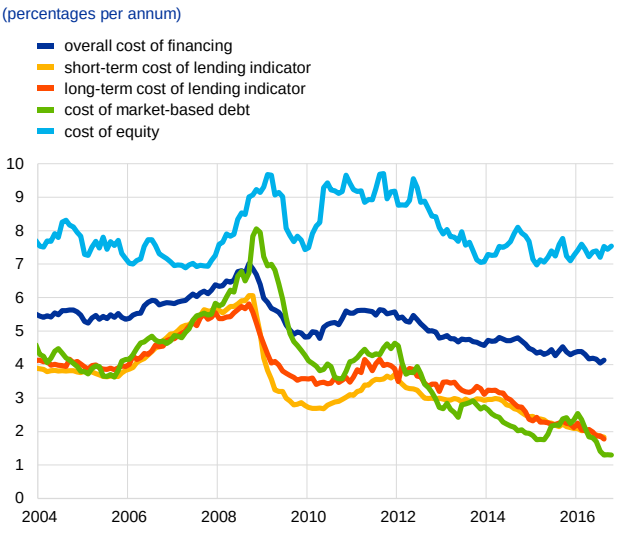
Euro area uncertainty



Source: ECB.
Notes: The light-orange shaded areas represent periods of recession according to the CEPR classifications. The solid blue line represents the median of the measures and the grey area represents the range of macroeconomic uncertainty indices. The latest observation is for September 2016.

Chart 13

Nominal cost of external financing for euro area NFCs



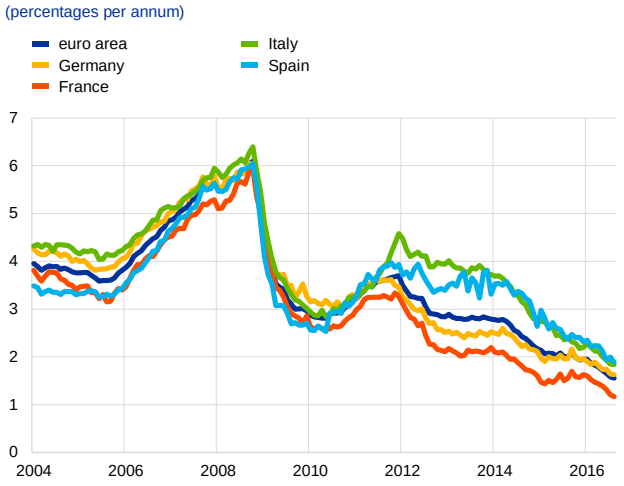
Sources: Thomson Reuters Datastream, Merrill Lynch, ECB and ECB calculations.
Notes: The overall cost of financing for NFCs is calculated as a weighted average of the cost of bank lending, the cost of market-based debt and the cost of equity, based on the respective amounts outstanding derived from the euro area accounts. The cost of equity estimates are based on a three-stage dividend discount model. The latest observation for the overall cost and lending rates is for August 2016, whereas the latest observation for the cost of market-based debt and quoted equity is for 14 October 2016.

Financing costs for euro area non-financial corporations (NFCs) have become increasingly supportive of business investment since the crisis, largely as a result of expansionary monetary policy measures. The overall nominal cost of external financing for euro area NFCs has trended downwards since 2012 and is currently standing at a historically low level (see Chart 13). Initially, the fall was mostly driven by a decline in the cost of equity financing, mirroring lower risk premia and the recovery in equity prices, but costs of equity have become more volatile since 2015. In addition, supported by the ECB's monetary policy, the cost of bank lending and market-based debt financing has continued to decline until very recently. The fall in the cost of debt financing has been broad-based across euro area countries (see Chart 14). However, despite very low interest rates, the monetary transmission channel has been impeded during the crisis period, as firms have not been able to take full advantage of low interest rates to invest more. Indeed, banks tightened credit standards markedly between mid-2007 and early 2009, and again between mid-2011 and early 2012 (see Chart 15). The results from Bayesian VAR models and a time-varying VAR model also suggest that restrictions in bank loan supply were responsible for reducing NFC credit growth significantly in 2009 and 2010, as well as

between 2012 and 2014.[81] However, financial fragmentation has receded and banks' balance sheets have strengthened significantly over the last couple of years. As a result, bank lending conditions have improved markedly and credit supply-driven shocks are now estimated to contribute positively to loan growth. See Box 3 on the survey evidence regarding the impact of financial constraints on the investment behaviour of euro area NFCs.

Chart 14

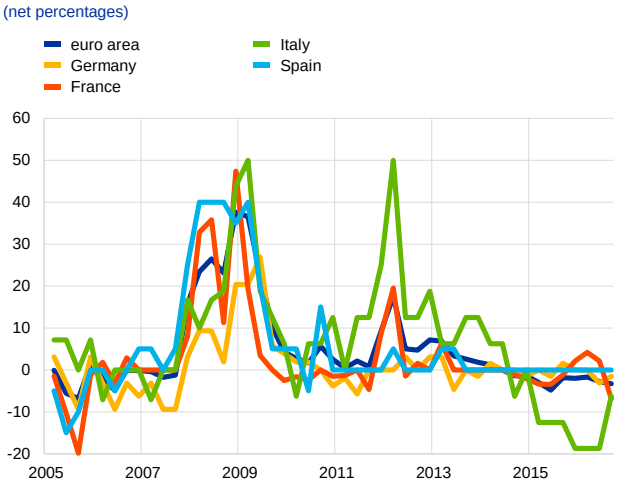
Nominal cost of debt financing for NFCs in selected euro area countries



Sources: Markit iBoxx, ECB and ECB calculations.
Notes: The nominal cost of debt financing for NFCs is calculated as a weighted average of the cost of bank lending and the cost of market-based debt, based on their respective amounts outstanding derived from the ECB monetary financial institutions' balance sheet items statistics and the ECB securities issue statistics. The latest observation is for August 2016.

Chart 15

Changes in credit standards applied to the approval of loans or credit lines to NFCs in selected euro area countries



Source: ECB.
Notes: Tightening of credit standards (+) / easing of credit standards (-). The latest observation refers to the July 2016 euro area bank lending survey.

Box 3

Recent business investment developments from the perspective of firm-level survey data

An indicator of credit constraints constructed from firm-specific survey replies suggests that credit constraints are declining. The ECB and European Commission Survey on the access to finance of enterprises[82] can help to explain the recent dynamics of business investment in the euro area by linking the investment decisions of firms to their perceptions regarding the business environment and to their financial situation. A firm is considered "credit constrained" whenever (i) it applied for a bank loan or credit line and its application was (either wholly or partly) denied, (ii) it

[81] See Altavilla, C., Giannone, D. and Lenza, M., "The financial and macroeconomic effects of OMT announcements", *Working Paper Series*, No 1707, ECB, Frankfurt am Main, August 2014; Altavilla, C., Darracq Paries, M. and Nicoletti, G., "Loan supply, credit markets and the euro area financial crisis", *Working Paper Series*, No 1861, ECB, Frankfurt am Main, October 2015; and Gambetti, L. and Musso, A., "Loan Supply Shocks and the Business Cycle", *Journal of Applied Econometrics*, 2016, forthcoming.

[82] The Survey on the access to finance of enterprises provides evidence on changes in the financial situation, financing needs and access to external financing of small and medium-sized enterprises (SMEs) in the euro area, and compares it with that of large enterprises. The survey started in 2009 but this box covers the period from April 2014 (survey round 11) to March 2016 (survey round 14), when a specific question on investments in property, plant or equipment was included.

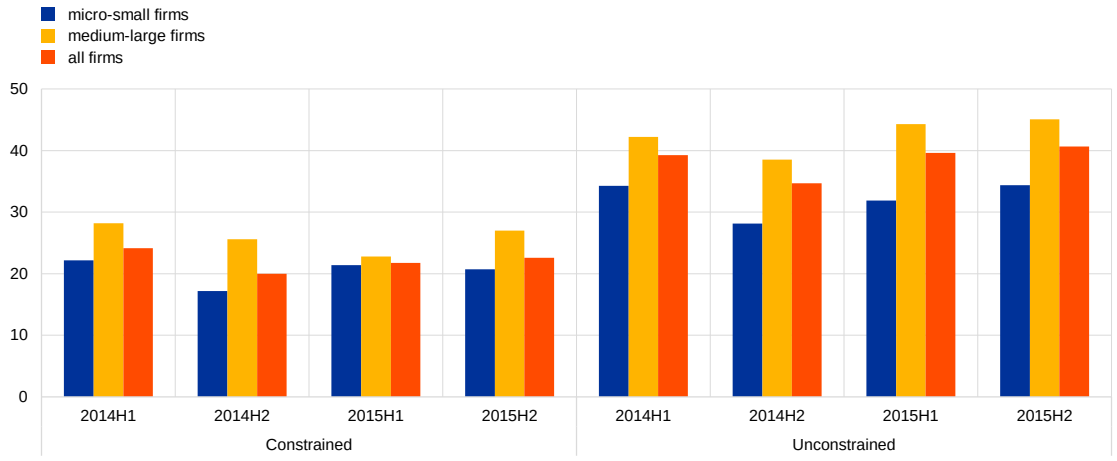
refused the loan because the associated costs were too high, or (iii) it was discouraged from applying for a bank loan although it needed it. The indicator fell to 11% of SMEs and 6% of large firms in March 2016, from 16% and 8%, respectively, two years before.

Survey evidence suggests that a lack of financing may still act as a drag on investment. Among firms that have increased investment during the preceding six months, financially unconstrained non-financial corporations (NFCs) report increasing investments almost twice as often as enterprises facing constrained access to credit (see Chart A).

Chart A

Increase in investment of euro area NFCs by firm size and by the credit constraints index

(weighted percentages of respondents)



Sources: ECB and European Commission Survey on the access to finance of enterprises.
Notes: Firm size is defined in terms of employees. "Micro-small firms" refers to those firms having from 1 to 49 employees, while "medium-large firms" are those which have 50 or more employees. The credit constraints index is calculated as the sum of the percentages of firms that (i) applied for a bank loan or credit line and their application was (either wholly or partly) denied, (ii) refused the loan because the associated costs were too high or (iii) were discouraged from applying for a bank loan although they needed it.

Econometric analysis provides further insights on the determinants of investment. To analyse the determinants of investment, a dummy variable, which takes the value 1 if the firm has reported increases in investment in the preceding six months or 0 if not, is regressed on a set of factors. These are firm-specific factors related to the company's financial situation, capital structure and demographics, as well as factors related to its business environment[83]. Furthermore, the credit constraints indicator is added as an explanatory variable, while a set of other variables control for the intensity of problems encountered by firms in their daily business activity, for instance finding customers, competition or regulation[84]. The analysis only considers firms that either applied for a bank loan or were discouraged from applying.

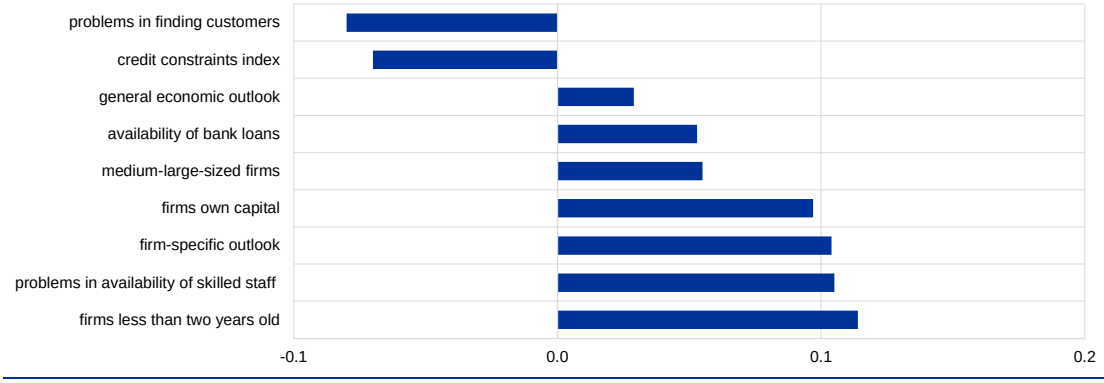
83 A first set of variables controls for size, age, turnover classes and whether firms are independent or family-owned. A second one controls for the financial situation of firms in terms of sales, profitability and own capital, as well as for firms' perceptions related to the general economic outlook and credit availability. All these variables are binary and set equal to 1 if there is an improvement in the factor. In addition, a third set of variables takes into consideration various sources of finance – either internal or external, such as retained earnings, grants, bank products, trade credit and market-based instruments – used by firms to run their business.

84 Firms are asked to rate factors that they see causing concerns for their businesses on a scale from 1 (not at all important) to 10 (extremely important). Such factors include "Finding customers", "Competition", "Access to finance", "Cost of production", "Availability of skilled labour" and "Regulation".

Chart B

Factors affecting the likelihood of euro area NFCs increasing investment

(marginal effects based on probit regressions)



Sources: ECB and European Commission Survey on the access to finance of enterprises and ECB calculations.
Notes: The dependent variable is a binary one that takes the value 1 if the firm has reported increases in investment in the preceding six months or 0 if not. Only statistically significant coefficients are reported, with the exception of the various sources of finance, which are not reported in the chart. Estimates are based on weighted probit regressions (see the Survey on the access to finance of enterprises for an explanation of the weights used). The regressions include country/industry fixed effects and time fixed effects, and errors are clustered at the regional level. The estimation period is from April 2014 to March 2016 for 12 euro area countries.

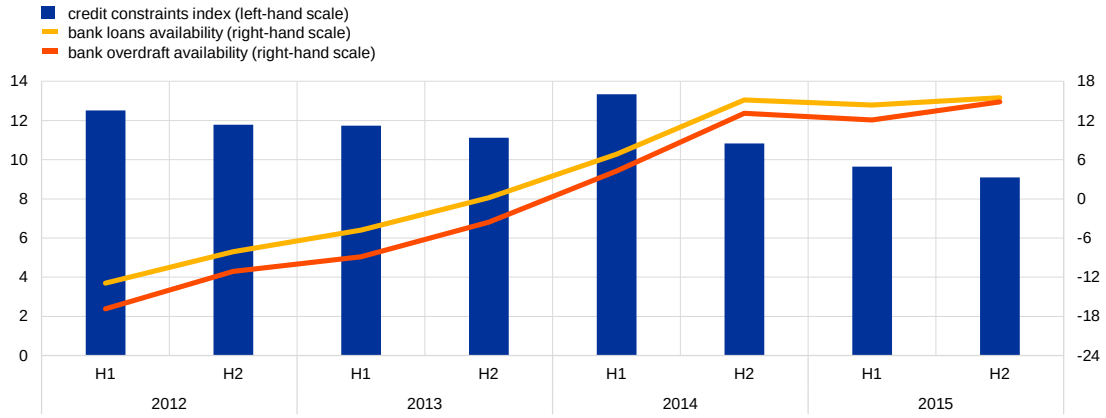
Generally, very young firms, as well as firms with better growth perspectives and more own capital, are more likely to report increased investment. This follows from Chart B, where the bars indicate the marginal increase in the predicted probability of a representative firm increasing investment due to a given factor. For example, the chart shows that young firms (less than two years old) signal increases in investment with an 11% higher probability. This probability of increased investment is 10% higher for firms with a better economic outlook. Moreover, the availability of bank loans raises the probability of increasing investment by 5%, while the impact of improvements in the general economic environment is somewhat smaller (3%). By contrast, being credit constrained has a large negative impact on investment, reducing the probability of increases in investment by 7%. There is also evidence that firms signal increases in investment with a 11% higher probability when they report problems in the availability of skilled labour forces, while for firms facing problems in finding customers this probability is reduced by 8%.

Overall, survey evidence suggests that financial constraints have a negative impact on the investment behaviour of euro area NFCs. At the same time, the credit constraints indicator, and therefore also the negative impact on investment, has declined somewhat over recent years. Consistently, other data in the Survey on the access to finance of enterprises (see Chart C) show that restrictions in bank loan supply have gradually receded and have led to improvements in the availability of bank financing (loans and bank overdrafts).

Chart C

Credit constraints index and availability of bank loans and bank overdrafts

(preceding six-month period; percentage of respondents, left-hand scale; net percentage of respondents, right-hand scale)



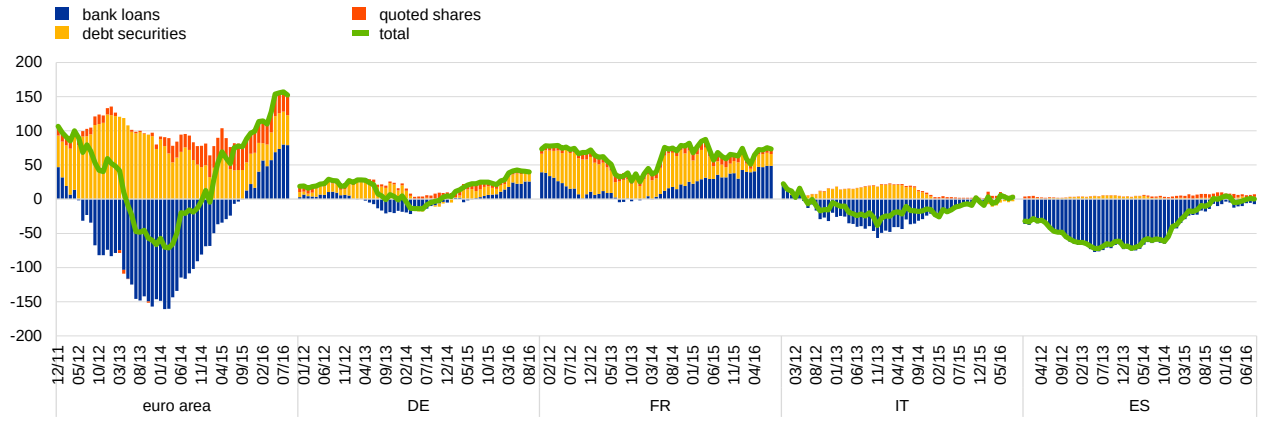
Sources: ECB and European Commission Survey on the access to finance of enterprises.
Note: base: left-hand scale, all enterprises; right-hand scale, enterprises for which the respective instrument (bank loan or bank overdraft) is relevant.

Business investment should also be supported by firms' increasing recourse to external sources of financing as a result of lower costs and fewer credit supply restraints. The annual flow of bank and market-based financing to euro area NFCs has continued to increase in recent quarters and has reached levels similar to those seen in autumn 2011 (see Chart 16). Overall, the recovery in external financing has been supported by the strengthening of economic activity, further declines in the cost of bank lending and market-based debt, the easing of bank lending conditions, as well as a larger number of mergers and acquisitions. At the same time, NFCs' record high liquid asset holdings (which include cash and deposits) have reduced the need for external financing.

