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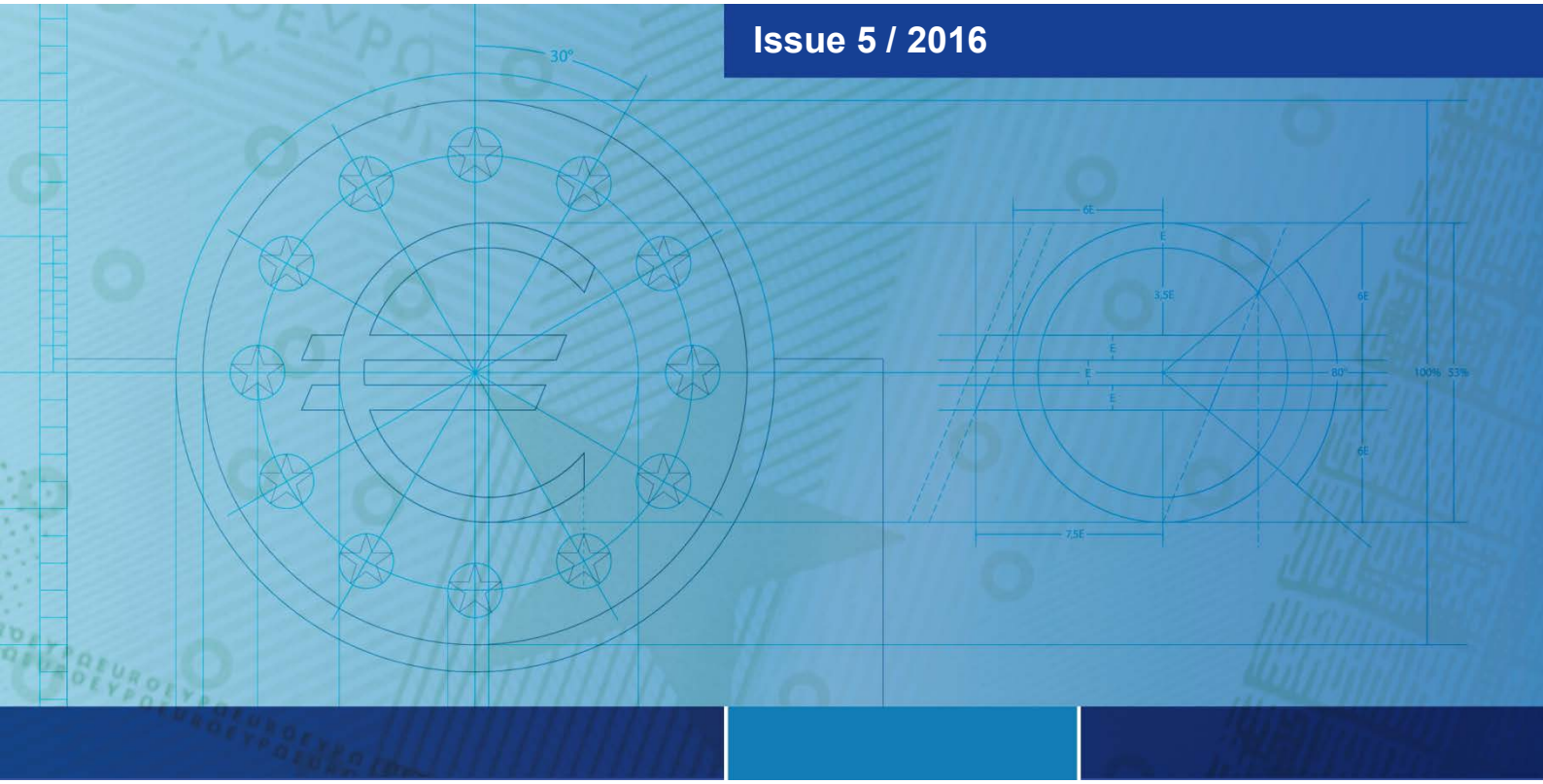

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Update of economic and monetary developments

Summary

Financial market volatility following the referendum in the United Kingdom on EU membership has been short-lived. However, uncertainty about the global outlook has increased, while incoming data for the second quarter point to subdued global activity and trade. Global headline inflation, meanwhile, has remained at low levels, mainly reflecting past energy price declines. Risks to the outlook for global activity, and in particular for emerging market economies, remain on the downside and relate primarily to political uncertainty and financial volatility.

Euro area financial markets have weathered the spike in uncertainty and volatility following the UK referendum with encouraging resilience. As a result, overall financial conditions remain highly supportive. In particular, while the EONIA forward curve has shifted downwards, especially at longer horizons, possibly reflecting expectations of both lower growth and further monetary policy actions, followed by low-risk sovereign bond yields, sovereign spreads vis-à-vis ten-year German government bonds have narrowed and those on corporate bonds have continued to tighten. At the same time, euro area banks' equity prices have declined further.

The economic recovery in the euro area is continuing, supported by domestic demand, while export growth remains modest. Looking ahead, the economic recovery is expected to proceed at a moderate pace. Domestic demand remains 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. Sustained employment gains, which are also benefiting from past structural reforms, and still relatively low oil prices provide additional support for households' real disposable income and thus for private consumption. In addition, the fiscal stance in the euro area is expected to be mildly expansionary in 2016 and to turn broadly neutral in 2017 and 2018. At the same time, headwinds to the economic recovery in the euro area include the outcome of the UK referendum and other geopolitical uncertainties, subdued growth prospects in emerging markets, the necessary balance sheet adjustments in a number of sectors and a sluggish pace of implementation of structural reforms. Against this background, the risks to the euro area growth outlook remain tilted to the downside.

Euro area headline inflation has remained at levels around zero in recent months. Measures of underlying inflation have on balance not yet shown clear signs of an upward trend, while pipeline price pressures have remained subdued. Market-based measures of long-term inflation expectations have declined further and remain substantially below survey-based measures of expectations. Looking ahead, on the basis of current futures prices for oil, inflation rates are likely to remain very low in

the next few months before starting to pick up later in 2016, 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 in place since June 2014, including the comprehensive package of new monetary policy measures adopted in March this year, have significantly improved borrowing conditions for firms and households, as well as credit flows across the euro area, thereby supporting the economic recovery. In particular, low interest rates, as well as the effects of the ECB's targeted longer-term refinancing operations and the expanded asset purchase programme, continue to support robust growth in money and the gradual recovery in credit dynamics. Banks have been passing on their favourable funding conditions in the form of lower lending rates, and improved lending conditions are fostering a recovery in loan growth. Indeed, the euro area bank lending survey for the second quarter of 2016 indicated further improvements in loan supply conditions for loans to enterprises and households and a continued increase in loan demand across all loan categories. In the light of the prevailing uncertainties, it is essential that the bank lending channel continues to function well.

At its meeting on 21 July 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.

Given prevailing uncertainties, the Governing Council will continue to monitor economic and financial market developments very closely and to safeguard the pass-through of its accommodative monetary policy to the real economy. Over the coming months, as more information becomes available, including new staff projections, the Governing Council will be in a better position to reassess the underlying macroeconomic conditions, the most likely paths of inflation and growth, and the distribution of risks around those paths. If warranted to achieve its objective, the Governing Council will act by using all the instruments available within its mandate.

The Governing Council confirmed the need to preserve an appropriate degree of monetary accommodation in order to secure a return of inflation rates towards levels that are below, but close to, 2% without undue delay.

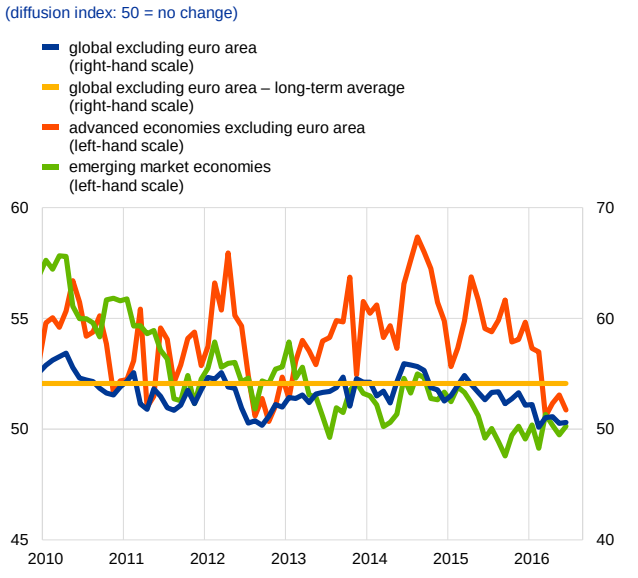
1 External environment

The vote in the United Kingdom in favour of leaving the European Union triggered some financial market volatility and increased uncertainty about the global outlook. The outcome of the referendum took financial markets by surprise and prices adjusted rapidly in the immediate aftermath of the vote. Since 23 June the pound sterling has depreciated sharply. However, the impact on most global markets has been short-lived, although bank equities have declined, particularly in the euro area. Uncertainty about the global outlook has risen since the referendum. In the short-term the largest impact has been felt by the UK economy, as uncertainty about the future trading and investment relationships between the United Kingdom and the EU is weighing on demand. Other non-euro area European economies, particularly those with close trading links with the United Kingdom, may also be affected. Outside Europe, the impact is expected to be more limited but political uncertainty across advanced economies has risen, which could dampen confidence and investment. Private sector forecasts for major economies have been revised downwards slightly.

Amid heightened uncertainty, financial markets expect a more accommodative monetary policy stance in major advanced economies. The Bank of England left interest rates unchanged at its meeting in July, although it signalled possible action in the near future. In the United States, market expectations for interest rate increases during 2016 have moderated. According to the federal funds futures curve, markets are fully pricing in a 25 basis point hike only towards the end of 2017. Financial markets also expect further easing by the Bank of Japan.

Chart 1

The global composite output PMI



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

Global indicators for the second quarter of 2016 point to subdued economic activity and trade. The global composite output Purchasing Managers' Index (PMI) recorded a further decline in the second quarter, falling to 51.3 – the lowest value seen since end-2012 (see Chart 1). Global trade growth has contracted further. The volume of world imports of goods fell by 0.6% in April 2016, on a three-month-on-three-month basis. While trade growth improved in advanced economies, it deteriorated further in emerging market economies (EMEs), particularly Asia. The short-term outlook for global trade is subdued, with the global PMI for new export orders remaining below the threshold value of 50 in June.

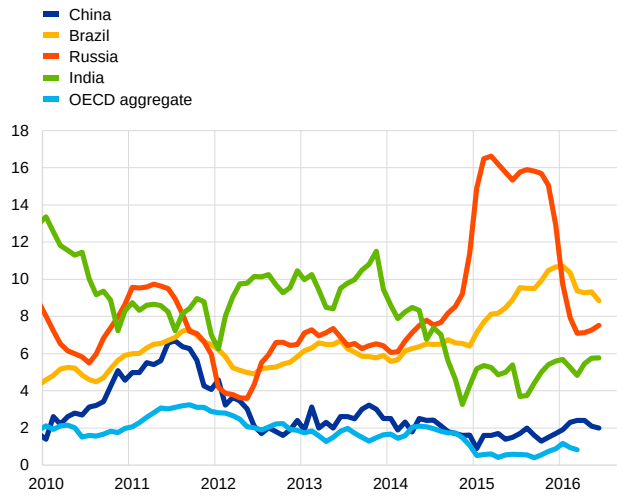
Global headline inflation remained at low levels. In the OECD countries, annual CPI inflation increased by 0.8% in May, the same pace as in the previous two months. The energy component has continued to weigh on inflation. OECD inflation excluding food and energy stood at 1.9% in May (see Chart 2). Among large

EMEs, inflation fell in China and Brazil and was unchanged in India. Having fallen sharply over the past year, inflation ticked up in Russia.

Chart 2

Consumer price inflation

(year-on-year percentage changes)



Sources: OECD and national sources.
Note: The latest observation is for June 2016 for individual countries and May 2016 for the OECD aggregate.

Brent crude oil prices have fallen slightly since early June. OPEC output increased in June, driven mainly by supply increases in Iran, Saudi Arabia and Nigeria. Non-OPEC supply also increased in June, underpinned by a partial recovery in Canadian oil production. On the demand side, the International Energy Agency's forecasts for global oil demand growth in 2016 have been revised upwards. The prices of non-oil commodities have increased marginally since the start of June.

Activity in the United States has rebounded after the soft patch at the start of the year. The pace of economic activity slowed to 0.3%, quarter on quarter, in the first quarter of this year (1.1% in annualised terms), driven by weaker household spending and a decline in non-residential investment. However, recent data point to a rebound in GDP growth in the second quarter. Growth in personal consumption expenditure has increased, reflecting gains in real disposable income and households' net wealth partly as a result of improved housing market conditions. In April and May retail sales rose at a steady pace and vehicle sales rebounded, after dipping in March. Moreover, the labour market remains resilient. US non-farm payroll employment rose by 287,000 in June, after more modest increases in the previous two months. In June, annual headline CPI inflation declined to 1.0%, dampened by lower energy and food price inflation, while inflation excluding food and energy rose slightly, to 2.3%, the highest rate seen in four years.

In Japan, the growth momentum remains modest. Following the decline in the final quarter of 2015, GDP grew by 0.5%, quarter on quarter, in the first quarter of 2016. The latest indicators, however, point to subdued activity in the second quarter, as industrial production contracted in May and the Bank of Japan's Tankan survey signalled some deterioration in business conditions. Labour market conditions are tight, with the unemployment rate standing at 3.2% in May, the lowest level in more than two decades. However, wage growth remains weak. Annual headline CPI inflation declined further into negative territory in May.

In the United Kingdom, economic growth is expected to decline in the second half of the year. GDP growth slowed to 0.4%, quarter on quarter, in the first quarter of 2016. Activity was driven primarily by robust private consumption, while investment recorded a decline and net exports also continued to exert a drag on growth. According to short-term indicators, the UK economy continued to expand in the second quarter of 2016 at a relatively robust pace, similar to that seen in the previous quarter. However, the uncertainty created by the outcome of the UK referendum is likely to weigh on economic activity in the near term, in particular investment and trade.

In China, macroeconomic data remain consistent with a gradual moderation in the pace of expansion. In the second quarter of 2016 China recorded GDP growth of 6.7%, year on year – the same rate as in the previous quarter and in line with the growth target range of 6.5%-7% set by the Chinese authorities for 2016. Activity has relied on government support in recent quarters. Fixed asset investment has been boosted by strong growth in infrastructure investment, while capital expenditure in the manufacturing sector has moderated.

Growth momentum remains weak and heterogeneous across other EMEs. Activity has remained resilient in commodity-importing countries, such as India where activity expanded by 7.6%, year on year, in the first quarter of 2016. Turkey also experienced sustained rates of GDP growth in the same period. However, looking ahead, the attempted military coup has increased political uncertainty, which could weigh on demand. Among commodity exporters, activity has been weak. Brazil remains in recession. However, in Russia, there are signs that the economy has bottomed out, as GDP returned to positive growth of 0.3%, quarter on quarter, in the first quarter of 2016. Capital flows towards EMEs have remained generally resilient in recent months. Taking a longer perspective, however, the gradual deceleration of economic activity in EMEs has contributed to a gradual waning of net capital flows to EMEs in recent years (see Box 1).

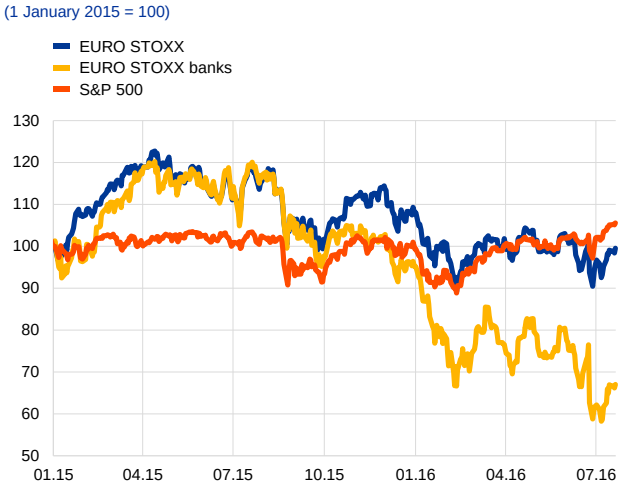
2 Financial developments

Long-term euro area government bond yields have edged further downwards since early June. Sovereign spreads vis-à-vis the German Bund ten-year rate widened immediately after the outcome of the UK referendum on EU membership, especially for lower-rated issuers, but thereafter spreads overall declined to below their early June levels, with the exception of those for Portugal and Greece.

Euro area equity prices declined following the outcome of the UK referendum on EU membership. While the composite index subsequently rebounded, the bank equity index remained well below its level in early June. The broad EURO STOXX index lost slightly more than 2% during the review period (2 June to 20 July 2016). Over the same period the S&P 500 index in the United States rose by around 3% (see Chart 3). These developments were the result of a relatively stable performance ahead of the UK referendum, losses of close to 8% and 5% for the euro area and US indices, respectively, between 23 and 27 June, and a recovery phase thereafter. Euro area bank equity prices overall lost 13% since early June, while US bank equity prices declined by around 4%. The overall declines, although large, are nonetheless much smaller than the drop in banks' equity prices in the two main economic areas between 23 and 27 June, of around 25% and 10% respectively. Profitability concerns, as well as country and bank-specific events, continued to weigh on the euro area banking sector in particular. Market expectations of equity price volatility spiked significantly just after the UK referendum, but fell back to their initial level in the remainder of the review period.

Chart 3

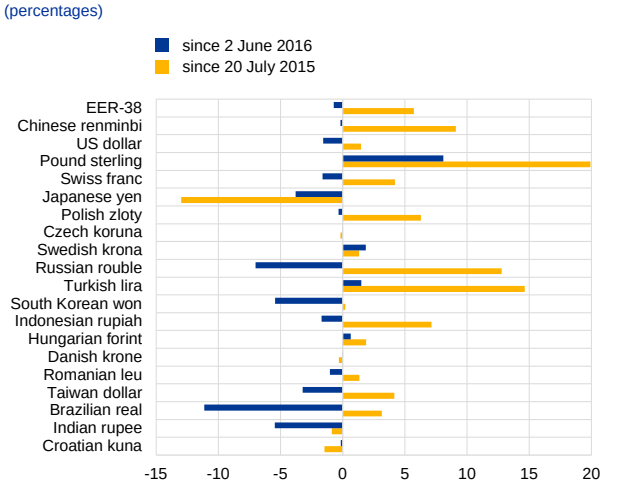
Selected euro area and US equity price indices



Source: Thomson Reuters.
Notes: Daily data. The latest observation is for 20 July 2016.

Chart 4

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



Source: ECB.
Notes: Percentage changes relative to 20 July 2016. 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.

Spreads on bonds issued by non-financial corporations (NFCs) declined, extending the trend that emerged after the Governing Council's announcement in March of the corporate sector purchase programme (CSPP). Spreads on issues by euro area NFCs have declined since early June across all rating classes, with a limited and short-lived rebound after the outcome of the UK referendum. On 20 July NFC bond spreads were, depending on the rating, 30-40 basis points lower than in early June and 50-80 basis points lower relative to 10 March, the day on which the Governing Council announced the CSPP (see also Box 2). In the financial sector, bond spreads also declined across all rating classes since early June. The diverging behaviour of bank equities, which declined significantly, and financial bond spreads, which continued to narrow, is consistent with the view that profitability concerns – rather than perceptions of increased default risks among financial institutions – were the key factor behind developments in the banking sector.

In the foreign exchange markets, the euro weakened modestly in trade-weighted terms. In bilateral terms, since 2 June the euro appreciated by 8.1% against the pound sterling, amid heightened uncertainty after the outcome of the UK referendum on EU membership. Higher volatility and a decline in risk appetite supported the Japanese yen, leading to a depreciation of the euro against the Japanese currency of around 5%. The euro also depreciated against the US dollar, the Swiss franc and the currencies of most emerging market economies and commodity-exporting countries (see Chart 4).

The euro overnight index average (EONIA) was relatively stable, ranging from -32 to -35 basis points, except at the end of the second quarter, when it temporarily rose to -29 basis points. Excess liquidity increased by €29 billion, to around €873 billion, in the context of Eurosystem purchases under the expanded asset purchase programme.

Relative to early June, the EONIA forward curve shifted downwards, especially beyond the one-year horizon. After a decline in the immediate aftermath of the UK referendum, the downward movement continued at maturities beyond the one-year horizon, with a temporary rebound in early July. Between 2 June and 24 June, when

the outcome of the UK referendum on EU membership was announced, the downward shift of the curve ranged from 10 basis points at the one-year horizon to 20 basis points at the eight-year horizon. These developments reflected downward revisions to expected growth and rising market expectations of further monetary policy easing in response. By 20 July these declines had remained stable up to the one-year horizon, but had widened further, up to around 30 basis points, across the remaining maturities.

3 Economic activity

The economic recovery in the euro area is continuing, driven largely by developments in private consumption but also by investment. Real GDP increased by 0.6% quarter on quarter in the first quarter, supported by robust private consumption dynamics as well as continued improvements in investment, whereas net trade contributed negatively. Changes in inventories also contributed positively to GDP growth in the first quarter of 2016.

Private consumption, which is the main driver of the ongoing recovery, continues to contribute positively to growth. Private consumption increased further in the first quarter of 2016, by 0.6% quarter on quarter, following a temporary slowdown in the previous quarter owing to adverse weather effects on energy and seasonal goods consumption, and the terrorist attacks in France. From a longer-term perspective, consumer spending has been benefiting from rising real disposable income among households, which primarily reflects rising employment and lower oil prices. Households' real gross disposable income grew in the first quarter of 2016, by 2.1% year on year. After improving further in the second quarter of 2016, consumer confidence declined slightly in July following the UK referendum outcome and remained above its long-term average. Households' balance sheets have also become less constrained.

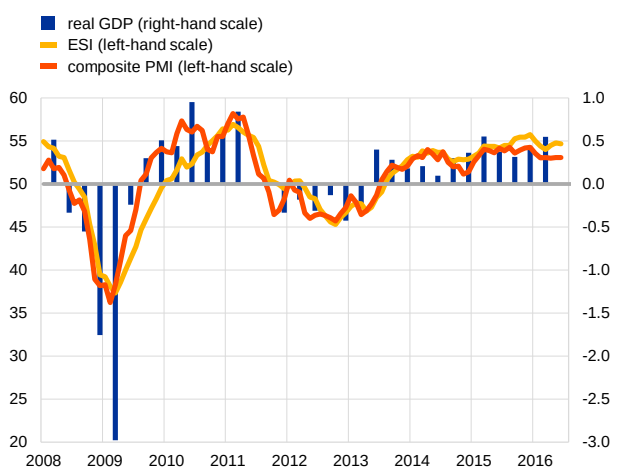
Following an acceleration at the end of 2015, investment continued to grow in the first quarter of 2016, but more recent data signal somewhat weaker dynamics in the short term. Total investment increased by 0.8%, quarter on quarter, in the first quarter of 2016 mainly owing to a rise in equipment investment. Rising investment in metal products and machinery made up about half of the increase in year-on-year terms in the first quarter, while construction and ICT (information and communication technology) investment contributed equally to the remaining part. In the second quarter of 2016 there was some weakness in the industrial production of capital goods which declined in May by 2.3%, month on month, thereby more than offsetting the strong increase of 1.7% recorded in April. A weak external environment combined with fewer industrial orders of capital goods and subdued production expectations in the capital goods sector will most likely weigh on the growth rate of non-construction investment in the months to come. Construction investment continued to grow in the first quarter of 2016, but a fall in production in the first two months of the second quarter of 2016, together with a negative carry-over from declines in February and March, suggest subdued dynamics for housing investment in the second quarter of 2016.

Beyond the short term, recovering demand, accommodative monetary policy as well as improving financing conditions should boost investment, albeit with some downside risks. Improving profits and the need to replace investment after years of subdued fixed capital formation should also support total investment going forward. However, uncertainty related to the UK referendum outcome and its potential implications for the euro area economy might weigh on the investment outlook. In addition, deleveraging needs and a slow pace of reform implementation, particularly in some countries, as well as subdued potential growth prospects, may also dampen investment growth.

Chart 5

Euro area real GDP, the ESI and the composite PMI

(quarter-on-quarter percentage growth; index; diffusion index)



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 first quarter of 2016 for real GDP and June 2016 for the ESI and the PMI.

Euro area total exports (goods and services) remained subdued in the first quarter of 2016 and monthly trade data point so far to weak momentum in the growth of goods exports in the second quarter. When taking monthly trade outcomes for April and May together, extra-euro area goods exports fell somewhat compared with the second quarter of 2015. Among the emerging market economies, growth in exports to China increased, while growth in exports to Russia and Latin America decreased. As for the advanced economies, exports to the United States made a broadly neutral contribution, whereas exports to non-euro area Europe (including the United Kingdom) increased. The relative strength of euro area exports since the turn of the year compared with global trade growth points to gains in euro area export market shares. Looking ahead, the slight appreciation of the effective exchange rate of the euro in the first half of this year is expected to weigh on euro area exports. In addition, exports may be negatively affected by the possible adverse consequences of the UK referendum outcome for global trade flows. Moreover, more timely indicators, such as surveys, signal continued subdued developments in foreign demand and relatively weak export orders from outside the euro area in the near term.

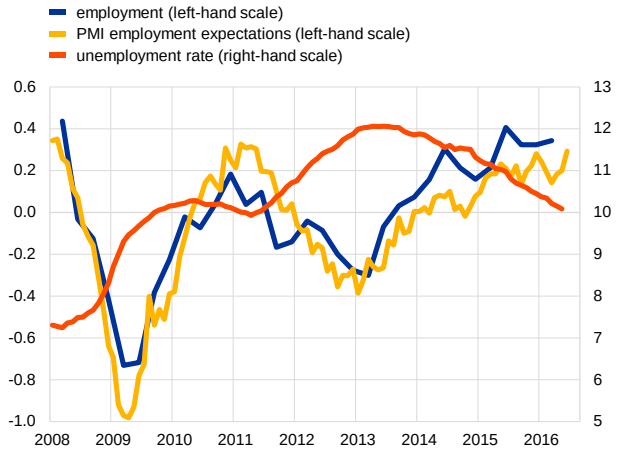
The latest economic indicators are, on balance, consistent with ongoing moderate real GDP growth in the second quarter of 2016. Industrial production (excluding construction) declined in May, following strong growth in April, resulting in an average index level for the first two months of the second quarter of 2016 that stands 0.2% below that for the first quarter. Construction production and new orders continued to decline in April. Retail sales and car registrations rose in April and May by 0.3%, month on month, although car registrations declined in June. More timely survey data are in line with continued growth in the second quarter, albeit at a lower rate than in the first quarter. The composite output Purchasing Managers' Index (PMI) remained unchanged in June, leading to a quarterly average slightly below the level seen in the first quarter of 2016 (see Chart 5). The Economic Sentiment Indicator (ESI) declined slightly in June. Both indicators remain above their long-term average levels.

Euro area labour markets continue to improve gradually. Employment increased further by 0.3%, quarter on quarter, in the first quarter of 2016. As a result, employment stood 1.4% above the level recorded one year earlier, the highest annual rise observed since the first quarter of 2008. The unemployment rate in the euro area also continued to decline in May 2016, falling to 10.1% (see Chart 6). 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 data continued to improve in the recent months and are consistent with further employment gains in the period ahead.

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 first quarter of 2016 for employment, June 2016 for the PMI and May 2016 for unemployment.

Looking ahead, the economic recovery is expected to proceed at a moderate pace, although uncertainty has increased following the outcome of the UK referendum. Domestic demand continues to be supported by the ECB's monetary policy measures. Their favourable impact on financing conditions, together with improvements in corporate profitability, is boosting investment. Moreover, continued employment gains and the still relatively low price of oil should continue to support households' real disposable income and private consumption. However, heightened uncertainty following the UK referendum might affect confidence and trade. Other geopolitical uncertainties also pose challenges for the economic recovery in the euro area. At the same time, the economic recovery is still being dampened by the ongoing balance sheet adjustments in a number of sectors, the insufficient pace of implementation of structural reforms and subdued growth prospects in emerging markets. Against this background, the risks to the euro area growth outlook remain tilted to the downside.

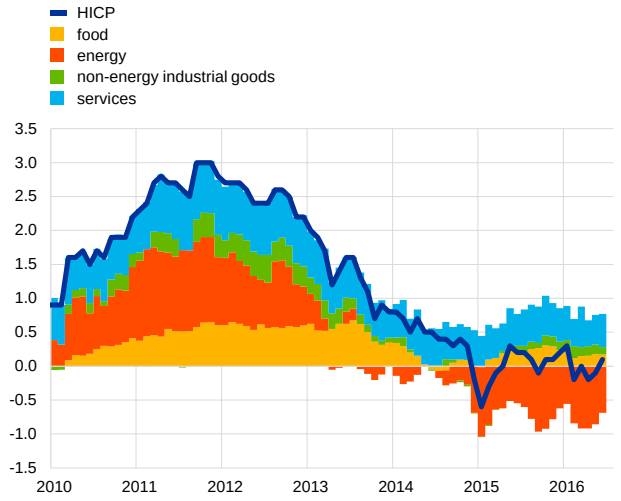
4 Prices and costs

Headline inflation has remained at levels around zero in recent months (see Chart 7)**.** The low level of inflation continues to reflect the dampening impact of strongly negative annual rates of change in energy prices. At the same time, HICP inflation excluding food and energy continues to hover at rates around 1.0%.

Chart 7

Contribution 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 June 2016.

Measures of underlying inflation have, on balance, not yet shown any clear sign of an upward trend. The annual rate of HICP inflation excluding food and energy has been hovering around 1% since the middle of last year. Other measures of underlying inflation have also shown no clear signs of further upward momentum since a turning point was reached in early 2015. Looking at the main components, services price inflation has been hovering around 1% in recent months, while non-energy industrial goods price inflation has been within a range of 0.4% to 0.7%.

Import price inflation remained negative, while producer price inflation continued to be quite stable. After declining for several successive months import price inflation in non-food consumer goods increased from -1.4% in April to -0.7% in May. This pattern is fairly similar to that of developments in the euro nominal effective exchange rate. The annual rate of change in the producer price index for domestic sales of non-food consumer goods industries increased slightly further, to 0.1% in May, from 0.0% in April and -0.1% in March. The limited upward pressure on producer prices may result from the impact of an improvement in economic conditions being offset by that of weak cost pressures stemming from, for example, low commodity prices.

Wage growth has remained subdued. Growth in compensation per employee was 1.2% in year-on-year terms in the first quarter of 2016, slightly down from 1.3% in the fourth quarter of 2015. Factors that may be weighing on wage growth include continued elevated levels of slack in the labour market, weak productivity growth, the low inflation environment and the ongoing impact of labour market reforms implemented during the crisis.