Chart 16

Bank loans, debt securities and quoted share issuance of NFCs in selected euro area countries

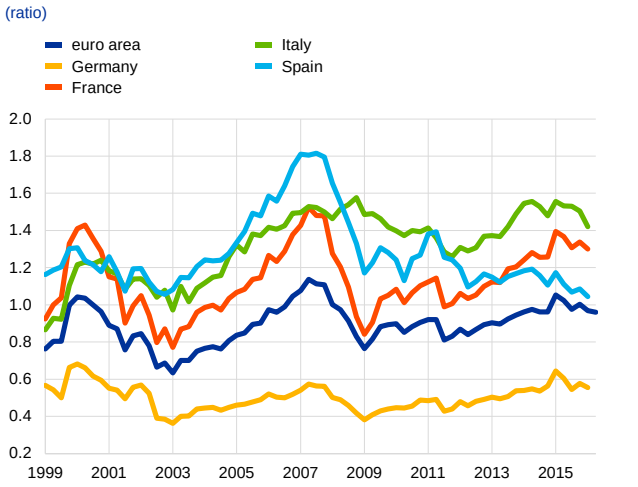
(EUR billions; 12-month flows)



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

Chart 17

Equity-to-net worth of NFCs in selected euro area countries



Sources: Eurostat, ECB and ECB calculations.
Notes: Net worth is at book value and calculated as total assets (sum of financial and non-financial assets) held minus the outstanding amounts of debt liabilities (total liabilities net of shares and other equity issued). Data on non-financial assets for Spain are based on ECB staff estimates. The latest observation is for the second quarter of 2016 for the euro area and for the first quarter of 2016 for the countries.

The measures of the marginal value of capital (Tobin's q) have increased significantly from their post-Lehman and mid-2012 levels (see Chart 17).[85] This signals increased incentives for capital investment. The Tobin's q measures have moderated somewhat since early 2015, but remain significantly above their post-Lehman and mid-2012 levels and should still be supportive of business investment. This is confirmed by the results from a VAR model that includes, as variables, real business investment, real gross operating surplus of NFCs, corporate bond spreads and Tobin's q. The results show that, since early 2014, Tobin's q-driven shocks have increasingly supported business investment growth.[86] This reflects the positive impact of monetary policy, which has reduced macro risk, and thus also corporate default risk in an uncertain environment, and has translated into higher corporate stock prices and improvements in the Tobin's q measures. The fall in the macro and corporate default risk is visible in the observed declines in the expected default frequencies of euro area listed firms and in corporate bond spreads after early 2009 and again after mid-2012. In recent quarters, the positive contribution from the Tobin's q-driven shocks has declined, following the observed decline in stock prices in the first half of 2016 and the gradual strengthening of debt financing growth.

The average euro area corporate gross debt ratio remains historically high, which may weigh on investment decisions (see Chart 18). From a medium-term perspective, high gross debt levels in a number of countries, in combination with possibly higher interest rates, may warrant further deleveraging since a large share of corporate debt is at variable rates. Meanwhile, among the largest euro area countries, the gross debt ratio of NFCs in Spain has fallen considerably since mid-2012 and has reached the average euro area level, benefiting from significant debt write-offs and net redemptions in bank loans. Under severe financial distress conditions – high gross debt levels combined with high perceived default probabilities – NFCs tend to reduce their investment spending significantly. However, firms' record high liquid asset holdings and historically low debt servicing costs should mitigate the possible negative impacts of high debt levels on the economy in the current climate (see Chart 19).

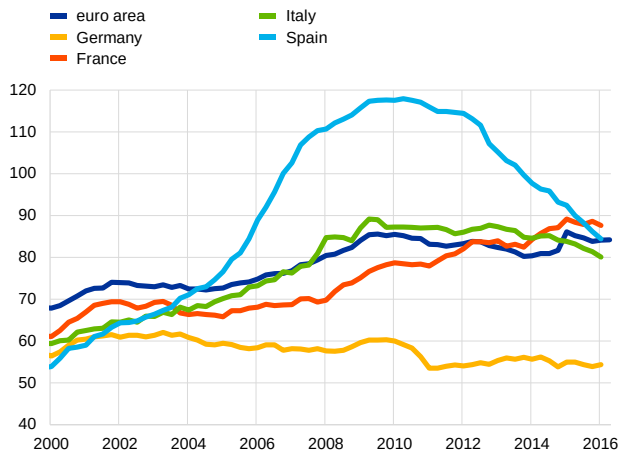
85 Tobin's q is defined as the equity-to-net-worth ratio, with equity being calculated at market value and net worth at book value.

86 See Philippon, T., "The Bond Market's q", *The Quarterly Journal of Economics*, Oxford University Press, Vol. 124(3), 2009, pp. 1011-1056, for an assessment of the impact of the b-measure of Tobin's q, instead of the equity-to-net-worth ratio, on business investment growth in the United States in a similar kind of framework.

Chart 18

Consolidated gross debt of NFCs in selected euro area countries

(as a percentage of nominal GDP)

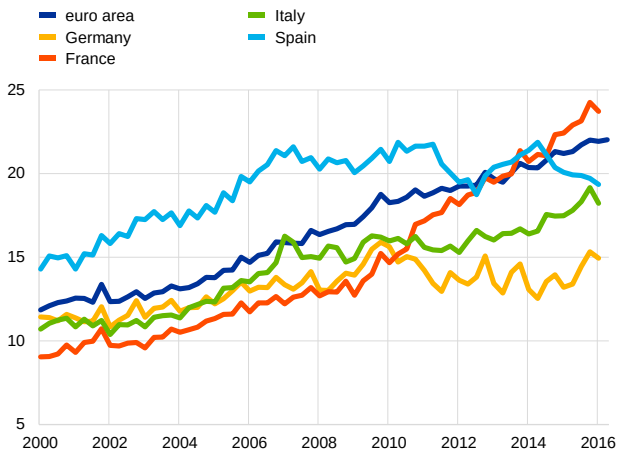


Sources: Eurostat, ECB and ECB calculations.
Notes: Debt is total loans net of inter-company loans, debt securities issued and pension liabilities. The latest observation is for the second quarter of 2016 for the euro area and for the first quarter of 2016 for the countries.

Chart 19

Cash holdings of NFCs in selected euro area countries

(as a percentage of nominal GDP)



Sources: Eurostat, ECB and ECB calculations.
Notes: Cash includes currency and deposits. The latest observation is for the second quarter of 2016 for the euro area and for the first quarter of 2016 for the countries.

Box 4 sets out to bring together the drivers of investment dynamics in a modelling framework.

Box 4

Drivers of business investment through the lens of a VAR model

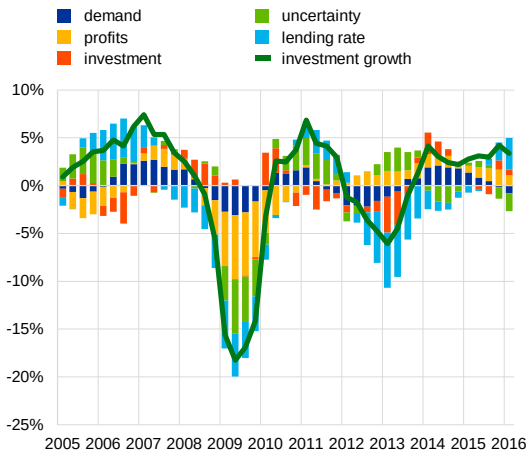
Additional insights on the impact of various factors on investment may be gained with the help of a model bringing the main factors together. This box presents evidence from a VAR model on drivers of business investment, such as real factors and uncertainty.[87] While real factors are found to have supported the recent investment recovery, uncertainty is still weighing on investment growth. For the purposes of the model, "business investment" refers to year-on-year growth in total investment net of housing investment and net of interpolated annual government investment, the latter taken from the AMECO database. "Demand" is GDP adjusted for business investment, "profits" refers to year-on-year growth in total economy gross operating surplus and "investment" represents investment-specific shocks. "Interest rate" refers to NFCs' lending rates and the "uncertainty" measure is the financial volatility index VIX. Shocks are orthogonal and the identification uses Choleski decomposition, where uncertainty is ordered first.

[87] The impulse responses of investment to the variables used in the VAR model show that the variables all have the expected sign and are significant for several periods following the shock.

Chart A

Breakdown of euro area business investment growth

(annual percentage change; percentage points)



Sources: Eurostat, European Commission and Thomson Reuters Datastream.
Note: The latest observation is for the first quarter of 2016.

According to the model, the current business investment recovery in the euro area is being driven by profit growth and improving demand. The results suggest that the investment recovery has been driven by a number of factors that have positively influenced investment at different stages, while some factors have continued to exert a drag. Profit growth seems to be the main driver (see Chart A). A declining negative impact in 2013, followed by an increasingly important positive contribution from improving demand, also supported business investment during the recovery. Reduced uncertainty and falling interest rates, together with the impact of the investment-specific shock, have also periodically been factors supporting the recovery, although uncertainty in this specification has weighed on investment more recently. Some caveats are attached to this type of estimate, as it is dependent on the choice of data and combination of variables. Still, it is a useful way to describe the time-varying impact of various factors and their relative importance during the investment recovery.

Long-term business investment decisions are affected by several institutional and regulatory factors. Regulatory and institutional factors describe the overall country-specific attractiveness of doing business and cover labour market institutions, product market regulations, tax systems, debt restructuring mechanisms and contract enforcement frameworks, as well as the overall quality of the public administration and the judicial system.[88] Not only can regulatory burdens and poor institutions affect the actual costs of investment projects, but they can also exacerbate the effects of uncertainty for any given future revenue and spending stream.[89] In particular, the creation of new firms can be affected by barriers to entry, for example owing to cumbersome licencing procedures. Additionally, administrative procedures can substantially affect the timing of the authorisation process and the expected costs of the investment. Moreover, highly rigid labour market institutions, which prevent an optimal allocation of labour, can discourage more innovative and risky investments, increase expected project costs and lower the capacity to reallocate and adjust firms' output. Firms' decisions are also very sensitive to the degree of irreversibility of their capital plans. In this respect, an efficient judicial

88 A review of the importance of sound institutions for increasing economic resilience and thus influencing investment decisions can be found in the article entitled "Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU", *Economic Bulletin*, Issue 5, ECB, 2016.

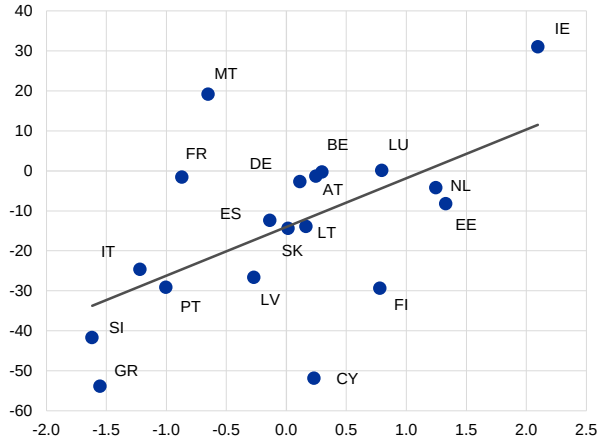
89 In Bloom et al (2007), factors which increase the irreversibility of capital accumulation tend to make firms more cautious.

system and an effective debt restructuring procedure further increase the resilience of the economy by supporting a business environment in which it is easier to reallocate capital should an investment project become unprofitable.

Chart 20

Institutional features and business investment performance

(x-axis: standardised Index Economic Freedom (2008); y-axis: business investment growth (2008-14))



Sources: Heritage Foundation (Index of Economic Freedom) and Eurostat.
Notes: Business investment is defined as private non-residential investment. Higher values for the Index of Economic Freedom signal higher free market conditions.

Despite significant reforms in recent years, several regulatory and institutional factors continue to drag on business investment. Chart 20 shows the relationship between an index that measures the overall capacity of a country to compete in international markets, based on the rule of law, size of government and regulatory efficiency and open market policies (Heritage Foundation's Index of Economic Freedom) in 2008 and the investment performance five years later. The chart shows that there is a clear positive correlation between a more business-friendly environment (higher value in the economic index) and higher business investment growth over five years.

The interaction between regulatory and institutional factors and other drivers analysed above may lead to non-linear effects on business investment (see Box 5). In some euro area countries, an example is the interplay between a high level of indebtedness across firms and inefficient debt restructuring frameworks, which can slow down the deleveraging process and therefore postpone new investment projects.

Box 5

Investment growth and structural reforms

This box looks at the link between country-specific structural characteristics and business investment performance. Informed by the firm-based evidence reported in Box 3, the exercise described in this box aims to test, at the macro level, the relevance of structural variables for investment decisions. Based on the data available for ten euro area countries, a panel data model is estimated for the period 2002-14, which links business investment growth to a set of macro and structural variables.

Table A

Effect from structural reforms

Dependent variable: Real business investment growth	Model (1)	Model (2)
Real GDP growth (t-1)	0.665***	0.621***
	(0.180)	(0.178)
Real long-term rate (t-1)	-0.246	-0.197
	(0.157)	(0.154)
Uncertainty (t-1)	-0.584**	-0.614***
	(0.229)	(0.229)
Credit restrictions (BLS)	-0.027**	-0.026**
	(0.011)	(0.011)
Leverage cycle (t-1)	-0.151***	-0.073
	(0.048)	(0.051)
Doing Business indicator (DBI)	0.316**	0.158
	(0.151)	(0.157)
DBI * leverage cycle (t-1)		-0.354***
		(0.132)
Constant	1.115**	1.125**
	-0.443	-0.435
Observations	490	490
R-squared	0.25	0.26

Sources: ECB, Eurostat and World Bank.
Notes: Robust standard errors in parentheses; significance levels: *** for p-value < 0.01, ** for p-value < 0.05 and * for p-value < 0.1. Real long-term rate refers to real rate of over one year. Uncertainty is defined as the square root of mean squared daily equity returns of the national stock market index. The leverage cycle is based on an HP filter.

Regulatory and institutional indicators are found to be significant in explaining business investment growth. Table A shows the results of the estimated empirical panel model, where real business investment growth is the dependent variable and real GDP growth, the real long-term lending rate, a measure of uncertainty based on stock market volatility, an indicator of credit supply restrictions based on the euro area bank lending survey, the cyclical component of NFCs' debt-to-asset ratio as a measure of excess leverage (leverage cycle) and the World Bank's Doing Business indicator as a variable measuring the business environment are the explanatory variables.[90] Column (1) shows that higher real GDP growth and a more business-friendly environment have a positive effect on business investment growth, while higher uncertainty, tighter credit supply conditions and excess leverage tend to depress business investment growth.[91]

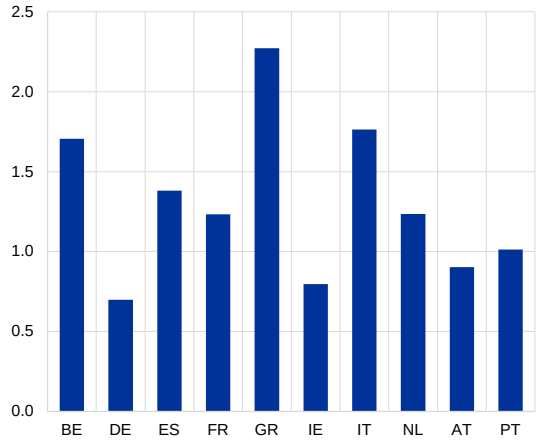
Model estimates suggest that the interaction between structural and certain cyclical factors may exacerbate business investment dynamics in crisis times. This effect is captured by including an interaction term between excess leverage and the business environment indicator (see Table A, column (2)). The additional interaction term is significant and suggests that the interplay between countries with overly indebted firms and a weaker business environment would negatively affect business investment growth.

90 Estimation results and economic implications are robust to the choice of other structural indicators such as the Heritage Foundation's Index of Economic Freedom, the OECD's Employment Protection index and the World Bank's Insolvency Framework index. All variables but the structural indicators and the bank lending survey indicator are lagged.

91 The lending rate is significant in a panel regression without uncertainty. After introducing uncertainty, the lending rate loses significance in our estimation sample.

Chart A

Effect from structural factors



Sources: ECB, Eurostat and World Bank.
Note: This is the annual percentage point effect on business investment growth of closing half of the gap from each country-specific indicator to the value of the best three OECD countries in the World Bank's Doing Business indicator.

Achieving a more business-friendly environment can significantly boost business investment growth. Based on the empirical model, it is possible to simulate the effect of countries aiming to improve their relative ranking in the World Bank's Doing Business indicator vis-à-vis the best three OECD performers. Chart A shows that such a reform effort would lead, on average, to an increase in business investment growth of approximately 1 percentage point per year, with the highest gains achieved in the countries that are furthest away from best OECD practices. While these results are in line with existing empirical evidence showing the importance of the quality of institutions to capital accumulation, productivity and growth (Alesina et al., 2005),[92] they should be interpreted with caution, given the partial equilibrium nature of the exercise, the relatively limited time span used, the proxies used for measuring uncertainty (which only rely on stock market volatility) and the leverage cycle, which is based on an HP filter.

Structural policies fostering investment

There is a wide range of structural policies that are expected to be investment-enhancing. These policies generally aim to improve the regulatory environment and credit conditions, reducing entry barriers and increasing the overall flexibility of labour and product markets. Investment-enhancing policies are expected to affect investment via many channels: by affecting firms' cost of adjusting capital stock, easing the expansion of productive capacity, altering the rate of return on capital, increasing the availability of credit to the economy, lowering administrative burdens and influencing expectations and confidence and thus reducing uncertainty. Many euro area countries have embarked on a number of investment-enhancing reforms since 2011; however, the pace of implementation has significantly slowed in recent years.[93]

Policies that increase competition, reduce administrative burdens and favour business-friendly regulations provide positive support to investment. In this respect, three classes of policy seem particularly important: (i) reforms that affect market efficiency and improve corporate governance structures, including state-

92 Alesina, A., Ardagna, S., Nicoletti, G. and Schiantarelli, F., "Regulation and Investment", *Journal of the European Economic Association*, 3(4), 2005, pp. 791-825.

93 On the low degree of implementation of product market reforms, see the box entitled "The 2016 macroeconomic imbalance procedure and the implementation of the 2015 country-specific recommendations", *Economic Bulletin*, Issue 2, ECB, 2016.

owned enterprises, which can alter the provision of goods and services in specific market segments; [94] (ii) reforms of licensing and administrative procedures that may significantly reduce the burdens of establishing a new firm, especially for non-domestic investors; and (iii) reforms that can reduce or eliminate barriers to entry with a focus on the services sector, including professional services and network industries. With the deleveraging process still ongoing across euro area countries, a way forward to generate additional business investment is to implement policies that can back the creation of new firms and new investment projects. This would also contribute to sectoral reallocation from crisis-hit sectors to more productive and innovative industries. These policies are particularly important to foster the Single Market and thus to increase the positive spillovers to investment resulting from more integrated and highly efficient economies. In the above areas, the pace of reform in recent years has remained relatively limited compared with country-specific needs and the overarching objective of enhancing economic integration within the Single Market. The importance of these reforms has also been emphasised in the context of the 2016 country-specific recommendations, where the Commission has significantly increased the number of recommendations addressing the need for policies to support investment through the enhancement of framework conditions.[95]

High efficiency and flexibility in the labour market is also conducive to higher investment growth.[96] A comprehensive approach to labour market reforms should include measures that can support the reallocation of unemployed people away from crisis-hit sectors, limit the negative effects of the depreciation of labour skills and avoid hysteresis effects on long-term unemployment dynamics. Increasing labour market flexibility may also favour more innovative investment projects, as they tend to be riskier and usually require more job reallocation. Significant labour market reforms have recently been implemented across the most vulnerable euro area countries and their effects need to be continuously monitored.

Measures to address the high level of indebtedness and the lack of an efficient debt restructuring framework are particularly important to support investment across some euro area countries. An efficient system to restructure indebted corporates (e.g. by facilitating out-of-court settlements, reducing time for insolvency proceedings and facilitating the repossession of collateral) and to avoid a sudden increase in the level of non-performing loans (NPLs) can positively contribute to the recovery. These policies would reduce the rigidity and complexity of the business environment and support the reallocation of firms towards more innovative and productive sectors. A stronger institutional infrastructure and supportive regulatory policies for the banking sector could provide further incentives for debtors and creditors to engage in debt restructuring. Policies to facilitate the transfer of non-performing assets to new owners would also support the repair of bank balance

94 Corporate governance can shape firms' balance sheet structures and their dependence on external financing sources, as well as their risk appetite. These factors have important implications for the accumulation of fixed assets in NFCs (see, for example, Zingales, L., "Corporate Governance", in Newman, P. (ed.), *The New Palgrave Dictionary of Economics and the Law*, 1998).

95 See the box entitled "The 2016 country-specific recommendations", *Economic Bulletin*, Issue 5, ECB, 2016.

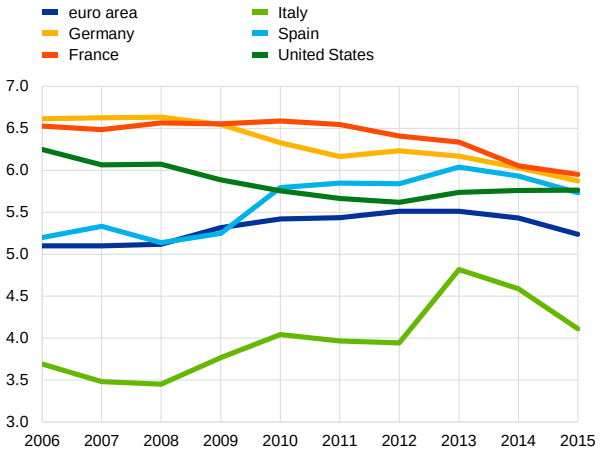
96 See the box entitled "What is behind the low investment in the euro area? Responses from a survey of large euro area firms", *Economic Bulletin*, Issue 8, ECB, 2015.

sheets (e.g. by fostering a market for NPL-backed securities). These actions would strengthen the capacity of the banking sector to provide loans to the economy. They would strengthen the balance sheet of banks and at the same time help distressed, but viable, borrowers to start receiving new credit. In recent years, some countries have modernised their legislative frameworks for debt restructuring, but more effort is needed to make the new frameworks more effective and to increase their harmonisation across European countries.

Chart 21

Quality of infrastructure in the euro area, United States and the largest euro area countries

(scale from 1 to 7; higher scores indicate better infrastructure)



Source: World Economic Forum, Global Competitiveness Report survey.
Note: The latest observation is for 2015.

Finally, targeted and efficient infrastructure investment can support business investment. A considerable volume of empirical literature in the early 1990s has highlighted the importance of physical infrastructure as a determinant of economic growth (e.g. Easterly and Rebelo).[97] Infrastructure investment enhances the productivity of private capital, raising its rate of return and encouraging more investment. The availability of good quality physical infrastructure is also an important consideration for multinational enterprises in their locational choices for foreign direct investment. Infrastructure investment is generally provided by the public sector, public-private partnerships or regulated private entities, in view of the fact that this type of investment tends to have significant up-front costs, while the benefits or returns accrue over very long periods of time. The longevity (and the associated difficulty of ascertaining adequate returns over such a long horizon) can pose a challenge to private financing and provision. In deciding which infrastructure projects to undertake, governments must carefully weigh broader social returns against funding costs and fiscal consequences. Some euro area countries have witnessed a significant decline in public investment over recent years, while others have continued to see relatively low levels during the past 15 years.[98] At the same time the quality of the existing stock of infrastructure has been declining (see Chart 21). With a view to having a comprehensive strategy to stimulate investment and to create new jobs in Europe, the EU Investment Plan was launched in November 2014,[99] financed by the newly established (June 2015) European Fund for Strategic Investments (EFSI).[100] By August 2016, the EFSI had supported one-third of the total expected funding for investment projects,[101] which targets both small-medium enterprises and larger projects. Over the longer term, the effects of the Plan may be sizeable provided that

97 Easterly W. and Rebelo, S., "Fiscal policy and economic growth: an empirical investigation", *Journal of Monetary Economics,* 32(3), 1993, pp. 417-458.

98 See the article entitled "Public investment in Europe", *Economic Bulletin*, Issue 2, ECB, 2016.

99 See the box entitled "The Investment Plan for Europe – "the Juncker plan"" in the article "Public Investment in Europe", *Economic Bulletin*, Issue 2, ECB, 2016.

100 See the box entitled "Flexibility within the Stability and Growth Pact", *Economic Bulletin*, Issue 1, ECB, 2015.

101 According to the initial assumptions, the EU investment plan is expected to mobilise about €315 billion in funding for additional investment projects. A subsequent proposal from the European Commission aims to increase the current EFSI funding to €500 billion and extend its activities to 2020.

investment projects are chosen based on their productivity-enhancing impact and that they are implemented efficiently.

Conclusion

Cyclical and structural factors supporting the investment recovery have improved over recent years. The recovery, underway since 2013, has been driven by improving demand and profit conditions and, for some euro area countries, good progress in the deleveraging process and improved financing conditions.

In the years ahead, improving cyclical factors should continue to support business investment, while a slower underlying growth potential and remaining elevated debt may hold back investment decisions. Looking forward, business investment is expected to continue to grow. Recovering demand, accommodative monetary policy and improving financing conditions should boost investment. Improving profits and the need to replace capital after years of subdued fixed capital formation should also support total investment going forward. However, deleveraging needs and a still unfriendly business environment in some countries, as well as subdued potential growth prospects, may dampen investment growth. In addition, uncertainty related to the European Union's future relations with the United Kingdom and its potential implications for the euro area economy might weigh on the investment outlook.

Looking forward, the role of structural policies in fostering investment remains crucial. Policies affecting the regulatory environment, improving competition in product markets, favouring labour flexibility and supporting debt deleveraging and credit growth via more effective insolvency frameworks are critical to provide a long-term boost to business investment.

Statistics

Contents

Further information

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

Conventions used in the tables

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

1 External environment

1.1 Main trading partners, GDP and CPI

	GDP [1] (period-on-period percentage changes)						CPI (annual percentage changes)						
	G20 [2]	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area [3] (HICP)
							Total	excluding food and energy					
	1	2	3	4	5	6	7	8	9	10	11	12	13
2013	3.1	1.7	1.9	1.4	7.8	-0.3	1.6	1.6	1.5	2.6	0.4	2.6	1.4
2014	3.3	2.4	3.1	-0.1	7.3	1.1	1.7	1.8	1.6	1.5	2.7	2.0	0.4
2015	3.2	2.6	2.2	0.6	6.9	2.0	0.6	1.7	0.1	0.0	0.8	1.4	0.0
2015 Q4	0.7	0.2	0.7	-0.4	1.5	0.4	0.7	1.8	0.5	0.1	0.3	1.5	0.2
2016 Q1	0.7	0.2	0.4	0.5	1.2	0.5	1.0	1.9	1.1	0.3	0.0	2.1	0.0
Q2	0.7	0.4	0.7	0.2	1.8	0.3	0.8	1.8	1.0	0.3	-0.4	2.1	-0.1
Q3	.	.	.	.	.	.	.	.	1.1	0.7	.	1.7	0.3
2016 Apr.	-	-	-	-	-	-	0.8	1.8	1.1	0.3	-0.3	2.3	-0.2
May	-	-	-	-	-	-	0.8	1.8	1.0	0.3	-0.5	2.0	-0.1
June	-	-	-	-	-	-	0.9	1.9	1.0	0.5	-0.4	1.9	0.1
July	-	-	-	-	-	-	0.8	1.8	0.8	0.6	-0.4	1.8	0.2
Aug.	-	-	-	-	-	-	0.9	1.8	1.1	0.6	-0.5	1.3	0.2
Sep.	-	-	-	-	-	-	.	.	1.5	1.0	.	1.9	0.4

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.

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

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports [1]		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index [2]					
	Global [2]	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders	Global	Advanced economies	Emerging market economies
	1	2	3	4	5	6	7	8	9	10	11	12
2013	53.4	54.8	56.8	52.6	51.5	49.7	52.2	52.7	50.6	3.3	-0.1	5.6
2014	54.2	57.3	57.9	50.9	51.1	52.7	53.2	54.1	51.4	2.7	3.8	2.0
2015	53.3	55.8	56.3	51.4	50.4	53.8	51.8	53.9	50.3	0.5	3.8	-1.6
2015 Q4	52.7	55.0	55.4	52.3	49.9	54.1	51.3	53.2	50.5	0.7	0.4	1.0
2016 Q1	51.2	51.5	54.1	51.2	50.3	53.2	50.7	51.3	49.4	-1.0	0.5	-2.0
Q2	50.8	51.5	52.4	49.0	50.5	53.1	49.7	51.1	48.8	-0.6	0.1	-1.1
Q3	51.2	51.9	51.6	49.6	51.7	52.9	51.6	51.1	50.1	.	.	.
2016 Apr.	51.1	52.4	51.9	48.9	50.8	53.0	50.0	51.6	48.7	-1.3	0.7	-2.6
May	50.5	50.9	53.0	49.2	50.5	53.1	49.5	50.9	48.4	-1.6	-0.6	-2.2
June	50.6	51.2	52.4	49.0	50.3	53.1	49.7	51.0	49.3	-0.6	0.1	-1.1
July	51.2	51.8	47.5	50.1	51.9	53.2	51.6	51.0	49.7	0.1	0.4	-0.1
Aug.	51.1	51.5	53.6	49.8	51.8	52.9	51.8	50.8	50.4	.	.	.
Sep.	51.4	52.3	53.9	48.9	51.4	52.6	51.5	51.4	50.2	.	.	.

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
2013	0.09	0.13	0.22	0.34	0.54	0.27	0.15
2014	0.09	0.13	0.21	0.31	0.48	0.23	0.13
2015	-0.11	-0.07	-0.02	0.05	0.17	0.32	0.09
2016 Mar.	-0.29	-0.31	-0.23	-0.13	-0.01	0.63	-0.01
Apr.	-0.34	-0.34	-0.25	-0.14	-0.01	0.63	-0.02
May	-0.34	-0.35	-0.26	-0.14	-0.01	0.64	-0.03
June	-0.33	-0.36	-0.27	-0.16	-0.03	0.65	-0.03
July	-0.33	-0.37	-0.29	-0.19	-0.06	0.70	-0.03
Aug.	-0.34	-0.37	-0.30	-0.19	-0.05	0.81	-0.02
Sep.	-0.34	-0.37	-0.30	-0.20	-0.06	0.85	-0.03

Source: ECB.

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

2.2 Yield curves

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

	Spot rates					Spreads			Instantaneous forward rates			
	Euro area [1], [2]					Euro area [1], [2]	United States	United Kingdom	Euro area [1], [2]			
	3 months	1 year	2 years	5 years	10 years	10 years - 1 year	10 years - 1 year	10 years - 1 year	1 year	2 years	5 years	10 years
	1	2	3	4	5	6	7	8	9	10	11	12
2013	0.08	0.09	0.25	1.07	2.24	2.15	2.91	2.66	0.18	0.67	2.53	3.88
2014	-0.02	-0.09	-0.12	0.07	0.65	0.74	1.95	1.45	-0.15	-0.11	0.58	1.77
2015	-0.45	-0.40	-0.35	0.02	0.77	1.17	1.66	1.68	-0.35	-0.22	0.82	1.98
2016 Mar.	-0.49	-0.49	-0.49	-0.30	0.26	0.75	1.18	1.03	-0.49	-0.47	0.25	1.21
Apr.	-0.54	-0.52	-0.50	-0.27	0.34	0.86	1.28	1.13	-0.50	-0.45	0.33	1.39
May	-0.56	-0.54	-0.53	-0.33	0.22	0.76	1.17	1.03	-0.53	-0.48	0.19	1.19
June	-0.65	-0.65	-0.66	-0.52	-0.10	0.54	1.03	0.72	-0.66	-0.66	-0.12	0.60
July	-0.65	-0.64	-0.65	-0.55	-0.15	0.49	0.96	0.56	-0.65	-0.67	-0.19	0.55
Aug.	-0.65	-0.64	-0.65	-0.54	-0.12	0.53	0.98	0.48	-0.65	-0.66	-0.16	0.64
Sep.	-0.74	-0.72	-0.72	-0.59	-0.16	0.56	1.00	0.60	-0.71	-0.71	-0.22	0.64

Source: ECB.

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

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

2.3 Stock market indices

(index levels in points; period averages)

	Dow Jones EURO STOXX indices												United States	Japan
	Benchmark		Main industry indices											
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care	Standard & Poor's 500	Nikkei 225
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2013	281.9	2,794.0	586.3	195.0	468.2	312.8	151.5	402.7	274.1	230.6	253.4	629.4	1,643.8	13,577.9
2014	318.7	3,145.3	644.3	216.6	510.6	335.5	180.0	452.9	310.8	279.2	306.7	668.1	1,931.4	15,460.4
2015	356.2	3,444.1	717.4	261.9	628.2	299.9	189.8	500.6	373.2	278.0	377.7	821.3	2,061.1	19,203.8
2016 Mar.	322.2	3,031.4	598.6	257.6	595.8	271.6	155.9	483.1	366.3	248.1	349.9	746.9	2,022.0	16,897.3
Apr.	323.4	3,031.2	623.9	254.7	597.3	273.2	153.6	491.4	364.9	252.3	337.0	772.7	2,075.5	16,543.5
May	319.5	2,983.7	602.3	248.6	591.6	279.5	150.8	491.9	357.8	252.1	335.4	755.7	2,065.6	16,612.7
June	312.2	2,910.8	591.8	243.6	588.2	276.9	141.7	481.3	359.9	249.8	320.4	761.3	2,083.9	16,068.8
July	312.8	2,919.1	604.5	247.1	599.9	285.0	132.8	481.1	372.6	258.5	317.8	801.0	2,148.9	16,168.3
Aug.	323.2	2,992.9	637.9	253.0	621.1	284.0	138.3	510.9	391.9	255.4	320.0	785.4	2,177.5	16,586.1
Sep.	325.5	3,012.1	635.6	255.4	617.6	281.3	142.8	518.7	396.1	251.6	321.0	780.1	2,157.7	16,737.0

Source: ECB.

2 Financial developments

2.4 MFI interest rates on loans to and deposits from households (new business) [1), 2)]

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

	Deposits				Revolving loans and overdrafts	Extended credit card credit	Loans for consumption			Loans to sole proprietors and unincorporated partnerships	Loans for house purchase					
	Overnight	Redeemable at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation		APRC [3)]		By initial period of rate fixation				APRC [3)]	Composite cost-of-borrowing indicator
			Up to 2 years	Over 2 years			Floating rate and up to 1 year	Over 1 year			Floating rate and up to 1 year	Over 1 and up to 5 years	Over 5 and up to 10 years	Over 10 years		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2015 Sep.	0.14	0.67	0.67	1.08	6.85	17.06	5.22	6.18	6.55	2.68	2.07	2.36	2.29	2.38	2.61	2.25
Oct.	0.14	0.66	0.64	0.99	6.71	16.98	5.22	6.03	6.43	2.64	2.06	2.32	2.30	2.41	2.58	2.26
Nov.	0.14	0.65	0.64	0.96	6.68	16.91	5.23	6.22	6.60	2.68	2.04	2.31	2.32	2.45	2.62	2.27
Dec.	0.13	0.64	0.64	0.98	6.61	16.95	4.84	5.94	6.25	2.53	1.99	2.27	2.27	2.41	2.55	2.22
2016 Jan.	0.12	0.62	0.63	1.25	6.65	16.88	5.31	6.29	6.65	2.53	1.99	2.22	2.30	2.40	2.53	2.23
Feb.	0.12	0.60	0.60	0.89	6.66	16.89	5.01	6.13	6.46	2.61	1.99	2.19	2.23	2.33	2.48	2.19
Mar.	0.11	0.58	0.59	0.87	6.63	16.88	5.14	5.97	6.34	2.53	1.90	2.09	2.10	2.24	2.38	2.11
Apr.	0.11	0.57	0.58	0.85	6.54	16.82	5.20	5.99	6.33	2.56	1.86	2.09	2.17	2.23	2.41	2.09
May	0.10	0.56	0.54	0.87	6.56	16.75	5.21	6.09	6.46	2.56	1.85	2.02	2.06	2.12	2.37	2.02
June	0.09	0.54	0.56	0.86	6.55	16.79	4.94	5.87	6.18	2.44	1.81	2.00	1.97	2.02	2.32	1.97
July	0.09	0.52	0.50	0.92	6.46	16.79	5.12	5.96	6.28	2.39	1.82	1.96	1.96	1.96	2.33	1.92
Aug. [(p)]	0.08	0.51	0.52	0.84	6.48	16.77	5.42	6.02	6.38	2.40	1.87	1.96	1.86	1.88	2.31	1.90

Source: ECB.

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

2) Including non-profit institutions serving households.

3) Annual percentage rate of charge (APRC).

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

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

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Overnight	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2015 Sep.	0.17	0.26	1.00	3.18	3.23	3.51	2.89	2.04	2.25	2.21	1.55	1.87	2.17	2.23
Oct.	0.16	0.26	0.82	3.09	3.19	3.42	2.89	2.04	2.28	2.20	1.48	1.69	2.03	2.16
Nov.	0.16	0.23	0.83	3.05	3.14	3.39	2.88	2.03	2.16	2.20	1.46	1.62	1.98	2.13
Dec.	0.14	0.23	0.85	3.01	3.07	3.18	2.77	2.01	2.13	2.17	1.51	1.77	1.92	2.10
2016 Jan.	0.13	0.27	0.77	2.97	3.23	3.25	2.78	2.00	2.22	2.17	1.43	1.67	2.07	2.10
Feb.	0.13	0.24	0.70	2.93	3.16	3.28	2.76	1.96	2.11	2.09	1.37	1.47	1.74	2.02
Mar.	0.13	0.16	0.87	2.89	3.03	3.20	2.68	1.92	2.03	2.02	1.39	1.74	1.77	2.05
Apr.	0.12	0.19	0.64	2.80	2.99	3.12	2.66	1.93	1.96	1.98	1.38	1.59	1.81	2.01
May	0.11	0.13	0.63	2.76	2.91	3.10	2.61	1.91	1.94	1.92	1.27	1.68	1.74	1.91
June	0.11	0.15	0.64	2.75	2.66	3.01	2.52	1.85	1.90	1.85	1.34	1.60	1.64	1.90
July	0.09	0.16	0.42	2.71	2.72	3.07	2.47	1.86	1.91	1.80	1.28	1.56	1.69	1.87
Aug. [(p)]	0.09	0.16	0.47	2.74	2.67	3.01	2.46	1.86	1.95	1.79	1.22	1.48	1.54	1.83

Source: ECB.