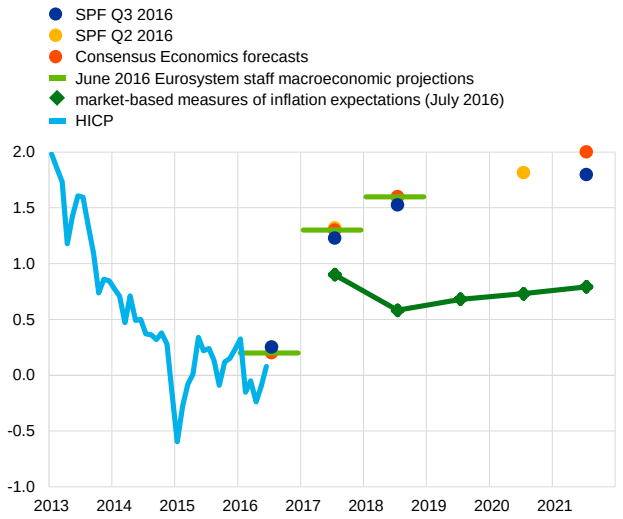
Market-based measures of long-term inflation expectations have declined notably and remain substantially below survey-based measures. The five-year forward inflation rate five years ahead has declined since the beginning of June and reached a new all-time low in early July. A large part of the decline appears to be due to technical factors, as increased demand for safe assets amid deteriorating market sentiment following the UK referendum on EU membership has contributed to dampening market-based measures of inflation. While these measures may therefore recover as market sentiment improves, the decrease may also indicate that market participants consider inflation unlikely to pick up soon. At the same time, markets continue to price in only a limited risk of deflation. In contrast to market-based measures, survey-based measures of long-term inflation expectations, such as those obtained from the ECB Survey of Professional Forecasters (SPF) and Consensus Economics surveys, have been more stable (see Chart 8). According to

the July 2016 SPF results, the average point forecast for inflation five years ahead remained unchanged from the previous survey round, at 1.8%.[1]

Chart 8

Survey-based measures of inflation expectations

(annual percentage changes)



Sources: ECB Survey of Professional Forecasters, Thomson Reuters, Consensus Economics, June 2016 Eurosystem staff macroeconomic projections and ECB calculations.
Notes: Realised HICP data are included up to June 2016. Consensus Economics data are taken from the forecasts published in July 2016. The market-based measures of inflation expectations are derived from HICPx (the euro area HICP excluding tobacco) zero coupon inflation-linked swaps; the latest observations are for 19 July 2016.

Looking ahead, on the basis of current futures prices for energy, inflation rates will remain low or possibly even slightly negative in the coming months before picking up later in 2016, largely owing to base effects. Thereafter, inflation rates should recover further in 2017 and 2018, supported by the ECB's monetary policy measures and the expected economic recovery. The result of the UK referendum has raised the level of uncertainty surrounding the inflation outlook.

Turning to house price developments, annual growth in the ECB's residential property price indicator for the euro area has picked up further. In the first quarter of 2016 the annual rate of change in residential property prices was 2.9%, up from 2.2% in the fourth quarter of 2015 and 1.6% in the third quarter of that year. The further increase in residential property price growth in the first quarter of 2016 was relatively broadly based, as the majority of euro area countries recorded either higher growth or a less pronounced decline compared with the previous quarter.

5 Money and credit

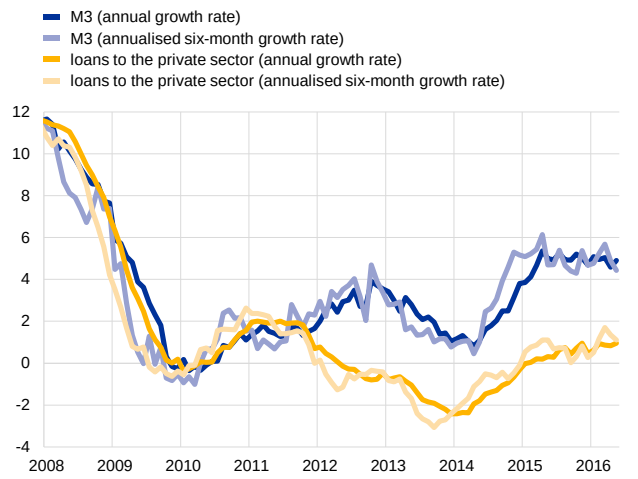
Broad money growth remained robust. The annual growth rate of M3, which increased to 4.9% in May 2016, has hovered around 5.0% since March 2015 (see Chart 9). Broad money growth was once again supported by the most liquid components. Over recent months M1 has been showing signs of deceleration as its annual growth rate continued to decrease, albeit remaining at a high level in May.

[1] See https://www.ecb.europa.eu/stats/prices/indic/forecast/shared/files/reports/spfreport2016_Q3.en.pdf

Chart 9

M3 and loans to the private sector

(annual rate of growth and annualised six-month growth rate)



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

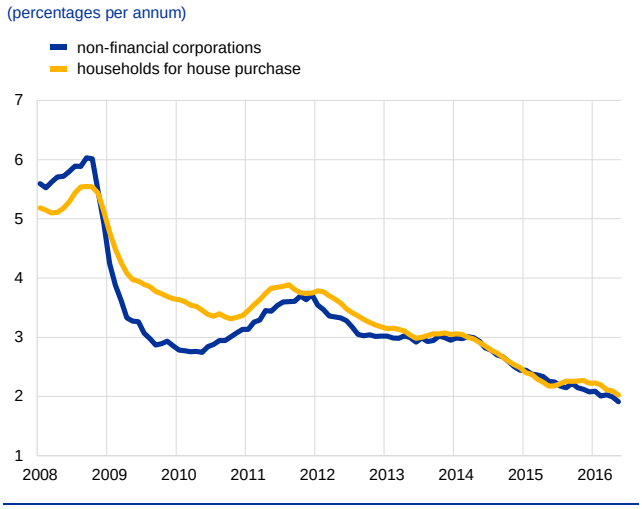
Broad money growth was mainly driven by domestic sources of money creation. The ECB's non-standard monetary policy measures partly account for this development. From a counterpart perspective, the largest sources of money creation in May were the bond purchases made by the Eurosystem in the context of the public sector purchase programme (PSPP) and shifts away from longer-term financial liabilities. The annual rate of change of the longer-term financial liabilities (excluding capital and reserves) of monetary financial institutions (MFIs) remained strongly negative in May 2016. This reflects the flatness of the yield curve, linked to the ECB's non-standard monetary policy measures, which has made it less favourable for investors to hold longer-term bank liabilities. The attractiveness of the targeted longer-term refinancing operations (TLTROs) as an alternative to longer-term market-based bank funding also played a role. In this context, the allotment in June 2016 of the first operation in the second series of TLTROs (TLTRO-II) amounted to €399 billion, which was slightly below market expectations. Furthermore, the gradual recovery in the growth of credit to the private sector contributed to increased money creation. The MFI sector's net external asset position continues to weigh on annual M3 growth. This development continues to reflect capital outflows from the euro area and ongoing portfolio rebalancing in favour of non-euro area instruments (in particular the euro area government bonds sold by non-residents under the PSPP).

Loan dynamics remained on a path of gradual recovery. The annual growth rate of MFI loans to the private sector (adjusted for sales and securitisation) increased in May (see Chart 9). While the annual growth rate of loans to non-financial corporations (NFCs) recovered further in May, the annual growth rate of loans to households has remained broadly stable since February 2016. These trends were generally observed across the euro area and were supported by the significant decreases in bank lending rates witnessed since summer 2014 (notably owing to the ECB's non-standard monetary policy measures), as well as by improvements in the supply of and demand for bank loans. Despite these positive signs, the ongoing consolidation of bank balance sheets and persistently high levels of non-performing loans in some countries remain a drag on loan growth.

The July 2016 euro area bank lending survey suggests that the recovery in loan growth is driven by increasing demand as well as improvements in loan supply (see survey at: https://www.ecb.europa.eu/stats/money/surveys/lend/html/index.en.html**).** In the second quarter of 2016 loan demand for all loan categories increased further. At the same time, loan supply conditions for loans to enterprises and households continued to improve. Competitive pressures remained the main factor driving the easing in banks' credit standards on loans to enterprises. Banks continued to indicate that the

main effects of the TLTROs on loan supply translate into an easing of terms and conditions, rather than in changes in credit standards.

Chart 10
Composite bank lending rates for NFCs and households



Source: ECB.
Note: The indicator for the composite bank lending rates is calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The latest observation is for May 2016.

Bank lending rates for the private sector fell to a new historic low in May. Composite lending rates for NFCs and households have decreased by significantly more than market reference rates since June 2014 (see Chart 10). Receding fragmentation in euro area financial markets and the improvement in the pass-through of monetary policy measures to bank lending rates have played a positive role in this context. Furthermore, the decrease in banks' composite funding costs has supported the decline in composite lending rates. Since June 2014 banks have been progressively passing on the decline in their funding costs in the form of lower lending rates. Moreover, the sizeable take-up in the first TLTRO-II operation implies a significant reduction in bank funding costs, which can be passed on to final borrowers in the economy. Between May 2014 and May 2016, composite lending rates on loans to euro area NFCs and households fell by around 100 and 90 basis points respectively; vulnerable euro area countries have seen particularly strong reductions in 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 are benefiting to a greater extent than large companies from the decline in lending rates.

The net issuance of debt securities by euro area NFCs strengthened further in April and May 2016, after having already increased strongly in March. The strengthening in April and May was supported by, among other things, the ECB's monetary policy package announced in March and was widespread across countries, while the increase in March was driven by two large transactions. Market data show that corporate bond issuance moderated notably in the second half of June, most likely related to concerns about the EU referendum in the United Kingdom, before strengthening again in the first half of July. The net issuance of quoted shares by NFCs has remained relatively modest in recent months. (See Box 5 for non-banks' increasing role in providing new financing to euro area NFCs since 2008.)

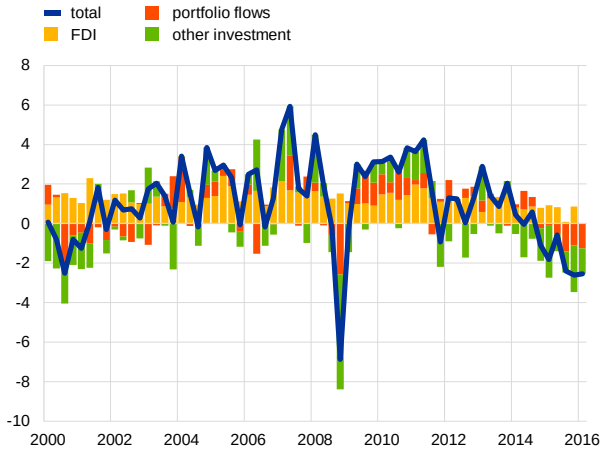
Financing costs for euro area NFCs remain favourable. The overall nominal cost of external financing for NFCs has remained broadly unchanged at the historically low level reached in April 2016, masking diverging movements across financing instruments. The cost of equity financing increased moderately in May and June and declined in July, following the developments in equity prices. By contrast, the cost of market-based debt financing continued to decline over the period from May to July,

supported by the ECB's latest monetary policy measures and globally declining yields.

Box 1
Recent developments in capital flows to emerging market economies

Chart A
Net capital inflows to EMEs

(percentages of nominal GDP)



Sources: Haver Analytics, IMF and ECB calculations.
Notes: Net capital inflows defined as the sum of net foreign direct investment (FDI), net portfolio flows and net other investment. Aggregated using GDP purchasing power parity (PPP) weights.

Net capital inflows to major emerging market economies (EMEs) have been on a downward trend since 2011 and have remained negative since the fourth quarter of 2014.[2] Net capital inflows to EMEs recovered quickly after the global financial crisis. However, this rebound reversed in 2011 and since then net capital inflows have followed a downward trend (see Chart A). Moreover, after a modest recovery in 2013, there was a renewed decline in net capital inflows to EMEs, which have remained negative for the last six quarters. This is the longest period of consecutive net capital outflows from EMEs since 2001. The reversal seems to be broad based across different types of investment class. In particular, foreign direct investment, which is the most stable component of the financial account, remained below its long-term average (2000-Q1 2016) over the last two years.

The decline in net capital inflows to EMEs has also been partly mirrored in a gradual and broad-based weakening of the currencies of EMEs. EME currencies were on a downward trend between 2011 and 2015. The weakening was particularly pronounced in the period between mid-2014 and late 2015 when the US dollar started to strengthen amid gradually building market expectations of a tightening of US monetary policy. Since early 2016 EME currencies have started to recover part of their losses.

Based on a standard "push/pull" framework[3], a simple model is used to determine, at an aggregate level, potential drivers of the recent slowdown in net capital inflows to EMEs (see Chart B). A single equation model relates aggregate balance of payments net capital inflows to EMEs (measured in

2 This box focuses on private net capital inflows to a group of large EMEs comprising Argentina, Brazil, Chile, China, Colombia, India, Indonesia, Malaysia, Mexico, Russia, South Africa, South Korea, Taiwan, Thailand, Turkey and Venezuela. Hong Kong and Singapore are excluded from the analysis given their special nature as global financial centres. The flows are defined as the sum of foreign direct investment, portfolio flows and other investment and do not include changes in foreign reserves.

3 A "push/pull" framework distinguishes between two types of driver of net capital inflows into an economy. Factors determining the attractiveness of the domestic economy for investors – so-called "pull factors" – include economic growth, the country's risk or returns on investments. International "push factors" determine foreign investors' decisions to invest abroad and include global risk aversion and foreign economies' growth and interest rates. See Koepke, R., "What Drives Capital Flows to Emerging Markets? A Survey of the Empirical Literature", *IIF Working Paper*, Institute of International Finance, 2015.

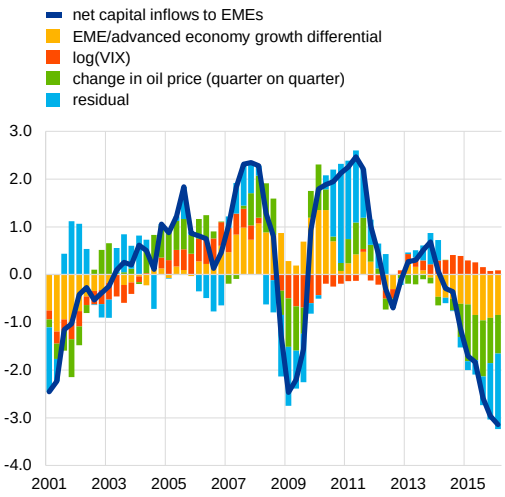
percentages of GDP) to the relative attractiveness of domestic economic conditions (measured as the real GDP growth differential between the respective EMEs and advanced economies and by interest rate differentials) and to changes in global conditions, including global risk aversion (measured by the VIX Index), changes in oil prices and a measure of expectations of US monetary policy.

The model results suggest that a falling growth differential between EMEs and advanced economies has been a major driver of net capital outflows from EMEs over recent years. Since 2010 growth in major EMEs has been on a downward trend, driven both by a deteriorating external environment and domestic structural factors (see Chart C).[4] At the same time, growth in advanced economies has stabilised since 2013. This has resulted in a diminishing growth differential between EMEs and advanced economies, making the former less attractive for foreign investment. Moreover, low growth or recessions in some EMEs might have bolstered gross capital outflows. The average quarterly growth differential decreased from 1.2 percentage points in the pre-crisis period (2001-07) to 0.9 percentage point in 2010-15 and to 0.7 percentage point over the last two years.

Chart B

Model-based contributions to net capital inflows to EMEs

(demeaned; four-quarter moving averages; percentages of nominal GDP)

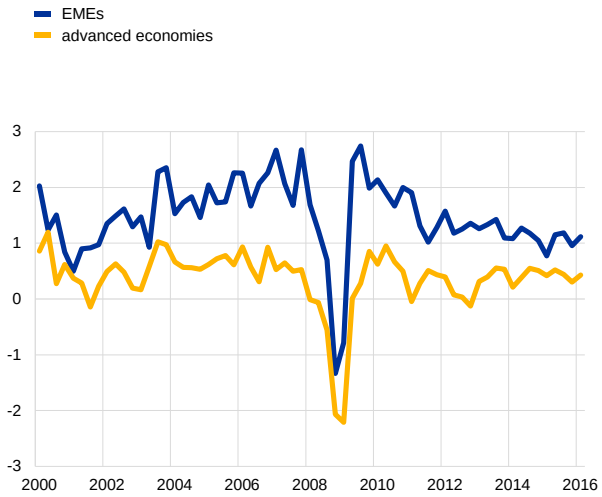


Sources: Datastream, Haver Analytics, IMF and ECB calculations.
Notes: See footnote 1 of this box for the country sample. The sample period is from Q1 2000 to Q1 2016. All aggregates are computed using GDP PPP weights. Growth differential calculated against an aggregate of advanced economies (see notes to Chart C for the country sample). The interest rate differential and US monetary policy expectations are not statistically significant in the regression; therefore, the chart is based on the model excluding these variables (the contributions of the other factors remain practically unchanged). To address the endogeneity problem, lagged growth differentials are used.

Chart C

Real GDP growth in EMEs and advanced economies

(quarter-on-quarter percentage changes)



Sources: Haver Analytics, IMF and ECB calculations.
Notes: See footnote 1 of this box for the country sample. Aggregated using GDP PPP weights. Advanced economies include Australia, Canada, Denmark, the euro area, Japan, Norway, Sweden, Switzerland, the United Kingdom and the United States. The latest observation is for Q1 2016.

[4] See the article entitled "The slowdown in emerging market economies and its implications for the global economy", *Economic Bulletin*, Issue 3, ECB, 2016.

In addition, capital flows to EMEs have been substantially affected by external factors such as global risk aversion and changes in oil prices. The model results show that net capital inflows respond to global risk aversion, which is consistent with the empirical evidence found in the literature.[5] Furthermore, the recent period of net capital outflows from EMEs also seems to have been strongly driven by the decline in oil prices which began in 2014. Oil price declines directly affect the economic and financing conditions of commodity exporters. However, changes in oil prices are also positively correlated with net capital inflows to commodity importers. This could be associated with the fact that oil prices partly reflect global demand conditions and therefore global income.[6] In particular, while the initial phase of the fall in oil prices as of mid-2014 was mainly supply-driven, the decline from autumn 2015 to January 2016 is believed to have been more demand-driven.[7]

The process of US monetary policy normalisation has drawn attention to the role of expectations about the future path of US policy rates in determining capital inflows to EMEs. The orderly developments in financial markets in December 2015, when the US policy rate hike was fully priced in by the markets, compared with the "taper tantrum" episode in 2013, have highlighted the importance of expectations concerning US monetary policy for global financial market developments. Using several different proxies for US monetary policy expectations, a significant effect of such expectations on aggregate net capital flows to EMEs is not found.[8] However, these expectations seem to play a more significant role as a determinant of portfolio flows examined at higher frequencies.[9] The role of interest rate differentials between EMEs and advanced economies is also not clearly captured in the specific set-up of the model; however, their effects are found to be significant in other more detailed studies.[10]

5 Koepke (2015), op. cit.

6 See Ahmed, S., Curcuru, S., Warnock, F. and Zlate, A., "The Two Components of International Portfolio Flows", 2015. The authors show (for portfolio flows) that, next to flows stemming from active portfolio reallocation decisions, flows attributable to new savings (income effect) are an important part of total portfolio flows.

7 See the box entitled "Global implications of low oil prices", *Economic Bulletin*, Issue 4, ECB, 2016.

8 Alternative specifications are tried, including US ten-year Treasury yields, the difference between US ten-year Treasury yields and three-month money market rates, and Eurodollar futures contracts.

9 See, for example, Dahlhaus, T. and Vasishtha, G., "The Impact of U.S. Monetary Policy Normalization on Capital Flows to Emerging-Market Economies", *Staff Working Papers*, No 14-53, Bank of Canada, 2014. The authors find a statistically significant, but small, economic effect of the US policy normalisation shock on monthly portfolio flows to EMEs. A recent analysis by the IMF (*World Economic Outlook*, April 2016, Chapter 2) finds a similar result at a weekly frequency and for a sample period as of 2013.

10 A standard specification is tried using the policy rate differential against advanced economies and an alternative, using a two-year government bond yield differential to capture more accurately recent developments in advanced economies' monetary policies. The model results do not show a statistically significant impact of EME/advanced economy interest rate differentials on net capital inflows to EMEs. This could be due to the level of aggregation of the dependent variable, which does not allow the heterogeneity of individual countries' interest rates and risk profiles to be taken into consideration. Other studies often employ a panel methodology, which allows country-specific effects to be taken into account. See, for example, Ahmed, S. and Zlate, A., "Capital Flows to Emerging Market Economies: A Brave New World?", *International Finance Discussion Papers*, No 1081, Board of Governors of the Federal Reserve System, 2013.

Overall, economic growth differentials between EMEs and advanced economies remain a key driver of net capital inflows to EMEs. This highlights the need for sound domestic economic policies in EMEs, aimed at addressing existing vulnerabilities and supporting economic growth, in particular in the context of slowing global economic growth prospects.

Box 2
The corporate bond market and the ECB's corporate sector purchase programme

On 8 June 2016 the Eurosystem started to make purchases under its new corporate sector purchase programme (CSPP). The CSPP was announced by the ECB's Governing Council following its meeting on 10 March and aims to further strengthen the pass-through of the Eurosystem's asset purchases to the financing conditions of the real economy. The CSPP is part of the Eurosystem's asset purchase programme (APP)[11], under which purchases 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 aim of achieving inflation rates below, but close to, 2% over the medium term. **This box describes the CSPP and considers its initial impact on the corporate bond market.**

Under the CSPP, the Eurosystem purchases securities issued by non-bank corporations in both the primary and the secondary market. To be eligible for purchase, securities must, as a necessary condition, be eligible as collateral for Eurosystem credit operations. In particular, they must have a minimum first-best credit assessment of at least credit quality step 3 (investment grade) according to the Eurosystem credit assessment framework from an external credit assessment institution. In addition, the securities must be denominated in euro; the eligible maturity spectrum ranges from a minimum remaining maturity of six months to a maximum remaining maturity of 30 years at the time of the purchase; the securities must be issued by a corporation established in the euro area; and securities issued by credit institutions are not eligible for purchase. The Eurosystem applies an issue share limit of 70% per security.[12]

Between the start of CSPP purchases on 8 June 2016 and 15 July, the Eurosystem bought €10.4 billion of non-bank corporate bonds.[13] 7% of the purchases were made in the primary market and 93% in the secondary market. The amount purchased is published on a weekly basis and the split between primary and secondary markets is published each month on the ECB's website. The corporate bond market is generally less liquid than the government bond market, as corporate bond issues are much smaller in terms of outstanding amount than most government bond issues, the market is dominated by long-term investors and banks usually do

11 The APP also comprises the asset-backed securities purchase programme (ABSPP), the third covered bond purchase programme (CBPP3) and the public sector purchase programme (PSPP).

12 However, in specific cases a lower issue share limit applies, e.g. for securities issued by public undertakings, which are dealt with in a manner consistent with their treatment under the PSPP.

13 All data on purchases refer to purchases settled by 15 July 2016 and are in market value.

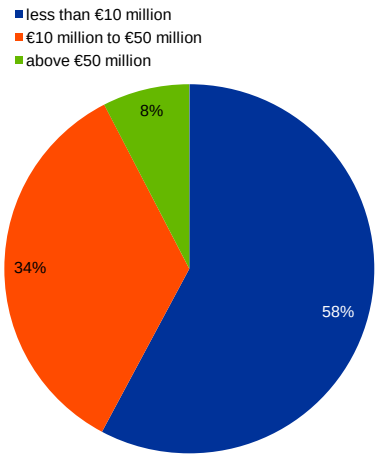
not serve as dedicated market-makers. Therefore, trades of less than €10 million make up the majority of the volume under the CSPP (see Chart A) and trades are typically larger in the primary market than in the secondary market. Average trade sizes under the CSPP are broadly comparable to those under the third covered bond purchase programme (CBPP3) and smaller than trades under the public sector purchase programme (PSPP). The corporate bond repo market likewise tends to be less liquid than the government bond repo market. To support market liquidity, the Eurosystem has since 18 July made its CSPP bond holdings available for securities lending via the national central banks conducting purchases.

CSPP purchases are well diversified across ratings, sectors, countries and issuers. Owing to the large number of eligible corporate issuers, purchases have so far been spread over 458 different bonds issued by 175 different issuers. Yields of the purchased bonds have ranged from around -0.3% to above 3%, with just above 20% of the purchases being made at negative yields above the ECB's deposit facility rate of -0.4%. The ratings of the bonds range from AA to BBB- and the distribution of purchases broadly mirrors the rating distribution of the universe of eligible bonds. The purchases are well diversified across corporations in many economic sectors (see Chart B) and across the euro area countries where bonds are outstanding.

Chart A

Trade sizes under the CSPP

(percentage shares)

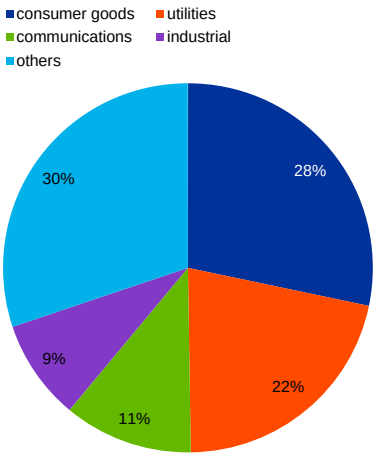


Source: ECB.
Note: Secondary market trades.

Chart B

Sectoral distribution of purchases

(percentage shares)

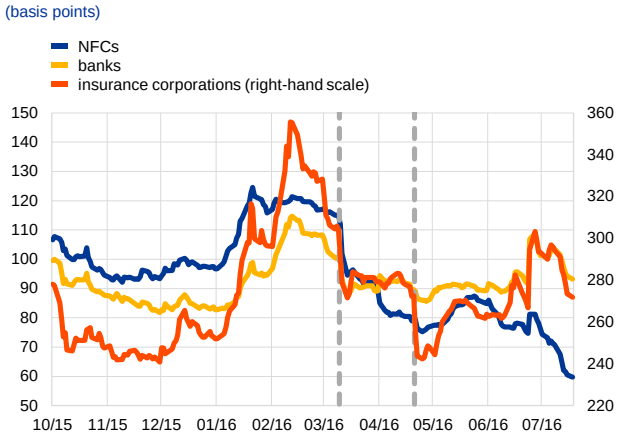


Sources: Bloomberg and ECB.
Note: Based on the Bloomberg sector classification.

The announcement of the CSPP on 10 March was followed by a significant contraction in the spread between yields on bonds issued by non-financial corporations (NFCs) and a risk-free rate. NFC bond spreads declined sharply on the day of the announcement and continued to decline subsequently, interrupted only by temporary bouts of volatility in May and June relating to the referendum on the United Kingdom's membership of the European Union (see Chart C). When the CSPP eligibility of insurance corporations was confirmed on 21 April, they also recorded a sizeable spread contraction. The subsequent developments in corporate spreads are to some extent related to the uncertainty generated by the UK referendum.

Chart C

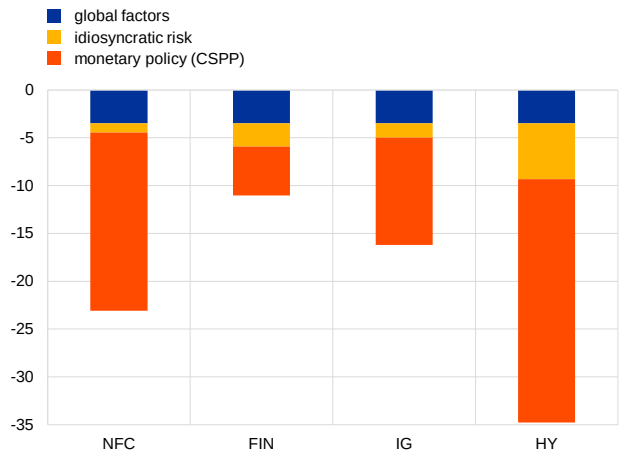
Investment-grade corporate bond spreads



Sources: Markit and Bloomberg.
Notes: Corporate bond spreads are measured by asset swap spreads. The vertical lines indicate the Governing Council meetings on 10 March and 21 April. The indices also contain subordinated bonds. The latest observation is for 18 July 2016.

Chart D

Contributions to changes in corporate bond spreads in the two-week period after the CSPP announcement



Sources: Merrill Lynch and ECB calculations.
Notes: Corporate bond spreads are measured by asset swap spreads. NFC denotes bonds issued by non-financial corporations; FIN denotes bonds issued by the financial sector; IG denotes investment-grade bonds; HY denotes high-yield (non-investment grade) bonds. For more details of the analytical approach taken to derive these results, see footnote 5 and De Santis, R. A., "Credit spreads, economic activity and fragmentation", Working Paper Series, No 1930, ECB, July 2016. The latest observation is for 24 March 2016.

Econometric analysis suggests that the CSPP announcement accounts for a large share of the decline in euro area corporate bond spreads in March 2016. Following the current practice in the literature, the impact of the CSPP announcement is assessed through an event study approach focusing on the two-week period after the announcement. The empirical analysis suggests that the monetary policy decisions announced in March, which include the launch of the CSPP, the cut in the ECB deposit facility rate and the new series of four targeted longer-term refinancing operations (TLTRO-II), have improved the external financing conditions of firms. Providing precise estimates of the impact of the policies is most likely not feasible. However, focusing on the spread between the individual corporate bond yield and the risk-free rate of the same maturity might help to identify more directly the effects of the CSPP.

A time-series panel analysis of the determinants of corporate bond spreads estimated over the October 1999-March 2016 period shows that, over the identified period from 10 to 24 March, 11 basis points of the total decline of 16 basis points in the spreads of euro area investment-grade corporate bonds was related to the monetary policy measures announced in March, more specifically the launch of the CSPP (see Chart D).[14] Most of these bonds are eligible for CSPP purchases. However, the same analysis also identifies a notable impact on the corporate bond market segments dominated by ineligible bonds. In particular, it shows an impact of 25 basis points on high-yield bonds, i.e. bonds with a rating lower than investment grade, and an impact of 5 basis points on corporate bonds issued by financial institutions, which include both ineligible bank bonds and eligible bonds issued by insurance corporations. The evidence of a decline in corporate credit spreads owing to the CSPP is corroborated by the sizeable spread contraction for bonds issued by insurance corporations when it was confirmed on 21 April that

[14] The results are based on a panel data analysis where spreads of 4,750 individual euro area corporate bonds are disaggregated into their driving factors by means of a two-step procedure. In a first step, the idiosyncratic risks of individual bonds are disentangled from a systematic or aggregate factor equally affecting all corporate bonds together over the period October 1999-March 2016. The second step considers the determinants of this systematic component, i.e. global factors, such as oil prices and the VIX (the Chicago Board Options Exchange volatility index), and monetary policy. For more details about the identification of idiosyncratic and systematic risks, see De Santis, R. A., "Credit spreads, economic activity and fragmentation", *Working Paper Series*, No 1930, ECB, July 2016.

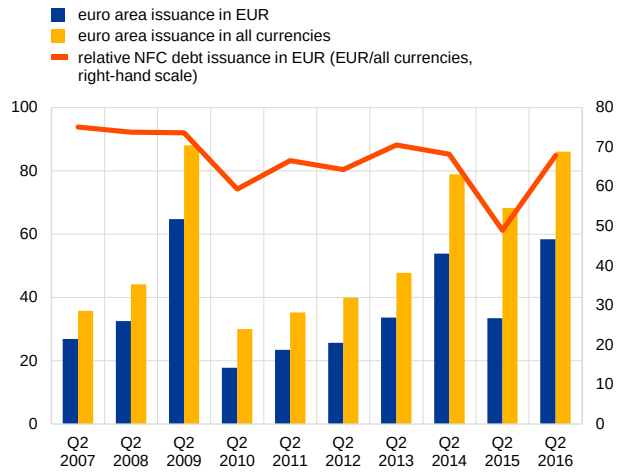
these bonds are eligible (see Chart C).

Issuance of corporate bonds denominated in euro increased after the CSPP announcement. While issuance was subdued at the beginning of the year amid elevated financial market uncertainty, it rebounded significantly after the CSPP announcement. Preliminary data (see Chart E) suggest that issuance in the second quarter of 2016 was well above the average seen in previous years. Moreover, the share of new bonds issued by euro area corporations in euro relative to issuance in all currencies rebounded to a level broadly similar to the share recorded in the past, i.e. about 70% (see Chart F). Foreign companies with headquarters located outside the euro area have not thus far increased their bond issuance in euro.

Chart E

Debt issuance by euro area NFCs

(EUR billions; percentage shares)

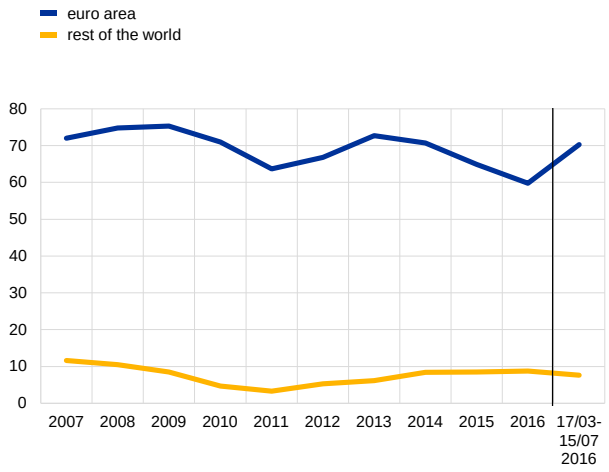


Sources: Dealogic and ECB calculations.
Notes: The data include both investment-grade and non-investment grade bonds. "Issuance in euro" denotes new issues denominated in euro by NFCs headquartered in the euro area. "Issuance in all currencies" denotes all new issues by NFCs headquartered in the euro area.

Chart F

Share of NFC debt issued in euro

(percentage shares)



Sources: Dealogic and ECB calculations.
Notes: The data include both investment-grade and non-investment grade bonds. "Euro area" denotes new issues denominated in euro relative to total new issuances by NFCs headquartered in the euro area. "Rest of the world" denotes new issuances denominated in euro relative to total new issuances by all NFCs headquartered outside the euro area. The year 2016 includes observations up to 15 July 2016. The period from 17 March to 15 July 2016 does not capture a large (€15 billion) transaction in the second week of March 2016, which was agreed before the CSPP announcement.

Box 3
The launch of money market statistical reporting

High frequency statistical information on money market activity is necessary to ensure a well-informed analysis and monitoring of standard and non-standard monetary policy measures and their implementation. In-depth knowledge of the dynamics of short-term interest rates is a key element for the conduct of monetary policy, affording a better understanding of its transmission mechanism, as well as for financial stability and microprudential supervision. To this end, the ECB and the Eurosystem have identified a pressing need to collect very timely, high frequency and granular money market transactional data, initially from a first wave of the 52 largest credit institutions in the euro area, which are referred to as the money market statistical reporting (MMSR) dataset.

To address this need, the ECB started on 1 July 2016 to collect statistical data on money market transactions, based on Regulation ECB/2014/48 concerning statistics on the money markets.[15] The main purpose of this dataset is to provide the Eurosystem with frequent (daily), accurate, timely (the day after the conclusion of the trade) and comprehensive data on transactions concluded by the reporting credit institutions in the euro money markets, which will allow improved monitoring of the transmission of monetary policy decisions to money markets. It will also provide valuable information on the functioning of the euro money markets, permitting in-depth analysis of developments in short-term interest rates.

This new granular dataset covers four segments of the euro money markets, namely unsecured, secured, foreign exchange swap and overnight index swap (OIS) transactions denominated in euro. The new Regulation requires the daily reporting of transaction-by-transaction information on unsecured and secured lending and borrowing transactions in euro with a maturity of up to one year. All foreign exchange swap transactions with a maturity of up to one year involving euro and all OIS transactions denominated in euro must also be reported. The detailed trade data to be provided include the volume, rate, counterparty type and collateral type, together with the time at which the transaction was conducted.

The reporting population currently comprises a sample of 52 of the largest euro area credit institutions, based on market share in money market segments, which fulfil the criteria defined in Article 2.2 of Regulation ECB/2014/48. The ECB collects data reported by the largest euro area monetary financial institutions (MFIs), based on the size of their total main balance sheet assets in comparison with the total main balance sheet assets of all euro area MFIs. The reporting agents either report to the NCB of the Member State where they are

[15] See http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014R1333

resident, providing data for all their branches located in EU Member States and EFTA countries, or directly to the ECB. In accordance with Regulation ECB/2014/48, the Governing Council of the ECB may in future expand the number of reporting institutions based on, for example, the significance of an MFI's activities in the money markets and its relevance to the stability and functioning of the financial system.

The data cover transactions concluded by MFIs both with other MFIs and with other types of counterparty. In this regard, the dataset is based on transaction-by-transaction data from reporting agents on transactions conducted with other MFIs, other financial intermediaries, insurance corporations, pension funds, central banks (excluding transactions related to Eurosystem tender operations and standing facilities) and the general government, as well as transactions with non-financial corporations classified as “wholesale” pursuant to the Basel III liquidity coverage ratio framework.

With the launch of MMSR, more than 35,000 transactional records are now received on a daily basis from the 52 reporting credit institutions in the euro area. With a view to limiting the impact of teething problems and ensuring full automation from 1 July 2016, the credit institutions started to send data on 1 April 2016. This three-month interim period was deemed necessary to fine-tune the reporting process before the legal obligation came into force on 1 July.

Taking into account the large data volumes, the daily frequency of the data collection and the timeliness required, a high degree of automation of the data flows between the reporting credit institutions and the Eurosystem has been envisaged. To this end, the Eurosystem based the underlying taxonomy and data transmission format on the ISO 20022 standard. A set of four reporting messages and a status message containing feedback information was approved by the ISO Securities Standards Evaluation Group in January 2016. The messages will be used for both the MMSR in euro and the Sterling Money Market Data collection by the Bank of England.

The ECB will publish aggregated data in the months to come. This could include breakdowns for the various market segments by frequency and concentration of market activity per reporting agent, together with an analysis of changes in volumes and rates over time. It will be the natural successor to similar publications, such as the Money Market Survey which gave an overview of the money market on an annual basis. It will also be used as background data for publications such as the Euro Money Market Study.

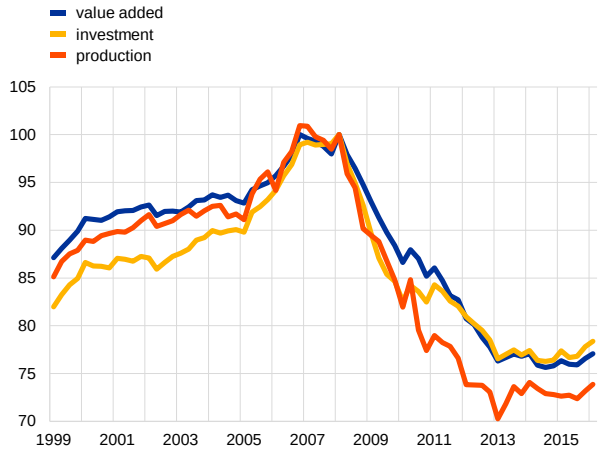
Box 4
Recent developments in euro area construction activity

This box reviews the factors behind the recent recovery in the construction sector and evaluates its strength in the light of short-term indicators and in the context of the broader macroeconomic outlook. Construction activity grew rapidly in the period preceding the financial and economic crisis that started in 2008. The subsequent recession was very pronounced in the sector: from peak to trough, both value added and employment declined by around 25%, with large differences across countries[16]. Although the economic recovery in the euro area started in 2013, construction activity does not seem to have bottomed out until 2015 and has only begun to show signs of recovery in recent quarters (see Chart A).

Chart A

Euro area construction sector value added, investment and production

(index: Q1 2008=100; quarterly data; working day and seasonally adjusted; chain-linked values)

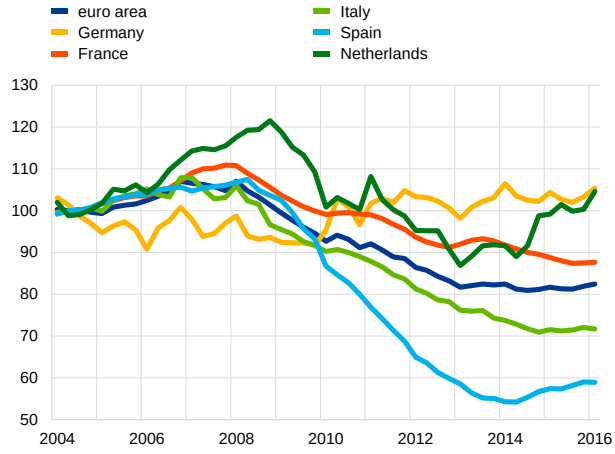


Sources: Eurostat and ECB calculations.

Chart B

Construction value added in the euro area and in the largest euro area countries

(index: 2004=100; quarterly data; working day and seasonally adjusted; chain-linked values)



Sources: Eurostat and ECB calculations.

Among the largest euro area countries, Germany and the Netherlands have seen the most resilient construction activity in the period since 2004 (see Chart B). Before and after the crisis, construction activity in most of the largest euro area countries (with the exception of Germany) exhibited a significant cyclical pattern, driven by the boom and bust of the property market. Between 2004 and 2007 the largest positive contributions to euro area construction activity were made by France, Italy, the Netherlands and Spain, while construction in Germany was

[16] In some Member States, the decline was as high as 75% (Greece and Cyprus), while in others it remained moderate (for example, 2.5% in Belgium and 7% in Germany).

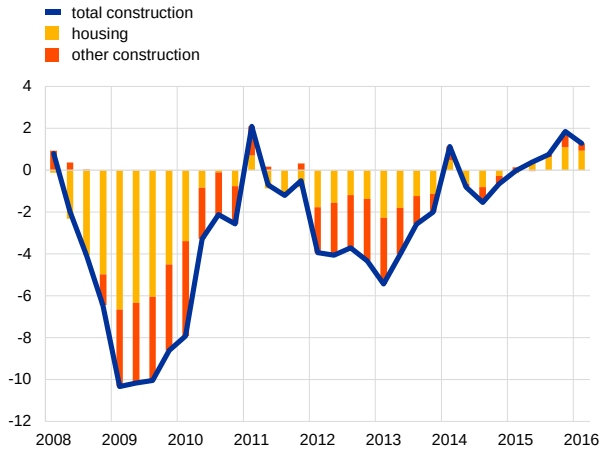
much weaker. After 2008 construction activity fell in most of the largest economies, with the exception of Germany, where it remained relatively flat until 2010. Value added and production in the construction sector began to pick up in Germany after 2010, led by an increase in housing demand,[17] while in Spain and the Netherlands the sector started to grow only in early 2014.

The most recent recovery in construction activity has been broadly based across countries. Construction production increased in the last quarter of 2015 and the first quarter of 2016 in Germany, Spain, the Netherlands and several smaller euro area countries, while in France and Italy it seems to be stabilising. Similarly, increases in value added[18] were recorded in most euro area countries over the same two quarters.

Chart C

Growth of construction investment and contribution from housing and other construction investment

(annual growth rate and contributions; percentages; quarterly data; working day and seasonally adjusted; chain-linked values)



Sources: Eurostat and ECB calculations.

The improvement in euro area construction production has been driven by residential investment. A breakdown of the monthly construction production indicator shows that construction of buildings[19] has been increasing strongly, while civil engineering remains weak. Correspondingly, construction investment is driven by housing investment, which also bottomed out in 2015 and has started to increase in the last few quarters (see Chart C).

The recovery in the housing market is linked primarily to higher demand, which is expected to remain strong. Several factors support demand for housing investment. First, real disposable income growth has started to accelerate as labour markets have improved, while households are more willing to invest when the probability of becoming unemployed is lower. Second, real mortgage lending rates have declined and credit conditions have been favourable, partly reflecting the recent monetary policy measures in the euro area. Third, recent fiscal measures, including tax incentives in several countries,[20] support housing demand. Finally, returns on alternative forms of household investment are low, providing further incentives for residential investment. These factors are expected to continue supporting demand for housing and construction activity in the forthcoming quarters.

17 See also *Monthly Report*, Deutsche Bundesbank, October 2013, pp. 14-29.

18 Construction production and value added co-move closely, but they differ in several respects. See the box entitled "A closer look at differences between industrial gross value added and industrial production", *Economic Bulletin*, Issue 1, ECB, 2016, which also applies to the construction sector.

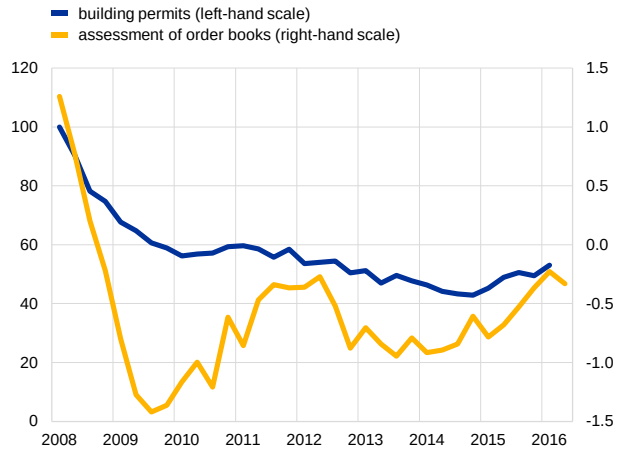
19 According to the classification of types of construction, buildings include both residential and non-residential buildings. Developments in the production of buildings, however, correlate strongly with those in residential investment.

20 Fiscal incentives for housing investment have been introduced in Belgium, Germany, France, Italy, Malta, the Netherlands, Austria and Finland.

Chart D

Building permits granted and construction firms' assessment of order books in the euro area

(building permits: index: Q1 2008=100; assessment of order books: standardised balance indicator; quarterly data; working day and seasonally adjusted)



Sources: Eurostat, European Commission and ECB calculations.
Note: Building permits are expressed as square metres of useful floor area.

Short-term indicators give a somewhat mixed picture regarding the outlook for construction. On the one hand, the volume of building permits granted suggests an increase in the construction of buildings looking ahead (see Chart D), and the construction confidence indicator in the European Commission's business surveys is currently around its long-term average. On the other hand, the first quarter of the year might have been influenced by weather effects and thus some caution is warranted when considering the strength of the figures for the year as a whole. In the first quarter of 2016, Germany made the largest contribution to the increase in euro area construction value added. This strong increase in construction activity in Germany, however, may be related to the mild weather conditions.[21] Indeed, in each of the past three years (including 2016), the first quarter has been the strongest (although in 2015 this was reflected in higher value added and investment, but not in higher production), but has been followed by a decline in the second quarter, pointing to weather effects over the winter periods. Furthermore, the Purchasing Managers' Index on euro area construction output, following strong increases at the start of the year, has declined significantly in recent months to a level indicating broadly flat construction activity, and the assessment of order books has followed a similar path. In addition, monthly construction production fell in April and May, signalling some risks to the strength of the recovery in the construction sector and residential investment in the second quarter of 2016. Taken together, these short-term indicators point to some correction in the strong growth of construction activity seen in the previous two quarters.

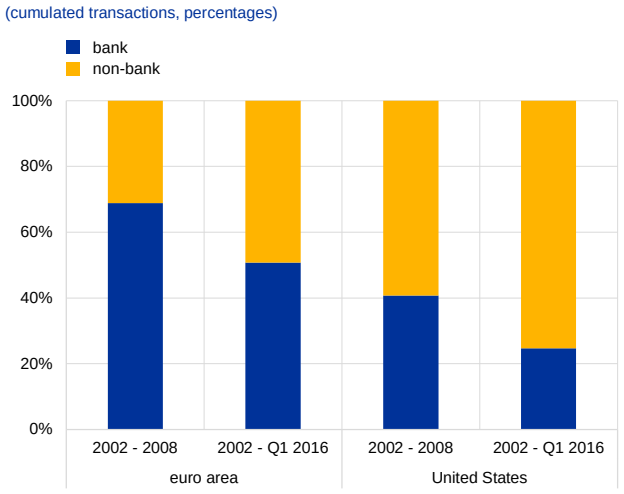
[21] See also *Monthly Report*, Deutsche Bundesbank, May 2016, p. 51.

Box 5
Trends in the external financing structure of euro area non-financial corporations

The funding structure of non-financial corporations (NFCs) plays a fundamental role in the transmission of monetary policy to the real economy and the resilience of the corporate sector to shocks. This box discusses the recent changes in the external financing structure of euro area NFCs, the possible factors behind them and potential implications for the transmission of monetary policy measures.

Chart A

Share of bank and non-bank financing in total non-financial corporation financing in the euro area and the United States



Sources: ECB, Federal Reserve System.
Note: The latest observation is for the first quarter of 2016.

Non-bank financing sources have become significantly more important since the onset of the crisis. Traditionally, euro area firms have mostly relied on bank lending to finance their fixed investment and working capital needs. Looking at cumulated transactions between 2002 and 2008, the share of bank financing in total NFC financing stood at around 70% (see Chart A). However, this share dropped to 50% in the period from 2002 to early 2016, implying that alternative financing sources have gained in importance in the euro area. The decline in bank financing is primarily driven by developments in the financing structure of large enterprises. By contrast, small and medium-sized enterprises (SMEs), which are the backbone of the euro area economy, continue to be financed mainly via bank credit. It is worth noting that a move to an even more market-financed system can be observed in the United States, where the share of bank financing in total NFC external financing fell to 25% in the period from 2002 to early 2016, down from 40% in the pre-2009 period.[22]

The increasing share of non-bank financing in total euro area NFC financing reflects both cyclical and structural factors. These are outlined below.

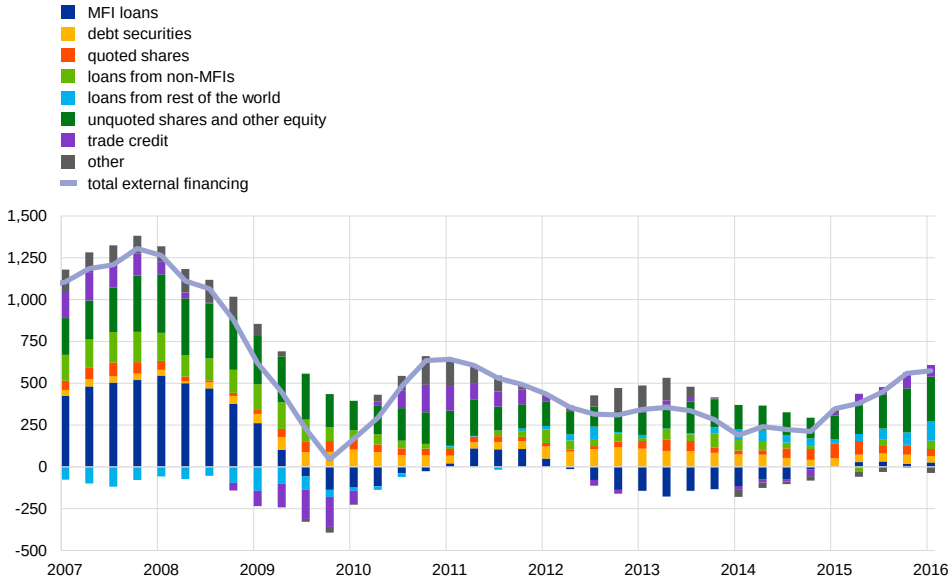
22 In terms of notional stocks, the shares of bank loans (not corrected for loan sales and securitisation) in NFC total external financing (net of intra-sectoral loans, unquoted shares and other equity issued, financial derivatives and other accounts payable) stood at 35.4% in the euro area in the first quarter of 2016 (down from 41.3% in the fourth quarter of 2008), while the respective share of debt securities issued stood at 10.1% (up from 6.5%) and that of quoted shares issued at 29.9% (broadly unchanged from 29.7%).

1. *A protracted period of weakness in bank lending.* The net flow of finance from banks to NFCs contracted in 2009 and 2010, and again between 2012 and 2014, reflecting both credit demand and supply factors, including stricter regulation and supervision (see Chart B). To the extent that credit supply restrictions were binding, NFCs were forced to find alternative sources of financing. Notwithstanding a recovery in bank lending to NFCs since late 2014, net credit flows remain rather low, implying an ongoing fall in the share of bank credit against the background of a strengthening in NFCs' overall external financing.

Chart B

External financing of euro area non-financial corporations by instrument

(annual flows, EUR billions)



Source: ECB.
Notes: The latest observation is for the first quarter of 2016. "Other" refers to the difference between the total and the instruments included in the chart and includes inter-company loans and the rebalancing between non-financial and financial accounts data.

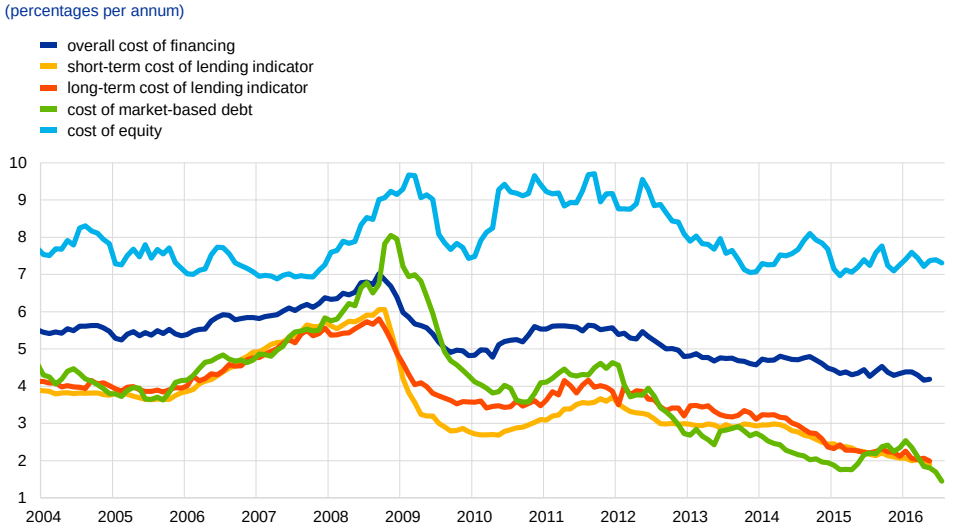
2. *Relatively robust bond issuance activity of NFCs.* Partly to compensate for the decline in bank lending but also reflecting increasingly favourable market-financing conditions, NFCs substantially increased their net issuance of debt securities, especially between 2009 and mid-2014.[23] Though NFCs' bond issuance activity has been less vibrant since mid-2014, it remains above pre-crisis levels, as suggested by the most recent data on issuance activity for the second quarter of 2016, further supported by the ECB's new corporate sector purchase programme (CSPP) announced on 10 March 2016 (see Box 2 in this issue of the Economic Bulletin) and record-low corporate bond yields. The nominal cost of market-based debt stood at 1.45% in mid-July 2016, which is significantly below the current level of bank lending rates (see Chart C). The observed marked 650 basis point decline in the cost of market-based debt since

[23] See also the box entitled "Recent developments in debt securities issued by non-financial corporations in the euro area", *Monthly Bulletin*, ECB, April 2014.

the end of 2008 has been supported by both the ECB's monetary policy measures and globally declining bond yields.

Chart C

Nominal cost of external financing for euro area non-financial corporations



Sources: Thomson Financial DataStream, Merrill Lynch, ECB, 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 their respective amounts outstanding derived from the euro area accounts. The latest observation for overall cost and lending rates is for May 2016 and the latest observation for the cost of market-based debt and cost of quoted equity is 20 July 2016.

3. *Rising importance of non-MFIs in financial intermediation.* Lending from non-MFIs[24] to NFCs has increased since the crisis, which has also mitigated the effect of weak bank credit.[25] In recent years, the vigorous developments in non-MFI loans have mainly reflected an increase in loans granted by financing special purpose entities (SPEs) to their parent company, financed by the issuance of debt securities by these subsidiaries. Financing SPEs are typically resident in a different euro area country from the parent company or outside the euro area to benefit from a favourable tax regime and financial technology. Hence, the observed robust developments in loans from foreign entities in recent quarters most likely also mirror the increasing levels of bond issuance by firms through their subsidiaries located outside the euro area.

4. *Higher recourse to intra-sectoral financing.* NFCs also significantly increased their recourse to trade credit and intra-sectoral loans between mid-2010 and the end of 2012 to mitigate the negative impact of lower credit supply on the availability of external financing. At the same time, during the crisis firms financed a larger share of their activities with internally generated funds and

[24] Non-MFI loans consist of loans from other financial institutions (OFIs) and insurance corporations and pension funds (ICPFs). Loans from OFIs include loans from financial vehicle corporations established to be holders of securitised loans originated by banks, financing special purpose entities, financial leasing companies, venture capital corporations, development capital companies and holding companies. Loans from ICPFs cover, inter alia, loans granted directly to finance construction projects, purchases of securitised loans to investment portfolios and possibly participation in syndicated loans.

[25] See the article entitled "The role of euro area non-monetary financial institutions in financial intermediation", *Economic Bulletin*, Issue 4, ECB, June 2016.

higher retained earnings. This development has moderated debt financing growth and has helped to stabilise gross indebtedness. Moreover, NFCs have continued to park a significant part of their retained earnings in liquid assets. The current record-high liquidity buffers should improve firms' shock absorption capacity.

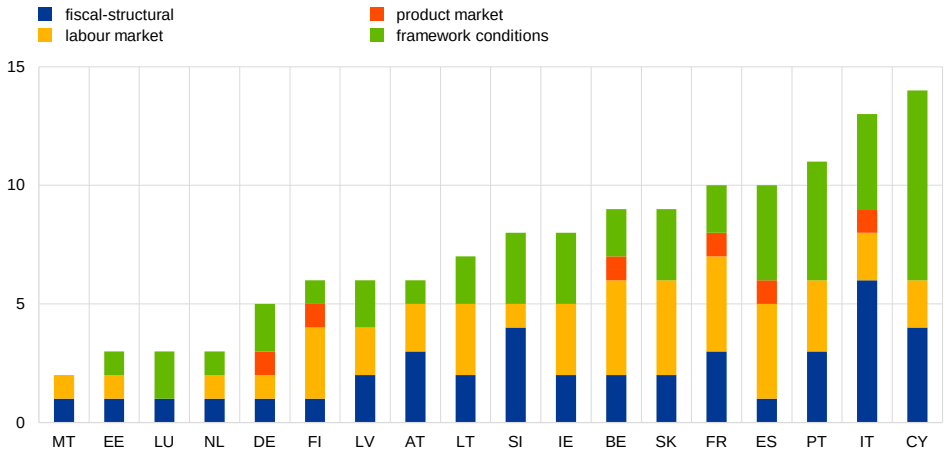
The observed shifts in the financing structure of NFCs may have implications for the transmission of monetary policy, but the overall effect is still difficult to identify. A more diversified funding structure of firms may render them more resilient to shocks hitting the banking system. It also diversifies the channel through which monetary policy is transmitted to the real economy. This has been reflected in the ECB's monetary policy, which has included a wide range of instruments to inject additional stimulus in recent years. A stronger role of non-MFIs in financial intermediation may accelerate monetary policy transmission as some non-MFIs may adjust their risk exposures more flexibly than banks in response to changes in the business and financial cycles. However, it remains to be seen whether the current trend towards a more market-based financing pattern for the real economy will continue once bank lending has fully recovered. In the past, a sustained growth in NFC external financing has always coincided with stronger bank loan dynamics. The EU has launched several initiatives to improve firms' access to risk capital and market-based financing. It is, however, too early to say to what extent these initiatives will be successful in reducing dependence, particularly of SMEs, on bank credit.

Box 6
The 2016 country-specific recommendations

Every year the European Commission issues country-specific recommendations (CSRs) for each EU Member State[26] which set the policy priorities for the following year. The CSRs are embedded in the European Semester of policy coordination, which ensures that Member States discuss their economic and budgetary plans with their EU partners throughout the year. They put into practice the commitment to regard national economic policies as a matter of common concern in a monetary union, as also stipulated in Article 121 of the Treaty on the Functioning of the European Union. CSRs provide tailored reform recommendations to individual Member States on how to enhance growth and resilience while maintaining sound public finances.[27] The timely implementation of these recommendations is critical to reduce the high unemployment rates and boost low potential growth in euro area countries. It will also make the euro area more resilient to adverse shocks and therefore ensure the smooth functioning of EMU as a whole.

Chart A

The 2016 CSRs by reform area in euro area countries



Source: ECB computations.
Notes: The chart shows the number of 2016 CSRs broken down into broad reform areas. "Fiscal-structural" includes public administration, age-related spending and taxation policies; "product market" includes sector-specific regulations; "labour market" includes wage policies, employment protection, education and active labour market policies; "framework conditions" includes the regulatory environment, public procurement, the judicial system, insolvency frameworks, housing policies and financial sector regulation. CSRs related to the Stability and Growth Pact are not included in the chart.

[26] Member States that are under a macroeconomic adjustment programme do not receive CSRs, as their policy priorities are already covered under a Memorandum of Understanding. This is currently the case for Greece.

[27] This box focuses on all CSRs received by the euro area countries, except for the first recommendation on fiscal policies, which contains recommendations for implementing the Stability and Growth Pact. These recommendations are described in the box entitled "Country-specific recommendations for fiscal policies under the 2016 European Semester", *Economic Bulletin*, Issue 4, ECB, 2016.

The CSRs are prepared through a comprehensive process which starts in the autumn of the year before they are issued. In November 2015 the European Commission released its Annual Growth Survey and Alert Mechanism Report. While the Annual Growth Survey identified the main policy priorities for the EU as a whole, the Alert Mechanism Report assessed developments in Member States to establish whether there were emerging imbalances or existing imbalances which needed to be corrected through targeted policy actions. On the basis of these documents, the EU Council approved recommendations for the euro area early in 2016, setting out the main areas for reform for EMU as a whole. The euro area CSRs published on 1 February 2016 called for remaining imbalances to be corrected, labour market rigidities to be addressed, product market competition to be strengthened, and framework conditions to be enhanced in particular through improvements in insolvency proceedings for businesses and households, not least with a view to facilitating a reduction in non-performing loans. On 18 May the Commission provided Member States with the draft 2016 CSRs. Following discussions in the respective EU committees, the EU Council adopted the final CSRs on 12 July.

The implementation of CSRs has been poor across Member States in recent years.[28] The Commission found in February this year that for the overwhelming majority of 2015 reform recommendations (more than 90%) there had been only "some" or "limited" progress with implementation, while only a small number of recommendations had been "substantially" or "fully" implemented. Moreover, this weak implementation of structural reforms constitutes a deterioration, following already disappointing experiences with national CSR compliance in previous years. The insufficient implementation of CSRs is all the more concerning given remaining rigidities and vulnerabilities in euro area countries, as reflected in, among other things, the Commission's finding that an increasing number of countries have excessive imbalances[29].