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

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

2 Financial developments

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

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

	Outstanding amounts							Gross issues [1]						
	Total	MFIs (including Euro-system)	Non-MFI corporations			General government		Total	MFIs (including Euro-system)	Non-MFI corporations			General government	
			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central govern-ment	Other general govern-ment			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central govern-ment	Other general govern-ment
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Short-term														
2013	1,255	483	124	.	67	529	53	508	314	31	.	44	99	21
2014	1,318	543	129	.	59	538	50	410	219	34	.	38	93	25
2015	1,262	517	140	.	61	478	65	336	150	37	.	32	82	34
2016 Mar.	1,283	515	135	.	72	493	69	321	123	38	.	30	89	40
Apr.	1,285	519	126	.	78	495	68	352	155	36	.	33	82	46
May	1,296	530	123	.	79	495	68	333	153	38	.	34	75	34
June	1,276	525	122	.	67	493	69	308	136	38	.	27	80	27
July	1,272	524	124	.	72	486	66	349	154	43	.	36	78	38
Aug.	1,275	526	126	.	70	484	70	302	138	36	.	24	77	26
Long-term														
2013	15,112	4,403	3,091	.	921	6,069	628	223	70	39	.	16	89	9
2014	15,131	4,045	3,164	.	994	6,285	642	221	65	44	.	16	85	10
2015	15,238	3,784	3,275	.	1,061	6,481	637	214	66	45	.	13	81	9
2016 Mar.	15,148	3,728	3,126	.	1,051	6,604	639	248	72	39	.	26	94	17
Apr.	15,112	3,724	3,140	.	1,068	6,548	633	219	61	35	.	25	91	7
May	15,221	3,732	3,162	.	1,082	6,611	634	238	59	57	.	26	88	8
June	15,222	3,733	3,107	.	1,081	6,663	638	216	73	41	.	14	79	10
July	15,182	3,698	3,130	.	1,084	6,629	641	203	55	46	.	10	84	9
Aug.	15,167	3,692	3,125	.	1,082	6,628	640	98	32	17	.	2	42	5

Source: ECB.

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

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

(EUR billions; percentage changes)

	Debt securities							Listed shares			
	Total	MFIs (including Eurosystem)	Non-MFI corporations			General government		Total	MFIs	Financial corporations other than MFIs	Non-financial corporations
			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central government	Other general government				
	1	2	3	4	5	6	7	8	9	10	11
Oustanding amount											
2013	16,366.9	4,886.1	3,215.2	.	987.4	6,598.1	680.0	5,649.0	569.1	742.5	4,337.4
2014	16,449.2	4,587.9	3,293.3	.	1,052.1	6,823.2	692.7	5,958.0	591.1	780.6	4,586.3
2015	16,499.2	4,301.2	3,415.3	.	1,121.6	6,959.3	701.9	6,744.7	586.1	911.6	5,247.0
2016 Mar.	16,431.2	4,243.3	3,261.2	.	1,122.8	7,096.7	707.2	6,419.9	483.4	902.3	5,034.2
Apr.	16,397.0	4,243.1	3,265.9	.	1,145.3	7,042.5	700.2	6,462.6	505.5	917.8	5,039.4
May	16,516.9	4,262.0	3,285.3	.	1,161.4	7,106.5	701.6	6,552.6	491.5	923.5	5,137.7
June	16,498.5	4,258.6	3,228.6	.	1,148.0	7,156.0	707.3	6,210.1	395.0	862.0	4,953.2
July	16,453.4	4,222.3	3,253.7	.	1,155.2	7,115.6	706.6	6,494.3	427.0	874.1	5,193.3
Aug.	16,442.0	4,217.7	3,250.5	.	1,152.3	7,112.0	709.5	6,539.3	444.7	881.3	5,213.2
Growth rate											
2013	-1.4	-8.9	-3.3	.	8.0	4.5	-1.1	0.7	7.2	-0.4	0.2
2014	-0.7	-7.9	0.4	.	5.1	3.1	1.1	1.5	7.2	1.2	0.7
2015	0.2	-6.9	5.1	.	4.8	1.8	0.6	1.1	4.5	1.4	0.6
2016 Mar.	-1.0	-6.9	-1.0	.	2.9	2.2	0.2	0.9	3.3	1.5	0.6
Apr.	-1.0	-6.8	-0.3	.	3.7	1.7	-0.1	0.9	2.6	1.7	0.6
May	-0.7	-5.9	-0.7	.	4.8	1.6	0.6	0.9	2.5	1.5	0.6
June	-0.4	-4.6	-2.3	.	4.8	2.1	2.7	0.9	2.7	1.5	0.6
July	-0.2	-4.7	-1.2	.	4.4	2.2	2.8	0.9	2.8	1.5	0.6
Aug.	0.0	-4.6	-0.3	.	4.0	2.1	2.1	0.9	2.8	1.5	0.5

Source: ECB.

2 Financial developments

2.8 Effective exchange rates [1)]

(period averages; index: 1999 Q1=100)

	EER-19						EER-38	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM [2)]	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2013	101.2	98.2	96.7	91.8	100.9	98.9	111.9	95.5
2014	101.8	97.8	96.8	92.0	99.4	100.0	114.7	96.0
2015	92.4	88.4	89.1	83.9	86.3	90.7	106.5	87.8
2015 Q4	92.4	88.3	89.3	84.3	85.8	90.5	107.7	88.3
2016 Q1	94.1	89.5	90.8	85.8	86.9	91.7	110.4	90.1
Q2	94.9	90.3	91.5	86.4	86.6	92.1	110.8	90.4
Q3	95.2	90.5	91.6	.	.	.	110.6	90.1
2016 Apr.	94.8	90.1	91.4	-	-	-	110.6	90.2
May	95.1	90.5	91.6	-	-	-	111.1	90.7
June	94.7	90.2	91.3	-	-	-	110.5	90.3
July	94.9	90.4	91.4	-	-	-	110.2	89.9
Aug.	95.2	90.6	91.6	-	-	-	110.6	90.2
Sep.	95.4	90.7	91.7	-	-	-	110.9	90.3
	Percentage change versus previous month							
2016 Sep.	0.2	0.1	0.1	-	-	-	0.2	0.2
	Percentage change versus previous year							
2016 Sep.	1.6	1.2	1.1	-	-	-	1.1	0.2

Source: ECB.

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

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

2.9 Bilateral exchange rates

(period averages; units of national currency per euro)

	Chinese renminbi	Croatian kuna	Czech koruna	Danish krone	Hungarian forint	Japanese yen	Polish zloty	Pound sterling	Romanian leu	Swedish krona	Swiss franc	US Dollar
	1	2	3	4	5	6	7	8	9	10	11	12
2013	8.165	7.579	25.980	7.458	296.873	129.663	4.197	0.849	4.4190	8.652	1.231	1.328
2014	8.186	7.634	27.536	7.455	308.706	140.306	4.184	0.806	4.4437	9.099	1.215	1.329
2015	6.973	7.614	27.279	7.459	309.996	134.314	4.184	0.726	4.4454	9.353	1.068	1.110
2015 Q4	7.000	7.623	27.057	7.460	312.652	132.952	4.264	0.722	4.4573	9.302	1.085	1.095
2016 Q1	7.210	7.617	27.040	7.461	312.024	126.997	4.365	0.770	4.4924	9.327	1.096	1.102
Q2	7.379	7.504	27.040	7.439	313.371	121.949	4.372	0.787	4.4986	9.278	1.096	1.129
Q3	7.443	7.493	27.029	7.442	311.016	114.292	4.338	0.850	4.4646	9.511	1.089	1.117
2016 Apr.	7.346	7.495	27.031	7.443	311.462	124.287	4.311	0.792	4.4724	9.203	1.093	1.134
May	7.386	7.498	27.026	7.439	314.581	123.214	4.404	0.778	4.4991	9.295	1.106	1.131
June	7.402	7.520	27.061	7.437	313.984	118.453	4.400	0.790	4.5230	9.334	1.089	1.123
July	7.391	7.493	27.042	7.439	314.353	115.250	4.396	0.841	4.4856	9.474	1.087	1.107
Aug.	7.454	7.487	27.025	7.441	310.205	113.487	4.300	0.855	4.4591	9.491	1.088	1.121
Sep.	7.482	7.500	27.022	7.447	308.678	114.218	4.321	0.852	4.4502	9.565	1.092	1.121
	Percentage change versus previous month											
2016 Sep.	0.4	0.2	0.0	0.1	-0.5	0.6	0.5	-0.3	-0.2	0.8	0.3	0.0
	Percentage change versus previous year											
2016 Sep.	4.7	-1.2	-0.2	-0.2	-1.4	-15.3	2.4	16.5	0.6	1.8	0.1	-0.1

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 Q3	21,708.7	23,017.6	-1,308.9	9,437.3	7,778.0	6,851.3	10,159.9	-45.7	4,821.5	5,079.7	644.2	13,185.1
Q4	22,235.2	23,309.6	-1,074.4	9,815.1	8,079.3	7,175.3	10,303.2	-44.6	4,645.1	4,927.1	644.2	13,003.1
2016 Q1	22,100.0	23,183.1	-1,083.1	9,672.8	7,999.2	7,111.8	10,113.0	-21.8	4,661.9	5,070.9	675.3	13,234.3
Q2	22,550.0	23,431.9	-881.9	9,710.4	8,031.1	7,432.1	10,147.6	-54.9	4,740.5	5,253.2	721.8	13,331.6
Outstanding amounts as a percentage of GDP												
2016 Q2	212.5	220.8	-8.3	91.5	75.7	70.0	95.6	-0.5	44.7	49.5	6.8	125.6
Transactions												
2015 Q3	117.7	22.8	94.9	146.2	130.0	27.8	-93.1	-0.8	-58.1	-14.0	2.7	-
Q4	152.9	-4.1	157.0	227.7	206.5	111.5	-11.8	55.6	-246.5	-198.8	4.6	-
2016 Q1	386.5	381.8	4.7	115.2	74.6	134.1	41.3	27.3	108.8	265.9	1.0	-
Q2	202.0	110.0	92.0	-21.0	4.4	127.0	-47.2	-47.8	141.6	152.8	2.2	-
2016 Feb.	173.1	190.3	-17.2	68.5	25.7	48.2	25.9	13.2	42.2	138.8	1.1	-
Mar.	-2.0	-38.8	36.7	25.8	8.9	50.6	52.0	-1.0	-78.5	-99.7	1.1	-
Apr.	151.5	130.5	21.1	-8.0	9.7	55.9	-64.3	-21.4	126.7	185.1	-1.6	-
May	100.1	89.1	10.9	32.7	20.4	26.1	21.3	-14.0	52.1	47.4	3.1	-
June	-49.6	-109.7	60.0	-45.8	-25.6	45.0	-4.2	-12.4	-37.2	-79.8	0.7	-
July	122.8	123.5	-0.8	15.8	-3.5	41.9	-10.9	6.1	59.9	138.0	-0.9	-
12-month cumulated transactions												
2016 July	829.1	512.9	316.2	393.5	328.0	418.8	-69.5	29.5	-29.2	254.4	16.5	-
12-month cumulated transactions as a percentage of GDP												
2016 July	7.8	4.8	3.0	3.7	3.1	3.9	-0.7	0.3	-0.3	2.4	0.2	-

Source: ECB.

1) Net financial derivatives are included in total assets.

3 Economic activity

3.1 GDP and expenditure components

(quarterly data seasonally adjusted; annual data unadjusted)

	GDP											
	Total	Domestic demand								External balance [1]		
		Total	Private consumption	Government consumption	Gross fixed capital formation				Changes in inventories [2]	Total	Exports [1]	Imports [1]
						Total construction	Total machinery	Intellectual property products				
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2013	9,938.2	9,607.0	5,561.7	2,093.9	1,951.3	1,005.1	571.1	370.2	0.1	331.2	4,373.9	4,042.7
2014	10,127.6	9,768.4	5,634.1	2,124.5	1,991.7	1,006.5	596.7	383.3	18.1	359.2	4,533.1	4,173.9
2015	10,454.6	9,976.3	5,741.1	2,163.8	2,069.1	1,024.3	632.6	406.7	2.3	478.3	4,826.5	4,348.2
2015 Q3	2,619.3	2,498.2	1,440.8	542.4	516.9	255.1	157.6	102.8	-2.0	121.1	1,210.4	1,089.3
Q4	2,643.3	2,521.8	1,447.0	546.1	526.8	259.5	163.6	102.3	1.9	121.5	1,214.6	1,093.0
2016 Q1	2,659.7	2,532.3	1,451.6	551.2	528.3	260.6	164.3	102.0	1.1	127.4	1,196.4	1,069.0
Q2	2,674.4	2,540.7	1,459.7	553.7	528.7	260.1	165.1	102.2	-1.3	133.8	1,209.9	1,076.1
	as a percentage of GDP											
2015	100.0	95.4	54.9	20.7	19.8	9.8	6.1	3.9	0.0	4.6	-	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2015 Q3	0.4	0.7	0.5	0.4	0.5	0.2	0.9	0.8	-	-	0.4	1.2
Q4	0.4	0.7	0.3	0.6	1.4	1.3	3.4	-1.3	-	-	0.7	1.4
2016 Q1	0.5	0.4	0.6	0.6	0.4	0.7	0.3	-0.2	-	-	0.0	-0.1
Q2	0.3	-0.1	0.2	0.1	0.0	-0.4	0.6	0.1	-	-	1.1	0.4
	annual percentage changes											
2013	-0.3	-0.6	-0.6	0.2	-2.4	-3.5	-2.8	1.1	-	-	2.2	1.5
2014	1.1	1.1	0.8	0.6	1.5	-0.7	4.3	3.0	-	-	4.4	4.8
2015	2.0	1.9	1.8	1.4	3.1	1.2	5.1	5.0	-	-	6.3	6.3
2015 Q3	2.0	1.9	1.9	1.3	2.7	1.0	3.5	6.0	-	-	5.7	5.9
Q4	2.0	2.3	1.7	1.9	3.7	2.1	6.1	4.2	-	-	4.8	5.8
2016 Q1	1.7	2.1	1.9	2.0	2.5	1.8	5.0	0.5	-	-	2.3	3.2
Q2	1.6	1.9	1.7	1.8	2.4	1.7	5.3	-0.5	-	-	2.2	2.8
	contributions to quarter-on-quarter percentage changes in GDP; percentage points											
2015 Q3	0.4	0.7	0.3	0.1	0.1	0.0	0.1	0.0	0.2	-0.3	-	-
Q4	0.4	0.7	0.2	0.1	0.3	0.1	0.2	0.0	0.1	-0.3	-	-
2016 Q1	0.5	0.4	0.3	0.1	0.1	0.1	0.0	0.0	-0.1	0.1	-	-
Q2	0.3	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.4	-	-
	contributions to annual percentage changes in GDP; percentage points											
2013	-0.3	-0.6	-0.3	0.0	-0.5	-0.4	-0.2	0.0	0.2	0.4	-	-
2014	1.1	1.1	0.4	0.1	0.3	-0.1	0.2	0.1	0.2	0.0	-	-
2015	2.0	1.8	1.0	0.3	0.6	0.1	0.3	0.2	-0.1	0.2	-	-
2015 Q3	2.0	1.9	1.0	0.3	0.5	0.1	0.2	0.2	0.0	0.1	-	-
Q4	2.0	2.2	0.9	0.4	0.7	0.2	0.4	0.2	0.2	-0.2	-	-
2016 Q1	1.7	1.9	1.0	0.4	0.5	0.2	0.3	0.0	0.0	-0.3	-	-
Q2	1.6	1.8	0.9	0.4	0.5	0.2	0.3	0.0	0.0	-0.2	-	-

Sources: Eurostat and ECB calculations.

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

2) Including acquisitions less disposals of valuables.

3 Economic activity

3.2 Value added by economic activity

(quarterly data seasonally adjusted; annual data unadjusted)

	Gross value added (basic prices)											Taxes less subsidies on products
	Total	Agriculture, forestry and fishing	Manufacturing energy and utilities	Const-ruction	Trade, transport, accom-modation and food services	Infor-mation and com-munica-tion	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2013	8,933.9	156.5	1,736.6	459.1	1,680.3	409.1	445.7	1,035.5	945.7	1,748.8	316.5	1,004.3
2014	9,094.9	150.3	1,768.0	462.7	1,719.1	415.3	459.4	1,047.2	971.2	1,778.7	323.0	1,032.7
2015	9,383.2	149.7	1,868.4	470.4	1,781.2	429.1	455.6	1,068.8	1,011.8	1,817.9	330.3	1,071.4
2015 Q3	2,348.6	37.4	466.5	117.2	446.8	107.4	113.4	268.3	253.7	455.0	82.8	270.7
Q4	2,370.7	38.4	470.2	119.2	450.2	109.0	112.6	270.4	257.9	459.2	83.6	272.6
2016 Q1	2,386.9	36.8	473.4	121.1	454.1	109.8	113.0	271.4	260.1	462.5	84.6	272.8
Q2	2,400.0	36.9	472.7	121.6	457.4	110.6	111.8	273.9	264.3	465.9	85.0	274.4
	as a percentage of value added											
2015	100.0	1.6	19.9	5.0	19.0	4.6	4.9	11.4	10.8	19.4	3.5	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2015 Q3	0.4	0.5	0.7	-0.1	0.4	0.8	-0.5	0.5	0.4	0.2	0.6	0.2
Q4	0.3	0.7	0.1	1.0	0.4	0.0	0.2	0.3	0.6	0.3	0.6	1.3
2016 Q1	0.6	-0.4	0.2	1.0	0.8	0.9	0.8	0.1	1.0	0.5	0.8	0.1
Q2	0.3	0.3	0.5	-0.3	0.4	0.1	-0.5	0.3	0.8	0.2	0.2	0.1
	annual percentage changes											
2013	-0.2	3.1	-0.9	-3.5	-0.5	1.5	0.1	1.4	0.3	0.1	-1.0	-1.1
2014	1.1	1.2	2.0	-0.8	1.4	3.2	-1.2	0.9	1.7	0.5	0.9	0.8
2015	1.9	0.2	3.8	0.4	2.2	2.9	0.1	1.0	2.7	1.1	0.9	2.8
2015 Q3	1.9	-0.6	3.8	0.3	2.0	2.8	-0.5	1.0	2.6	1.1	0.8	3.0
Q4	1.9	1.0	3.5	1.2	1.9	2.0	-0.2	1.2	2.6	1.1	1.3	3.1
2016 Q1	1.6	0.1	1.4	1.5	2.0	2.4	0.6	0.9	2.7	1.1	1.8	2.8
Q2	1.6	1.1	1.5	1.6	2.0	1.9	0.0	1.2	2.9	1.3	2.1	1.7
	contributions to quarter-on-quarter percentage changes in value added; percentage points											
2015 Q3	0.4	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	-
Q4	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	-
2016 Q1	0.6	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	-
Q2	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	-
	contributions to annual percentage changes in value added; percentage points											
2013	-0.2	0.1	-0.2	-0.2	-0.1	0.1	0.0	0.2	0.0	0.0	0.0	-
2014	1.1	0.0	0.4	0.0	0.3	0.1	-0.1	0.1	0.2	0.1	0.0	-
2015	1.9	0.0	0.7	0.0	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
2015 Q3	1.9	0.0	0.7	0.0	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
Q4	1.9	0.0	0.7	0.1	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
2016 Q1	1.6	0.0	0.3	0.1	0.4	0.1	0.0	0.1	0.3	0.2	0.1	-
Q2	1.6	0.0	0.3	0.1	0.4	0.1	0.0	0.1	0.3	0.2	0.1	-

Sources: Eurostat and ECB calculations.