For some countries, the 2016 CSRs have been streamlined further, following the significant prioritisation already undertaken in the previous year. The 2015 CSRs were streamlined by the Commission with a view to allowing Member States to focus on key priority issues of macroeconomic and social relevance. However, despite this measure, implementation did not improve, as noted above. This year's recommendations have been further reduced, even for most countries with excessive imbalances.

The 2016 CSRs have been reprioritised broadly in line with the emphasis of the euro area recommendations. Across Member States the Commission has significantly increased the number of CSRs addressing the need for policies to support investment through the enhancement of framework conditions, for example by improving the business environment and increasing the effectiveness of the

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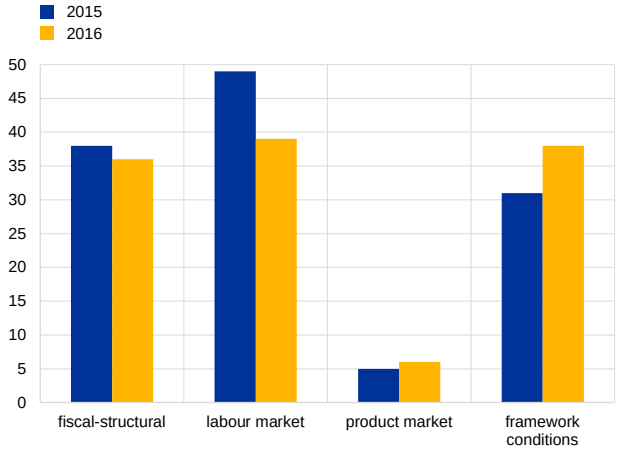
28 For more details, see the box entitled "The 2016 macroeconomic imbalance procedure and the implementation of the 2015 country-specific recommendations", *Economic Bulletin*, Issue 2, ECB, 2016.

29 See Chart 11 in the article entitled "Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU" in this issue of the Economic Bulletin.

frameworks for non-performing loan resolution. The latter will be particularly important for countries with high levels of private sector indebtedness, where a quicker resolution of non-performing loans should help viable firms to invest again. Chart A shows a breakdown of the 2016 CSRs by reform area. It indicates that in many countries a large share of recommendations address bottlenecks in framework conditions, which include all measures related to the regulatory environment, the judicial system, insolvency frameworks, housing policy and financial sector regulation. Such bottlenecks negatively affect market entry, reduce incentives for firms to invest and hamper resource reallocation.

Chart B

2015 and 2016 CSRs by reform area (euro area countries)



Source: ECB computations.
Notes: The chart shows the number of 2015 and 2016 CSRs broken down into broad reform areas (see the footnote in Chart A). Cyprus is excluded from the chart, given that it received CSRs in 2016 only.

As a result of the reprioritisation, this year's CSRs contain fewer recommendations on labour market policies (see Chart B). While important labour market reforms were undertaken in the past, in particular in the countries which had been most affected by the financial and sovereign debt crises, the resilience of labour markets across euro area countries remains limited and unemployment high.[30] Against this background, and given the limited implementation of the labour market CSRs which have now been dropped, continuing reform efforts with regard to the labour market appear warranted.[31]

Continued monitoring of other reform areas which are no longer covered by the CSRs, but which are critical for the overall economic performance of Member States, remains essential. In the 2015 CSRs, the Commission excluded certain policy areas which were already covered by other monitoring channels.[32] These included the energy sector (which is covered in the context of the energy union) and the monitoring and enforcement mechanisms related to the Single Market. It remains essential, however, that developments and policies in these areas are also monitored in the context of the European Semester to ensure that all significant economic policies implemented by Member States are assessed in a holistic manner.

30 See Chart 5 in the article entitled "Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU" in this issue of the Economic Bulletin.

31 See Section 3 of the article entitled "Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU" in this issue of the Economic Bulletin for a discussion of the benefits of labour and product market reforms for growth and resilience in euro area countries.

32 See the European Commission's communication on "2016 European Semester: country-specific recommendations", published on 13 May 2015.

Articles
The layers of the global financial safety net: taking stock

1 Introduction

The global financial safety net (GFSN) can be defined as a diverse set of institutions and mechanisms which can contribute to preventing and mitigating the effects of economic and financial crises. In debates about global financial stability, policymakers and academics often refer to the global financial safety net, understood as a set of institutions and mechanisms which provide financial support to prevent a crisis and financial support to countries hit by a crisis, both facilitating adjustment at the country level and preventing the crisis from spreading further. A crisis can be of domestic or external origin and it can take many different forms. A balance of payments crisis occurs when a nation is unable to pay for essential imports or service its external debt. In some cases, balance of payments problems can be compounded by a sharp exchange rate depreciation and a currency crisis. Financial crises stem from insolvent or illiquid financial institutions, and fiscal crises are caused by excessive fiscal deficits and debt levels. The GFSN can contribute to preventing and mitigating the effects of such crises. However, the GFSN has not been established in one single process and does not have a coherent design. The elements of the GFSN are diverse, have different origins, follow different rules and incentives, and help in addressing different types of crises. Foreign exchange reserves, central bank swap and repo lines, funding by regional financing arrangements (RFAs) and international financial institutions are considered the key elements of the GFSN.

An effective and efficient interaction of the different elements of the GFSN is a requirement for a well-functioning international monetary system. Owing to high levels of economic and financial interconnectedness, contagion is a regular characteristic of crisis episodes. Challenges in one country often do not stay confined within that country's borders, but tend to spread through various channels across countries. Therefore, by providing a country with "financial breathing space", the GFSN not only limits the economic slowdown and provides a window of opportunity to implement reforms needed for a quick return to economic stability and growth, but also limits spillovers to other economies and thereby contributes to global financial stability, in turn supporting financial integration and globalisation.[33]

[33] See, for example, Herrala, R., Scheubel, B. and Stracca, L., "What do we know about the global financial safety net? Rationale, data and possible evolution", *Occasional Paper Series*, ECB, forthcoming; "Adequacy of the global financial safety net", IMF Policy Paper, March 2016; and Denbee, E., Jung, C. and Paternó, F., "Stitching together the global financial safety net", Bank of England Financial Stability Paper No 36, February 2016.

The GFSN in its current form is the result of the historical accumulation and stratification of different forms of financial support provision. The design of some of its elements has been influenced by domestic or regional rather than global concerns and is, hence, not the result of an ex ante widely shared consensus at the international level.

With the growing financial and economic integration of emerging market economies (EMEs) into the global economy, the GFSN has become increasingly important. The global financial crisis has also highlighted the continued relevance of the GFSN for advanced economies. One of the most important challenges for both EMEs and advanced economies is capital flow volatility, which has remained elevated since the onset of the global financial crisis (IMF, 2016a[34]). At the same time, the GFSN had not kept up with financial globalisation and the increasing size of capital flows, and the expansion of its elements has not been even (IMF, 2016b[35]).

These developments have brought the size and coverage of the GFSN back onto the agenda of the G20 and the International Monetary Fund (IMF). Emerging markets remain concerned about persistent financial market volatility given that monetary policies in advanced economies may diverge for some time in the future.[36] While there is overall agreement on the need for sound domestic policies and frameworks as a first line of defence, views differ on the need for better coverage of the GFSN and the appropriate size of the GFSN both in terms of the types of instruments available to specific countries and in terms of the amount of resources available to address crises.

This article focuses on the role of domestic policies, the complementary support provided by the four key layers of the GFSN and the interaction between these layers. Section 2 of this article recalls the key role played by domestic policies, Section 3 then reviews the elements of the GFSN, Section 4 discusses the scope for interaction between them and the final section draws some conclusions.

2 The role of sound domestic policies

The history of economic and financial crises has highlighted that strong macroeconomic fundamentals and policy frameworks are of primary importance in limiting country vulnerabilities. Analysing effects of both real and financial shocks faced by IMF members, Becker et al. (2006) conclude that countries

34 *World Economic Outlook*, IMF, April 2016, Chapter 2.

35 "Adequacy of the Global Financial Safety Net", IMF Policy Paper, March 2016.

36 While some advanced economies' central banks have started the normalisation of their monetary policy, the interest rate path signalled by other advanced economies' central banks does not point to an imminent normalisation of their monetary policies. During previous episodes of such constellations of monetary policy, capital outflows from emerging markets increased (for example, when some advanced economies signalled an impending normalisation of monetary policy and later on embarked on a normalisation path, following a period of general loosening of monetary policy across advanced economies after the onset of the global financial crisis).

can self-insure against shocks through their own policies and institutions.[37] Kawai (2009) summarises the policy lessons from the Asian and global financial crises for preventing and reducing the risk of systemic crises as (i) establishing effective financial regulation and supervision to monitor and act on economy-wide systemic risk, (ii) adopting sound macroeconomic management (monetary, fiscal, exchange rate and public debt) and (iii) maintaining sustainable current account and capital account positions.[38] Similarly, Lane and Milesi-Ferretti (2011) find that the pre-crisis developments in the ratio of private credit to GDP, the current account deficit and the degree of openness to trade are helpful in understanding the intensity of the global financial crisis in 2008-09.[39] Such empirical findings are in line with the notion that crises stemming from the build-up of macroeconomic or financial imbalances can be avoided in the first place by maintaining strong fundamentals, that is by "keeping one's house in order".

Adequate domestic macroeconomic and financial policies, including structural reforms, coupled with strengthened macroeconomic and macroprudential surveillance, are the first line of defence in crisis prevention. For instance, during the recent global financial crisis, pre-existing domestic policy frameworks and subsequent actions by national authorities were key to mitigate adverse crisis effects. In particular, EMEs' resilience to the deterioration in external funding conditions was stronger than in previous crises. Owing to reforms including fiscal rules to promote countercyclical policies, central bank independence to underpin low and stable inflation, and better debt management to limit the impact of devaluations on government balance sheets, countries were able to display a more resilient macroeconomic environment. By loosening monetary and fiscal policies, they supported financial and economic stability. More flexible exchange rate regimes helped a number of countries to diminish the impact of external shocks on the domestic economy, while the resilience of financial sectors in some economies had been improved through better regulation. Countercyclical macroprudential measures applied in a few EMEs to limit credit growth also contributed to the containment of the negative externalities of the credit crunch.

Nevertheless, sound domestic policies may not always be sufficient to fend off a crisis. Capital flow reversals may be difficult to weather by relying on flexible domestic frameworks, such as a flexible exchange rate, alone. In addition, sudden economic adjustments may have a negative effect on long-term growth or may affect some parts of the population disproportionately. The GFSN therefore provides countries with complementary support to address a crisis, while also helping to address crisis spillovers to other countries.

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37 Becker, T., Jeanne, O., Mauro, P., Ostry, J. D. and Ranciere, R., "Country Insurance: The Role of Domestic Policies", IMF Discussion Paper, 2006.

38 Kawai, M., "Reform of the International Financial Architecture: An Asian Perspective", ADBI Working Paper No 167, 2009.

39 Lane, P. R. and Milesi-Ferretti, G. M., "The Cross-Country Incidence of the Global Crisis", *IMF Economic Review*, Vol. 59(1), April 2011, pp. 77-110.

3 The different layers of the global financial safety net

As each layer of the GFSN constitutes de facto a form of insurance, which may cause moral hazard similar to any other form of insurance provision, they need to be designed in such a way as to encourage sound domestic policies. First, the layers of the GFSN may induce ex ante moral hazard in that countries may invest less in good policymaking and creditors may lend imprudently to vulnerable countries (thereby increasing their own vulnerability), in the expectation that support will be provided in the event of a crisis. Second, the layers of the GFSN may promote ex post moral hazard in that they may induce crisis-hit countries to delay needed adjustment. Therefore, the GFSN needs to be designed in such a way as to encourage and support the implementation of sound domestic policies.

This section reviews each layer of the GFSN and how it addresses moral hazard to complement sound domestic policies. As the layers of the GFSN have developed independently and at different speeds, the extent of and approaches to limiting moral hazard in the provision of emergency liquidity differ among the elements of the GFSN, depending on their purpose and set-up. Hence, this section gives an overview of how the different elements of the GFSN address moral hazard. Moreover, it provides some evidence on their effectiveness.

3.1 International reserves

International reserves are readily available resources which are completely controlled by the national authorities and include mainly highly liquid assets. A country's international reserve position comprises official foreign currency and gold reserves as well as claims on international financial institutions that can be rapidly converted into foreign exchange reserves such as claims on the IMF or special drawing right (SDR) holdings. Foreign assets accumulated beyond a certain level can also be transferred to sovereign wealth funds and employed as reserve complements to meet external shocks.[40] Foreign currency reserves comprise external assets generally controlled by national monetary authorities and include foreign currency-denominated banknotes, deposits and marketable securities. With a total value of USD 11 trillion at end-2015, foreign exchange reserves constitute the largest component of the GFSN. The dominance of foreign exchange reserves is often attributed to the holder's independence in the usage of this source of foreign currency liquidity.

[40] Although they are not considered part of the GFSN, sovereign wealth funds are also domestic sources of reserves and play an important role in macroeconomic management and global financial stability. Lam and Rossi (2010) argue that sovereign wealth funds can facilitate a more efficient allocation of resources across countries, enhance market depth and liquidity, including at times of financial stress, and play a stabilising role in global financial markets, particularly because most of them are long-term investors with mainly unleveraged positions (see Lam, R. and Rossi, M., "Sovereign wealth funds: investment strategies and financial distress", *Journal of Derivatives & Hedge Funds*, Vol. 15(4), 2010). Moreover, sovereign wealth funds aim to provide insurance for the budget and the economy against commodity price volatility and external shocks. For a detailed discussion, see Al-Hassan, A., Papaioannou, M., Skancke, M. and Sung, C. C., "Sovereign Wealth Funds: Aspects of Governance Structures and Investment Management", IMF Working Paper WP/13/231, 2013.

Foreign currency reserves have been found to be a key element of the economic policy toolkit to address economic and financial crises, especially for non-reserve currency countries. Dominguez et al. (2013) find that countries with higher reserves experienced higher real GDP growth during the crisis years.[41] Obstfeld et al. (2009) note that international reserve demand can be rationalised by a central bank's desire to backstop the broad money supply to avert the possibility of an internal/external "double drain", i.e. a bank run combined with capital flight.[42] They show that a country's reserve holdings just before the global financial crisis relative to its predicted holdings based on financial motives can significantly predict exchange rate movements of both emerging and advanced economies in 2008. Adequate levels of international reserves are generally associated with a lower probability of sudden stops[43] and lower borrowing costs, most likely via the signalling channel. Fernandez-Arias and Levy-Yeyati (2012) find that during the Lehman Brothers episode a higher reserves-to-foreign debt ratio predicted a lower increase in sovereign bond spreads over a cross-section of emerging markets.[44] Hur and Kondo (2003)[45] confirm that international reserves are negatively associated with sudden stops in addition to debt default, banking crises and currency crises. Therefore, market participants closely monitor the level of reserves as an indicator of the soundness of an economy. These results indicate that during crisis episodes international reserves act as a buffer and help to reduce macroeconomic and financial volatility.

There are different reasons why countries accumulate reserves, which can be grouped into precautionary and non-precautionary motives. The former include maintaining confidence in the domestic currency, smoothing periods of extreme volatility through interventions in foreign exchange markets or addressing market dysfunctions. Non-precautionary motives include the support of monetary policy, the inter-generational transfer of national assets or the pursuit of export-led growth policies via a competitive exchange rate. Ghosh et al. (2012), investigating dominant drivers of reserve accumulation between 1980 and 2010, conclude that the relative importance of these determinants has shifted over time.[46] According to their results, insurance against capital account shocks and currency undervaluation with mercantilist motives have been predominant factors in reserve accumulation. By contrast, according to the IMF Survey of Reserve Managers[47] the main motives for building up international reserves are constituting buffers against liquidity needs and smoothing exchange rate volatility.

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41 Dominguez, K., Hashimoto, Y. and Ito, T., "International reserves and the global financial crisis", *Journal of International Economics*, Vol. 88(2), 2012, pp. 388-406.

42 Obstfeld, M., Shambaugh, J. C. and Taylor, A. M., "Financial Instability, Reserves, and Central Bank Swap Lines in the Panic of 2008", *American Economic Review*, Vol. 99(2), 2009, pp. 480-486.

43 The term "sudden stop" refers to a large reduction in the inflow of international capital.

44 Fernàndez-Arias, E. and Levy-Yeyati, E., "Global financial safety nets: Where do we go from here?", IDB Working Paper No 231, 2010.

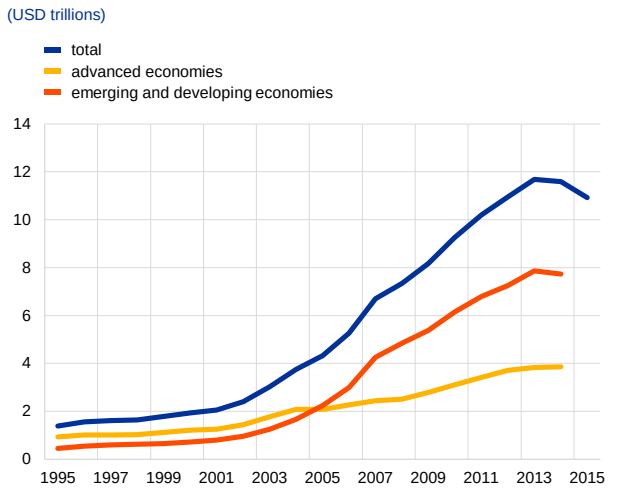
45 Hur, S. and Kondo, I. O., "A Theory of Rollover Risk, Sudden Stops, and Foreign Reserves", International Finance Discussion Paper No 1073, Board of Governors of the Federal Reserve System, 2013.

46 Ghosh, A. R., Ostry, J. D. and Tsangarides, C., "Shifting Motives: Explaining the Buildup in Official Reserves in Emerging Markets since the 1980s", IMF Working Paper WP/12/34, 2012.

47 "Assessing Reserve Adequacy", IMF Policy Paper, 2011.

Chart 1

International foreign exchange reserves



Sources: IMF International Financial Statistics and Haver Analytics.

Following the financial crises in the second half of the 1990s and at the beginning of the 2000s, the world's foreign exchange reserve accumulation displayed an upward trend. One of the main drivers of this trend was that EMEs recognised the self-insurance benefits of reserves in view of higher capital flow volatility. Aizenman and Marion (2003) identify such precautionary demand for reserves as a cause of increasing international reserves in East Asia following the Asian crisis.[48] Also Bastourre et al. (2009) confirm the significance of precautionary determinants of international reserve accumulation by EMEs.[49]

When external financial risks materialise, reserves can be used by national central banks to provide foreign exchange liquidity up to certain levels. Throughout the global financial crisis, many central banks took action against the collapse in cross-border funding and provided foreign currency to their domestic foreign exchange markets by drawing on reserves. However, the marginal benefit of using reserves declines as they are depleted. A swift fall or a continuous depletion of international reserves can send negative signals to the markets about the sustainability of domestic crisis mitigation policies. In fact, national authorities may not want to use their foreign exchange reserves beyond a certain level. Aizenman and Sun (2009) capture this concern about losing international reserves in their analysis of reserve usage by EMEs during the global financial crisis.[50] This concern can be explained by the motivation of EMEs to maintain similar reserve benchmark ratios to peer countries. A decline in reserve indicators beyond peer country averages might increase investors' risk aversion towards the country and also its vulnerability to deleveraging and sudden stops.

Besides the associated domestic social opportunity cost, which is the cost of using resources for reserve accumulation instead of supporting domestic investment and consumption, reserve accumulation entails financial costs. The financial costs arise as a result of the likely negative differential between the returns on the international reserves and the yields paid on domestic sterilisation instruments[51]. In addition, excessive reserve accumulation may entail inefficiencies

48 Aizenman, J. and Marion, N. P., "The High Demand for International Reserves in the Far East: What's Going On?", *Journal of the Japanese and International Economies*, Vol. 17(3), 2003.

49 Aizenman, J. and Lee, J., "International Reserves: Precautionary versus Mercantilist Views, Theory and Evidence", *Open Economic Review*, Vol. 18, 2007.

Bastourre, D., Carrera, J. and Ibarlucia, J., "What is Driving Reserves Accumulation", *Review of International Economics*, Vol. 17, 2009.

50 Aizenman, J. and Sun, Y., "The financial crisis and sizable international reserves depletion: From 'fear of floating' to the 'fear of losing international reserves'?", NBER Working Paper No 15308, 2009.

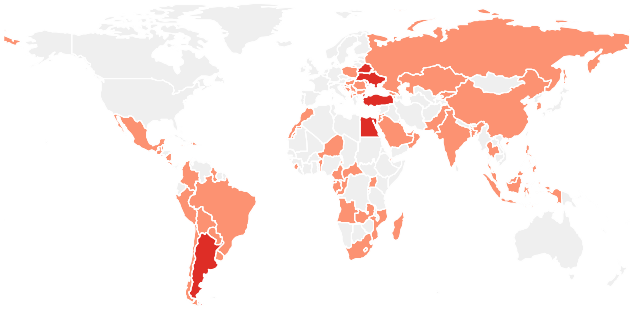
51 Central banks generally conduct sterilisation by selling assets from their domestic asset portfolios at repo auctions or by issuing domestic currency securities in their own name. The main aim is to drain the cash injected into the system via foreign reserve currency purchases and to stabilise the monetary base.

and distortions at the regional and global levels, e.g. via misaligned exchange rates and global imbalances[52].

Chart 2

Reserve adequacy

(index of reserve adequacy; dark red = less than 1; light red = greater than 1; grey = floating exchange rate regimes/no data)



Sources: IMF International Financial Statistics and World Economic Outlook and ECB.
Note: As at end-2015.

It is difficult to determine an adequate level of reserves for a given country and there are a variety of adequacy measures. The traditional reserve adequacy benchmarks utilise import coverage, short-term external debt and the broad money stock in the economy.[53] In Chart 2, these three rules of thumb are translated into one simple indicator, which is the equally weighted average of all three. A reserve adequacy ratio higher than one indicates that the country's foreign exchange reserves are more than the average amount implied by the most commonly used benchmarks (i.e. three months of imports, 100% of short-term debt and 20% of M2).[54] There are also many model-based adequacy measures. Among them, the IMF's Assessing Reserve Adequacy (ARA) metric is designed to measure balance of payments-related vulnerabilities and is calibrated according to the relative frequency of different shocks as well as country characteristics such as the exchange rate regime and the existence of capital controls[55].In general, only countries with managed exchange rate regimes require sufficient levels of international reserves to manage the effects of capital outflows on their currencies.

To sum up, international reserves are generally the primary form of insurance chosen by countries against foreign exchange liquidity shocks. While excessive reserve accumulation can create negative externalities, adequate holdings of reserves for precautionary purposes are an essential element of a country's safety net. However, it would be inefficient and, from a global perspective, undesirable for each country to be fully self-insured against large external liquidity shocks by foreign exchange reserves only since this can lead to large social costs and the aforementioned imbalances and distortions. Therefore, other layers of the GFSN providing elements of joint insurance are useful complements, which can reduce the costs at the level of countries seeking insurance as well as distortions and side effects of excessive reserve accumulation.

52 The discussion about "global imbalances" refers to the notion that large current deficits in some parts of the world are funded by surplus countries with an undervalued exchange rate. This constellation may not be sustainable over the longer term, in particular as it may also lead to distortions in asset markets via purchases of safe assets by reserve-accumulating countries. Since their peak in 2006, global imbalances in terms of flows have narrowed, however (*World Economic Outlook*, IMF, 2014, Chapter 4).

53 Three months of imports and 100% short-term debt coverage are indicators of vulnerability against an external finance shortage. The M2 coverage ratio takes into account an internal drain on external financing which is driven by domestic investors. As a rule of thumb, 20% of domestic financial liabilities (M2) that could potentially be converted into foreign currency are used as a benchmark to assess the adequacy of the level of reserves in the event of a domestic sudden stop. See Jeanne, O., "International Reserves in Emerging Market Countries: Too Much of a Good Thing?", *Brookings Papers on Economic Activity*, Vol. 1, 2007, pp. 1-79.

54 An indicator below one does not necessarily imply that a country does not have a sufficient level of foreign exchange reserves.

55 "Assessing Reserve Adequacy – Further Considerations", IMF Policy Paper, November 2013.

3.2 Central bank swap and repo lines

Bilateral swap lines between central banks technically provide the receiving central bank with short-term access to foreign currency liquidity in exchange for its domestic currency. A central bank swap line is an arrangement between central banks which combines two transactions: a spot transaction between a central bank issuing one currency and a central bank issuing another currency for a fixed term and a reverse transaction at maturity applying the exchange rate used in the spot transaction. During the term between the transactions, the central bank that requested the activation of the swap (the receiving central bank) pays a fee to the liquidity-providing central bank and can use the foreign currency liquidity to lend it to its domestic financial sector. Although the conditions of swap agreements are designed to protect the balance sheets of both central banks involved, the risk that one of them may not be in a position to honour its commitment has to be taken into account. To mitigate this risk, the receiving central bank pledges its own currency or other assets as collateral to the liquidity-providing central bank.

While these kinds of arrangements have been part of the policy toolkit of central banks for a long time, their role in crisis prevention became more prominent during the global financial crisis. Throughout economic history, swap-type agreements between monetary authorities have been used for a multitude of purposes, such as supporting foreign exchange rate policies, managing assets and liabilities, promoting the international use of currencies, facilitating the functioning of financial markets and ensuring financial stability. In the course of the recent global financial crisis, central bank swap lines have been utilised with the aim of mitigating possible negative spillovers from a deterioration in international funding conditions to financial stability and the real economy within and across countries.

Swap lines have been found to be effective in addressing crises triggered by foreign currency mismatches. Goldberg et al. (2011)[56] find that the US dollar swap lines among central banks were effective in reducing US dollar funding pressures abroad and stress in money markets. They conclude that the US dollar central bank swap facilities are an important part of the toolbox for dealing with systemic liquidity disruptions. Coffey et al. (2009)[57] also conclude that Fed swap line announcements and actual operations are effective in reducing global institutions' US dollar funding liquidity risk. Overall, the effectiveness of a swap line depends on the credibility of the commitment to provide sufficient foreign currency liquidity in a timely manner and a pricing policy that hinders opportunistic bidding.

The use of bilateral central bank swap lines has been increasing rapidly during the recent years. After 2007 central banks in advanced economies set up swap lines in response to the international financial crisis both among themselves and with some emerging economies. In particular, US dollar liquidity provided by the Federal Reserve swap lines helped to restrain funding stress in major advanced financial

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56 Goldberg, L. S., Kennedy, C. and Miu, J, "Central Bank Dollar Swap Lines and Overseas Dollar Funding Costs", *Economic Policy Review*, Federal Reserve Bank of New York, May 2011.

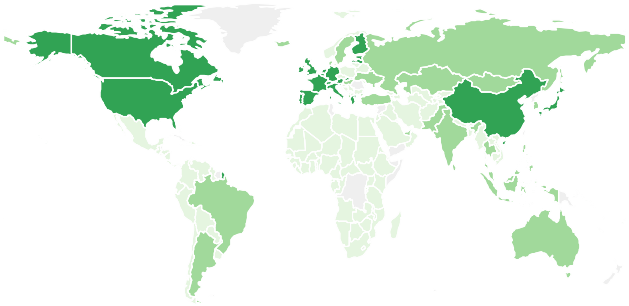
57 Coffey, N., Hrung, W. B. and Sarkar, A., "Capital Constraints, Counterparty Risk, and Deviations from Covered Interest Rate Parity", Federal Reserve Bank of New York Staff Report No 393, 2009.

markets at the peak of the crisis. While most of the short-term liquidity-providing lines established between advanced and emerging economies' central banks have expired or been terminated, the swap arrangements between the European Central Bank[58], the Federal Reserve, the Bank of England, the Bank of Canada, the Bank of Japan and the Swiss National Bank evolved into an unlimited and standing (i.e. open-ended) bilateral swap network. The rest of the existing swap lines have pre-set limits.

Chart 3

Availability of (un)limited swap lines

(dark green = unlimited; medium green = limited; light green = no swap line; grey = no data)



Sources: Bank of England, Bank of Japan, People's Bank of China, Federal Reserve and ECB.
Notes: Data from 2014. Only swap lines from the Bank of England, Bank of Japan, People's Bank of China, Federal Reserve and ECB are depicted.

Today's global swap network, when measured by the number of current arrangements, is dominated by the Chinese renminbi versus local currencies (see Chart 3). Since 2009 the People's Bank of China has rapidly expanded its swap line network and in February 2016 it had 31 active swap lines amounting to USD 500 billion.[59] Although a core motivation of the Chinese swap lines is often to support bilateral trade and investment with the countries that are part of its swap line network, they can also be used to address financial stability challenges and foreign exchange liquidity shortages. When renminbi swap lines are used to address reserve currency shortages, there are additional costs associated with the conversion of renminbi into the respective reserve currency.

When evaluating the role of central bank swap/repo lines in the GFSN, it is important to keep in mind that these instruments are based on the respective mandates of the central banks involved. Swap lines are not substitutes for other elements of the safety net. In fact, they are instruments designed to help address currency mismatch-related stress in financial markets rather than funds that can be used to finance balance of payments imbalances.

Overall, while the present network of central bank swap lines contributes both to crisis mitigation and global financial stability, the availability of funds is subject to their consistency with the policy mandates of the central banks involved. The central bank swap lines can in principle be unlimited in size and have no commitment costs at the initiation of the lines. As the experience during the global financial crisis suggests, swap lines can not only help to mitigate funding liquidity strains in the respective market segment, but can also contribute to global financial stability via the confidence channel. However, owing to the domestic mandates of the liquidity-providing central banks, the country coverage of swap lines is limited. In the case of the ECB and the Eurosystem, the provision of euro liquidity via swap or repo lines depends on: (i) the existence of exceptional circumstances characterised by significant euro liquidity needs as a result of serious market dysfunctions; (ii) the

58 A detailed discussion of the ECB's swap and repo arrangements can be found in the article entitled "Experience with foreign currency liquidity-providing central bank swaps", *Monthly Bulletin*, ECB, August 2014.

59 Volz, U., "Toward the Development of a Global Financial Safety Net or a Segmentation of the Global Financial Architecture?", 2016.

systemic relevance of the country requesting the swap line for the euro area; (iii) the presence of sound economic fundamentals; (iv) the financial risk for the Eurosystem; and (v) the consistency with any parallel support provided by the IMF (see ECB, 2014).

3.3 Financing by international financial institutions

In view of its global membership, mandate and expertise, the IMF is at the centre of the GFSN. With 189 member countries, the IMF is the most comprehensive and largest provider of liquidity insurance. Its special role with regard to the overall functioning of the GFSN is enshrined in its Articles of Agreement. The latter define its primary purpose as being to ensure the stability of the international monetary system. The IMF does this through various activities that help countries prevent and address crises, notably by: (i) advising countries in the context of surveillance and promoting sound policies as a first line of defence; (ii) warding off crises through the provision of access to liquidity resources under its lending policies, including via precautionary lines; (iii) providing financial assistance in a crisis subject to appropriate conditionality as necessary, to overcome balance of payments problems; and (iv) preventing moral hazard through appropriate access requirements and conditionality.[60]

With more than 60 years of experience in surveillance and lending, the IMF has a long track record of helping its members to address crises. First, IMF programmes help countries to stop a crisis from spreading further (e.g. Papi et al., 2015). Second, IMF programmes can act as a catalyst for re-attracting private investors (Bordo et al., 2005; Mody and Saravia, 2006; Morris and Shin, 2006).[61] Third, IMF programmes can also help to prevent future capital flow reversals and crises (e.g. Eichengreen et al., 2008).

The global financial crisis has highlighted that the IMF needs to maintain an adequate lending capacity in order to continue performing its function of preventing and addressing crises. Potential demand for IMF resources has risen with the growing integration of EMEs into the global economy and heightened risks of cross-border spillovers also among advanced economies, as was amply demonstrated during the global financial crisis. The global financial crisis led to increased resource needs among IMF members. To cope with its task, the IMF's resources were boosted (IMF, 2016*b*). In April 2009 the G20 agreed to increase the resources available to the IMF through expanded New Arrangements to Borrow

60 The resources available for the IMF's lending function currently amount to approximately USD 1 trillion, which makes the IMF the largest single provider of liquidity insurance (see IMF, 2016b), although in terms of actual disbursements the European Stability Mechanism (ESM) has topped the IMF in recent years. In addition, the IMF can allocate SDRs to supplement existing reserves in line with its Articles of Agreement.

61 Bordo, M. D., Mody, A. and Oomes, N., "Keeping capital flowing: the role of the IMF", *International Finance*, Vol. 7, 2004, pp. 421-450; Mody, A. and Saravia, D., "Catalysing private capital flows: do IMF programmes work as commitment devices?", *Economic Journal*, Vol. 116, 2006, pp. 843-867; Morris, S. and Shin, H. S., "Catalytic finance: When does it work?", *Journal of International Economics*, Vol. 70, 2006, pp. 161-177.

(NAB) by up to USD 500 billion as part of a global plan for recovery. In 2010 the membership agreed on a quota reform to double the IMF's paid-in resources permanently, which however only came into effect in January 2016. In the interim period, the IMF received pledges for bilateral loans of more than USD 400 billion from some of its members to temporarily supplement permanent resources. In addition, a new SDR allocation of USD 250 billion was agreed to provide the membership with liquidity to address the crisis.

While the IMF's lending capacity remains essential, there are concerns that countries may be reluctant to approach the IMF for financial support since the IMF provides its loans conditional on the implementation of specified policies. The IMF's Articles of Agreement emphasise the need to adopt policies on the use of its general resources that will help members to solve their balance of payments problems in a manner consistent with the IMF's provisions and the need to safeguard IMF resources. Therefore, the IMF provides loans only conditional on good policies which also ensure the repayment capacity of the borrower. [62] While conditionality has been helpful to address members' balance of payments problems and to prevent moral hazard (e.g. Jeanne and Zettelmeyer, 2001[63]), some countries also experienced social unrest or adverse financial market reactions related to the specific conditionality of the programme (e.g. Vreeland, 2007[64]). There have been concerns that due to these experiences some countries may be reluctant to approach the IMF for support.

Countries' reluctance to ask for IMF support could potentially have negative consequences for global financial stability (e.g. Vreeland, 2007). If a country delays asking the IMF for assistance, its mounting problems may lead to contagion to other countries, the need for a larger resource envelope when it finally does approach the IMF (making a greater demand on IMF resources) and the need for a greater reform effort by the country (increasing the likelihood of a political backlash). Moreover, reluctance to rely on the IMF as the global layer of the GFSN may lead to an inefficient stockpiling of national foreign exchange reserves.

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62 The need to ensure that the IMF is repaid is enshrined in Article 1(v) of its Articles of Agreement. IMF resources are typically safeguarded by ensuring the repayment capacity of a member through setting conditions either for the qualification to obtain a loan (ex ante conditionality) or the release of tranches against evidence of compliance with an agreed set of conditions (ex post conditionality). In other words, loans are provided only to conditionally solvent countries. Conditions are jointly agreed between a member and the IMF upon the request from the member to access a loan and prior to the IMF Executive Board's approval.

63 Jeanne and Zettelmeyer provide a broad interpretation of moral hazard as being not only taking risks with the money of the global taxpayer (hence IMF lending needs to be paid back), but also with that of the domestic taxpayer, who can eventually foot the bill for bad policies. See Jeanne, O. and Zettelmeyer, J., "International Bailouts, Moral Hazard, and Conditionality", *Economic Policy*, Vol. 33, 2001, pp. 409-432.

64 Vreeland, J. R., *The International Monetary Fund: Politics of Conditional Lending*, Routledge: New York, 2007. During the Asian crisis, IMF programme countries experienced large capital outflows when recommended policies were not as effective as originally intended. For example, in Indonesia, the IMF recommended a free floating exchange rate regime, which led to a depreciation of the currency. The bank restructuring without deposit guarantees led to bank runs and capital outflows. See, for example, Ito, T., "Can Asia Overcome the IMF Stigma", *American Economic Review*, Vol. 201, 2012, pp. 198-202.

Over the years the IMF has reacted to these concerns, inter alia by strengthening its precautionary lending (e.g. IMF, 2009; 2014a; 2014b[65]). The enhanced Flexible Credit Line (FCL) and the Precautionary and Liquidity Line (PLL) have been designed to shield countries with sound fundamentals from liquidity crises caused by external contagion.[66] Both facilities require the fulfilment of certain pre-qualification criteria (ex ante conditionality) and entail no (FCL) or streamlined (PLL) ex post conditionality. As they can be requested (and used) in the absence of actual balance of payments pressures and only entail an IMF commitment to provide financing if the member so requires (not necessarily actual disbursements), they should be less costly in political terms than the IMF's standard programmes with elaborate conditionality requirements in terms of prior actions and performance criteria. However, the precautionary facilities have to date only been used by five countries.

However, the reluctance to ask the IMF for support may not only be related to the IMF's strict conditionality framework, but also to its governance structure. In the view of many EMEs, the IMF's governance structure is overly influenced by advanced country considerations, even after the 2010 quota review (IMF, 2015).

To retain its role at the centre of the GFSN, the IMF will need to better understand the main causes behind the reluctance to borrow from the IMF. EMEs may be tempted to rely also on financing provided by other international financial institutions which may be perceived as imposing less stringent conditions. In addition to the traditional project-driven support by the World Bank (mainly to developing and emerging economies), regional development banks provide funding for structural purposes, particularly infrastructure development, including the European Bank for Reconstruction and Development (EBRD), the Asian Development Bank (ADB) and, most recently, the New Development Bank (NDB) of the BRICS countries (Brazil, Russia, India, China and South Africa) and the Asian Infrastructure Investment Bank (AIIB). The BRICS countries have also set up their own Contingent Reserve Arrangement (CRA) for mutual financial support.[67] These new institutions might be perceived by many EMEs as being more in tune with the concerns of emerging market countries.

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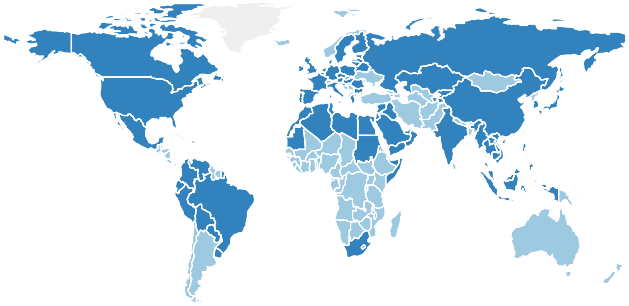
65 "The Flexible Credit Line – Guidance on Operational Issues", IMF Staff Paper, November 2009; "Review of the Flexible Credit Line, the Precautionary and Liquidity Line, and the Rapid Financing Instrument", IMF Policy Paper, January 2014; and "Review of the Flexible Credit Line, the Precautionary and Liquidity Line, and the Rapid Financing Instrument", IMF Policy Paper, April 2014.

66 The FCL is reserved for countries with very strong economic fundamentals, policies and institutional policy frameworks. These countries should satisfy five groups of eligibility criteria, related to their external position and market access, fiscal policy, monetary policy, financial sector soundness and supervision, and data adequacy. Access to the FCL is uncapped. The PLL has been designed for countries which have sound economic fundamentals, policies and institutional policy frameworks and moderate vulnerabilities. The limit on PLL access is 250% of quota for the first year, with a total limit of 500% of quota.

67 Still, the CRA conditions 70% of the resources available to a member on having in place an IMF precautionary programme.

Chart 4
Membership in RFAs

(dark blue = member of an RFA; light blue = not a member of an RFA; grey = no data)



Sources: RFA websites and ECB.
Notes: The chart includes membership in the following RFAs: the Latin American Reserve Fund (FLAR), the Arab Monetary Fund (AMF), the Chiang Mai Initiative Multilateralisation (CMIM), the Contingent Reserve Arrangement (CRA), the European Stability Mechanism (ESM), the European Financial Stabilisation Mechanism (EFSM), the European Financial Stability Facility (EFSF), the Eurasian Fund for Stabilisation and Development (EFSD), the North American Framework Agreement (NAFA) and EU balance of payments assistance.

Within the GFSN, regional financing arrangements (RFAs) represent a middle ground between self-insurance and the multilateral assistance offered by the IMF to its membership. RFAs exist in many, though not all, regions of the world (see Chart 4). Some RFAs have been in place for a long time, while others have been established only more recently in response to the global financial crisis. The "older" RFAs, such as the Arab Monetary Fund (AMF),[68] founded in 1976, and the Latin American Reserve Fund (FLAR),[69] which emerged in 1989, have more than three decades of lending experience. The Chiang Mai Initiative (CMI), an agreement to provide bilateral swap lines, was set up in response to East Asia's perceived need to develop a regional mechanism after the 1997-98 financial crisis (see Sussangkarn, 2011[70]). The CMI's successor, the Chiang Mai Initiative Multilateralisation (CMIM) Agreement,[71] and the European facilities (the temporary European Financial Stabilisation Mechanism, EFSM, and European Financial Stability Facility, EFSF, and the permanent European Stability Mechanism, ESM) have been set up more recently to boost resources for crisis prevention and resolution. The lending capacities of RFAs differ substantially. For example, smaller RFAs have a lending capacity below USD 10 billion, while the second largest RFA, the CMIM, and the largest RFA to date, the ESM, have total lending capacities of USD 240 billion and EUR 500 billion respectively.

RFAs differ with respect to their purpose and set-up, their surveillance capacity and the conditions under which they disburse financing. Regarding their purpose and set-up, most RFAs provide financial resources to members with balance of payments problems to address economic crises and prevent regional contagion. Some, but not all RFAs set conditions for macroeconomic adjustment before disbursing financing, such as the ordinary loan facility and the extended loan facility of the AMF or the loans provided by FLAR. Some RFAs link their assistance to conditions for IMF financial support.[72]

68 The Arab Monetary Fund's aim is to assist its non-OPEC members. Members include Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates and Yemen.

69 FLAR was established as an extension of FAR (the Andean Reserve Fund), which was set up in 1988. Members include Bolivia, Colombia, the Dominican Republic, Peru, Uruguay and Venezuela. See also Ocampo and Titelman (2009) for more details.

70 Sussangkarn, C., "Chiang Mai Initiative Multilateralization: Origin, Development, and Outlook", *Asian Economic Policy Review*, Vol. 6, 2011, pp. 203-220.

71 The CMIM is an East Asian regional financing arrangement covering Brunei Darussalam, Cambodia, China, Hong Kong, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam (see also Sussangkarn, 2011), which succeeded and extended the Chiang Mai Initiative.

72 The CMIM raised the unconditional share from 20% to 30% on 17 July 2014. It is currently reviewing the specific modalities of its cooperation with the IMF.

As RFAs are geographically closer to their members than the IMF, they can provide targeted support based on deeper local knowledge to implement policies to help a member overcome a crisis (e.g. Ocampo and Titelman, 2009)[73]. In addition, the limited number of RFA members can be an aid to quick decision-making, which facilitates the timely disbursement of funds during a crisis.

However, some RFAs may become overburdened on account of limited resources. The resources of several RFAs are limited, which constrains the duration, magnitude and number of loans that the RFA can offer at any one time. Also, countries with a lower willingness to adjust or with larger adjustment needs as well as countries which perceive IMF support as politically costly may prefer RFA support. As a consequence, RFAs may become overburdened in a regional or protracted shock. To support RFAs in their vital role of providing regional crisis support, there is a strong case for strengthening them (e.g. Kawai, 2015[74]).

Enhanced cooperation between RFAs and the IMF may promote their use, while reducing incentives for "facility shopping". In view of the existing links between some RFAs and the IMF, there seems to be scope for cooperation that provides support to RFAs, while avoiding "facility shopping" and an overburdening of RFAs. In 2011 the G20 endorsed six principles for cooperation between the IMF and RFAs (see Box 1) which help to guide this process.

Box 1

G20 Principles for Cooperation Between the IMF and Regional Financing Arrangements (15 October 2011)

In November 2010 the G20 Leaders requested that the G20 Finance Ministers and Central Bank Governors explore "ways to improve collaboration between RFAs and the IMF across all possible areas". Based on contributions by the EU and the ASEAN+3 countries that are members of the G20, the following non-binding broad principles for cooperation were agreed. Also, collaboration with the IMF should be tailored to each RFA in a flexible manner in order to take account of region-specific circumstances and the characteristics of RFAs.

1. An enhanced cooperation between RFAs and the IMF would be a step forward toward better crisis prevention, more effective crisis resolution, and would reduce moral hazard. Cooperation between RFAs and the IMF should foster rigorous and even-handed surveillance and promote the common goals of regional and global financial and monetary stability.

2. Cooperation should respect the roles, independence and decision-making processes of each institution, taking into account regional specificities in a flexible manner.

3. While cooperation between RFAs and the IMF may be triggered by a crisis, ongoing collaboration should be promoted as a way to build regional capacity for crisis prevention.

[73] Ocampo, J. A. and Titelman, D., "Subregional financial cooperation: the South American experience", *Journal of Post Keynesian Economics*, Vol. 32, 2009, pp. 249-268.

[74] Kawai, M., "From the Chiang Mai Initiative to an Asian Monetary Fund", ADBI Working Paper No 527, 2015.

4. Cooperation should commence as early as possible and include open sharing of information and joint missions where necessary. It is clear that each institution has comparative advantages and would benefit from the expertise of the other. Specifically, RFAs have better understanding of regional circumstances and the IMF has a greater global surveillance capacity.

5. Consistency of lending conditions should be sought to the extent possible, in order to prevent arbitrage and facility shopping, in particular as concerns policy conditions and facility pricing. However, some flexibility would be needed as regards adjustments to conditionality, if necessary, and on the timing of the reviews. In addition, definitive decisions about financial assistance within a joint program should be taken by the respective institutions participating in the program.

6. RFAs must respect the preferred creditor status of the IMF.

Sources: G20 and IMF.

3.4 Interaction between the layers of the global financial safety net

Better understanding the interaction between the different layers of the GFSN would help to avoid an overburdening of one of the elements and promote a complementary use of some of the different elements more generally. The interaction between the safety net's different layers needs to be based on their various purposes and operating features and the role which each element could and should fulfil. This section reviews these interactions.

Currently, coordination between layers is limited. As the global financial safety net has developed increasingly outside the IMF, partly through countries' self-insurance activities and partly through the provision of financing by other bilateral or regional arrangements or institutions, the coordination ties within and between layers are limited. Especially since the global financial crisis, the GFSN has become more multi-layered and more diversified in part owing to differing objectives and set-ups of the different elements. Hence, the coverage of the GFSN is not the same for each country. At the same time, different purposes and rules also imply that there is only limited scope for substitutability between the layers of the GFSN.

The question arises as to whether the various layers of the GFSN could be better aligned to ensure greater complementary use and better country coverage so as to boost the overall insurance capabilities of the GFSN as a whole. To avoid overburdening a single layer, the complementary use of certain other layers of the GFSN could be further explored. Attention should be paid to the ability of each element of the GFSN to achieve its general objectives, to its specific characteristics and to the ability of countries to access each of these GFSN elements. In this context, it should be borne in mind that at the regional level there is not only a growing number and size of RFAs, but also an increase in the size and number of regional development banks that have the potential to offer complementary financial support.

At the global level, an adequately resourced and quota-based IMF should be at the core of the GFSN, providing support in relation to potential or actual balance of payments crises. Effective crisis prevention is well served by the IMF through appropriate macroeconomic, financial and macroprudential policy surveillance. It is therefore essential that the incentive structure built into the qualification criteria of precautionary facilities supports strong policies, thereby giving traction to surveillance. Effective crisis resolution relies on the adequacy and efficient use of the IMF's resources. Maintaining a sufficient level of resources and utilising them in a judicious manner, including for precautionary purposes, is therefore essential for the IMF in fulfilling its stabilising role as the truly global layer of the GFSN. This stabilising role of the IMF would be enhanced by a deeper understanding and a reduction of the political cost for some countries associated with seeking the IMF's assistance.

At the national level, sound macroeconomic policies and frameworks remain the first line of defence. This does not contradict the observation that the accumulation of precautionary reserves as a means of self-insurance has served many countries well during crisis times. However, excessive reserve accumulation carries a cost and risks creating imbalances and systemic inefficiency. The cost of precautionary reserve accumulation varies across countries and needs to be weighed against the cost of having insufficient own reserves. Greater transparency with regard to the availability and cost of reserve accumulation by individual countries could play a useful role in this respect.

Bilateral central bank swap and repo lines constitute a very specific form of short-term liquidity provision to address liquidity constraints in the domestic banking sector. Their establishment is a decision for central banks in line with their respective mandates. In particular, there is no scope for liquidity provision from central banks to governments. Another consequence of the mandate-based provision of these lines is that it is not possible for one entity – not even the IMF – to serve as coordinator of the provision of central bank swap lines.

Cooperation between the IMF and RFAs deserves to be pursued further. Some RFAs are now closer to being operational than prior to the global financial crisis, but as several infrastructures remain untested and may be overburdened in the event of a regional shock, closer cooperation between the IMF and RFAs, also outside crisis episodes, would be worth developing. RFAs are at very different stages of development and they vary widely in terms of their size, focus, and frequency and nature of lending. In addition, surveillance tools are still under development for many RFAs. Given the IMF's broad expertise in both surveillance and lending, closer cooperation between the IMF and RFAs deserves to be pursued, in particular through advice and technical assistance to those RFAs which have not yet been tested. The G20 principles (see Box 1) are an adequate instrument to guide cooperation between the IMF and RFAs. The diversity of RFAs underscores the case for a tailored approach. The European experience of crisis resolution shows that there are also substantial benefits to be derived from the involvement of an RFA in stabilising a country and that RFAs may be complementary to IMF support.

4 Conclusion

The layers of the global financial safety net – comprising international reserves, regional financing arrangements, funding provided by international financial institutions and central bank swap/repo lines – are essential components of a well-functioning international monetary system. The various elements of the GFSN have been shaped by historical developments and they are all conceived to make a contribution to the maintenance of economic and financial stability by providing insurance and by supplying finance in crisis situations, as discussed in the previous sections.

The IMF is at the centre of the GFSN. It has a long experience in promoting sound economic policies and in addressing crises with its well-diversified toolkit. However, the stabilising role of the IMF could be further enhanced by making the use of its facilities more timely and effective and by a continued evolution of its governance. While central bank swap/repo lines have been highly successful in mitigating foreign exchange funding tensions, it should be emphasised that their usage has to be decided by central banks, in line with their respective mandates, and they are hence not suited to coordination under a global umbrella such as the one offered by the IMF. The other elements of the GFSN also have their objectives and limitations. Given their considerable growth in the wake of the global financial crisis, a more heterogeneous landscape has emerged for the GFSN. One promising avenue to pursue is the strengthening of those RFAs that have not yet been tested, through advice and technical cooperation.

A global stocktaking focusing on the role of the IMF as the truly global hub of the GFSN is warranted. To prevent the evolving GFSN from developing in sub-optimal directions, either because part of the resources are not available to certain countries or regions, or because the availability of resources creates greater room for moral hazard behaviour, a global stocktaking is warranted in the current post-global financial crisis environment. Such a review should focus primarily on how to strengthen the role of the IMF as the truly global hub of the GFSN, given its universal membership. This stocktaking should not be conducted in isolation. Reforms which aim at containing demand for financial safety net resources should also be analysed more thoroughly. Recent efforts to strengthen global financial regulation and the sovereign debt restructuring framework, as well as the option to mobilise private sector liquidity support in a crisis, are important elements in this regard.

New evidence on wage adjustment in Europe during the period 2010-13

This article presents evidence from the third wave of the Wage Dynamics Network (WDN) survey, which was recently conducted in 25 EU countries to assess how firms adjusted to the various shocks and labour market reforms that took place in the European Union during the period 2010-13. The article focuses on wage rigidities and wage adjustment. The main results discussed can be summarised as follows: Downward nominal wage rigidity (DNWR) was prevalent in EU countries during the period 2010-13. Nevertheless, its incidence was lower during the period 2010-13 than during the first phase of the crisis (2008-09). This resistance of firms to cut base wages – in favour of freezing them – contributed to a lower frequency of wage changes during the period 2010-13 than in the period of economic stability prior to the crisis (2002-07). The survey evidence also suggests that firms used cuts in bonuses as a substitute for cuts in base wages to adjust their wage costs. Finally, a substantial percentage of firms in the euro area countries that undertook wide labour market reforms found it easier to adjust both employment and wages in 2013 than in 2010.

1 Introduction

Wage rigidity is at the heart of central banks' concerns, particularly during periods of economic instability and low inflation, and in the presence of segmented labour markets. Understanding wage rigidities, their sources and their patterns is essential for conducting monetary policy and designing appropriate structural policies. Inertial wage behaviour is an important factor behind price stickiness in the euro area, as suggested by the findings of the Inflation Persistence Network (IPN), a Eurosystem research network analysing the features and determinants of price setting in the euro area.[75] Downward nominal wage rigidity (DNWR) – resistance to wage decreases – might have implications for the choice of the optimal rate of inflation. In the presence of DNWR, a positive rate of inflation is needed to facilitate the adjustment of relative (real) wages and thus "grease the wheels of the economy". Hence, an inflation rate which is too low could, in the

[75] See Altissimo, F., Ehrmann, M. and Smets, F., "Inflation persistence and price-setting behaviour in the euro area: a summary of the IPN evidence", *Occasional Paper Series*, No 46, ECB, June 2006, and the article entitled "Price-setting behaviour in the euro area", *Monthly Bulletin*, ECB, November 2005. These showed that inertial wage behaviour is an important factor behind price stickiness in the euro area and therefore a key determinant of monetary policy transmission. Further evidence of this relationship is provided for 17 EU countries in Druant et al., "Firms' price and wage adjustment in Europe: Survey evidence on nominal stickiness", *Labour Economics*, Vol. 19, Issue 5, October 2012, pp. 772-782.

presence of DNWR, lead to long-term unemployment. Such considerations have generated a long-standing debate in macroeconomics which goes back to Tobin.[76]

The wage adjustment mechanism used by firms also plays a crucial role in the transmission of economic shocks. In fact, during the recent economic and financial crisis, the degree of wage flexibility determined, among other factors, the speed, nature and cost of adjustment in the presence of economic shocks.[77] In addition, identifying the sources of wage rigidities is essential to designing appropriate structural policies that facilitate adjustment to shocks.[78] More generally, wage flexibility is essential for the proper functioning of a multi-country monetary union with segmented labour markets, such as the euro area, where there is significant cross-country heterogeneity in labour market features and performance.[79] Indeed, with cross-country differences in the ability of firms to adjust wages in response to shocks, a country exhibiting stronger rigidity will suffer from a loss of competitiveness relative to countries that have more flexible labour markets.

In this context, the ESCB has developed an ad hoc survey on wage and price-setting behaviour at the firm level: the Wage Dynamics Network (WDN) survey. The WDN survey collects information that enables researchers to examine the effect on wages, employment and price adjustments of firms' characteristics, the economic environment and the institutional features of the labour markets where the firms operate. The third wave of the WDN survey (WDN3) was recently conducted and covers the period 2010-13. An important value added of the WDN3 survey is that it also collected information that can be used to evaluate the incidence of the various shocks and the relevance of recent labour market reforms that are deemed to affect labour market adjustments.

This article provides evidence on the features and sources of nominal wage rigidities across EU countries over the period 2010-13, drawing from WDN3 survey data. The article is structured as follows: Section 2 describes the main features of the WDN survey. Section 3 briefly discusses certain features that underlie the cross-country heterogeneity in wage rigidities and, more generally, in labour market performance in Europe during the period 2010-13. Section 4 presents stylised facts on nominal wage rigidities, covering wage stickiness and the frequency of base wage changes (4.1), downward nominal wage rigidity (4.2) and the use of

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76 Tobin, J., "Inflation and unemployment", *American Economic Review*, Vol. 62, Issue 1, February 1972, pp. 1-18. Tobin's argument has been formalised in Akerlof, G., Dickens, W. and Perry G., "The Macroeconomics of Low Inflation", *Brookings Papers on Economic Activity*, Vol. 27, Issue 1, 1996, pp. 1-76. Fagan and Messina found that the optimal steady-state rate of inflation varies between 0% and 2% for Belgium, Germany, Portugal and Finland while for the US it varies between 2% and 5%. See Fagan, G. and Messina, J., "Downward wage rigidity and optimal steady-state inflation", *Working Paper Series*, No 1048, ECB, April 2009.

77 Fabiani et al. showed that, during the first phase of the crisis (2008-09), the inability of firms to cut wages might have prevented the optimal adjustment of firms' labour costs and forced them to adjust employment rather than wages, thus contributing to job destruction. See Fabiani et al., "European firm adjustment during times of economic crisis", *IZA Journal of Labor Policy*, Vol. 4, Article 24, December 2015.

78 See also the box entitled "Downward wage rigidity and the role of structural reforms in the euro area", *Economic Bulletin*, Issue 8, ECB, 2015.

79 More generally, there is large heterogeneity across EU national labour markets.

bonuses and benefits as labour cost adjustment margins in addition to changes in base wages (4.3). Section 5 concludes.

2 The WDN survey: sample and data

The WDN survey offers a unique dataset to explore wage dynamics, accounting for institutional features, firm-specific features and the economic environment in which the firms were operating. It was launched by the Wage Dynamics Network, an ESCB research network focusing on identifying the sources and features of wage and labour cost dynamics that are most relevant for monetary policy.[80] The first wave of the WDN survey (WDN1) was carried out by 17 national central banks (NCBs) between the end of 2007 and the first half of 2008. It collected information from a period of economic stability and relatively stable growth, namely 2002-07. During summer 2009, ten NCBs conducted a more focused follow-up survey, specifically with the aim of understanding firms' reactions to the initial stage of the crisis (2008-09). This was the second wave of the WDN survey (WDN2).[81]

The third wave of the WDN survey (WDN3) was conducted by 25 ESCB NCBs between the end of 2014 and the first half of 2015. The aim of the WDN3 survey was to assess recent labour market adjustments and firms' reactions to the various shocks and labour market reforms that took place during the second phase of the crisis (2010-13). This wave collected information from over 25,000 firms from the following sectors: manufacturing, energy, construction, trade and transportation, market services, financial intermediation and, for some countries, non-market services.[82] By design, the sample is relatively balanced across firm size categories within each country and across the sectors considered. Its distribution closely follows the distribution of private employment in each country. However, the sample size varies across countries both in absolute terms and relative to the number of firms in each country. Thus, individual weights have been calculated for each firm to make the sample representative of the overall number of firms in each country and to account for the number of workers that the firm represents in a given country.

The WDN surveys are ad hoc surveys at the firm level that respond to specific information demands. This feature has resulted in different questionnaires across waves. Coverage in terms of countries also varies across waves, as does the sample of firms in each country. Thus the WDN surveys are not, strictly speaking, different waves of a panel, but have led to cross-country datasets with ample geographical and sectoral coverage. The main advantage of conducting an ad hoc survey at the firm level is its flexibility. Firms can be asked directly about the features of their wage and price setting, their reactions to shocks or their perceptions of the effectiveness and impact of reforms – information that would otherwise be difficult to

80 The WDN, as such, was in operation from July 2006 until December 2009.

81 Fully harmonised WDN1 survey data is available for Belgium, the Czech Republic, Estonia, Ireland, Greece, Spain, France, Italy, Lithuania, Hungary, the Netherlands, Austria, Poland, Portugal and Slovenia. The WDN2 survey was conducted in the following countries: Belgium, the Czech Republic, Estonia, Spain, France, Italy, Luxembourg, the Netherlands, Austria and Poland.

82 For the list of countries covered, see Table 1.

collect. Where wages are concerned, surveys addressed to firms typically provide more accurate information than those addressed to households. Nevertheless, several shortcomings inherent in ad hoc surveys should be borne in mind, such as low response rates and potential misinterpretations of the questions. Moreover, responses may be influenced by the specific macroeconomic environment prevailing at the time of the survey.

3 Cross-country heterogeneity in the incidence of the crisis during the period 2010-13

The WDN3 survey provides firm-level information on several aspects that can be used to account for cross-country heterogeneity in European labour markets and wage rigidities.

3.1 The incidence of shocks

The diverse nature and intensity of the shocks that hit European labour markets may have contributed to the cross-country heterogeneity of their performance. The WDN3 survey provides detailed information on a variety of shocks that hit European firms during the period 2010-13.[83] Chart 1 provides a brief overview of the incidence of shocks across countries; it displays the percentage of firms that reported a decrease (or strong decrease) in total demand and access to credit. On average, 36% of EU firms reported a fall in demand; in the euro area 42% of firms experienced a fall in demand, while only 23% did so among non-euro area firms. At the country level, 71% of firms in Greece and 59% in Cyprus reported facing a demand shock, in contrast to Estonia and the UK, where less than 18% of firms reported this kind of shock. Heterogeneity similarly emerges when focusing on credit shocks. While 66% of firms in Greece, 48% in Cyprus, 45% in Slovenia and about 39% in Spain report more restricted access to credit, this is the case for only around 5% of firms in Estonia and Malta, and 11% in Latvia. Interestingly, the volatility of demand, rather than the level, appears to be a concern among the Baltic States, which, during the period 2010-13, were recovering from a large deterioration in the labour market.[84]

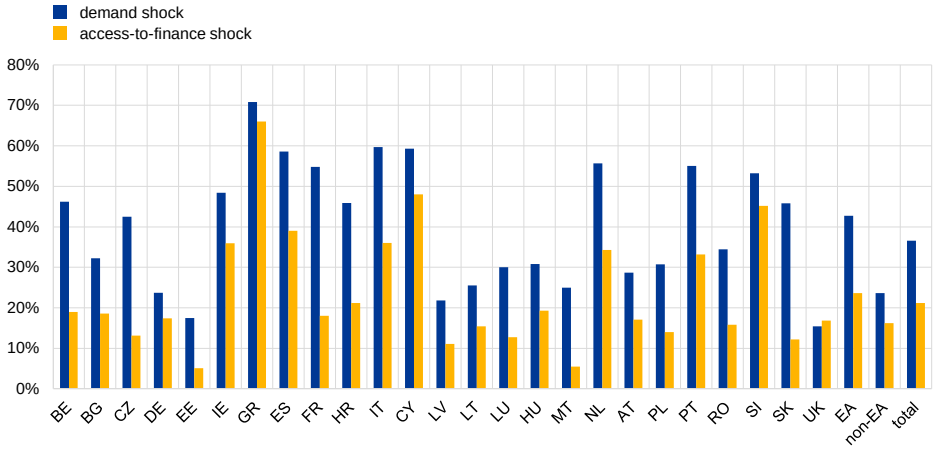
[83] When reporting the shocks, firms were asked to distinguish between domestic and external in the case of demand shocks, and between different financing methods (for financing new investment projects, refinancing, etc.) in the case of financial shocks. In addition, they were asked to provide information on the volatility of demand, customers' ability to pay and the availability of supplies.