3 Economic activity

3.3 Employment [1)]

(quarterly data seasonally adjusted; annual data unadjusted)

	Total	By employment status		By economic activity										
		Employees	Self-employed	Agriculture, forestry and fishing	Manufacturing, energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12	13
Persons employed													
as a percentage of total persons employed													
2013	100.0	85.0	15.0	3.4	15.3	6.2	24.8	2.7	2.7	1.0	12.9	24.1	7.0
2014	100.0	85.1	14.9	3.4	15.1	6.1	24.8	2.7	2.7	1.0	13.0	24.2	7.0
2015	100.0	85.2	14.8	3.3	15.0	6.0	24.8	2.7	2.6	1.0	13.3	24.1	7.0
annual percentage changes													
2013	-0.7	-0.6	-0.9	-1.7	-1.3	-4.0	-0.8	0.2	-1.2	-1.4	0.3	0.3	-0.3
2014	0.6	0.6	0.1	0.3	-0.2	-1.8	0.7	0.9	-1.0	0.7	1.9	0.9	0.5
2015	1.1	1.3	0.1	-0.1	0.3	0.1	1.2	1.0	-0.1	1.3	2.8	1.0	1.2
2015 Q3	1.1	1.3	0.0	0.0	0.5	-0.3	1.2	1.5	0.0	1.2	3.0	1.1	1.0
Q4	1.3	1.6	-0.2	0.0	0.4	-0.1	1.7	1.5	0.0	0.9	3.1	1.1	1.7
2016 Q1	1.4	1.8	-0.3	-0.3	0.7	0.0	1.8	2.5	0.3	1.5	3.3	1.1	1.7
Q2	1.4	1.7	0.0	0.3	0.6	-0.2	2.0	1.7	0.1	0.3	3.0	1.2	1.6
Hours worked													
as a percentage of total hours worked													
2013	100.0	80.1	19.9	4.4	15.7	6.9	25.8	2.8	2.7	1.0	12.5	21.8	6.3
2014	100.0	80.3	19.7	4.3	15.7	6.7	25.8	2.9	2.7	1.0	12.7	22.0	6.3
2015	100.0	80.5	19.5	4.3	15.6	6.7	25.7	2.9	2.7	1.0	13.0	21.9	6.2
annual percentage changes													
2013	-1.4	-1.3	-1.8	-1.4	-1.5	-5.5	-1.6	-0.1	-1.9	-2.8	-0.7	-0.3	-1.4
2014	0.5	0.8	-0.5	-1.1	0.3	-1.6	0.5	1.0	-1.0	0.4	2.0	1.1	0.1
2015	1.2	1.4	0.3	0.8	0.7	0.6	1.0	1.9	-0.3	1.6	3.0	1.1	0.8
2015 Q3	1.3	1.6	0.4	0.8	1.1	0.3	0.8	2.6	-0.5	2.0	3.6	1.3	0.9
Q4	1.3	1.5	0.3	1.1	0.6	0.7	1.4	1.8	0.1	-0.1	3.1	1.0	1.3
2016 Q1	1.7	2.0	0.4	1.3	1.2	0.7	1.9	3.2	0.6	0.7	3.9	1.0	0.9
Q2	1.6	1.8	0.7	0.9	1.1	0.2	2.1	2.0	0.7	0.3	3.5	1.0	1.7
Hours worked per person employed													
annual percentage changes													
2013	-0.8	-0.7	-0.9	0.2	-0.2	-1.5	-0.8	-0.3	-0.6	-1.4	-1.1	-0.5	-1.2
2014	0.0	0.1	-0.5	-1.4	0.5	0.2	-0.2	0.1	-0.1	-0.4	0.1	0.2	-0.5
2015	0.1	0.1	0.1	0.9	0.4	0.5	-0.3	0.9	-0.1	0.3	0.2	0.1	-0.3
2015 Q3	0.2	0.2	0.4	0.8	0.6	0.6	-0.4	1.1	-0.5	0.8	0.6	0.3	-0.1
Q4	0.0	-0.1	0.5	1.2	0.2	0.8	-0.3	0.3	0.1	-0.9	0.0	-0.1	-0.4
2016 Q1	0.2	0.2	0.7	1.6	0.5	0.6	0.1	0.6	0.3	-0.8	0.6	-0.1	-0.8
Q2	0.2	0.1	0.7	0.6	0.5	0.3	0.0	0.3	0.7	0.0	0.4	-0.2	0.1

Sources: Eurostat and ECB calculations.

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

3 Economic activity

3.4 Labour force, unemployment and job vacancies

(seasonally adjusted, unless otherwise indicated)

	Labour force, millions [1]	Under-employ-ment, % of labour force [1]	Unemployment												Job vacancy rate [2]
			Total		Long-term unemploy-ment, % of labour force [1]	By age				By gender					
						Adult		Youth		Male		Female			
			Millions	% of labour force		Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions	% of labour force		
	1	2	3	4	5	6	7	8	9	10	11	12	13		14
% of total in 2013			100.0			81.3		18.7		53.6		46.4			
2013	159.359	4.6	19.227	12.0	5.9	15.628	10.7	3.599	24.4	10.305	11.9	8.922	12.1		1.4
2014	160.334	4.6	18.634	11.6	6.1	15.214	10.4	3.421	23.7	9.933	11.5	8.701	11.8		1.5
2015	160.600	4.6	17.451	10.9	5.6	14.300	9.8	3.151	22.3	9.261	10.7	8.190	11.0		1.5
2015 Q3	160.628	4.4	17.214	10.7	5.3	14.093	9.6	3.121	22.2	9.144	10.6	8.070	10.9		1.5
Q4	161.147	4.5	16.909	10.5	5.4	13.830	9.4	3.078	22.0	8.943	10.3	7.966	10.7		1.6
2016 Q1	161.013	4.5	16.635	10.3	5.2	13.621	9.2	3.014	21.5	8.726	10.0	7.909	10.6		1.7
Q2	161.849	4.5	16.356	10.1	5.1	13.389	9.1	2.967	21.0	8.493	9.8	7.863	10.5		1.7
2016 Mar.	-	-	16.476	10.2	-	13.495	9.2	2.981	21.2	8.622	9.9	7.853	10.5		-
Apr.	-	-	16.390	10.1	-	13.412	9.1	2.979	21.0	8.520	9.8	7.870	10.5		-
May	-	-	16.329	10.1	-	13.357	9.0	2.972	21.0	8.470	9.7	7.859	10.5		-
June	-	-	16.349	10.1	-	13.398	9.1	2.951	20.9	8.490	9.8	7.860	10.5		-
July	-	-	16.318	10.1	-	13.374	9.0	2.945	20.8	8.462	9.7	7.857	10.5		-
Aug.	-	-	16.326	10.1	-	13.399	9.0	2.927	20.7	8.449	9.7	7.877	10.5		-

Sources: Eurostat and ECB calculations.

1) Not seasonally adjusted.

2) The job vacancy rate is equal to the number of job vacancies divided by the sum of the number of occupied posts and the number of job vacancies, expressed as a percentage.

3.5 Short-term business statistics

	Industrial production						Con-struction produc-tion	ECB indicator on industrial new orders	Retail sales				New passenger car regis-trations
	Total (excluding construction)	Main Industrial Groupings							Total	Food, beverages, tobacco	Non-food	Fuel	
		Manu-facturing	Inter-mediate goods	Capital goods	Consumer goods	Energy							
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2010	100.0	86.0	33.6	29.2	22.5	14.7	100.0	100.0	100.0	39.3	51.5	9.1	100.0
	annual percentage changes												
2013	-0.7	-0.7	-0.9	-0.5	-0.4	-0.8	-2.2	-0.3	-0.6	-0.6	-0.5	-0.8	-4.4
2014	0.9	1.8	1.3	1.8	2.6	-5.4	2.0	3.1	1.4	0.7	2.4	-0.1	3.8
2015	2.0	2.3	1.0	3.6	2.3	0.7	-0.8	3.4	2.7	1.7	3.6	2.6	8.8
2015 Q4	1.8	2.3	1.7	3.4	1.9	-1.9	0.5	2.5	2.5	1.2	3.4	2.1	10.0
2016 Q1	1.3	1.9	1.9	2.9	1.0	-3.4	2.5	0.6	2.2	1.7	2.8	1.3	9.5
Q2	1.0	1.2	1.1	1.4	1.1	-0.9	-0.1	-2.3	1.7	0.7	2.7	2.1	8.5
Q3	.	.	.	.	.	.	.	.	.	.	.	.	6.5
2016 Apr.	2.0	2.0	1.7	3.1	1.4	2.2	-1.1	-2.7	1.6	0.2	2.6	2.4	8.5
May	0.4	0.4	1.1	-0.4	0.5	-1.4	-0.5	-1.9	1.8	0.8	2.3	3.7	10.3
June	0.7	1.0	0.5	1.5	1.4	-3.5	0.6	-2.3	1.9	1.0	3.1	0.3	6.9
July	-0.5	0.0	0.5	-1.3	1.8	-5.0	4.1	-3.7	1.8	1.4	2.1	2.7	5.7
Aug.	1.8	2.0	2.0	2.6	0.3	1.5	0.9	.	0.6	0.1	1.3	1.2	3.9
Sep.	.	.	.	.	.	.	.	.	.	.	.	.	9.4
	month-on-month percentage changes (s.a.)												
2016 Apr.	1.5	1.6	0.6	2.0	2.6	0.1	0.0	0.0	0.2	0.0	0.7	0.5	1.0
May	-1.4	-1.3	-0.3	-2.4	-0.4	-2.7	0.2	0.4	0.4	0.8	-0.2	1.1	0.3
June	0.8	0.9	-0.3	1.7	1.0	-0.5	0.3	1.9	0.0	-0.1	0.8	-3.1	-1.0
July	-0.7	-0.7	-0.3	-1.9	0.2	0.3	1.5	-2.6	0.3	0.7	-0.3	1.8	-0.3
Aug.	1.6	1.5	1.4	3.5	-0.1	3.3	-0.9	.	-0.1	-0.4	-0.1	0.2	-0.4
Sep.	.	.	.	.	.	.	.	.	.	.	.	.	5.0

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

3 Economic activity

3.6 Opinion surveys
(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances, unless otherwise indicated)								Purchasing Managers' Surveys (diffusion indices)			
	Economic sentiment indicator (long-term average = 100)	Manufacturing industry		Consumer confidence indicator	Construction confidence indicator	Retail trade confidence indicator	Service industries		Purchasing Managers' Index (PMI) for manufacturing	Manufacturing output	Business activity for services	Composite output
		Industrial confidence indicator	Capacity utilisation (%)				Services confidence indicator	Capacity utilisation (%)				
	1	2	3	4	5	6	7	8	9	10	11	12
1999-13	100.0	-6.1	80.8	-12.8	-13.6	-8.7	6.9	-	51.0	52.4	52.9	52.7
2013	93.5	-9.0	78.7	-18.8	-27.8	-12.2	-5.3	87.2	49.6	50.6	49.3	49.7
2014	101.5	-3.8	80.5	-10.2	-26.4	-3.1	4.9	87.7	51.8	53.3	52.5	52.7
2015	104.2	-3.1	81.4	-6.2	-22.5	1.6	9.3	88.4	52.2	53.4	54.0	53.8
2015 Q4	106.2	-2.4	81.8	-6.4	-18.4	5.1	12.7	88.7	52.8	54.0	54.2	54.1
2016 Q1	104.0	-3.8	81.7	-8.3	-18.9	1.9	10.8	88.8	51.7	52.9	53.3	53.2
Q2	104.3	-3.4	81.5	-7.8	-18.4	1.8	11.3	89.0	52.0	53.0	53.1	53.1
Q3	104.3	-2.9	.	-8.2	-15.7	0.4	10.4	.	52.1	53.7	52.6	52.9
2016 Apr.	104.0	-3.6	81.5	-9.3	-19.2	1.3	11.6	89.0	51.7	52.6	53.1	53.0
May	104.6	-3.7	-	-7.0	-17.7	3.3	11.3	-	51.5	52.4	53.3	53.1
June	104.4	-2.8	-	-7.2	-18.2	0.8	10.9	-	52.8	53.9	52.8	53.1
July	104.5	-2.6	81.6	-7.9	-16.3	1.7	11.2	89.0	52.0	53.9	52.9	53.2
Aug.	103.5	-4.3	-	-8.5	-15.8	-1.1	9.9	-	51.7	53.3	52.8	52.9
Sep.	104.9	-1.7	-	-8.2	-15.0	0.5	10.0	-	52.6	53.8	52.2	52.6

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

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

	Households							Non-financial corporations					
	Saving ratio (gross) [1]	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth [2]	Housing wealth	Profit share [3]	Saving ratio (net)	Debt ratio [4]	Financial investment	Non-financial investment (gross)	Financing
	Percentage of gross disposable income (adjusted)		Annual percentage changes					Percentage of net value added		Percentage of GDP	Annual percentage changes		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2013	12.5	95.4	-0.5	1.3	-4.9	0.7	-1.8	32.3	4.1	129.9	2.1	-0.1	0.9
2014	12.5	94.7	0.7	1.9	0.6	2.7	1.2	33.0	4.8	130.5	2.1	6.5	1.2
2015	12.5	94.0	1.8	2.1	2.3	3.4	2.8	34.4	6.3	133.0	3.8	2.6	2.2
2015 Q3	12.4	94.2	1.7	2.0	2.1	2.6	2.0	34.4	6.0	133.3	3.1	0.1	1.9
Q4	12.5	94.0	1.7	2.1	5.3	3.4	2.8	34.4	6.3	133.0	3.8	4.8	2.2
2016 Q1	12.5	93.3	2.3	2.0	3.1	2.2	3.5	33.7	6.1	132.4	3.8	4.6	2.2
Q2	.	.	2.5	2.3	6.1	3.2	3.9	33.9	6.6	132.6	3.7	5.0	2.1

Sources: ECB and Eurostat.
1) Based on four-quarter cumulated sums of both saving and gross disposable income (adjusted for the change in the net equity of households in pension fund reserves).
2) Financial assets (net of financial liabilities) and non-financial assets. Non-financial assets consist mainly of housing wealth (residential structures and land). They also include non-financial assets of unincorporated enterprises classified within the household sector.
3) The profit share uses net entrepreneurial income, which is broadly equivalent to current profits in business accounting.
4) Based on the outstanding amount of loans, debt securities, trade credits and pension scheme liabilities.

3 Economic activity

3.8 Euro area balance of payments, current and capital accounts

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

	Current account											Capital account [1]	
	Total			Goods		Services		Primary income		Secondary income			
	Credit	Debit	Net	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit
	1	2	3	4	5	6	7	8	9	10	11	12	13
2015 Q3	898.9	819.5	79.4	523.8	436.3	191.4	177.3	158.6	147.9	25.1	58.0	9.6	4.6
Q4	903.1	822.2	80.9	525.2	434.2	195.5	182.2	156.0	148.2	26.4	57.6	18.4	9.4
2016 Q1	877.5	790.1	87.4	515.9	424.8	194.1	176.2	143.2	133.0	24.4	56.2	9.8	11.1
Q2	882.1	787.3	94.8	519.6	419.3	190.1	179.0	147.4	138.4	24.9	50.6	7.0	6.6
2016 Feb.	292.2	265.2	27.0	170.5	142.5	65.4	59.0	48.4	44.6	8.0	19.1	3.5	2.6
Mar.	292.5	260.0	32.5	173.5	140.3	64.2	57.5	46.5	43.4	8.3	18.9	3.7	3.8
Apr.	294.7	259.9	34.8	173.6	139.5	63.4	59.6	49.4	43.8	8.3	17.0	2.5	2.0
May	295.0	261.9	33.1	171.9	139.7	64.0	60.1	50.6	45.7	8.5	16.4	1.8	2.2
June	292.4	265.5	26.9	174.2	140.1	62.7	59.3	47.4	48.9	8.1	17.2	2.8	2.4
July	287.4	266.4	21.0	168.8	142.4	63.3	58.3	47.5	44.1	7.9	21.6	2.0	1.8
12-month cumulated transactions													
2016 July	3,546.7	3,208.8	337.9	2,075.9	1,710.3	770.3	713.5	599.7	560.5	100.8	224.5	43.3	32.0
12-month cumulated transactions as a percentage of GDP													
2016 July	33.5	30.3	3.2	19.6	16.1	7.3	6.7	5.7	5.3	1.0	2.1	0.4	0.3

1) The capital account is not seasonally adjusted.