[84] Not reported in Chart 1.

Chart 1

Percentage of firms suffering from a demand and access-to-finance shock during the period 2010-13

(percentage of firms; employment-weighted values)



Source: ECB calculations on the basis of the WDN3 survey.
Notes: Firms with fewer than five employees are excluded from the calculations. Figures are weighted to reflect overall employment and rescaled to exclude non-response. Figures for Ireland are unweighted. Totals are calculated across countries that have weights. Demand and access-to-finance shocks are defined as the percentage of firms experiencing a moderate or strong decrease in demand and access to finance respectively.

3.2 Collective wage bargaining in Europe

Wage bargaining institutions are likely to play an important role as regards wage dynamics and, more generally, the operation of the labour market. Theoretical literature assigns an important role in wage adjustment and wage rigidity to wage bargaining institutions, and an extensive body of empirical literature attempts to quantify this role. Such quantification, however, remains difficult and comparable information at the international level is limited. The WDN1 and WDN3 surveys provide information on the centralisation and coverage of collective wage agreements. Regarding centralisation, the surveys asked firms whether they apply a collective wage agreement negotiated and signed outside the firm and/or at the firm level.[85] The latter type of agreement is usually regarded as more flexible than the former, as it gives firms greater scope to react to economic circumstances specific to the firm.

[85] It is often the case that agreements at both levels coexist in the firm.

Table 1

Collective bargaining – level and coverage: country overview in 2013

	% of firms with a collective bargaining agreement			% of workers covered by a collective pay agreement
	Firm level	Outside the firm	Firm level or outside	
Belgium	30.8	63.0	72.0	94.4
Bulgaria	21.8	7.0	24.3	17.8
Czech Republic	30.6	10.0	39.0	33.2
Germany	16.1	47.2	56.9	48.3
Estonia	10.1	2.0	11.3	8.2
Ireland	8.1	7.7	14.5	6.9
Greece	26.2	42.8	60.1	71.4
Spain	31.0	77.3	95.2	96.3
France	28.9	82.9	88.8	94.4
Croatia	35.4	23.3	45.2	47.1
Italy	60.4	89	99.5	99.0
Cyprus	31.7	41.7	56.4	39.6
Latvia	16.7	2.3	18.9	18.3
Lithuania	17.4	1.9	18.2	16.0
Luxembourg	25.1	33.4	54.9	54.0
Hungary	20.2	6.7	23.2	20.3
Malta	31.0	0.5	31.0	23.8
Netherlands	61.1	49.3	82.9	89.4
Austria	27.4	88.0	98.8	80.4
Poland	17.9	1.0	20.9	20.9
Portugal	13.0	62.2	66.3	62.5
Romania	69.4	7.7	73.0	71.6
Slovenia	57.9	75.9	86.9	79.4
Slovakia	35.1	14.8	38.4	35.7
United Kingdom	17.4	7.2	32.7	21.3
Euro area	28.9	64.3	75.0	73.4
Non-euro area	23.1	6.5	34.2	28.2
Total	26.8	50.3	63.9	60.9
Total (WDN1 countries)	31.9	64.2	76.0	77.1

Source: ECB calculations on the basis of the WDN3 survey.
Notes: Firms with fewer than five employees are excluded from the calculations. Figures are weighted to reflect overall employment and rescaled to exclude non-response. Figures for Ireland are unweighted. Totals are calculated across countries that have weights.

The percentage of firms that apply some kind of collective wage agreement in 2013 is very high in the euro area countries surveyed, but lower than in 2007. On average, around 75% of firms applied a collective wage agreement in the euro area in 2013, while in 2007 this figure was 95%. By contrast, in the non-euro area countries surveyed, only around 34% of firms applied a collective wage agreement in 2013, as opposed to 28% in 2007. It is noteworthy that in the Baltic States only a very small percentage of firms applied collective agreements (11-18% in 2013).[86]

[86] In Ireland, the partnership agreements which set out the framework for collective bargaining over pay in both the public and private sectors were abandoned in 2010 and most firms have been operating without a formal agreement on pay since. Nevertheless, is likely that they operate under informal agreements.

Differences between euro area and non-euro area countries are also apparent when looking separately at collective agreements signed at the firm level and those signed outside the firm. In the euro area, collective bargaining was still mostly signed outside the firm at the sector level (this applies to 64.3% of firms, accounting for the largest proportion of workers) – with the exception of the Baltic States, where wage bargaining was predominantly organised at the firm level. The latter is also the case for the non-euro area countries (see Table 1).[87] However, a trend towards more decentralised bargaining has been observed in Spain, Italy, the Netherlands and Slovenia.

The percentage of workers covered by any kind of collective agreement fell during the crisis period in most euro area countries.[88] Nevertheless, the evidence collected by the WDN3 survey confirms that a large proportion of workers are still covered by some kind of collective wage agreement. The coverage rate before the crisis was high – 68% on average and over 80% in the euro area – while in 2013 the average coverage was 60% across all sampled firms and 73% across euro area firms.

3.3 Labour market reforms during the period 2010-13

The crisis led some governments to engage in a number of labour market reforms and policies designed to facilitate labour market adjustment and foster competitiveness. This is another factor that may have influenced the reaction of firms to shocks and contributed to the observed cross-country labour market heterogeneity.[89] In the WDN3 survey, firms were asked whether adjusting employment (via a number of channels) and adjusting wages (of both incumbents and new hires) had become easier or more difficult than in 2010.[90] Chart 2 shows the percentage of firms in each country that found it easier to adjust employment in 2013 than in 2010 (it reports the average across the different channels), while Chart 3 displays the percentage of firms that found it easier to adjust wages in 2013 than in 2010. These charts show that it is precisely in the countries where the largest and most wide-ranging labour market reforms took place (mostly the “stressed” countries) that substantial percentages of firms found it easier to adjust labour costs in 2013 than in 2010.

87 See also Visser, J., *Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, 1960-2014 (ICTWSS)*, Version 5.0, Amsterdam Institute for Advanced Labour Studies, Amsterdam, October 2015, and the box entitled “Downward wage rigidity and the role of structural reforms in the euro area”, *Economic Bulletin*, Issue 8, ECB, 2015.

88 Comparing the evidence collected by the WDN1 survey with that of the WDN3 survey, coverage fell in every euro area country except France and, to a lesser extent, Italy.

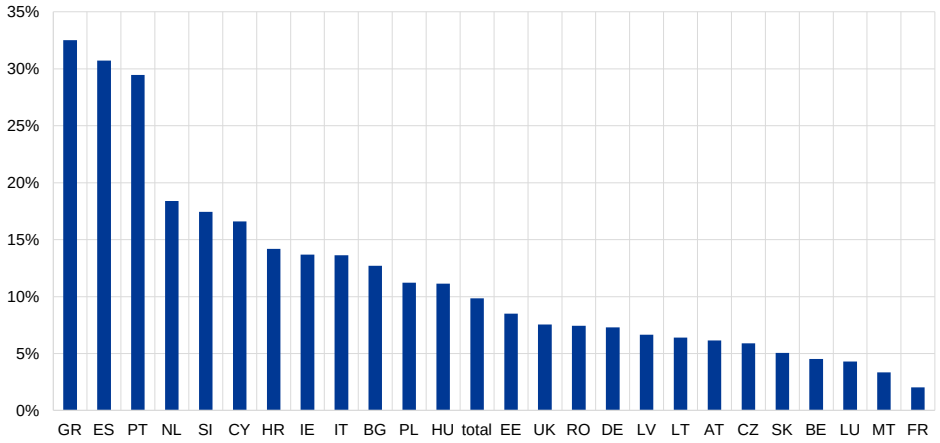
89 For a discussion on the structural reforms in the euro area, see the article entitled “Progress with structural reforms across the euro area and their possible impacts”, *Economic Bulletin*, Issue 2, ECB, 2015.

90 Box 1 in this article offers a detailed analysis of this information for stressed countries.

Chart 2

Percentage of firms that found it easier to adjust employment in 2013 than in 2010

(average across channels of adjustment; percentage of firms; firm-weighted values)

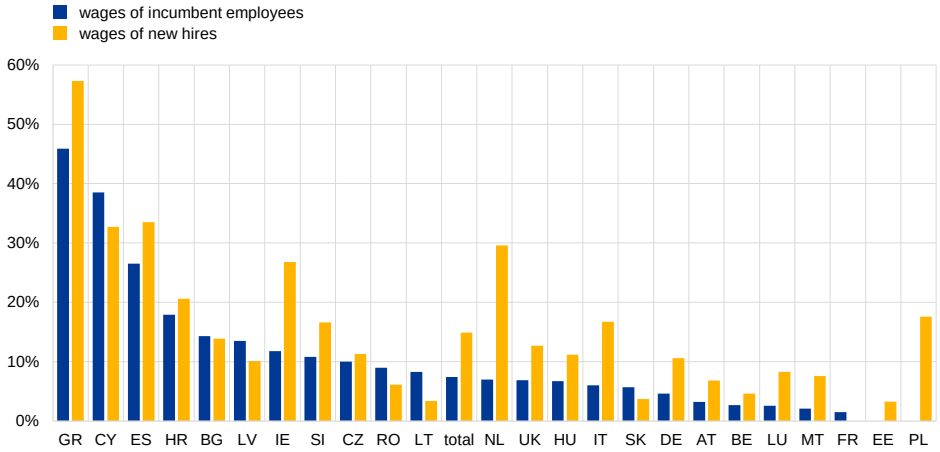


Source: ECB calculations on the basis of the WDN3 survey.
Notes: Firms with fewer than five employees are excluded from the calculations. Figures are weighted to reflect overall firm population and rescaled to exclude non-response. Figures for Ireland are unweighted. Channels of adjustment include collective and individual dismissals of employees for economic reasons, dismissals of employees for disciplinary reasons, temporary dismissals, employee hires, adjustment of working hours and employee reallocation.

Chart 3

Percentage of firms that found it easier to adjust wages in 2013 than in 2010

(percentage of firms; firm-weighted values)



Source: ECB calculations on the basis of the WDN3 survey.
Notes: Firms with fewer than five employees are excluded from the calculations. Figures are weighted to reflect overall firm population and rescaled to exclude non-response. Figures for Ireland are unweighted.

The firms' perceptions of the easiness of adjustments, as recorded in the WDN3 survey, could be seen as an indicator of the effectiveness of the labour market reforms implemented during the period 2010-13. However, it must be borne in mind that the easiness of adjustments may hinge on other factors. For example, 27% of Spanish firms reported that cutting the wages of incumbents in 2013 was easier than doing so in 2010, but when asked to identify specific reasons behind that change, they attributed particular importance to changes in workers' attitudes (see Box 1). This is likely to be a consequence of the intensity and duration of the crisis in Spain, rather than any regulatory changes.

Box 1

Firms' perceptions of changes in the ease of labour market adjustment and the role of reforms in stressed euro area countries during the period 2010-13 (based on the WDN3 survey)

This box discusses firms' perceptions regarding labour market adjustment in stressed euro area countries during the period 2010-13[91], **as these countries implemented a number of labour and institutional reforms during the crisis.**[92] It focuses on firms' responses to the WDN3 survey regarding labour market adjustment channels and how they were influenced by labour market reforms, workers' attitudes, trade union behaviour and the enforcement of laws. The box defines labour market adjustment channels in a very broad way but gives special attention to labour market reforms.[93] At the same time, WDN3 survey information on firms' perceptions also allows us to disentangle the impacts of demand-side factors, such as the severity of various shocks affecting stressed countries, and supply-side factors, such as changes in trade union behaviour and workers' attitudes.

Given substantial changes in the economic environment, along with considerable reform efforts in the stressed countries during the period 2010-13, firms in these countries adjusted via many channels. In particular, as discussed in this article, firms adjusted wages, employment and prices to increase their competitiveness and performance. For example, firms in most stressed countries reported that it was either just as easy or less difficult to adjust wages and/or employment in 2013 compared with 2010 (see Table 1). Overall, it seems that labour market adjustment was perceived to be easier than in the past in Greece, Spain, Cyprus and Portugal (i.e. firms that found it less difficult to adjust wages and/or employment significantly outnumbered those that found it more difficult), while firms' overall ability to make these adjustments did not alter much in Ireland, Italy and Slovenia. This is consistent with the different timings of labour market reforms in different countries. For instance, the effects of the earlier reforms of the first group of countries were more likely to be captured over the sample period of the WDN3 survey (2010-13). By contrast, significant labour market reforms in Italy were only implemented at a later stage, in 2012 and 2015, while labour market reform in Slovenia was implemented towards the end of the WDN3 sample period in 2013. Meanwhile, Ireland was already considered to be a relatively flexible economy before the crisis and experienced economic difficulties mainly in its first phase (2008-09); it is thus unsurprising that perceptions did not change much in Ireland over the period 2010-13.

Adjusting the wages of incumbents or new hires seems to have become less difficult overall in Greece, Spain and Cyprus (see Table).[94] Labour market reforms in these countries modified some of the most important institutional aspects of the labour market, such as the degree of

91 Following the definition used in the article entitled "The impact of the economic crisis on euro area labour markets", *Monthly Bulletin*, ECB, October 2014, stressed euro area countries (i.e. those defined as stressed during the period 2010-13) include Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia.

92 Reforms in Ireland, Spain and Portugal are described in detail in Box 2 of the article entitled "What is behind the recent rebound in euro area employment?", *Economic Bulletin*, Issue 8, ECB, 2015. Impacts of reforms in the stressed countries were also discussed in the article entitled "Progress with structural reforms across the euro area and their possible impacts", *Economic Bulletin*, Issue 2, ECB, 2015.

93 It should be recognised that the issue of labour market adjustment channels is much broader than investigated in this box. Furthermore, the limitations of the survey data should also be taken into consideration when studying the impact of reforms.

94 No information on these specific aspects of adjustment for Portugal is available from the WDN.

centralisation of the collective bargaining system, and dismissal costs and procedures.[95] It is therefore not surprising that the firms that said it was now easier to adjust or lower wages outnumbered those that said it was more difficult. By contrast, firms in Slovenia report that the ease of adjusting the wages of incumbents in 2013 remained broadly similar to that of 2010; the same applies to lowering the wages of new hires in Ireland. Furthermore, adjusting the wages of incumbents in Italy actually seems to have been somewhat more burdensome in 2013 than in 2010, while adjusting the wages of new hires remained broadly similar. Overall, increased wage flexibility, as reported by firms, should be seen as an important buffer against even higher potential increases in unemployment in stressed countries during the crisis. At the same time, it is important to bear in mind that wage policies should also reflect wider labour market conditions and productivity developments.

The ease of laying off employees for economic reasons or of adjusting working hours also seems to have increased in most of the stressed countries. This is reported particularly by firms in Greece, Spain and Portugal. In Cyprus and Slovenia, laying off employees for economic reasons eased to a lesser extent, and in Ireland and Italy it remained broadly unchanged. Firms in Ireland also reported that the ease of adjusting working hours was broadly similar in comparison with 2010, as did firms in Italy, Cyprus and Slovenia.[96] From the policy perspective, it is important that increased flexibility is combined with active labour market policies to allow workers to redeploy quickly to new sectors and job opportunities. Such a policy mix would reduce the duration of unemployment and further reduce structural unemployment in the euro area. In particular, firms will be more likely to increase employment in the future if there is more flexibility regarding the adjustment of labour requirements.

95 The impact of labour market institutions on wage developments is also discussed in detail in Box 4 in the article entitled “Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU” in this issue of the Economic Bulletin.

96 Such a reading is broadly consistent with the changes in the employment protection legislation indicators published by the Organisation for Economic Co-operation and Development for the period 2008-13 for most of the stressed countries.

Table

Firms' perceptions at the end of 2013 regarding labour market adjustment channels in stressed countries, compared with the situation in 2010

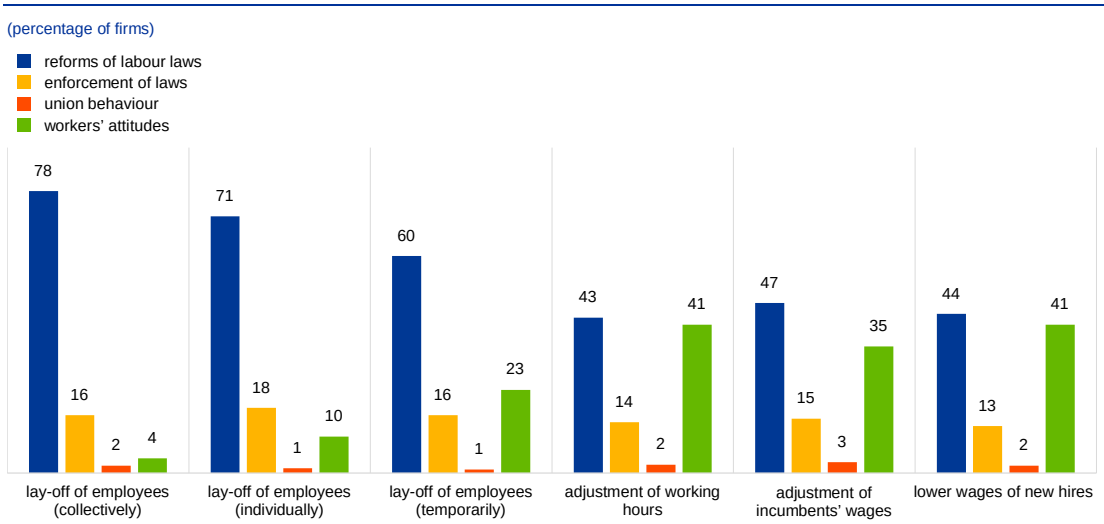
Actions	Lay off employees (collectively) (%)	Lay off employees (individually) (%)	Lay off employees (temporarily) (%)	Adjust working hours (%)	Adjust wages of incumbents (%)	Lower wages of new hires (%)
Ireland						
Much less/less difficult to…	8	12	13	19	12	27
Unchanged	74	66	69	63	62	53
More/much more difficult to…	18	22	18	18	26	20
Difference: less - more difficult	-8	-9	-3	3	-12	9
Greece						
Much less/less difficult to…	42	46	22	42	46	57
Unchanged	57	51	77	49	48	40
More/much more difficult to…	1	3	1	9	6	3
Difference: less - more difficult	41	43	22	33	40	54
Spain						
Much less/less difficult to…	42	47	29	30	27	33
Unchanged	48	42	55	61	60	58
More/much more difficult to…	10	11	16	9	13	9
Difference: less - more difficult	33	37	12	21	14	25
Italy						
Much less/less difficult to…	13	14	18	16	6	16
Unchanged	72	69	71	71	64	63
More/much more difficult to…	15	17	11	13	30	21
Difference: less - more difficult	-2	-2	7	3	-24	-5
Cyprus						
Much less/less difficult to…	13	23	18	22	39	33
Unchanged	78	64	77	65	46	62
More/much more difficult to…	9	13	5	13	15	5
Difference: less - more difficult	3	10	13	8	23	28
Portugal						
Much less/less difficult to…	32	33	31	32	*	*
Unchanged	56	52	59	58	*	*
More/much more difficult to…	12	15	10	10	*	*
Difference: less - more difficult	20	18	21	22	*	*
Slovenia						
Much less/less difficult to…	19	27	*	14	11	17
Unchanged	74	65	*	80	82	76
More/much more difficult to…	7	8	*	6	8	7
Difference: less - more difficult	12	19	*	7	3	10

Sources: WDN3 survey database, WDN3 country reports and ECB calculations.
Notes: Firms with fewer than five employees are excluded from the calculations. The percentages are derived from the weighted answers to questions to reflect overall firm population and are rescaled to exclude non-response. Figures for Ireland are unweighted. * denotes missing data.

Labour market reforms seem to be a notable factor behind the identified changes, especially in Greece and Spain.[97] The firms surveyed in these two countries indicated that reforms were an important reason for the increase in the ease of labour market adjustment, while changes in workers' attitudes in Spain also played a significant role, particularly as regards the wage channel (see Chart A). The latter may be partly explained by the strong increase in the unemployment rate in Spain over the period 2010-13.

Chart A

Factors behind labour market adjustment channels in Spain between 2013 and 2010



Sources: WDN3 survey database, WDN3 country report for Spain and ECB calculations.
Notes: Firms with fewer than five employees are excluded from the calculations. The percentages are derived from the weighted answers to questions to reflect overall firm population and are rescaled to exclude non-response.

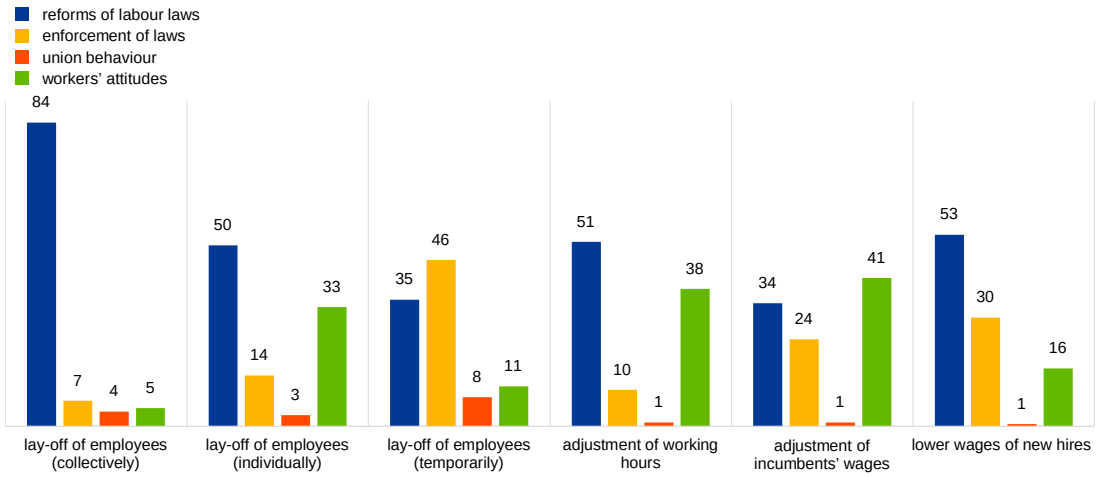
Although structural reforms played a significant role in affecting firms' perceptions of adjustment in Greece, changes in the enforcement of laws and workers' attitudes also helped to increase labour market adjustment (see Chart B). This is consistent with various labour reforms in Greece, including the decentralisation of wage bargaining.[98] Although there was little improvement in the flexibility of labour market adjustment in Italy (see Table), the survey results suggest that the labour reforms implemented did influence labour market dynamics for some firms (see Chart C).

97 Note that, in the WDN3 survey, only a limited number of countries were asked to identify specific reasons behind changes in the ease of labour market adjustment.

98 See Visser, J., op. cit.

Chart B

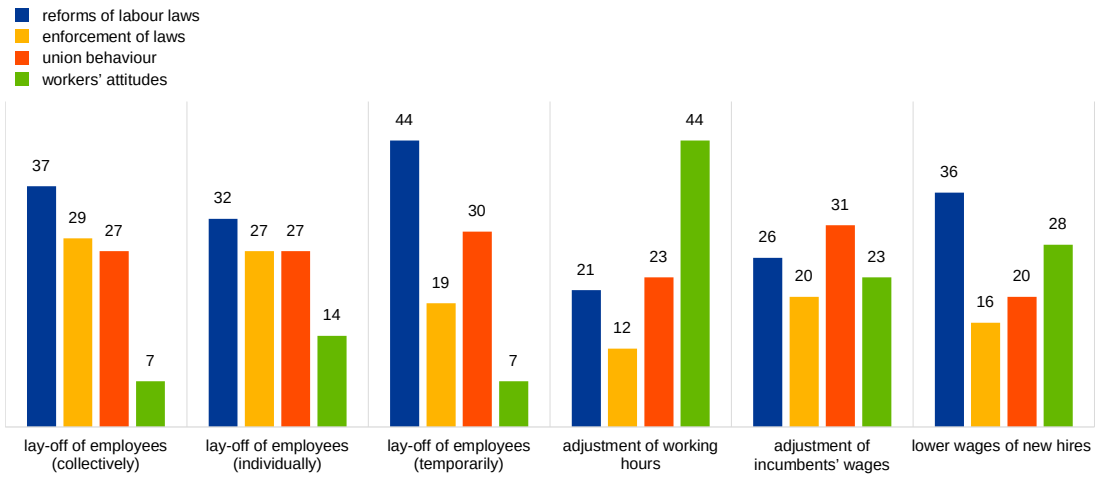
Factors behind labour market adjustment channels in Greece between 2013 and 2010



Sources: WDN3 survey database and ECB calculations.
Note: Firms with fewer than five employees are excluded from the calculations. The percentages are derived from the weighted answers to questions to reflect overall firm population and are rescaled to exclude non-response.

Chart C

Factors behind labour market adjustment channels in Italy between 2013 and 2010



Sources: WDN3 survey database and ECB calculations.
Note: Firms with fewer than five employees are excluded from the calculations. The percentages are derived from the weighted answers to questions to reflect overall firm population and are rescaled to exclude non-response.

To further facilitate labour market adjustment and generate job creation, credible and effective labour market reforms are essential. The WDN3 survey shows that euro area countries that demonstrated stronger reform efforts made it easier for firms to adjust both employment and wages, thereby facilitating the wider adjustment process. This box shows that wage flexibility helped to reduce lay-offs during the adjustment period. Labour market efficiency indicators also show that euro area countries are still a long way behind the highest performing OECD member countries, hence more reforms are necessary for all euro area countries. Further labour and product market reforms are crucial to deliver the necessary flexibility and adjustment capacity required of euro area countries. This is particularly important given the slowdown in reform momentum over the

past two years across the euro area countries, as signalled by various indicators[99] and reflected in the very limited progress in implementing the European Commission's country-specific recommendations. However, reforms should also reduce labour market duality, thereby ensuring that adjustment is not unfairly placed on specific groups of workers, such as temporary or new employees. At the same time, active labour market policies – which enhance skills, job searching and employability – are required to facilitate labour market improvements and reduce current high levels of unemployment, with a particular focus on helping the young and long-term unemployed to find work.

4 Nominal wage rigidities

This section presents evidence on nominal wage rigidities, their sources and their consequences during the period 2010-13 and in comparison with the pre-crisis period (2002-07).

4.1 Frequency of wage setting

Wages are sticky and react with lags to changes in economic conditions; this inertial behaviour is a key factor influencing the transmission of monetary policy. The frequency of wage changes provides a measure of the extent to which wages are sticky. This measure is often used in the literature and in policy analysis. It is an essential ingredient in the calibration of standard dynamic stochastic general equilibrium models with staggered adjustment mechanisms, which are widely used for monetary policy analysis.

EU firms most typically adjust wages once a year. On average, during the period 2010-13, they adjusted wages every 17 months.[100] The WDN3 survey explicitly asked firms about the frequency of wage changes for their main occupational group. A similar question was included in the WDN1 survey, thus enabling a comparison between firms' behaviour during the period 2010-13 on the one hand and the period of economic stability prior to the crisis (2002-07) on the other. Chart 4 summarises the responses, grouping the potential answers into: (i) more frequently than once a year, (ii) once a year, and (iii) less frequently than once a year. Around 48.5% of firms in the 25 EU countries of the WDN3 sample reported that, during the period 2010-13, they changed their employees' base wages once a year; 40% changed wages less frequently than once a year; and only 4% did so more frequently than once a year. These aggregate figures hinder large cross-country heterogeneity; for example, the percentage of firms that adjusted wages less than once a year during the period 2010-13 ranges from 60% in Italy to

99 See the article entitled "Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU" in this issue of the Economic Bulletin.

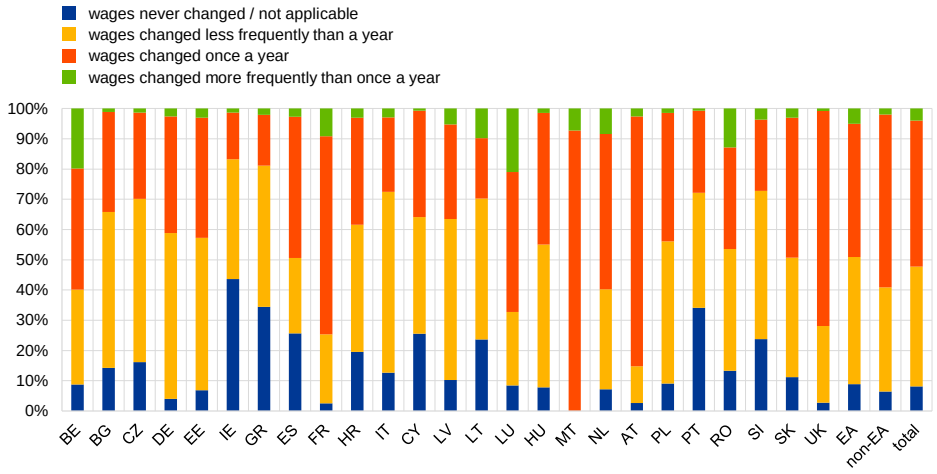
100 Estimated following similar methodology to that of the WDN1 survey. See Druant, M. et al. "How are firms' wages and prices linked: survey evidence in Europe", *Working Paper Series*, No 1084, ECB, August 2009.

12% in Austria.[101] There is, however, substantially lower heterogeneity in the frequency of wage changes across sectors than across countries.

Chart 4

Frequency of base wage changes over the period 2010-13

(percentage of firms; employment-weighted values)



Source: ECB calculations on the basis of the WDN3 survey.
Notes: Firms with fewer than five employees are excluded from the calculations. Figures are weighted to reflect overall employment and rescaled to exclude non-response. Figures for Ireland are unweighted. Totals are calculated across countries that have weights.

The frequency of wage changes in EU countries was lower during the period 2010-13 than during the pre-crisis period (2002-07). The estimated duration of the wage spell (the number of months for which wages remain unchanged) was 15 months on average in the sampled countries in 2007, compared with 16.8 months for the same countries during the period 2010-13. For the 25 countries of the WDN3 survey, the average wage spell was, as reported above, 17 months. This general reduction in the frequency of wage changes can be observed in every country. The low (and decreasing) frequency confirms the prevalence of wage inertia, which may have delayed adjustment to shocks at the country level.

The large cross-country differences in the frequency of wage changes during the period 2010-13 can be attributed not only to institutional features but also to features typically linked to the crisis, such as the incidence of shocks and the resistance of firms to cut wages in spite of these shocks. This has been formally explored using WDN3 survey data in a multivariate analysis for the 25 countries sampled. According to the findings, base wages are changed less often if the firm experiences credit restrictions or a decline in demand, and if it is reluctant to cut nominal wages. During a period in which economic conditions may in fact be calling for a wage reduction, the reluctance to cut nominal wages might prevent wage changes as firms freeze wages instead of cutting them. The evidence from the WDN3 survey data is that substantial numbers of freezes are largely responsible for the lower frequency of wage changes observed.[102] Institutional features in the labour

[101] In Malta, firms change wages at least once a year due to the annual Cost-of-Living Adjustment (COLA) mechanism (i.e. partial indexation to past inflation).

[102] See Section 4.2 on downward nominal wage rigidity (DNWR).

market also contribute to explaining the cross-country differences in wage stickiness: base wages are changed more often in the presence of collective bargaining and internal policies that adjust base wages for inflation.[103]

Looking ahead, wage inertia should eventually return to pre-crisis levels as the economic recovery progresses. Prima facie, higher wage inertia may suggest that wages will take more time to respond to economic recovery. Nevertheless, the lower frequency of wage changes over the period 2010-13 seems to be related to factors that are linked to the crisis; it is thus likely that the frequency of wage changes will eventually return to pre-crisis levels, in particular as wage freezes thaw. In any case, although higher than during the crisis, the pre-crisis frequency of wage changes is also indicative of the prevalence of wage inertia and delayed adjustment.

4.2 Downward wage rigidity

Downward nominal wage rigidity (DNWR) refers to the reluctance of firms to implement cuts in nominal wages and/or a resistance on the part of workers to accept such cuts. It is typically defined on the basis of nominal wage freezes. DNWR prevents wage cuts, meaning that firms keep base wages unchanged even if economic conditions justify a cut. The WDN survey, in its three waves, collected information on whether firms cut or froze the base wages of some of their employees and on the proportion of workers affected. Babecký et al. summarised the evidence on DNWR for the period 2002-07.[104] Fabiani et al. used WDN2 survey data to provide evidence on how wage rigidity led firms to adjust labour in response to the shocks during the period 2008-09.[105] This article summarises evidence on DNWR for the period 2010-13, drawing from the WDN3 survey.

A key finding of the three WDN surveys is that nominal base wage cuts are extremely rare among European firms. In 2007 around only 2.3% of firms in the sampled countries reported having cut wages in the previous five years. During the acute phase of the crisis, in the second half of 2008 and the first half of 2009, only 3.2% of the surveyed firms reported having cut wages.[106] The evidence from the WDN3 survey reveals that only 4% of the surveyed firms cut wages at least once over the period 2010-13.[107] There is, however, remarkable heterogeneity in wage cuts across countries. In 2013 about 55% of firms in Greece implemented wage cuts,

[103] These results are in line with those of the WDN1 survey for the pre-crisis period (2002-07). See Druant, M. et al., "Firms' price and wage adjustment in Europe: Survey evidence on nominal stickiness", *Labour Economics*, Vol. 19, Issue 5, October 2012, pp. 772-782.

[104] Babecký, J. et al., "Downward Nominal and Real Wage Rigidity: Survey Evidence from European Firms", *The Scandinavian Journal of Economics*, Vol. 112, Issue 4, December 2010, pp. 884-910.

[105] See Druant, M. et al., "How are firms' wages and prices linked: survey evidence in Europe", *Working Paper Series*, No 1084, ECB, August 2009.

[106] The low percentage of firms having reported nominal wage cuts in 2007 is not necessarily indicative of downward nominal wage rigidity but may simply reflect the absence of a shock large enough as a trigger. This is no longer the case as of 2009.

[107] The incidence of wage cuts in terms of affected workers is also very low. In the pre-crisis period (2002-07), on average, around only 0.2% of workers a year were affected by wage cuts. During the period 2008-09, in spite of the depth of the shock, the incidence of wage cuts increased only moderately, affecting 1.8% of workers. Finally, during the period 2010-13 the incidence of wage cuts was also minor, ranging from 0.4% to 0.8% of workers per year.

followed by 37% in Cyprus and 25% in Croatia. At the other extreme, less than 2% of firms cut wages in Belgium, France, Italy, Luxembourg, Hungary and the Netherlands. During the period 2008-09 Estonia was the exception, with 40% of firms (accounting for 30% of employees) implementing wage cuts. All this seems to indicate that firms cut nominal wages only in the case of severe economic difficulties. In fact, an important factor determining the propensity to cut wages, which can, in part, explain the heterogeneity observed across countries, is the nature and intensity of the shocks that the firm faced. A first look at the data shows that about 8% of the firms that suffered a decline in demand cut base wages (against 4% on average), and this increases to 12% among the firms that in addition faced credit constraints. The proportion is largest, at 18%, among those firms that experienced a strong shock in demand as well as credit constraints.

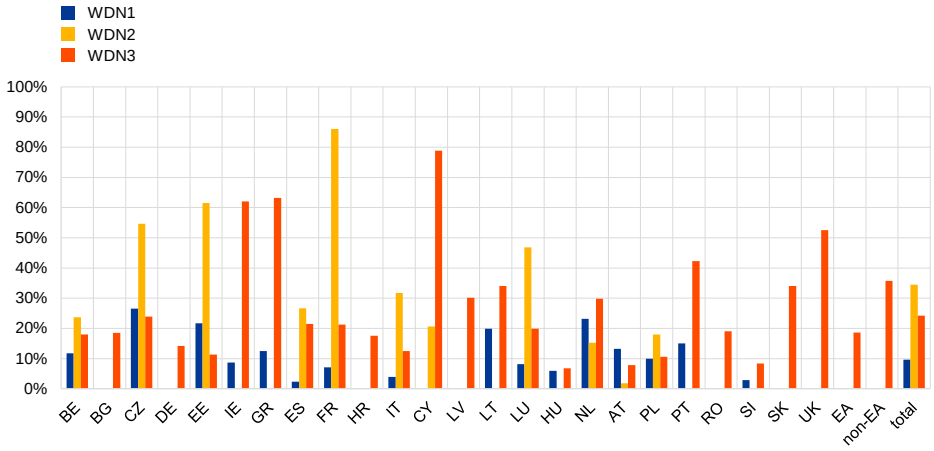
The percentage of firms that reported having frozen base wages increased dramatically at the beginning of the crisis and moderated somewhat during the period 2010-13. Of the firms sampled in the WDN1 survey, 9.6% reported that they had frozen base wages at least once during the period 2002-07. This percentage substantially increased to 34.5% of firms during the period 2008-09 in the countries covered by the WDN2 survey (with another 35% of firms indicating their intention to freeze wages in the future). In the WDN3 survey, 24% of the sampled firms reported that they had frozen base wages at least once over the period 2010-13 (see Chart 5).[108] This evidence on wage freezes, together with the low incidence of wage cuts, is indicative of the prevalence of DNWR. Overall, DNWR was still prevalent during the period 2010-13 in spite of the intensity and length of the crisis, but it seems that it reached its peak in the first years of the crisis (2008-09). There also appear to be substantial differences across countries in the incidence of wage freezes during the period 2010-13, with firms in Ireland, Greece and Cyprus having a greater propensity to freeze base wages in this period (see Chart 5). The heterogeneity in the incidence of wage freezes and wage cuts across sectors and firm size is not as pronounced as across countries. Construction was perhaps the sector with the lowest percentage of wage freezes, but it should be borne in mind that construction suffered huge employment cuts before that period. Preliminary research points not only to the nature and intensity of the shocks but also to institutional features and firm characteristics as factors behind the cross-country differences in DNWR.

[108] During the period 2010-13, 18% of the sampled firms in the countries covered by the WDN1survey froze base wages at least once.

Chart 5

Percentage of firms having frozen wages

(percentage of firms; employment-weighted values)



Source: ECB calculations on the basis of the WDN1 (2002-07), WDN2 (2008-09) and WDN3 (2010-13) surveys.
Notes: Firms with fewer than five employees are excluded from the calculations. Figures are weighted to reflect overall employment and rescaled to exclude non-response. Totals are calculated across countries that have weights. WDN1, WDN2 and WDN3 values refer to freezes applied at least once over the periods 2002-07, 2008-09 and 2010-13 respectively.

In the current period of recovery DNWR continues to be a key concern, as it may dampen wage increases. In the presence of DNWR, firms are also likely to moderate wage increases; in a period of low inflation such as the current one, this may trigger second-round effects, further dampening wage inflation. Elsby, and Stüber and Beissinger, among others, argue that, even if increasing nominal wages raises workers' effort and productivity, a wage cut of the same amount will reduce effort and productivity by a larger amount, such that reversing wage increases will incur an extra cost in terms of productivity.[109] As a consequence, forward-looking firms will moderate wage increases in the presence of DNWR.[110]

4.3 Other channels to lower firms' wage bill: bonuses and benefits

The relevance of DNWR depends on whether firms have other margins besides base wages to adjust labour costs. In fact, downward rigidity in base wages can be (partially) circumvented by including "flexible wage components" in the total wage bill. Bonuses and benefits are the main examples of these components. While companies avoid reductions in base wages for various reasons, reductions in

[109] See Elsby, M., "Evaluating the economic significance of downward nominal wage rigidity", *Journal of Monetary Economics*, Vol. 56, Issue 2, March 2009, pp. 154-169, and Stuber, H. and Beissinger, T., "Does downward nominal wage rigidity dampen wage increases?", *European Economic Review*, Vol. 56, Issue 4, May 2012, pp. 870-887.

[110] In fact, the two main reasons identified in the literature for firms' reluctance to cut nominal wages are (i) the belief that nominal wage reductions can damage worker morale and effort, and (ii) the possibility that the most productive workers would leave as a consequence. See Bewley, T., *Why Wages Don't Fall During a Recession*, Harvard University Press, 1999, and Babecký, J. et al., "Downward Nominal and Real Wage Rigidity: Survey Evidence from European Firms", *The Scandinavian Journal of Economics*, Vol. 112, Issue 4, December 2010, pp. 884-910.

bonuses are considered more acceptable.[111] The WDN1 survey opened up the possibility of studying the role of several flexible wage components.[112] The WDN3 survey focuses on the use of bonuses and benefits.

Table 2

Bonuses: an overview across countries in 2013

Country	Firms paying bonuses (%)	Bonuses as a percentage of total pay, unconditional (%)	Bonuses as a percentage of total pay, conditional (%)
Belgium	61.1	3.2	5.3
Bulgaria	55.8	5.2	9.4
Czech Republic	84.1	10.1	12.0
Germany	72.9	5.2	7.2
Estonia	79.6	12.9	16.3
Ireland	41.6	3.5	8.5
Greece	59.6	4.9	8.2
Spain	56.3	4.5	7.9
France	79.2	5.6	7.1
Croatia	54.8	4.5	8.1
Italy	77.4	5.6	7.3
Cyprus	54.2	4.2	7.7
Latvia	73.0	9.1	12.4
Lithuania	83.2	13.1	15.7
Luxembourg	51.3	4.0	7.7
Hungary	69.2	9.2	13.4
Malta	61.7	3.5	5.7
Netherlands	58.2	4.1	7.0
Austria	79.4	5.0	6.3
Poland	86.6	13.1	15.1
Portugal	99.0	24.9	25.1
Romania	59.4	5.8	9.8
Slovenia	85.3	10.4	12.2
Slovakia	93.2	15.1	16.2
United Kingdom	75.3	7.7	10.2
Euro area	73.5	6.2	8.4
Non euro area	75.9	8.8	11.6
Total	74.3	7.0	9.4
Total (WDN1 countries)	75.5	7.4	9.9

Source: ECB calculations on the basis of the WDN3 survey.
Notes: Firms with fewer than five employees are excluded from the calculations. Figures are weighted to reflect overall employment and rescaled to exclude non-response. WDN3 figures for Ireland are unweighted. Totals are calculated across countries that have weights. The unconditional percentage of bonuses in total pay is calculated across all firms (including those not paying bonuses). The conditional percentage of bonuses in total pay is calculated only across companies that pay bonuses.

111 Whether payments of bonuses can also be used to counteract the lower frequency of wage adjustment (or staggering in wage setting) depends on their frequency.

112 The WDN1 survey provides information, for 13 EU countries, on the use of the following channels to adjust the wage bill: bonuses and benefits, slow promotions, early retirement, changes in shift assignments or shift premia, and cheaper new hires. See Babecký, J.et al., "How do European firms adjust their labour costs when nominal wages are rigid?", *Labour Economics*, Vol. 19, Issue 5, October 2012, pp. 792-801.

Bonuses and benefits payments have declined considerably in comparison with the pre-crisis period. The average share of bonuses in the total wage bill of the firms sampled in 2007 was 11%, falling to 7.4% in 2013 for the subset of countries that participated in the WDN1 survey.[113] For the 25 countries participating in the WDN3 survey, the average was 7%. A smaller fraction of bonuses and benefits in the total wage bill may reflect slower economic growth in 2013 relative to the pre-crisis period (2002-07), but it is also suggestive of the increased role of bonuses in firms' labour cost flexibility.

Firms facing DNWR are more likely to use bonuses and benefits to reduce labour costs. The WDN3 survey asked firms whether they used bonuses and benefits as an adjustment mechanism to reduce labour costs during the period 2010-13. Regression analysis using WDN3 survey data shows that firms that are subject to nominal wage rigidities are more likely to cut bonuses in order to adjust labour costs. This finding confirms some degree of substitutability between wage flexibility and the flexibility of bonuses during the period 2010-13. Similar substitutability was also found for the period 2002-07 with data from the WDN1 survey.

Results indicate that bonuses and benefits played a role as shock absorbers during the period 2010-13. Demand and credit shocks are both associated with an increased use of flexible wage components as a means of adjusting costs. Moreover, regression analysis supports the view that the use of bonuses and benefits is not influenced by unionisation; cutting bonuses is thus likely to be a strategy developed outside formal collective bargaining.

Box 2

Sectoral wage Phillips curves and the capacity of WDN3 survey micro data to inform on their slope

This box aims to explain differences in the slope of the wage Phillips curve at the country and sector levels, resulting from structural characteristics of labour markets. Data on the performance of the euro area labour markets at the country and sector levels were combined with information from the WDN3 survey to explain one aspect of wage rigidity: the responsiveness of wage growth to economic slack. Country and sector-specific wage Phillips curves were estimated, focusing on the slope coefficient of the Phillips curve, which captures the responsiveness of wage growth to economic slack. The slope of the Phillips curve reflects how sticky wages are[114], which in turn depends on a variety of factors widely studied in the literature. WDN3 survey data were used to account for those factors and to examine their capacity to explain the estimated responsiveness of wage growth to economic slack.

The country and sector-level approach offers valuable insight into the underlying structure of the euro area economy. Every sector can be described in terms of a specific degree of economic slack and different labour market characteristics (e.g. composition of workers or labour market institutions) that affect wage growth. Such heterogeneity has been particularly notable since

[113] See Table 2. Conditional on firms paying bonuses, the figures were 16% in 2007 and 10% in 2013.

[114] The stickier the wages, the smaller the slope coefficient and the flatter the Phillips curve.

the crisis, as not all sectors were affected in the same way.[115] The heterogeneity could be captured by estimating the Phillips curve with sectoral rather than aggregate data and combining it with the information on firm and labour market characteristics from the WDN3 survey. It was then possible to assess how different characteristics of the labour markets across countries and sectors affected the responsiveness of wage growth to economic slack.

The wage Phillips curve specification linked wage growth to a sectoral measure of economic slack[116], sectoral productivity growth and country-level inflation expectations. The Phillips curve regressions were run for five sectors in each of the euro area countries (93 regressions in total). These sectors followed the same categorisation used in the WDN3 survey: (i) manufacturing, (ii) electricity, gas and water, (iii) construction, (iv) business services and trade[117], and (v) financial intermediation.

The majority of the slope coefficient estimates from the country and sector-level wage Phillips curve regressions had the expected positive sign. For the second part of the analysis using WDN3 survey data, however, staff only used slope coefficients from the Phillips curves where all estimated coefficients of the explanatory variables had signs in line with economic theory.[118]

Several factors are described in the literature as having an impact on wage stickiness, which in turn affects the slope of the wage Phillips curve.[119] These factors include a firm's size[120], the proportion of highly skilled and white-collar employees in the firm[121], the percentage of the firm's costs attributable to labour[122], the presence of alternative means of cost adjustment (bonuses, etc.)[123], the degree of indexation and frequency of wage adjustment[124], and the use of wage cuts and freezes[125]. All these factors could be proxied using answers from the WDN3 survey. The estimated slope coefficients were regressed on the WDN3 survey variables using a cross-sectional regression.

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115 See "Euro area labour markets and the crisis", *Occasional Paper Series*, No 138, ECB, October 2012, and "Comparisons and contrasts of the impact of the crisis on euro area labour markets", *Occasional Paper Series*, No 159, ECB, February 2015.

116 The sectoral value-added growth gap, calculated as the growth rate of value added relative to its long-term moving average, is used as a measure of sectoral slack.

117 In the original WDN3 dataset, "business services" and "trade" are two separate sectors. Here, they are combined for consistency with the sectoral data available for the wage Phillips curve estimation.

118 A similar approach (using only "models with "correct" parameter signs") was used by the Deutsche Bundesbank in the article entitled "The Phillips curve as an instrument for analysing prices and forecasting inflation in Germany", *Monthly Report*, 2016, April, pp. 31-45.

119 For a related analysis on how institutional rigidities – such as labour and product market institutions and regulations – may reduce the responsiveness of euro area wages to unemployment, see Box 4 in the article entitled "Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU" in this issue of the Economic Bulletin.

120 See Du Caju, P. et al., "Understanding sectoral differences in downward real wage rigidity: workforce composition, institutions, technology and competition", *Working Paper Series*, No 1006, ECB, February 2009, and Druant, M. et al., "Firms' price and wage adjustment in Europe: Survey evidence on nominal stickiness", *Labour Economics*, Vol. 19, Issue 5, October 2012, pp. 772-782.

121 See Messina, J. et al., "The incidence of nominal and real wage rigidity: an individual-based sectoral approach", *Working Paper Series*, No 1213, ECB, June 2010, and Druant, M. et al., ibid.

122 See Druant, M. et al., ibid.

123 See Messina, J. et al., ibid., and Druant, M. et al., ibid.

124 See the article entitled "The Phillips curve relationship in the euro area", *Monthly Bulletin*, ECB, July 2014.

125 See Babecký, J. et al., "Downward Nominal and Real Wage Rigidity: Survey Evidence from European Firms", *The Scandinavian Journal of Economics*, Vol. 112, Issue 4, December 2010, pp. 884-910, and Du Caju, P. et al., ibid.

Table

Regression results: factors affecting the responsiveness of wage growth to economic slack

	Responsiveness of wage growth to economic slack
Size	0.2413*
Highly skilled	-0.0174**
White-collar	-0.0042
Labour-to-total cost ratio	0.0229
Bonuses-to-total wage bill ratio	0.0022
Indexation of base wages to inflation	-0.7006*
Frequency of base wage changes	0.0854
Use of wage freezes	-0.0032
Use of wage cuts	0.0083**
Constant	1.7386
R2	60.6

Source: WDN3 survey data.
Note: * p-value <0.05, ** p-value <0.1.

The firm size, the proportion of highly skilled employees and the proportion of employees affected by wage cuts all had a significant influence on the responsiveness of wage growth to economic slack and had signs in line with economic theory (see Table). In particular, wage flexibility (and therefore the slope of the Phillips curve) was negatively related to the proportion of highly skilled employees owing to the high costs associated with their recruitment and training. This tends to limit wage cuts for such workers and thus decreases wage flexibility. There are several reasons why wages tend to be more flexible in large firms: (i) they are more likely to sign firm-level collective pay agreements that are usually regarded as more flexible than agreements signed outside the firm; (ii) they have more complex compensation structures; (iii) they often offer extra wage components that contribute to wage flexibility; and (iv) they tend to have more dispersed wages. The reluctance of firms to cut wages is typically used to define downward nominal wage rigidity. In this sense, a higher proportion of employees actually affected by wage cuts points to lower wage rigidity.

The effect of indexing base wages to inflation was difficult to interpret in the present case because the WDN3 survey did not specify whether wages were indexed to past inflation (in line with the common understanding of indexation) or to future inflation expectations. Nevertheless, the negative sign of the coefficient on indexation could suggest that indexation, when operative, dominates wage setting irrespective of economic developments.

While the coefficient estimates of the proportions of white-collar employees and employees affected by wage freezes, and of the share of bonuses in the firm's total wage bill, had signs that are in line with economic theory and the literature, they were insignificant. It is therefore difficult to draw any conclusions about their impact on the slope of the Phillips curve. However, their insignificance could be a reflection of the limited sample size, which was dictated by data availability, and the fact that, while the wage Phillips curve was estimated over the period 1997-2014, the cross-sectional regression could only be based on data from the WDN3 survey (i.e. the period 2010-13). This may explain, for example, the insignificance of the proportion of employees affected by wage freezes; the latter increased substantially during the crisis, but the Phillips curve estimated over the longer period may not have fully captured this change.

Overall, the analysis in this box shows that the WDN3 survey data on firm and labour market characteristics can explain some of the variation in the responsiveness of wage growth to economic slack across sectors and countries. Despite the limitations related to data availability and the construction of the sample, the analysis provides valuable information on which firm and labour market characteristics seem to matter for the responsiveness of wages to labour market conditions. These findings contribute to ECB staff's understanding of wage growth dynamics at the aggregate level, which is particularly important in the current period of muted wage growth.

5 Conclusions

Understanding wage rigidities is crucial for conducting monetary policy effectively and for designing appropriate policies that facilitate macroeconomic adjustments. Drawing on evidence from the WDN3 survey, a firm-level survey recently conducted in 25 EU countries, this article contributes to a better understanding of wage rigidities in the European Union after the Great Recession, namely during the period 2010-13. A number of tentative conclusions can be drawn from this evidence.

First, EU firms most typically adjust wages once a year. Around 49% of firms in the 25 EU countries sampled report that, during the period 2010-13, they changed their employees' base wages once a year, while 40% changed them less frequently than once a year.

Second, the frequency of wage changes in EU countries was lower during the period 2010-13 than during the pre-crisis period (2002-07). This seems to be at least partially attributable to the resistance of firms to lower base wages, i.e. to the prevalence of DNWR.

Third, DNWR was indeed prevalent during the period 2010-13, in spite of the length and intensity of the crisis, although to a lesser extent than during the period 2008-09. Nominal base wage cuts are extremely rare among European firms, and this was the case even during the crisis. Meanwhile, the percentage of firms that reported having frozen base wages increased dramatically with the crisis, reaching its peak during the period 2008-09, before declining over the period 2010-13.

Fourth, the WDN3 survey evidence confirms some degree of substitutability between wage flexibility and the flexibility of bonuses during the period 2010-13. Firms facing DNWR are more likely to use bonuses and benefits to reduce labour costs; this may help to circumvent the DNWR constraint. Results also point to a (probably moderate) role of bonuses and benefits as shock absorbers during the period 2010-13.

Last, a substantial percentage of firms in the countries where labour market reforms have been implemented (mostly in the "stressed" countries, where the crisis was most profound) found it easier to adjust both employment and wages in 2013 than in 2010.

Further analysis to gain a fuller understanding of these wage rigidities and their consequences is ongoing. The WDN's main research objectives also include understanding employment and price adjustment and, more generally, how firms have adjusted to the various shocks and labour market reforms that took place during the period 2010-13.

Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU

Sound institutions and economic structures are essential for the resilience and the long-term prosperity of the euro area. However, there remains a significant gap in terms of the quality of national institutions and the efficiency of economic structures between most euro area countries and the best performing members of the Organisation for Economic Co-operation and Development (OECD). After having increased in the period 2011-13, the momentum of structural reforms has weakened in recent years in euro area countries, despite the fact that significant reform effort is still needed to strengthen resilience and ensure long-term growth. This article recalls the main benefits of sound institutions for Economic and Monetary Union (EMU), provides evidence for gaps between euro area countries and best performers in terms of institutional quality and labour and product market functioning, and considers the national versus the common perspective in shaping a stronger and more resilient euro area. It shows that in terms of quality of institutions as well as for labour and product market functioning euro area counties are still distant from international best-performers. The article reports evidence that reducing the gap to the frontier would increase productivity and long-term growth as well as ensure more resilience to adverse shocks. The latter would be important not only for the countries themselves, but also for improving the smooth functioning of EMU. It is therefore of utmost importance that decisive institutional and structural reforms are carried out to foster employment and investment growth, and increase potential output in all euro area countries.

1 Introduction

This article reviews the role of institutional and structural factors in the economic resilience and long-term growth prospects of the euro area countries. It builds on two previous Economic Bulletin articles, which dealt with the importance of structural reforms in the euro area and the need to foster real convergence.[126] They showed the effects of structural reforms on key macroeconomic variables as well as how weak institutions and structural rigidities constrained real convergence among EU countries. They also suggested how further structural reforms could be a powerful tool to restore growth and competitiveness in the euro area. This article complements the previous analysis by revisiting the

[126] "Progress with structural reforms across the euro area and their possible impacts", *Economic Bulletin*, Issue 2, ECB, 2015, and "Real convergence in the euro area: evidence, theory and policy implications", *Economic Bulletin*, Issue 5, ECB, 2015.

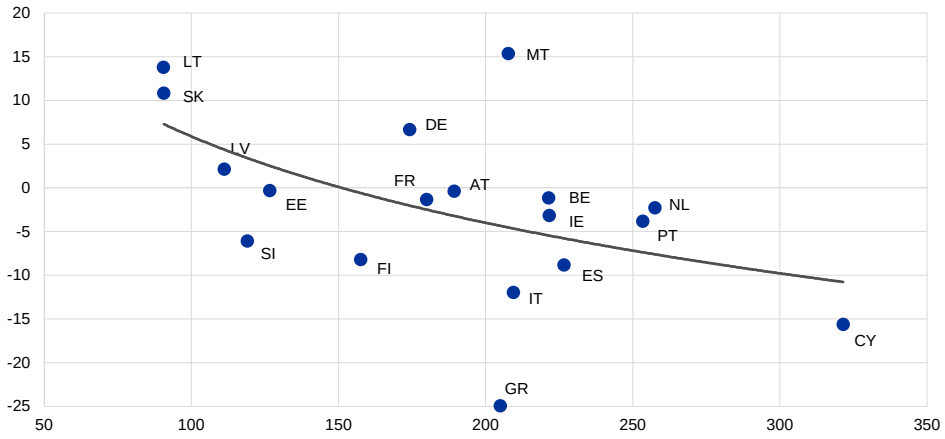
importance of sound institutions, particularly as regards two key pressing issues: how to increase resilience and how to boost productivity and potential growth across the euro area countries.

Resilience is hampered by rigid economic structures and high levels of debt. In the event of structural changes or an abrupt adverse shock, rigid economic structures hinder a timely reorientation of resources, i.e. capital and labour, towards other sectors. High public debt makes it more difficult to pursue counter-cyclical fiscal policies,[127] while high private debt thwarts the ability of households and firms to take smooth consumption and investment decisions. Similarly, and relatedly, high net external indebtedness makes countries vulnerable to a sudden withdrawal of foreign investors' funds. Chart 1 shows that the high debt problem is relatively widespread across the euro area countries and has been generally associated with poor economic growth since the beginning of the financial and economic crisis.

Chart 1

Private and public debt (2007) and output growth per capita (2007-15)

(x-axis: public and private debt as a percentage of GDP (2007); y-axis: change in GDP per capita since the peak)



Sources: ECB calculations based on Eurostat data for private and public debt and IMF estimates for potential output growth.
Note: 2007 represents the cyclical peak for the euro area as a whole.

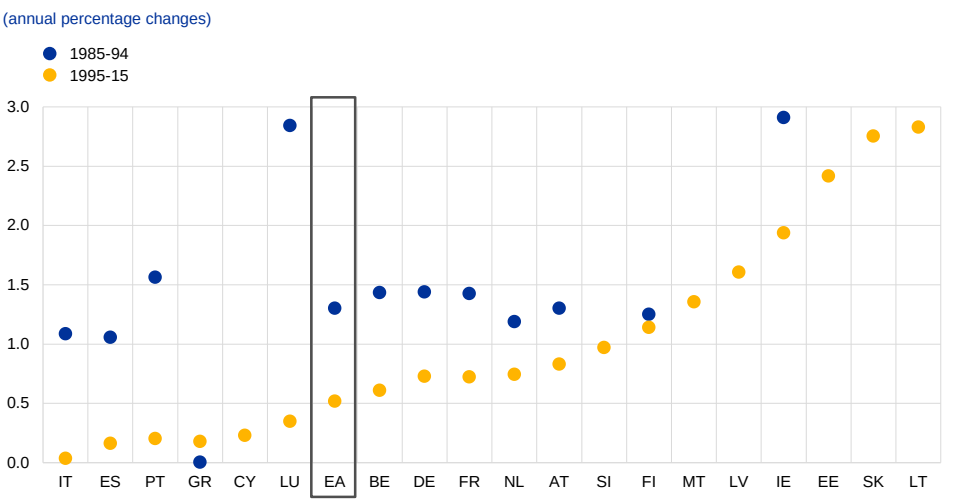
Low productivity growth, partly as a result of many structural and institutional obstacles, is a long-standing issue in the euro area. Chart 2 shows that for two-thirds of the euro area countries total factor productivity (TFP) growth has averaged at below 1% over the past 20 years. At the same time the United States has seen rates of slightly above 1%. This picture is worrying, as TFP is a key determinant of GDP growth and, in turn, GDP growth is necessary to boost employment and help reduce high levels of private and public indebtedness.

Against this background, the article examines how sound institutions and economic structures can address insufficient resilience and weak productivity, particularly in a monetary union. This is done in three steps.

[127] For a discussion of this, see the article entitled "Government debt reduction strategies in the euro area", *Economic Bulletin*, Issue 3, ECB, 2016.

Chart 2

Average total factor productivity growth in 1985-95 and 1995-2015



Source: Unweighted average of ECB, European Commission and IMF estimates.
Notes: For the period 1985-95 estimates are not available for some countries. EA stands for euro area.

Section 2 examines euro area countries' performance based on a selection of institutional and structural indicators. It shows that on the main economic structures (i.e. labour and product markets), as well as on a set of principal institutions, euro area countries remain far from the OECD frontier of best practices.

Section 3 reviews the empirical evidence for the benefits of sound institutions and structures with a particular focus on the euro area countries. It shows how sound labour and product market regulations as well as good governance institutions increase resilience and are a key source for long-term growth. This section shows that despite the significant benefits to be gained from institutional and structural reforms and the still large distance from best practices, the pace of reforms across the euro area has, after picking up early in the crisis, been slow, especially in countries under an economic adjustment programme.

Section 4 shows how moving towards sound economic structures and institutions is important for ensuring the smooth functioning of EMU as a whole. There is ample evidence and consensus on the importance of adaptable product, labour and capital markets for the smooth functioning of EMU, in the context of a single monetary policy. Against the background of slow implementation of reforms, this section reviews the current EU governance framework and draws some lessons for the future.