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

(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)					Imports (c.i.f.)					
			Total				Memo item:	Total				Memo items:	
	Exports	Imports		Intermediate goods	Capital goods	Consump-tion goods	Manu-facturing		Intermediate goods	Capital goods	Consump-tion goods	Manu-facturing	Oil
	1	2	3	4	5	6	7	8	9	10	11	12	13
Values (EUR billions; annual percentage changes for columns 1 and 2)													
2015 Q3	4.5	0.9	502.9	232.8	105.2	153.3	424.5	444.7	252.8	71.0	112.8	318.7	50.4
Q4	3.6	2.3	509.2	236.7	105.7	153.9	426.5	443.8	247.2	73.5	114.5	324.5	44.6
2016 Q1	-0.9	-2.6	502.9	233.5	104.2	151.2	422.1	438.4	241.3	71.7	116.7	326.2	37.4
Q2	-0.3	-4.1	502.1	230.9	105.3	153.2	432.4	429.5	235.7	70.7	114.7	324.1	42.1
2016 Feb.	1.3	2.0	167.0	78.1	34.0	50.3	140.1	147.3	80.6	24.0	39.1	110.1	12.2
Mar.	-1.9	-8.0	168.4	77.3	36.0	50.2	141.0	144.0	79.1	24.2	38.6	106.5	12.7
Apr.	-0.9	-5.4	168.6	77.7	35.8	51.0	146.0	143.6	78.2	24.0	38.5	109.2	13.3
May	2.0	-2.0	165.8	76.0	34.8	50.7	140.8	141.9	78.4	22.7	38.2	106.1	14.3
June	-1.7	-4.8	167.6	77.3	34.7	51.5	145.6	144.0	79.2	24.0	38.0	108.9	14.5
July	-9.5	-8.3	166.3	77.1	33.3	50.3	134.7	145.5	80.0	23.1	38.6	104.1	14.5
Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)													
2015 Q3	1.2	3.0	116.4	111.7	119.3	122.8	117.2	105.9	105.4	106.2	106.5	108.2	98.7
Q4	1.0	5.1	118.4	115.2	119.4	122.6	117.5	107.5	107.4	107.9	107.8	110.2	101.4
2016 Q1	-0.9	2.4	118.5	116.1	117.6	121.8	117.0	110.0	111.0	106.0	109.9	111.2	110.8
Q2	2.0	3.9	118.0	114.0	118.9	123.6	119.9	107.1	106.4	104.4	110.0	111.9	100.8
2016 Jan.	-3.7	1.1	117.9	115.8	115.8	121.9	116.8	109.9	111.2	104.3	109.1	111.5	110.8
Feb.	1.3	7.0	118.3	116.7	115.3	121.8	116.7	110.9	111.8	106.3	110.0	112.4	114.4
Mar.	-0.5	-0.5	119.3	115.6	121.8	121.6	117.6	109.0	109.9	107.4	110.5	109.9	107.2
Apr.	1.4	2.9	119.5	115.7	121.6	124.1	121.8	107.9	107.1	106.4	109.9	112.7	105.0
May	4.9	7.1	117.1	113.0	117.7	122.6	117.3	106.5	106.3	101.1	110.5	110.1	101.7
June	-0.2	1.9	117.3	113.3	117.4	124.0	120.6	106.8	105.8	105.5	109.7	112.8	95.7

Sources: ECB and Eurostat.

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

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

4 Prices and costs

4.1 Harmonised Index of Consumer Prices [1)]

(annual percentage changes, unless otherwise indicated)

	Total					Total (s.a.; percentage change vis-à-vis previous period) [2)]						Memo item: Administered prices	
	Index: 2015 = 100	Total		Goods	Services	Total	Processed food	Unprocessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Administered prices
			Total excluding food and energy										
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2016	100.0	100.0	70.7	55.8	44.2	100.0	12.1	7.4	26.5	9.7	44.2	86.5	13.5
2013	99.5	1.4	1.1	1.3	1.4	-	-	-	-	-	-	1.2	2.1
2014	100.0	0.4	0.8	-0.2	1.2	-	-	-	-	-	-	0.2	1.9
2015	100.0	0.0	0.8	-0.8	1.2	-	-	-	-	-	-	-0.1	0.9
2015 Q4	100.2	0.2	1.0	-0.6	1.2	-0.1	0.1	1.1	0.1	-3.0	0.2	0.1	0.7
2016 Q1	99.2	0.0	1.0	-0.8	1.1	-0.4	0.1	-0.8	0.1	-4.4	0.2	0.0	0.3
Q2	100.4	-0.1	0.8	-0.9	1.0	0.4	0.2	0.8	0.0	2.0	0.3	-0.1	0.1
Q3	100.3	0.3	0.8	-0.4	1.1	0.3	0.1	1.1	0.0	0.3	0.4	0.3	0.3
2016 Apr.	100.2	-0.2	0.7	-1.1	0.9	0.0	0.2	0.2	0.0	0.1	-0.1	-0.3	0.1
May	100.5	-0.1	0.8	-0.9	1.0	0.3	0.0	0.4	0.0	1.7	0.2	-0.1	0.0
June	100.7	0.1	0.9	-0.7	1.1	0.2	0.1	-0.2	0.0	1.7	0.1	0.1	0.2
July	100.1	0.2	0.9	-0.6	1.2	0.0	0.0	0.9	0.0	-1.0	0.2	0.1	0.3
Aug.	100.2	0.2	0.8	-0.5	1.1	0.0	0.0	0.8	0.0	-1.0	0.0	0.2	0.2
Sep.	100.6	0.4	0.8	-0.2	1.1	0.1	0.0	-0.8	0.0	1.0	0.1	0.4	0.4

	Goods						Services					
	Food (including alcoholic beverages and tobacco)			Industrial goods			Housing		Transport	Communication	Recreation and personal	Miscellaneous
	Total	Processed food	Unprocessed food	Total	Non-energy industrial goods	Energy		Rents				
	14	15	16	17	18	19	20	21	22	23	24	25
% of total in 2016	19.5	12.1	7.4	36.3	26.5	9.7	10.7	6.4	7.1	3.2	15.2	8.0
2013	2.7	2.2	3.5	0.6	0.6	0.6	1.7	1.4	2.4	-4.2	2.3	0.7
2014	0.5	1.2	-0.8	-0.5	0.1	-1.9	1.7	1.4	1.7	-2.8	1.5	1.3
2015	1.0	0.6	1.6	-1.8	0.3	-6.8	1.2	1.1	1.3	-0.8	1.5	1.2
2015 Q4	1.4	0.7	2.6	-1.7	0.5	-7.2	1.2	1.0	1.1	-0.1	1.5	1.2
2016 Q1	0.8	0.6	1.1	-1.7	0.6	-7.4	1.1	1.0	0.6	0.0	1.6	1.2
Q2	0.9	0.5	1.4	-1.9	0.5	-7.7	1.1	1.0	0.6	0.0	1.3	1.2
Q3	1.1	0.5	2.1	-1.3	0.3	-5.1	1.1	1.0	0.9	0.0	1.5	1.3
2016 Apr.	0.8	0.5	1.2	-2.1	0.5	-8.7	1.1	1.0	0.5	0.1	0.9	1.2
May	0.9	0.6	1.5	-1.9	0.5	-8.1	1.1	1.0	0.5	0.0	1.4	1.1
June	0.9	0.5	1.5	-1.6	0.4	-6.4	1.0	1.0	0.8	-0.1	1.6	1.3
July	1.4	0.5	2.9	-1.7	0.4	-6.7	1.0	1.0	1.0	0.0	1.5	1.4
Aug.	1.3	0.5	2.5	-1.4	0.3	-5.6	1.0	1.0	0.8	0.0	1.5	1.3
Sep.	0.7	0.5	1.1	-0.6	0.3	-3.0	1.1	1.1	0.9	0.0	1.5	1.3

Sources: Eurostat and ECB calculations.

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

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

4 Prices and costs

4.2 Industry, construction and property prices

(annual percentage changes, unless otherwise indicated)

	Industrial producer prices excluding construction										Con-struction	Residential property prices [1]	Experimental indicator of commercial property prices [1]
	Total (index: 2010 = 100)	Total		Industry excluding construction and energy						Energy			
			Manu-facturing	Total	Intermediate goods	Capital goods	Consumer goods						
							Total	Food, beverages and tobacco	Non-food				
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2010	100.0	100.0	78.1	72.1	29.4	20.1	22.6	13.8	8.9	27.9			
2013	108.5	-0.2	-0.1	0.4	-0.6	0.6	1.7	2.6	0.3	-1.6	0.3	-1.9	-1.0
2014	106.9	-1.5	-0.9	-0.3	-1.1	0.4	0.1	-0.2	0.3	-4.4	0.3	0.3	1.3
2015	104.0	-2.7	-2.3	-0.5	-1.3	0.7	-0.6	-1.0	0.2	-8.1	0.2	1.5	4.5
2015 Q3	104.0	-2.6	-2.6	-0.5	-1.1	0.6	-0.6	-1.1	0.1	-8.3	0.3	1.5	4.3
Q4	102.7	-3.1	-2.5	-0.7	-2.0	0.6	-0.2	-0.3	0.2	-9.3	-0.2	2.2	6.2
2016 Q1	100.6	-3.7	-2.7	-0.9	-2.2	0.4	-0.4	-0.6	-0.1	-11.1	-0.3	2.7	.
Q2	100.9	-3.8	-2.8	-1.1	-2.7	0.4	-0.5	-0.8	0.1	-10.7	0.2	3.0	.
2016 Mar.	100.6	-4.1	-3.1	-1.1	-2.7	0.4	-0.6	-1.0	-0.1	-11.8	-	-	-
Apr.	100.2	-4.4	-3.2	-1.3	-2.9	0.4	-0.7	-1.1	0.1	-12.5	-	-	-
May	100.9	-3.8	-2.9	-1.2	-2.8	0.4	-0.5	-0.9	0.1	-10.8	-	-	-
June	101.6	-3.1	-2.3	-1.0	-2.5	0.4	-0.4	-0.6	0.0	-8.7	-	-	-
July	101.9	-2.6	-2.1	-0.8	-2.3	0.5	-0.1	-0.3	0.0	-7.7	-	-	-
Aug.	101.7	-2.1	-1.3	-0.6	-1.9	0.5	-0.1	-0.2	0.1	-6.0	-	-	-

Sources: Eurostat, ECB calculations, and ECB calculations based on MSCI data and national sources (col. 13).
1) Experimental data based on non-harmonised sources (see http://www.ecb.europa.eu/stats/html/experiment.en.html for further details).

4.3 Commodity prices and GDP deflators

(annual percentage changes, unless otherwise indicated)

	GDP deflators								Oil prices (EUR per barrel)	Non-energy commodity prices (EUR)					
	Total (s.a.; index: 2010 = 100)	Total	Domestic demand				Exports [1]	Imports [1]		Import-weighted [2]			Use-weighted [2]		
			Total	Private consump-tion	Govern-ment consump-tion	Gross fixed capital formation				Total	Food	Non-food	Total	Food	Non-food
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
% of total										100.0	45.4	54.6	100.0	50.4	49.6
2013	103.7	1.3	1.0	1.1	1.3	0.4	-0.5	-1.3	81.7	-9.9	-13.6	-6.1	-9.0	-11.2	-6.3
2014	104.6	0.8	0.6	0.5	0.9	0.6	-0.8	-1.5	74.5	-3.4	2.0	-8.5	-0.4	4.6	-6.4
2015	105.8	1.2	0.2	0.1	0.4	0.7	0.2	-2.0	48.3	0.0	4.2	-4.5	2.9	7.0	-2.6
2015 Q4	106.4	1.3	0.4	0.3	0.5	0.9	-0.1	-2.3	40.7	-7.4	-1.8	-13.4	-8.2	-4.8	-12.9
2016 Q1	106.5	1.2	0.4	0.3	0.7	0.8	-1.5	-3.3	32.5	-12.3	-8.4	-16.5	-12.9	-11.1	-15.6
Q2	106.8	1.1	0.4	0.2	0.9	0.7	-2.2	-4.1	42.0	-8.9	-5.7	-12.4	-12.4	-12.6	-12.2
Q3	.	.	.	.	.	.	.	.	42.5	-0.6	-2.0	1.0	-6.0	-10.5	0.9
2016 Apr.	-	-	-	-	-	-	-	-	38.2	-11.6	-10.2	-13.2	-14.5	-15.3	-13.4
May	-	-	-	-	-	-	-	-	42.7	-9.1	-4.9	-13.7	-12.7	-12.1	-13.5
June	-	-	-	-	-	-	-	-	44.9	-5.9	-2.0	-10.3	-10.1	-10.4	-9.6
July	-	-	-	-	-	-	-	-	42.6	-3.1	-4.8	-1.2	-8.0	-12.3	-1.4
Aug.	-	-	-	-	-	-	-	-	42.3	0.3	-1.7	2.7	-5.1	-10.3	2.6
Sep.	-	-	-	-	-	-	-	-	42.7	1.1	0.7	1.5	-4.6	-8.9	1.6

Sources: Eurostat, ECB calculations and Thomson Reuters (col. 9).
1) Deflators for exports and imports refer to goods and services and include cross-border trade within the euro area.
2) Import-weighted: weighted according to 2009-11 average import structure; use-weighted: weighted according to 2009-11 average domestic demand structure.

4 Prices and costs

4.4 Price-related opinion surveys
(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances)					Purchasing Managers' Surveys (diffusion indices)			
	Selling price expectations (for next three months)				Consumer price trends over past 12 months	Input prices		Prices charged	
	Manu-facturing	Retail trade	Services	Construction		Manu-facturing	Services	Manu-facturing	Services
	1	2	3	4	5	6	7	8	9
1999-13	4.8	-	-	-2.0	34.0	57.7	56.7	-	49.9
2013	-0.4	1.6	-1.4	-17.3	29.7	48.5	53.8	49.4	47.8
2014	-0.9	-1.5	0.9	-17.2	14.2	49.6	53.5	49.7	48.2
2015	-2.7	1.3	2.7	-13.3	-1.1	48.9	53.5	49.6	49.0
2015 Q4	-2.1	1.9	3.8	-8.7	-0.8	45.6	53.6	49.2	49.6
2016 Q1	-4.8	0.7	3.7	-9.3	-1.7	41.5	52.5	47.7	49.0
Q2	-1.0	1.9	4.7	-8.2	-2.2	47.5	54.4	48.5	49.0
Q3	-0.2	1.0	4.6	-6.5	-0.3	51.4	54.0	49.6	49.8
2016 Apr.	-2.8	1.6	4.2	-8.9	-2.9	45.2	52.7	47.4	48.7
May	-0.7	2.1	6.0	-8.0	-2.3	47.7	55.6	48.8	49.5
June	0.6	2.0	3.8	-7.7	-1.3	49.6	54.8	49.3	49.0
July	0.2	0.7	4.8	-5.2	-0.5	51.0	54.7	49.9	49.8
Aug.	-0.8	1.3	4.3	-7.4	-0.8	51.0	53.2	48.9	49.5
Sep.	0.0	0.9	4.6	-7.0	0.5	52.4	54.0	49.9	50.0

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

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

	Total (index: 2012 = 100)	Total	By component		For selected economic activities		Memo item: Indicator of negotiated wages [1]
			Wages and salaries	Employers' social contributions	Business economy	Mainly non-business economy	
	1	2	3	4	5	6	7
% of total in 2012	100.0	100.0	74.6	25.4	69.3	30.7	
2013	101.4	1.4	1.5	1.2	1.2	1.9	1.8
2014	102.7	1.3	1.3	1.2	1.3	1.2	1.7
2015	104.3	1.6	2.0	0.5	1.6	1.6	1.5
2015 Q3	101.0	1.3	1.6	0.2	1.3	1.2	1.6
Q4	110.5	1.6	1.9	0.9	1.5	1.8	1.5
2016 Q1	99.0	1.6	1.7	1.5	1.6	1.6	1.4
Q2	109.2	1.0	0.9	1.4	0.9	1.1	1.5

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	-2.2	2.2	0.9	0.8	-0.3	0.4	-2.7	1.3	1.7	2.5
2014	104.6	0.8	-0.9	0.0	0.6	0.3	-0.5	1.9	1.1	1.6	1.5	0.7
2015	104.9	0.3	0.4	-1.7	0.6	0.5	0.6	0.1	3.0	1.8	1.0	1.1
2015 Q3	105.1	0.4	1.0	-1.8	0.5	0.6	1.3	0.7	3.0	2.2	0.9	1.2
Q4	105.4	0.5	-0.1	-1.7	-0.4	1.5	1.5	0.3	2.8	1.9	1.3	1.1
2016 Q1	105.5	1.0	1.1	0.7	-0.2	1.0	1.4	1.3	4.0	2.0	1.2	1.3
Q2	105.8	0.9	1.2	0.1	-0.4	1.2	1.2	1.5	2.3	1.3	1.2	0.3
						Compensation per employee						
2013	105.2	1.6	2.5	2.6	1.4	1.1	0.9	1.7	0.1	1.3	1.6	1.8
2014	106.6	1.3	0.0	2.2	1.6	1.0	1.8	1.6	1.2	1.4	1.1	1.0
2015	107.9	1.3	0.7	1.7	0.9	1.4	2.4	0.3	2.7	1.6	1.1	0.8
2015 Q3	108.1	1.2	0.4	1.5	1.1	1.4	2.6	0.2	2.8	1.9	0.9	0.9
Q4	108.5	1.2	1.0	1.3	0.9	1.7	2.0	0.2	3.1	1.5	1.2	0.7
2016 Q1	108.8	1.2	1.5	1.4	1.3	1.3	1.3	1.6	3.4	1.4	1.2	1.4
Q2	109.0	1.1	1.9	1.1	1.3	1.2	1.3	1.5	3.2	1.1	1.3	0.8
						Labour productivity per person employed						
2013	101.4	0.4	4.8	0.4	0.5	0.3	1.2	1.3	2.9	0.0	-0.2	-0.7
2014	101.9	0.5	0.9	2.2	1.1	0.7	2.3	-0.3	0.1	-0.2	-0.5	0.3
2015	102.9	0.9	0.2	3.4	0.4	0.9	1.8	0.2	-0.3	-0.2	0.1	-0.2
2015 Q3	102.9	0.8	-0.6	3.3	0.6	0.8	1.3	-0.4	-0.2	-0.3	0.0	-0.3
Q4	103.0	0.7	1.1	3.0	1.3	0.2	0.5	-0.2	0.3	-0.5	-0.1	-0.4
2016 Q1	103.1	0.2	0.4	0.7	1.4	0.3	-0.1	0.3	-0.6	-0.6	0.0	0.1
Q2	103.0	0.2	0.8	0.9	1.7	0.0	0.2	-0.1	0.8	-0.1	0.1	0.5
						Compensation per hour worked						
2013	107.3	2.3	2.3	2.8	2.9	2.0	0.9	2.3	1.6	2.4	2.0	3.0
2014	108.5	1.1	1.2	1.7	1.4	1.1	1.6	1.5	1.0	1.0	0.8	1.3
2015	109.8	1.1	0.3	1.3	0.4	1.6	1.3	0.6	2.2	1.3	1.0	1.2
2015 Q3	109.8	1.0	0.1	0.9	0.3	1.6	1.6	0.9	2.2	1.4	0.7	1.0
Q4	110.3	1.2	0.2	1.0	0.5	2.0	1.5	0.3	3.6	1.3	1.4	1.2
2016 Q1	110.5	1.0	-0.2	0.7	0.8	1.1	0.7	1.4	3.8	0.8	1.2	2.3
Q2	110.6	1.0	2.3	0.5	1.2	1.1	1.0	1.0	3.0	0.8	1.5	0.7
						Hourly labour productivity						
2013	103.5	1.2	4.6	0.6	2.0	1.1	1.5	2.0	4.3	1.0	0.4	0.5
2014	104.1	0.5	2.4	1.7	0.9	0.8	2.1	-0.2	0.5	-0.3	-0.7	0.8
2015	105.0	0.9	-0.6	3.0	-0.1	1.2	1.0	0.3	-0.6	-0.3	0.0	0.1
2015 Q3	104.8	0.6	-1.4	2.7	0.0	1.2	0.2	0.0	-1.0	-0.9	-0.3	-0.1
Q4	104.9	0.7	-0.1	2.9	0.5	0.5	0.2	-0.2	1.2	-0.4	0.1	0.0
2016 Q1	105.1	0.0	-1.1	0.2	0.8	0.2	-0.8	0.1	0.2	-1.2	0.1	0.9
Q2	105.0	0.0	0.2	0.4	1.4	-0.1	-0.1	-0.7	0.8	-0.6	0.3	0.4

Sources: Eurostat and ECB calculations.

5 Money and credit

5.1 Monetary aggregates [1)]

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

	M3											
	M2							M3-M2				
	M1			M2-M1								
	Currency in circulation	Overnight deposits		Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months			Repos	Money market fund shares	Debt securities with a maturity of up to 2 years		
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2013	909.7	4,476.3	5,386.1	1,683.3	2,142.8	3,826.1	9,212.1	121.4	418.1	86.5	626.0	9,838.1
2014	968.5	4,981.3	5,949.9	1,598.5	2,148.8	3,747.2	9,697.1	123.9	423.4	106.2	653.4	10,350.5
2015	1,034.5	5,569.7	6,604.1	1,448.1	2,160.6	3,608.7	10,212.8	77.1	474.2	72.9	624.3	10,837.1
2015 Q3	1,028.2	5,434.8	6,463.0	1,449.3	2,164.4	3,613.7	10,076.7	96.3	452.8	75.1	624.2	10,700.9
Q4	1,034.5	5,569.7	6,604.1	1,448.1	2,160.6	3,608.7	10,212.8	77.1	474.2	72.9	624.3	10,837.1
2016 Q1	1,051.5	5,715.1	6,766.6	1,427.0	2,163.7	3,590.7	10,357.3	88.7	463.3	89.9	642.0	10,999.2
Q2	1,053.4	5,812.9	6,866.2	1,417.3	2,173.6	3,591.0	10,457.2	83.3	481.5	92.8	657.6	11,114.8
2016 Mar.	1,051.5	5,715.1	6,766.6	1,427.0	2,163.7	3,590.7	10,357.3	88.7	463.3	89.9	642.0	10,999.2
Apr.	1,047.5	5,747.8	6,795.4	1,408.7	2,162.6	3,571.3	10,366.7	88.4	470.4	98.4	657.2	11,023.8
May	1,051.2	5,789.7	6,840.9	1,407.6	2,172.2	3,579.8	10,420.7	88.3	474.7	88.6	651.5	11,072.2
June	1,053.4	5,812.9	6,866.2	1,417.3	2,173.6	3,591.0	10,457.2	83.3	481.5	92.8	657.6	11,114.8
July	1,056.2	5,873.2	6,929.4	1,406.6	2,174.5	3,581.1	10,510.6	82.4	485.5	99.4	667.3	11,177.9
Aug. [(p)]	1,060.4	5,931.2	6,991.6	1,395.9	2,176.2	3,572.2	10,563.8	82.6	481.7	97.8	662.1	11,225.9
Transactions												
2013	45.6	250.4	295.9	-114.4	45.5	-68.9	227.0	-11.6	-48.7	-63.3	-123.6	103.4
2014	58.2	379.4	437.5	-90.9	3.2	-87.7	349.8	1.0	10.8	12.5	24.4	374.2
2015	64.8	556.1	620.9	-143.2	12.0	-131.2	489.7	-47.8	48.9	-26.0	-24.9	464.8
2015 Q3	14.3	130.7	145.0	-35.3	3.1	-32.3	112.7	8.2	18.3	-18.5	8.0	120.7
Q4	6.3	128.1	134.4	-3.4	-4.0	-7.4	127.0	-19.5	21.4	-2.5	-0.6	126.4
2016 Q1	17.2	155.9	173.1	-16.9	3.3	-13.6	159.5	12.1	-10.9	14.9	16.1	175.5
Q2	1.9	92.8	94.7	-12.3	10.1	-2.2	92.4	-2.5	17.7	1.6	16.8	109.2
2016 Mar.	4.7	55.2	59.9	-1.1	-1.3	-2.4	57.5	-3.4	-5.4	1.3	-7.5	50.0
Apr.	-4.0	31.7	27.7	-18.5	-1.0	-19.5	8.2	2.8	6.8	8.7	18.4	26.6
May	3.7	37.3	40.9	-2.9	9.5	6.6	47.5	-0.3	4.3	-9.4	-5.3	42.2
June	2.2	23.9	26.1	9.0	1.6	10.7	36.7	-5.0	6.5	2.3	3.8	40.5
July	2.9	59.8	62.7	-10.0	0.9	-9.2	53.5	-0.9	3.9	6.2	9.3	62.8
Aug. [(p)]	4.2	58.6	62.8	-10.7	1.7	-9.0	53.8	0.2	-3.8	-1.9	-5.4	48.4
Growth rates												
2013	5.3	5.9	5.8	-6.4	2.2	-1.8	2.5	-9.2	-10.4	-38.0	-16.1	1.0
2014	6.4	8.4	8.1	-5.4	0.1	-2.3	3.8	0.8	2.6	18.4	3.9	3.8
2015	6.7	11.1	10.4	-9.0	0.6	-3.5	5.0	-38.2	11.5	-25.4	-3.8	4.5
2015 Q3	8.3	11.9	11.3	-11.4	0.5	-4.7	5.0	-24.6	9.0	-0.9	0.3	4.7
Q4	6.7	11.1	10.4	-9.0	0.6	-3.5	5.0	-38.2	11.5	-25.4	-3.8	4.5
2016 Q1	5.9	11.0	10.2	-6.7	0.6	-2.4	5.5	-27.8	7.6	-1.9	-0.6	5.1
Q2	3.9	9.6	8.7	-4.6	0.6	-1.5	4.9	-2.1	10.7	-4.0	6.5	5.0
2016 Mar.	5.9	11.0	10.2	-6.7	0.6	-2.4	5.5	-27.8	7.6	-1.9	-0.6	5.1
Apr.	4.6	10.7	9.7	-7.3	0.4	-2.8	5.1	-27.3	6.1	-4.0	-1.8	4.6
May	4.5	10.0	9.1	-5.7	0.7	-2.0	5.1	-15.1	8.5	-1.8	3.0	4.9
June	3.9	9.6	8.7	-4.6	0.6	-1.5	4.9	-2.1	10.7	-4.0	6.5	5.0
July	3.5	9.4	8.4	-4.4	0.6	-1.4	4.9	-16.9	7.8	16.4	5.0	4.9
Aug. [(p)]	3.5	10.0	8.9	-4.5	0.5	-1.5	5.2	-14.8	6.4	17.7	4.5	5.1

Source: ECB.

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

5 Money and credit

5.2 Deposits in M3 [1]

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

	Non-financial corporations [2]					Households [3]					Financial corporations other than MFIs and ICPFs [2]	Insurance corporations and pension funds	Other general government [4]
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Outstanding amounts													
2013	1,710.5	1,186.7	397.8	109.8	16.2	5,413.6	2,539.7	874.7	1,994.5	4.7	804.8	194.9	300.1
2014	1,842.1	1,346.8	365.3	111.6	18.4	5,556.8	2,751.5	809.6	1,992.7	3.0	897.6	222.8	333.1
2015	1,927.1	1,480.8	321.8	116.5	8.0	5,750.9	3,060.9	694.3	1,993.1	2.6	990.4	224.5	362.5
2015 Q3	1,910.3	1,460.7	324.0	115.8	9.9	5,695.3	2,987.9	707.4	1,997.0	3.0	964.9	218.1	356.2
Q4	1,927.1	1,480.8	321.8	116.5	8.0	5,750.9	3,060.9	694.3	1,993.1	2.6	990.4	224.5	362.5
2016 Q1	1,986.2	1,534.8	325.6	115.9	9.9	5,832.8	3,140.3	694.3	1,995.5	2.6	980.5	220.2	374.8
Q2	2,011.3	1,572.0	313.8	117.1	8.4	5,909.0	3,213.9	690.7	2,001.6	2.8	980.6	210.3	375.9
2016 Mar.	1,986.2	1,534.8	325.6	115.9	9.9	5,832.8	3,140.3	694.3	1,995.5	2.6	980.5	220.2	374.8
Apr.	2,009.0	1,561.8	322.9	115.7	8.6	5,849.1	3,158.9	692.9	1,994.0	3.3	958.1	213.8	377.5
May	2,010.9	1,567.7	318.9	116.4	7.9	5,878.4	3,184.6	691.1	1,999.0	3.7	975.8	214.7	378.0
June	2,011.3	1,572.0	313.8	117.1	8.4	5,909.0	3,213.9	690.7	2,001.6	2.8	980.6	210.3	375.9
July	2,032.7	1,593.6	312.5	118.0	8.5	5,930.9	3,240.8	685.4	2,001.8	2.8	969.3	215.5	388.4
Aug. (p)	2,032.7	1,597.2	309.9	116.9	8.7	5,969.1	3,284.1	676.6	2,005.6	2.7	981.3	214.6	388.2
Transactions													
2013	98.2	90.1	-6.9	9.1	5.9	107.9	182.4	-100.1	31.9	-6.2	-15.1	-13.3	-7.8
2014	69.2	91.2	-25.9	1.5	2.4	140.7	210.0	-65.7	-1.8	-1.7	53.6	7.5	21.7
2015	81.4	120.8	-33.6	4.9	-10.7	194.5	302.4	-108.2	0.7	-0.4	75.2	-1.9	27.9
2015 Q3	44.4	42.7	0.4	3.1	-1.8	48.3	77.7	-27.7	-1.9	0.2	10.6	-10.1	13.4
Q4	13.9	17.9	-2.7	0.7	-2.0	56.1	71.9	-11.4	-3.9	-0.5	21.1	4.0	6.1
2016 Q1	64.6	58.2	4.9	-0.5	2.0	84.2	80.7	1.0	2.5	0.1	-3.7	-4.1	13.3
Q2	23.4	35.9	-12.1	1.1	-1.5	75.2	72.6	-3.9	6.4	0.2	-1.3	-10.1	0.9
2016 Mar.	13.7	7.6	5.6	0.0	0.5	39.4	38.7	1.4	-0.4	-0.3	7.0	-11.4	0.9
Apr.	22.5	26.8	-2.7	-0.2	-1.4	16.0	18.3	-1.4	-1.5	0.7	-19.7	-6.4	2.6
May	-0.3	4.4	-4.6	0.6	-0.7	28.7	25.2	-2.0	5.1	0.4	14.1	0.7	0.4
June	1.2	4.7	-4.8	0.8	0.5	30.6	29.2	-0.5	2.7	-0.9	4.2	-4.3	-2.1
July	21.8	22.0	-1.2	1.0	0.1	21.9	26.9	-5.2	0.2	0.0	-11.7	5.2	12.5
Aug. (p)	-0.1	3.7	-2.9	-1.2	0.2	38.5	43.5	-8.8	3.9	-0.1	12.7	-0.9	-0.4
Growth rates													
2013	6.1	8.2	-1.7	8.9	56.4	2.0	7.7	-10.3	1.6	-56.7	-1.9	-6.4	-2.5
2014	4.0	7.6	-6.5	1.4	14.4	2.6	8.3	-7.5	-0.1	-36.9	6.4	4.0	7.3
2015	4.4	8.9	-9.4	4.4	-57.5	3.5	11.0	-13.4	0.0	-14.2	8.2	-0.8	8.3
2015 Q3	4.0	9.2	-12.3	2.4	-31.4	3.0	11.1	-15.5	0.0	-37.7	13.8	-4.9	5.8
Q4	4.4	8.9	-9.4	4.4	-57.5	3.5	11.0	-13.4	0.0	-14.2	8.2	-0.8	8.3
2016 Q1	7.4	11.0	-4.2	3.8	-30.3	4.3	10.7	-8.7	0.2	-30.7	4.2	-3.2	9.8
Q2	7.8	10.9	-2.9	3.8	-27.8	4.7	10.4	-5.7	0.2	-0.8	2.8	-8.8	9.8
2016 Mar.	7.4	11.0	-4.2	3.8	-30.3	4.3	10.7	-8.7	0.2	-30.7	4.2	-3.2	9.8
Apr.	8.5	12.1	-3.3	2.4	-20.8	4.3	10.5	-8.1	0.0	-6.6	0.7	-7.3	9.3
May	7.9	11.0	-2.5	3.4	-32.8	4.6	10.7	-7.0	0.1	-5.6	2.2	-7.2	8.9
June	7.8	10.9	-2.9	3.8	-27.8	4.7	10.4	-5.7	0.2	-0.8	2.8	-8.8	9.8
July	7.3	10.3	-3.3	3.7	-29.7	4.8	10.1	-4.7	0.3	-10.9	0.4	-8.0	11.8
Aug. (p)	7.1	10.1	-4.4	2.1	11.2	5.2	10.9	-5.0	0.4	-12.2	1.5	-5.4	9.7

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

5.3 Credit to euro area residents [1)]

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

	Credit to general government			Credit to other euro area residents								
					Loans						Debt securities	Equity and non-money market fund investment fund shares
					Total		To non-financial corporations [3)]	To households [4)]	To financial corporations other than MFIs and ICPFs [3)]	To insurance corporations and pension funds		
	Total	Loans	Debt securities	Total		Adjusted loans [2)]						
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2013	3,404.9	1,096.7	2,308.2	12,709.1	10,544.4	10,973.3	4,353.6	5,222.8	869.2	98.7	1,364.7	800.0
2014	3,608.3	1,132.4	2,473.8	12,590.7	10,538.6	10,817.4	4,300.6	5,200.4	908.6	129.0	1,277.4	774.8
2015	3,896.6	1,110.1	2,784.1	12,678.6	10,589.3	10,890.1	4,272.8	5,307.3	885.7	123.6	1,301.7	787.6
2015 Q3	3,819.0	1,127.6	2,689.0	12,659.4	10,571.0	10,858.8	4,284.4	5,277.6	887.7	121.3	1,310.9	777.4
Q4	3,896.6	1,110.1	2,784.1	12,678.6	10,589.3	10,890.1	4,272.8	5,307.3	885.7	123.6	1,301.7	787.6
2016 Q1	4,051.5	1,117.6	2,920.9	12,704.5	10,640.8	10,907.8	4,287.3	5,338.5	906.4	108.6	1,312.3	751.4
Q2	4,194.6	1,112.4	3,069.1	12,739.3	10,640.8	10,947.7	4,300.5	5,349.8	887.1	103.4	1,347.4	751.2
2016 Mar.	4,051.5	1,117.6	2,920.9	12,704.5	10,640.8	10,907.8	4,287.3	5,338.5	906.4	108.6	1,312.3	751.4
Apr.	4,096.3	1,125.7	2,957.4	12,704.2	10,638.3	10,906.1	4,290.1	5,343.7	890.9	113.6	1,317.9	747.9
May	4,146.7	1,127.2	3,006.5	12,742.1	10,655.5	10,930.4	4,307.7	5,346.8	889.8	111.2	1,330.5	756.1
June	4,194.6	1,112.4	3,069.1	12,739.3	10,640.8	10,947.7	4,300.5	5,349.8	887.1	103.4	1,347.4	751.2
July	4,256.6	1,109.1	3,134.1	12,785.5	10,665.4	10,975.1	4,301.4	5,356.1	897.6	110.3	1,364.2	755.9
Aug. [p)]	4,261.2	1,108.8	3,139.1	12,821.4	10,667.5	10,985.3	4,293.0	5,366.4	897.7	110.4	1,371.4	782.5
Transactions												
2013	-25.0	-73.5	48.5	-305.7	-248.1	-271.7	-132.9	-4.0	-120.9	9.7	-72.7	15.1
2014	72.0	15.9	56.1	-103.8	-50.1	-36.1	-60.9	-15.2	14.3	11.7	-90.0	36.2
2015	284.6	-20.7	305.0	78.9	50.2	64.7	-17.3	98.1	-25.0	-5.6	24.5	4.3
2015 Q3	112.6	-10.2	122.7	56.8	-6.1	19.2	-4.3	24.7	-12.0	-14.4	64.4	-1.6
Q4	73.6	-16.3	89.8	8.7	24.3	32.6	-1.6	22.7	0.8	2.4	-22.4	6.8
2016 Q1	125.8	5.4	120.4	64.8	81.5	51.9	35.9	36.2	24.4	-14.9	14.2	-30.9
Q2	122.0	-10.6	132.6	60.0	22.1	57.4	23.9	16.6	-13.3	-5.2	35.9	2.0
2016 Mar.	28.5	0.3	28.3	-5.0	2.4	2.0	-1.9	11.2	10.8	-17.7	3.3	-10.7
Apr.	46.8	3.3	43.5	12.6	10.7	10.5	9.0	6.0	-9.4	5.0	5.2	-3.3
May	39.8	1.3	38.5	32.1	13.0	18.2	13.7	3.4	-1.7	-2.4	11.1	8.0
June	35.4	-15.2	50.6	15.3	-1.6	28.7	1.2	7.2	-2.2	-7.8	19.7	-2.7
July	53.7	-3.3	56.8	52.6	34.6	36.5	10.0	6.7	11.1	6.8	14.9	3.1
Aug. [p)]	4.8	-0.3	5.1	39.1	6.3	14.1	-7.8	11.3	2.7	0.1	6.8	25.9
Growth rates												
2013	-0.7	-6.3	2.2	-2.3	-2.3	-2.4	-2.9	-0.1	-12.3	10.9	-5.1	1.9
2014	2.1	1.4	2.4	-0.8	-0.5	-0.3	-1.4	-0.3	1.5	11.9	-6.6	4.5
2015	7.9	-1.8	12.3	0.6	0.5	0.6	-0.4	1.9	-2.7	-4.3	1.9	0.5
2015 Q3	7.2	0.5	10.2	0.6	0.4	0.4	-0.3	1.6	-2.3	-1.4	1.0	1.9
Q4	7.9	-1.8	12.3	0.6	0.5	0.6	-0.4	1.9	-2.7	-4.3	1.9	0.5
2016 Q1	10.1	-2.8	16.1	1.1	1.1	1.0	0.8	2.2	-1.1	-19.2	3.3	-2.5
Q2	11.7	-2.8	18.1	1.5	1.2	1.5	1.3	1.9	0.0	-23.6	7.3	-3.0
2016 Mar.	10.1	-2.8	16.1	1.1	1.1	1.0	0.8	2.2	-1.1	-19.2	3.3	-2.5
Apr.	10.3	-2.6	16.2	1.2	1.1	1.0	0.9	2.2	-2.0	-16.5	4.1	-2.5
May	11.1	-1.9	16.9	1.3	1.1	1.2	1.2	2.1	-1.1	-21.1	5.1	-2.4
June	11.7	-2.8	18.1	1.5	1.2	1.5	1.3	1.9	0.0	-23.6	7.3	-3.0
July	12.2	-2.7	18.7	1.4	1.3	1.7	1.3	2.0	0.2	-16.1	4.6	-3.7
Aug. [p)]	10.9	-2.8	16.8	1.5	1.3	1.7	1.2	2.0	0.7	-14.1	4.2	-0.3

Source: ECB.

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

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

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

4) Including non-profit institutions serving households.

5 Money and credit

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

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

	Non-financial corporations [2)]					Households [3)]				
	Total		Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total		Loans for consumption	Loans for house purchase	Other loans
		Adjusted loans [4)]					Adjusted loans [4)]			
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2013	4,353.6	4,450.2	1,065.7	740.9	2,547.0	5,222.8	5,547.8	573.6	3,853.7	795.5
2014	4,300.6	4,256.2	1,109.9	720.6	2,470.2	5,200.4	5,546.1	563.3	3,861.1	776.0
2015	4,272.8	4,257.1	1,038.1	758.3	2,476.4	5,307.3	5,640.7	595.6	3,948.0	763.6
2015 Q3	4,284.4	4,252.1	1,067.7	745.9	2,470.7	5,277.6	5,611.6	582.4	3,926.5	768.7
Q4	4,272.8	4,257.1	1,038.1	758.3	2,476.4	5,307.3	5,640.7	595.6	3,948.0	763.6
2016 Q1	4,287.3	4,262.6	1,044.6	768.2	2,474.5	5,338.5	5,658.5	603.4	3,973.0	762.2
Q2	4,300.5	4,281.8	1,041.7	774.4	2,484.3	5,349.8	5,685.3	604.2	3,987.0	758.6
2016 Mar.	4,287.3	4,262.6	1,044.6	768.2	2,474.5	5,338.5	5,658.5	603.4	3,973.0	762.2
Apr.	4,290.1	4,264.9	1,043.5	772.7	2,473.9	5,343.7	5,665.1	604.6	3,979.9	759.2
May	4,307.7	4,279.9	1,051.4	771.7	2,484.7	5,346.8	5,673.1	601.8	3,986.1	758.9
June	4,300.5	4,281.8	1,041.7	774.4	2,484.3	5,349.8	5,685.3	604.2	3,987.0	758.6
July	4,301.4	4,284.4	1,031.2	780.3	2,489.9	5,356.1	5,693.7	604.4	3,995.2	756.5
Aug. [(p)]	4,293.0	4,282.9	1,022.9	781.2	2,488.9	5,366.4	5,700.1	607.7	4,004.1	754.7
Transactions										
2013	-132.9	-145.5	-44.3	-44.6	-44.0	-4.0	-17.0	-18.2	27.4	-13.2
2014	-60.9	-68.3	-14.2	2.3	-49.0	-15.2	5.5	-3.0	-3.4	-8.8
2015	-17.3	16.7	-65.6	32.7	15.6	98.1	76.4	21.7	80.0	-3.6
2015 Q3	-4.3	3.2	-17.5	4.0	9.2	24.7	24.9	5.2	19.8	-0.3
Q4	-1.6	15.9	-22.8	13.5	7.7	22.7	19.2	5.1	20.0	-2.4
2016 Q1	35.9	28.8	15.3	13.0	7.5	36.2	23.8	9.1	27.0	0.1
Q2	23.9	25.2	1.2	8.5	14.1	16.6	31.2	1.0	16.1	-0.4
2016 Mar.	-1.9	-1.6	0.2	-3.7	1.6	11.2	9.1	2.7	7.4	1.0
Apr.	9.0	7.9	1.0	5.0	3.0	6.0	7.0	1.1	7.0	-2.1
May	13.7	9.8	5.9	-0.8	8.6	3.4	7.8	-3.1	6.4	0.1
June	1.2	7.5	-5.7	4.4	2.5	7.2	16.4	3.0	2.6	1.6
July	10.0	10.8	-4.5	7.4	7.1	6.7	8.7	0.0	8.3	-1.7
Aug. [(p)]	-7.8	-1.3	-7.3	1.0	-1.5	11.3	7.0	3.5	9.1	-1.4
Growth rates										
2013	-2.9	-3.2	-4.0	-5.6	-1.7	-0.1	-0.3	-3.0	0.7	-1.6
2014	-1.4	-1.5	-1.3	0.3	-1.9	-0.3	0.1	-0.5	-0.1	-1.1
2015	-0.4	0.4	-5.9	4.5	0.6	1.9	1.4	3.8	2.1	-0.5
2015 Q3	-0.3	0.0	-4.4	3.6	0.3	1.6	1.1	2.6	1.8	-0.4
Q4	-0.4	0.4	-5.9	4.5	0.6	1.9	1.4	3.8	2.1	-0.5
2016 Q1	0.8	1.1	-2.4	5.2	0.9	2.2	1.6	5.0	2.3	-0.4
Q2	1.3	1.7	-2.2	5.3	1.6	1.9	1.8	3.5	2.1	-0.4
2016 Mar.	0.8	1.1	-2.4	5.2	0.9	2.2	1.6	5.0	2.3	-0.4
Apr.	0.9	1.3	-2.6	5.7	1.1	2.2	1.6	5.3	2.3	-0.7
May	1.2	1.6	-2.0	4.9	1.4	2.1	1.6	4.5	2.3	-0.7
June	1.3	1.7	-2.2	5.3	1.6	1.9	1.8	3.5	2.1	-0.4
July	1.3	1.9	-2.8	6.2	1.7	2.0	1.8	3.2	2.2	-0.5
Aug. [(p)]	1.2	1.9	-4.0	6.4	1.8	2.0	1.8	3.4	2.3	-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										
2013	261.7	7,311.0	2,371.2	91.5	2,507.2	2,341.1	1,146.5	150.2	183.8	121.9
2014	264.6	7,188.1	2,248.9	92.2	2,381.1	2,465.9	1,379.3	225.0	184.5	139.7
2015	278.6	7,066.8	2,184.2	79.8	2,253.1	2,549.7	1,326.6	280.6	205.9	135.6
2015 Q3	287.6	7,100.9	2,223.8	83.7	2,263.6	2,529.9	1,357.4	253.8	215.6	142.8
Q4	278.6	7,066.8	2,184.2	79.8	2,253.1	2,549.7	1,326.6	280.6	205.9	135.6
2016 Q1	318.8	7,027.9	2,183.1	76.8	2,174.7	2,593.2	1,281.5	308.4	247.1	152.1
Q2	323.5	7,075.9	2,162.4	74.6	2,176.3	2,662.5	1,285.9	294.4	238.0	144.0
2016 Mar.	318.8	7,027.9	2,183.1	76.8	2,174.7	2,593.2	1,281.5	308.4	247.1	152.1
Apr.	316.8	7,050.4	2,184.4	75.4	2,173.2	2,617.5	1,275.6	315.1	237.0	140.0
May	292.1	7,057.5	2,182.8	75.3	2,185.9	2,613.5	1,239.4	293.6	226.9	138.6
June	323.5	7,075.9	2,162.4	74.6	2,176.3	2,662.5	1,285.9	294.4	238.0	144.0
July	331.2	7,052.8	2,154.0	73.9	2,148.4	2,676.4	1,216.8	303.0	212.9	128.2
Aug. [(p)]	319.3	7,038.4	2,148.4	73.2	2,142.8	2,674.0	1,177.4	323.6	215.4	134.6
Transactions										
2013	-44.9	-80.8	-19.0	-14.3	-137.3	89.8	362.0	-53.6	32.2	43.7
2014	-5.7	-161.1	-122.3	2.0	-151.2	110.3	238.5	0.8	0.7	17.8
2015	7.8	-217.6	-104.0	-13.5	-202.9	102.8	-97.6	-10.9	21.4	-4.0
2015 Q3	22.0	-37.5	6.1	-3.1	-57.8	17.3	-65.2	1.0	-14.3	-6.3
Q4	-11.7	-57.6	-47.5	-3.9	-42.5	36.3	-36.7	11.7	-9.6	-7.2
2016 Q1	40.1	-62.2	1.6	-2.9	-49.9	-10.9	-70.3	33.2	41.3	17.3
Q2	4.3	-8.4	-23.6	-1.6	-11.0	27.8	-60.4	-16.5	-9.2	-8.1
2016 Mar.	23.9	-14.5	-1.0	-0.8	3.4	-16.2	27.4	8.4	0.7	9.5
Apr.	-2.2	11.4	1.3	-0.9	-3.8	14.8	-23.0	-0.5	-10.1	-12.0
May	-24.9	5.3	-2.7	-0.1	2.3	5.8	-26.5	-22.8	-10.2	-1.5
June	31.4	-25.2	-22.1	-0.6	-9.6	7.1	-10.9	6.8	11.1	5.4
July	7.7	-27.1	-8.4	-0.7	-22.0	4.0	-73.3	10.4	-25.1	-15.8
Aug. [(p)]	-11.9	-4.2	-5.6	-0.7	-3.5	5.6	-32.1	20.4	2.5	6.4
Growth rates										
2013	-14.7	-1.1	-0.8	-13.5	-5.1	3.8	-	-	10.3	23.3
2014	-2.3	-2.2	-5.2	2.2	-6.0	4.6	-	-	0.4	14.6
2015	3.2	-3.0	-4.6	-14.4	-8.3	4.1	-	-	11.6	-2.9
2015 Q3	11.8	-3.3	-3.7	-9.1	-9.3	3.1	-	-	31.7	17.4
Q4	3.2	-3.0	-4.6	-14.4	-8.3	4.1	-	-	11.6	-2.9
2016 Q1	11.4	-3.3	-3.3	-15.2	-8.4	1.8	-	-	3.7	-5.9
Q2	20.6	-2.3	-2.9	-13.3	-6.9	2.8	-	-	3.5	-2.9
2016 Mar.	11.4	-3.3	-3.3	-15.2	-8.4	1.8	-	-	3.7	-5.9
Apr.	17.4	-2.7	-2.6	-14.6	-7.8	2.4	-	-	11.0	3.2
May	6.1	-2.5	-2.5	-13.6	-6.9	2.1	-	-	0.5	-2.9
June	20.6	-2.3	-2.9	-13.3	-6.9	2.8	-	-	3.5	-2.9
July	29.2	-2.6	-3.7	-13.0	-7.0	2.6	-	-	1.8	-10.6
Aug. [(p)]	15.1	-2.5	-3.8	-12.4	-6.7	2.7	-	-	1.4	1.1

Source: ECB.

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

2) Comprises central government holdings of deposits with the MFI sector and of securities issued by the MFI sector.

3) Not adjusted for seasonal effects.

6 Fiscal developments

6.1 Deficit/surplus

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

	Deficit (-)/surplus (+)					Memo item: Primary deficit (-)/ surplus (+)
	Total	Central government	State government	Local government	Socual security funds	
	1	2	3	4	5	6
2012	-3.7	-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	-0.1	0.1
2015	-2.1	-1.9	-0.2	0.1	-0.1	0.3
2015 Q2	-2.4	.	.	.	.	0.1
Q3	-2.2	.	.	.	.	0.3
Q4	-2.1	.	.	.	.	0.3
2016 Q1	-1.9	.	.	.	.	0.4

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

6.2 Revenue and expenditure

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

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure					Capital expenditure
			Direct taxes	Indirect taxes	Net social contributions				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	5.4	3.0	22.6	4.5
2013	46.6	46.1	12.5	12.9	15.5	0.5	49.6	45.5	10.4	5.4	2.8	23.0	4.1
2014	46.8	46.3	12.5	13.1	15.5	0.5	49.3	45.4	10.3	5.3	2.7	23.1	4.0
2015	46.6	46.1	12.6	13.1	15.4	0.5	48.6	44.7	10.2	5.2	2.4	23.0	3.9
2015 Q2	46.6	46.1	12.5	13.1	15.4	0.5	49.1	45.2	10.3	5.3	2.5	23.1	3.9
Q3	46.6	46.1	12.5	13.1	15.4	0.5	48.7	45.0	10.2	5.3	2.5	23.1	3.8
Q4	46.6	46.1	12.6	13.2	15.4	0.5	48.7	44.8	10.1	5.3	2.4	23.0	3.9
2016 Q1	46.5	46.0	12.6	13.2	15.4	0.5	48.5	44.6	10.1	5.3	2.4	23.0	3.9

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

6.3 Government debt-to-GDP ratio

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

	Total	Financial instrument			Holder			Original maturity		Residual maturity			Currency	
		Currency and deposits	Loans	Debt securities	Resident creditors	MFIs	Non-resident creditors	Up to 1 year	Over 1 year	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Euro or participating currencies	Other curren-cies
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2012	89.3	3.0	17.4	68.9	45.5	26.2	43.9	11.3	78.0	19.7	31.6	38.0	87.2	2.2
2013	91.1	2.6	17.2	71.3	46.0	26.2	45.1	10.4	80.7	19.4	32.2	39.5	89.0	2.1
2014	92.0	2.8	16.9	72.4	45.1	26.0	46.9	10.0	82.0	19.0	32.0	41.0	89.9	2.1
2015	90.7	2.8	16.1	71.7	45.7	27.5	45.0	9.4	81.3	17.8	31.8	41.1	88.6	2.1
2015 Q2	92.4	2.8	16.3	73.3	.	.	.	.	.	.	.	.	.	.
Q3	91.7	2.8	16.2	72.8	.	.	.	.	.	.	.	.	.	.
Q4	90.7	2.8	16.1	71.8	.	.	.	.	.	.	.	.	.	.
2016 Q1	91.7	2.7	16.2	72.7	.	.	.	.	.	.	.	.	.	.

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	1.8	0.2	-0.3	-0.7	-0.4	-0.4	-0.1	0.3	-0.1	0.4	1.9	2.7
2014	0.9	-0.1	0.0	-0.2	0.2	-0.2	-0.2	0.0	0.0	0.2	1.0	2.6
2015	-1.4	-0.3	-0.8	-0.4	0.0	-0.1	-0.2	-0.1	-0.1	-0.3	-0.2	1.4
2015 Q2	-0.6	-0.1	-1.0	-1.0	-0.3	-0.3	-0.2	-0.2	0.1	0.0	0.5	1.4
Q3	-0.6	-0.3	-0.4	-0.4	0.2	-0.3	-0.2	-0.2	0.1	-0.2	0.1	1.6
Q4	-1.4	-0.3	-0.8	-0.5	0.1	-0.2	-0.2	-0.1	0.0	-0.3	-0.3	1.3
2016 Q1	-1.4	-0.4	-0.5	-0.1	0.3	-0.3	-0.2	0.1	-0.1	-0.3	-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	Maturities of up to 1 year	Issuance	Redemption
	1	2	3	4	5	6	7	8	9	10	11	12	13
2013	16.5	14.4	5.0	2.1	0.5	6.3	3.5	1.7	1.3	3.7	2.8	1.2	1.8
2014	15.9	13.9	5.1	2.0	0.5	6.4	3.1	1.5	0.5	3.5	2.7	0.8	1.6
2015	14.8	12.9	4.3	2.0	0.5	6.6	2.9	1.2	0.1	3.3	3.0	0.4	1.2
2015 Q2	15.0	13.0	4.8	2.0	0.5	6.6	3.0	1.3	0.2	3.4	2.9	0.5	1.5
Q3	15.1	13.1	4.3	2.0	0.5	6.6	2.9	1.2	0.1	3.3	3.0	0.4	1.4
Q4	14.8	12.9	4.3	2.0	0.5	6.6	2.9	1.2	0.1	3.3	3.0	0.4	1.2
2016 Q1	15.5	13.6	4.8	1.9	0.5	6.6	2.8	1.2	0.0	3.2	2.8	0.3	1.1
2016 Apr.	15.1	13.2	4.2	1.9	0.5	6.7	2.7	1.2	0.0	3.2	2.9	0.3	1.3
May	15.1	13.2	4.5	1.9	0.5	6.7	2.7	1.1	-0.1	3.2	2.9	0.4	1.2
June	15.4	13.5	5.0	1.8	0.5	6.7	2.7	1.1	-0.1	3.1	2.9	0.3	1.1
July	15.1	13.3	4.6	1.8	0.5	6.8	2.7	1.1	-0.1	3.1	3.0	0.3	1.2
Aug.	15.1	13.2	4.7	1.8	0.5	6.8	2.7	1.1	-0.1	3.1	2.9	0.3	1.1
Sep.	14.9	13.1	4.1	1.8	0.5	6.8	2.6	1.1	-0.1	3.1	2.9	0.3	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 Q2	-3.1	0.4	0.6	-2.3	-4.7	-5.4	-4.1	-2.9	-0.4
Q3	-2.9	0.8	0.7	-1.6	-4.4	-5.3	-3.9	-2.7	-0.9
Q4	-2.6	0.6	0.4	-1.8	-7.2	-5.1	-3.6	-2.6	-1.0
2016 Q1	-2.7	0.7	1.0	-1.5	-5.7	-5.1	-3.3	-2.5	-0.1
	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 Q2	109.5	72.6	9.9	91.1	169.4	99.8	97.7	136.0	110.7
Q3	109.1	72.0	9.8	85.9	171.8	99.7	97.1	134.6	110.2
Q4	106.1	71.2	9.7	78.7	176.9	99.2	96.2	132.7	108.9
2016 Q1	109.2	71.1	9.6	80.4	176.3	100.5	97.5	135.4	109.3

	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 Q2	-2.1	0.4	1.3	-2.0	-2.1	-2.2	-6.4	-4.5	-2.9	-3.1
Q3	-2.1	0.1	1.2	-1.7	-2.1	-2.5	-3.1	-4.1	-2.6	-2.9
Q4	-1.3	-0.2	1.2	-1.5	-1.9	-1.2	-4.4	-2.9	-3.0	-2.7
2016 Q1	-0.8	-0.1	1.0	-0.1	-1.6	-1.2	-3.8	-2.8	-2.8	-2.3
	Government debt									
2012	41.3	39.8	21.8	67.6	66.4	82.0	126.2	53.9	52.2	53.9
2013	39.0	38.7	23.5	68.4	67.7	81.3	129.0	71.0	54.7	56.5
2014	40.7	40.5	22.7	67.0	67.9	84.4	130.6	80.9	53.6	60.2
2015	36.3	42.7	22.1	64.0	65.1	85.5	129.0	83.1	52.5	63.6
2015 Q2	35.3	37.6	21.8	67.2	67.0	86.3	128.4	81.0	54.7	62.0
Q3	36.4	38.2	21.5	66.0	66.2	86.3	130.2	84.4	53.9	60.6
Q4	36.4	42.8	21.5	63.8	65.1	86.2	129.0	83.2	52.9	62.6
2016 Q1	38.5	40.1	21.8	65.3	64.8	86.9	128.9	83.6	52.2	63.6

Source: Eurostat.

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