2 Institutions and economic structures in the euro area

International institutions such as the International Monetary Fund (IMF), the OECD, the European Commission and the ECB repeatedly call for ambitious

structural reforms.[128] This is because such reforms can i) promote a better use of an economy's resources by reducing barriers to the swift movement of capital and labour across firms, leading to a better use of labour and thus higher employment rates, ii) eliminate barriers to entry for new firms and iii) more generally ensure a level playing field across all economic actors.

Structural reforms are typically associated with regulatory policies aimed at strengthening market-based incentives in domestic labour and product markets. The latter often includes the overall conditions for setting up and running businesses.

However, they also relate to the quality of basic economic institutions. Sound institutions, such as legal certainty, efficient public administration or the absence of corruption, provide the basis for all specific economic structures, such as labour and product markets, to work appropriately. Box 1 elaborates on the concepts of institutions and economic structures and lists possible policies which could impact their functioning.

Box 1

The concept of institutions and economic structures and how they impact the economy

Acemoglu et al.[129] **define institutions as the set of rules and policies able to deliver a level playing field for all economic actors** and ensure that sound economic incentives are in place for encouraging people to invest, innovate, save and solve problems of collective action, and for ensuring the efficient provision of public goods. One of the most prominent examples in this regard is the enforceability of property rights, which – if guaranteed – significantly influences the incentives to invest and innovate.

Building on institutions that fulfil the criteria described above, economic structures can be defined as the frameworks which set the incentives for all transactions among economic agents in an economy. In market economies, regulations try to prevent market failure and preserve social cohesion, and therefore play a significant role in determining economic structures, for example in labour or product markets. There are several cases in which regulations can be welfare-enhancing if used appropriately. If a market does not function well, such as in cases of natural monopoly in large network industries (e.g. energy), it might be beneficial to regulate the market. In general, however, too much regulation could create the wrong incentives for investors, firms and employees, so that labour or capital is not used where it is most useful from a welfare perspective. Such excessive regulation or protection could ultimately hinder productivity and employment growth as well as a swift response to adverse shocks.

Labour market regulations affect the rate of job creation and destruction, levels of unemployment, productivity, wages and profits and the degree of social protection. On the

[128] See, for example, *World Economic Outlook*, IMF, April 2016; *Economic Policy Reforms 2016: Going for Growth Interim Report*, OECD, 2016; European Commission 2016 European Semester package including country-specific recommendations; or introductory statements to the ECB press conference by the President of the ECB.

[129] As defined in Acemoglu, D. et al., "Institutions as the Fundamental Cause of Long-Run Growth", *NBER Working Paper*, No 10481, 2004.

one hand, job security arrangements, minimum wages and collective bargaining might need to be regulated to provide sufficient social protection for workers or to encourage productivity growth (through training and the development of firm-specific skills). On the other hand, excessive regulation impedes the timely adjustment of firms and employees to economic shocks by discouraging hiring and favours people currently in employment over the unemployed. The key issue for policymakers is to try to balance the need for a certain degree of regulation with the need to avoid excessive distortions. The main categories of labour market institution cover (i) the rules of the wage-setting process, (ii) labour (protection) legislation, (iii) activation policies, (iv) income replacement policies (v) labour taxation and (vi) education and vocational training policies.

Labour market structures affect the potential of an economy to grow and adapt in a timely manner to (abruptly) changing circumstances. Economic changes could happen gradually, such as structural change brought about by globalisation, or more abruptly in the event that adverse shocks hit the economy. In such cases, the price and quantity of labour need to be able to adjust. Moreover, the degree to which reallocation between sectors is possible can be very important. Against this background, labour market policies must provide sufficient flexibility in the wage-setting framework and prevent excessively strict labour protection legislation from creating a “lock-in” effect. At the same time, security must be ensured for workers in the event of temporary unemployment by granting sufficient unemployment benefits, and the reactivation of workers must be facilitated through targeted employment programmes.

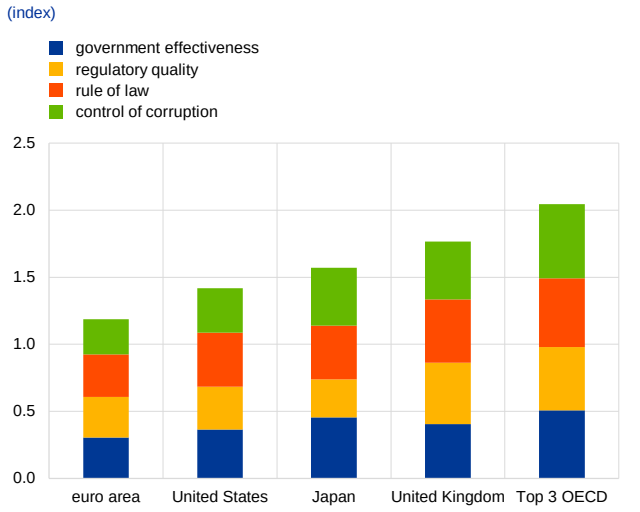
Excessive product market regulation is likely to have adverse effects on productivity and GDP growth. A high degree of competition among firms in goods and services markets ensures that prices do not become excessive in relation to the costs of production. Given that markets with higher competition tend to exhibit lower prices than markets with limited competition, consumers benefit from more competitive markets. This in turn reduces unjustified rents for producers and raises consumer welfare. Moreover, competition also tends to favour the variety of products, thereby giving consumers more choice. In addition, it seems that firms in markets with high barriers to entry tend to innovate less. This in turn impedes technological progress, productivity and thus job creation.

Product market structures affect the shock absorption capacity of economies. In order for the economy to weather shocks, it must be possible for prices to adjust quickly and for production factors to be reallocated between firms and sectors. The price adjustments are essential to ensure a pass-through of changes in labour costs to consumer prices. In the event of a decline in labour costs after a negative shock, the competitiveness of an economy can only improve if prices also adjust. Without swift price adjustment the cost of an adverse shock would otherwise fall on the real disposable income of households.

Various product market policies exist to facilitate competition. General policies relate, for example, to ensuring a strong and efficient regulation authority that can monitor the state of competition in all relevant markets. Moreover, policies can create favourable broader business conditions to facilitate the entry of new firms and alleviate the administrative burden of existing firms. Sector-specific policies include, for example, competition policies for network industries (e.g. energy, telecoms or transport), the retail sector and closed professions (e.g. notaries, pharmacies or lawyers).

Chart 3

Quality of institutions in the OECD in 2015



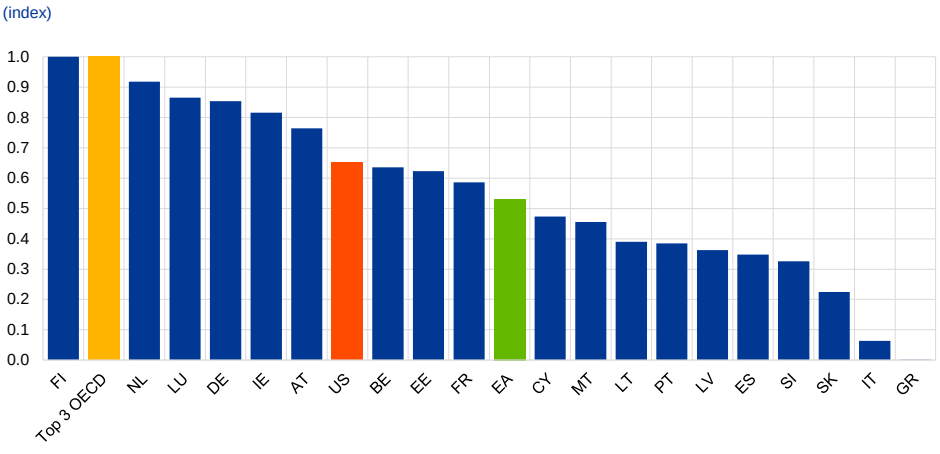
Sources: ECB calculations based on World Bank data.
Notes: "Top 3 OECD" comprises Finland, New Zealand and Switzerland. The higher the index number, the better the quality of institutions. Data for the euro area are an unweighted average of member countries.

Measuring the quality of institutions and economic structures is a challenging task. It is common practice to measure institutional quality, in particular, in terms of perceptions; this may not necessarily reflect the quality of the law but rather the actual workings of the economy. In this article we use as a proxy for institutional quality the four governance indicators computed by the World Bank: government effectiveness, regulatory quality, rule of law and control of corruption. The aggregate of these indicators has been referred to as the delivery quality of government services,[130] or simply as institutional delivery. Chart 3 shows these four indicators for the euro area countries, the United States, and the three best performers in the OECD. A higher index number indicates higher institutional standards. For all four indicators, the quality of institutions in the euro area is on average weaker than in its peer regions.

While almost all euro area countries have weaker institutions compared with the best performers in the OECD, there is significant heterogeneity among them. Chart 4 shows that the institutional quality indicator varies greatly across the euro area countries, with Finland at the frontier of institutional strength, some countries (e.g. the Netherlands and Luxembourg) very close to the OECD best performers, and some (e.g. Greece and Italy) close to the OECD worst performers.

Chart 4

Euro area countries' distance to the frontier in terms of quality of institutions (2015)



Sources: World Bank Worldwide Governance Indicators 2015 (WGI; government effectiveness, rule of law, regulatory quality, control of corruption) and ECB calculations.
Notes: Composite indicator covering the standardised indices above, averaged, and rescaled to rank between 0 and 1 (frontier). "Top 3 OECD" comprises Finland, New Zealand and Switzerland. EA stands for euro area.

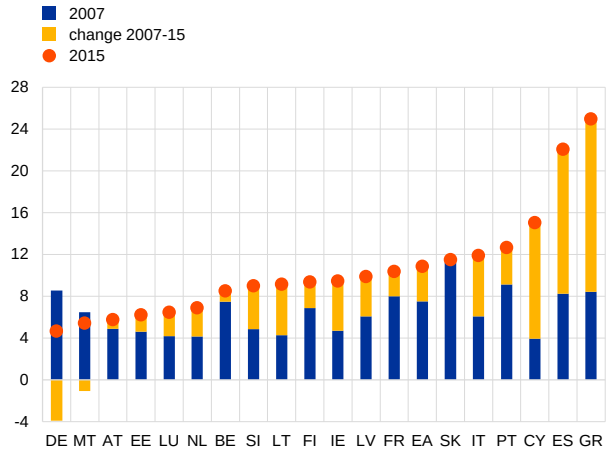
130 Helliwell, J.F. et al., "Good Governance and National Well-being: What are the Linkages?", *OECD Working Papers on Public Governance*, No 25, 2014.

Measuring labour market efficiency requires looking at a broad spectrum of regulations. This is because the suitability of specific regulations (e.g. employment protection) can only be assessed in a wider context (e.g. the level of social protection). For this reason, a wide range of indicators should be used to assess the overall efficiency of the labour market. As stated in the Five Presidents' Report,[131] best practices for labour markets should combine elements of security and flexibility. This means flexible and reliable labour contracts that avoid a two tier labour market, comprehensive lifelong learning strategies, effective policies to help the unemployed re-enter the labour market, modern social security systems and enabling labour taxation. There was a rise in unemployment in euro area countries during the crisis and it still remains very high in some member states (see Chart 5). Reforms which enhance flexibility and security in a balanced manner increase labour market efficiency, thereby facilitating job creation and reducing the high rates of unemployment in the countries concerned.

Chart 5

Unemployment in euro area countries

(as a percentage of the labour force)



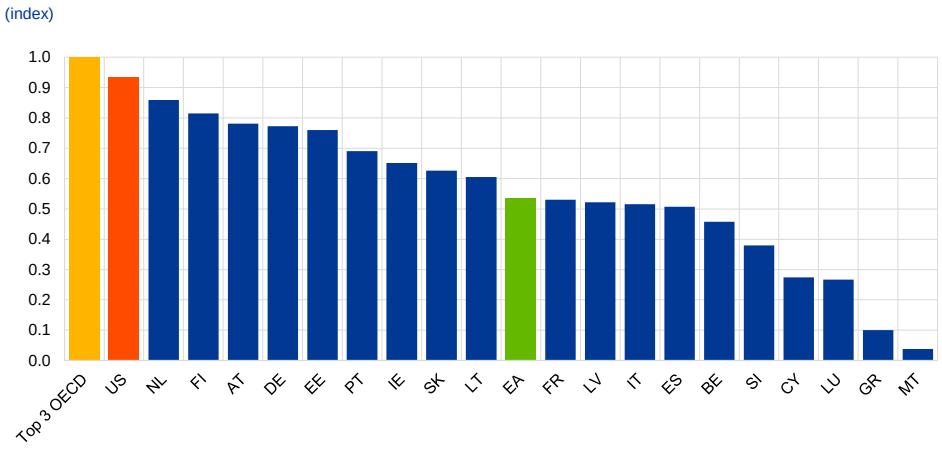
Source: Eurostat.

To measure product market regulations, it is necessary to look at the functioning of many sectors of the economy. The indicators consulted have de jure and de facto aspects. The OECD product market regulation (PMR) index focuses on the legislative aspects of the regulatory environment related to economy-wide regulation (e.g. state control) and industry-level regulation (e.g. barriers to trade in manufacturing). By contrast, the World Bank Doing Business indicator focuses mainly on the implementation aspects of the cost of doing business. Chart 6 shows the (standardised) aggregate of the two indicators. This aggregate indicator suggests that the euro area appears to have less well-functioning product markets than the top three OECD countries. On the basis of this indicator, all euro area countries, and in particular the countries with the greatest distance to the frontier, need to improve competition and overall conditions for doing business.

[131] Juncker, J.-C. et al., *Completing Europe's Economic and Monetary Union*, 22 June 2015.

Chart 6

Euro area countries' distance to the frontier in terms of product market efficiency (2015 or latest available data)

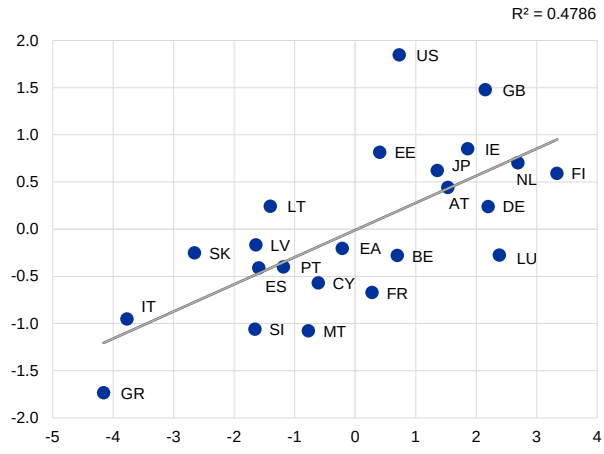


Sources: Latest OECD PMR, World Bank Doing Business indicator and ECB calculations.
Notes: Composite indicator covering the two standardised indices, averaged, and rescaled to rank between 0 and 1 (frontier). "Top 3 OECD" comprises New Zealand, the United Kingdom and Denmark.

Chart 7

Institutional quality and product and labour market efficiency (2015 or latest available data)

(x-axis: institutional quality (z-score); y-axis: product and labour market efficiency (z-score))



Sources: ECB calculations based on World Bank, OECD, Global Competitiveness Index, Heritage Foundation and Fraser Institute data.
Notes: Institutional quality is measured as an average of the six World Bank Worldwide Governance Indicators (voice and accountability, government effectiveness, rule of law, regulatory quality, control of corruption, and political stability and the absence of violence). Indicators reported in the form of z-scores.

There is a high correlation between the quality of institutions and well-functioning labour and product markets. Chart 7 shows that, on the basis of the indicators used for this analysis, countries with below average quality of institutions also tend to have below average quality of product and labour markets. This high correlation might, among other things, reflect the fact that, in the presence of sound institutions, societies and lawmakers are more likely to overcome vested interests and carry out reforms that benefit the majority of citizens.

All indicators aiming to assess the quality of institutions and economic structures face significant measurement issues. As noted in greater detail in Box 1, institutions and certain economic structures (such as those pertaining to labour and product markets) are multifaceted and often not easily or not at all quantifiable. Also, given that indicators are often based on perceptions, they might be affected by cyclical influences, e.g. in times of crisis perceptions of the functioning of certain institutions could be worse than in good times. Another issue relates to the arbitrariness of the scale used, in particular for de facto indicators. Moreover, the sample size and composition of the surveyed matter, as do their changes through time. Therefore, the conclusions drawn from the broad composite indicators chosen in Charts 4-6 regarding the institutional and regulatory quality of a particular country would need to be complemented with a more profound investigation of the actual functioning of the economy and its public sector.

3 Evidence for the impact of institutional and structural reforms for euro area countries

Building on the above indicators, this section looks into the empirical evidence linking both institutions and economic structures to resilience and long-term productivity growth.

3.1 Increasing economic resilience

Institutional and structural reforms are key for increasing economic resilience. Economic resilience has an ex ante and an ex post aspect. In general, ex ante resilience refers to the capacity to resist to shocks while ex post resilience refers to the capacity to moderate the costs of, and recover quickly after, an adverse shock. The two aspects are interconnected. How well economies deal with shocks depends on a range of factors, including the policy environment, the depth of economic and financial diversification and, in particular, the quality of institutions and economic structures.

The resilience of countries is usually tested empirically by first identifying the sources of shocks. Adverse shocks hitting economies can have a common origin or be idiosyncratic. In the case of a common origin (e.g. the bursting of the dot-com bubble or the financial crisis of 2007-08) economic resilience can be tested by comparing the reaction of different countries to the same shock. This comparison is usually done by assessing the impact of the shock on the economy (ex ante resilience) and by computing the recovery time (ex post resilience).

Starting with ex ante resilience, it has been shown that the depth of the recession or crisis following an adverse shock is related to the institutional setting of a country. Acemoglu et al.[132] find that countries with institutional problems suffer substantially more volatility as measured by the standard deviation of per capital output. Rodrik[133] comes to a similar conclusion, finding that the effect of external shocks on growth is larger the greater the latent social conflicts in an economy and the weaker its institutions of conflict management. High quality institutions and economic structures also tend to reduce the probability of crises, as Box 2 shows. Countries with the weakest institutions in the sample of OECD countries are significantly more prone to economic shocks than countries with well-functioning institutions and sound labour and product markets.

Many empirical studies have confirmed the importance of well-functioning product and labour markets for increasing economic resilience ex post, i.e. after a shock has occurred. Canavo et al.[134] uses the approach described above,

132 See footnote number 129.

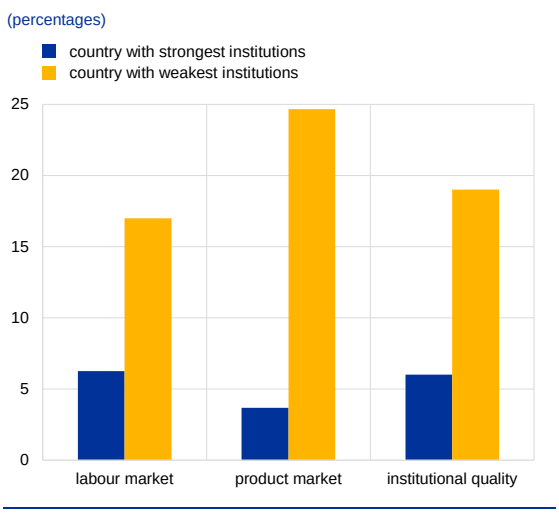
133 Rodrik, D., "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses", *Journal of Economic Growth*, Vol. 4, No 4, 1999, pp. 385-412.

134 Canavo et al., "Measuring the macroeconomic resilience of industrial sectors in the EU and assessing the role of product market regulations", *European Economy – Occasional Papers*, No 112, European Commission, July 2012.

identifying common shocks and testing their impact on countries with different economic structures. They look at sectoral data across European countries and find that a high level of product market regulation makes industries less resilient to adverse shocks. They show that the different capacity to absorb shocks within industrial sub-sectors seems to be explained to a large extent by how far product market reforms have advanced. Duval and Vogel[135] conduct a similar analysis, focusing, however, on the persistence of shocks in the output gap. Their simulations indicate that rigid labour and product markets lengthen the time it takes for output to return to potential following a shock and increase the cumulative output loss incurred over the period. Box 3 highlights an example of ex post resilience, giving evidence of unemployment decline episodes after the implementation of structural reforms.

Box 2
Higher quality institutions and economic structures reduce the probability of crisis

Chart
Probability of crisis events occurring, conditional on the quality of institutions



Source: ECB calculations.
Notes: The chart shows the result of a probit model where the probability of crisis is computed on the extremes of institutional variables, i.e. the lowest and the highest institutional value across countries, while control variables (total government expenditure and nominal short-term interest rates) are assumed to be average. For institutional quality, the average probability is obtained from WGI; for product market institutions, the average probability is obtained from Doing Business and GCI product market efficiency; and for labour market institutions, average probability is obtained from EPL, GCI and Heritage labour market flexibility. Data are based on the period 1990-2014 and are for a sample of OECD countries.

This box describes a simple exercise to test whether the probability of large falls in GDP is dependent on different institutional and structural settings. The exercise, the outcome of which is shown in the chart, first identifies a large fall in output. This is done by taking the distribution of annual GDP growth across all OECD countries from 1990 to 2014 and defining the tenth percentile of the distribution as a crisis event. This percentile has a median GDP growth rate of -4%. Second, a probit regression model is estimated, where the dependent variable is the probability of experiencing a GDP slump in the order of magnitude covered by the tenth percentile. On the right-hand side of the equation, institutional and structural variables as well as a set of control variables, such as government expenditure and short-term interest rates, are added. The results show that the probability of a severe reduction in GDP, i.e. a crisis event falling under the tenth percentile of the distribution, is significantly lower for a country with the strongest institutions and structural characteristics in the sample than for a country with the weakest institutions and characteristics. The message appears consistent across the three policy areas: labour market, product market and institutional quality. Improving on all these fronts is therefore very important to reduce the probability of being affected by a severe crisis. In particular, product market reforms, which also include overall conditions for setting up and

[135] Duval, R. and Vogel, L., "Economic resilience to shocks. The role of structural policies", *OECD Journal: Economic Studies*, Vol. 2008/1.

running businesses, seem to be particularly beneficial for increasing the adjustment capacity of a country.

Ex post resilience would be significantly improved if the competitiveness channel worked properly in the euro area. Prior to the financial crisis, several studies had shown how the working of the competitiveness channel had been slow in the euro area owing to structural rigidities.[136] In a recent study, Biroli et al.[137] confirm these results. Overall they find that excessive regulations in product and labour markets appear to make inflation differentials more persistent in the face of a common shock. This implies that in a monetary union, where the nominal exchange rate channel is no longer available as a mode of adjustment, the working of the competitiveness channel is impeded by highly regulated labour and product market structures, thereby preventing an automatic smoothing of shocks at the country level. Between 2011 and 2013 structural reforms undertaken in the countries most affected by the sovereign crisis are likely to have improved the functioning of the competitiveness channel.

High indebtedness constrains economic resilience both ex ante and ex post. High levels of debt can make the economy more vulnerable to shocks and intensify or prolong economic downturns. This is because they hinder the ability of households and firms to smooth consumption and investment spending decisions, and the ability of governments to cushion adverse shocks. High public debt generally implies high future tax rates, which will undermine investment. Negative feedback loops between high sovereign debt and a weak financial sector are still constraining investment decisions and economic growth. High private and public sector debt remains a major vulnerability in many euro area countries. Some empirical studies derive implicit thresholds for debt ratios and find that, once a certain level of debt has remained for a number of years, there is evidence that GDP growth remains subdued.[138]

There appears to be a robust empirical relationship between the debt dynamics of the private sector and the effectiveness of national insolvency frameworks. For example, recent analysis by staff of the European Commission found evidence that, in the presence of a high stock of private debt, the quality of insolvency frameworks is important for financial stability and for spurring entrepreneurship and thereby mitigating the impact of deleveraging on growth. In particular, it was found that a good insolvency framework is associated with speedier

136 For example *The EU Economy: 2006 Review: Adjustment Dynamics in the Euro Area: Experiences and Challenges*, European Commission, 2006.

137 Biroli et al., "Adjustment in the Euro Area and Regulation of Product and Labour Markets: An Empirical Assessment", *European Economy – Economic Papers*, No 428, European Commission, October 2010.

138 On the relationship between public debt and growth, see Checherita-Westphal, C. and Rother, P., "The impact of high government debt on economic growth and its channels: An empirical investigation for the euro area", *European Economic Review*, Vol. 56, No 7, October 2012, pp. 1392-1405. On the relationship between private debt and growth, see Cecchetti, S., Mohanty, M. and Zampolli, F., "The real effects of debt", *Working Papers*, No 352, Bank for International Settlements, September 2011.

adjustment of non-performing loan (NPL) ratios.[139] High NPL ratios tend to be associated with weaker insolvency frameworks. The quality of insolvency frameworks is important for speeding up the process of resolving bad debt, which in turn supports efficient investment and long-term growth.

Box 3

Episodes of unemployment decline in the euro area and the role of structural reforms

One of the largest costs inflicted by the financial and sovereign crisis has been the sharp rise in the unemployment rate in many euro area countries. This box aims to explain episodes of unemployment absorption, by focusing on the relative importance of the unemployment rate, GDP growth and labour and product market reforms. This is done using an event study approach. The unemployment absorption event is defined as an event that cumulatively fulfils the following conditions: (1) the unemployment rate declines by at least 3 percentage points in a three-year period; (2) the decline in the unemployment rate over a three-year period is at least 25% of the initial unemployment rate; and (3) after five years the unemployment rate remains below that at the beginning of the episode.[140] The data sample covers the euro area countries over the period 1995-2015. In total 12 episodes can be identified (see Table A).

Table A

Countries and years of strong and sustained unemployment absorption episodes

Germany	2005
Estonia	2003, 2010
Ireland	1995
Spain	1996
France	1998
Latvia	2002, 2010
Lithuania	2001, 2010
Slovakia	2004
Finland	1996

Source: ECB calculations based on Eurostat data.
Note: The year indicates the beginning of an episode of unemployment absorption. For instance, Germany started an episode of unemployment absorption in 2005 which, according to the definition applied, means that in the period 2005-08 the unemployment rate declined by at least 3 percentage points and by 25%, and that in 2010 the unemployment rate was below the level registered in 2005.

Table A shows that periods of significant unemployment reduction are not common but also not rare events. Macroeconomic developments play an important role in driving these episodes. The chart (first panel) shows that the unemployment rate increases before an episode of absorption and is substantially higher than the sample average. In addition, the unemployment peak is preceded by a sharp deceleration in the GDP growth rate (see chart, second panel). GDP growth picks up in the period before the episode starts, and the unemployment rate falls with a lag.

In addition to the role played by the economic cycle, the reform stance also seems to be very important. The reform stance is computed using the OECD's indicators of employment protection legislation (EPL) and of regulation in energy, transport and communications (ETCR)[141]. These series are a proxy for labour and product market reforms. The focus is on relatively large reforms, which are defined as reforms that exceed one standard deviation of the change in the indicator over all observations in each

139 Carpus Carcea, M. et al., "The Economic Impact of Rescue and Recovery Frameworks in the EU", *European Economy – Discussion Papers*, No 004, European Commission, September 2015.

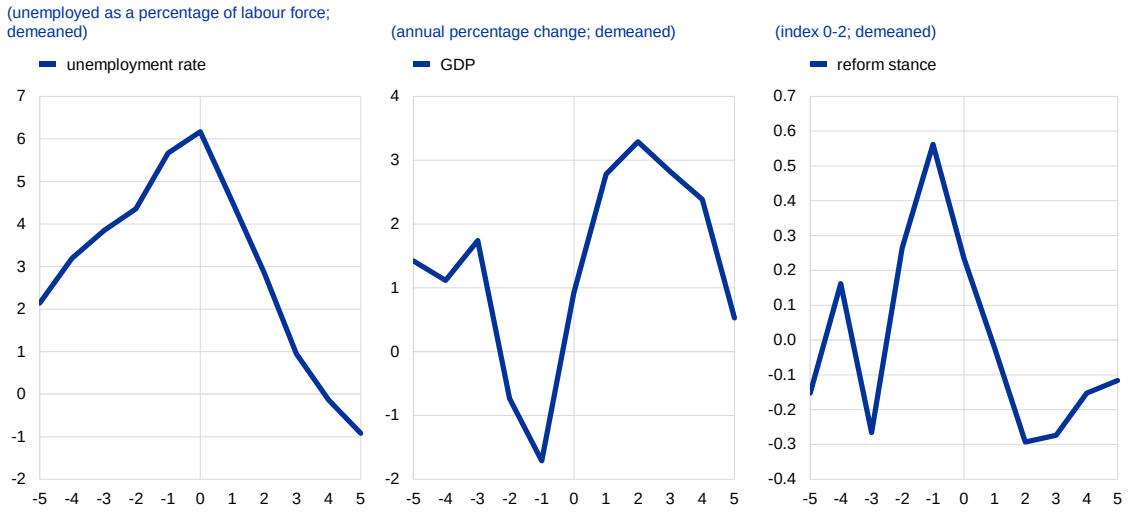
140 A related approach has been followed by Freund, C. and Rijkers, B., "Episodes of unemployment reduction in rich, middle-income and transition economies", *Journal of Comparative Economics*, Vol. 42, issue 4, December 2014, pp. 907-923.

141 The ETCR index is used, in view of its annual frequency, instead of the OECD's broader product market regulation (PMR) index, which is only available with a 5-year frequency.

series.[142] The sum of the episodes in the area of labour and product markets gives the reform stance, which equals 0 in the case of the absence of any reform according to the definition above, 1 in case of one reform episode and 2 in the case of simultaneous reform episodes in EPL and ETCR. The chart (third panel) shows that in the years before the unemployment absorption episode, countries tend to have implemented more reforms. The reform activity peaks one year before the episode starts and declines thereafter. Taken together, the three panels in the chart indicate that on average the willingness to introduce reforms is higher when GDP grows at slower pace and unemployment is high and increasing. In other words it rises during adverse economic conditions.

Chart

Evolution of key variables of unemployment absorption episodes



Notes: "0" marks the beginning of the unemployment absorption episode. Each variable is demeaned by the sample average of observations in each year (the unemployment rate is demeaned by the average unemployment rate in each year; the GDP growth is demeaned by the average GDP growth in each year; and reform stance is demeaned by the number of the selected reforms in each year).

Table B

Probability of an unemployment absorption episode (result from a linear probability model)

	(1)	(2)
Unemployment rate	0.0596***n	0.0533***
GDP growth	0.0274***	0.0432**
Reform stance (t-1)		0.0928*
Year dumies	yes	yes
Country dumies	yes	yes
No of observations	223	143
r-squared	0.427	0.539

Notes: Regression performed for the sample period 1995-2010 for countries with an unemployment rate above 5%. Robust standard errors are shown in parenthesis.

A linear probability model is used to cross-check the importance of the reform stance in predicting unemployment absorption episodes. In this model the dependent variable equals 1 where an unemployment absorption episode starts and 0 in the absence of unemployment absorption episode. The regression results show that higher unemployment rates and higher GDP growth rates have a positive impact on the probability of an unemployment absorption episode beginning. In addition, the results show that the reform stance, after controlling for the

[142] A similar approach is followed by Bouis, R. and Duval, R., "Raising Potential Growth After the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond", *OECD Economics Department Working Papers*, No 835, 2011.

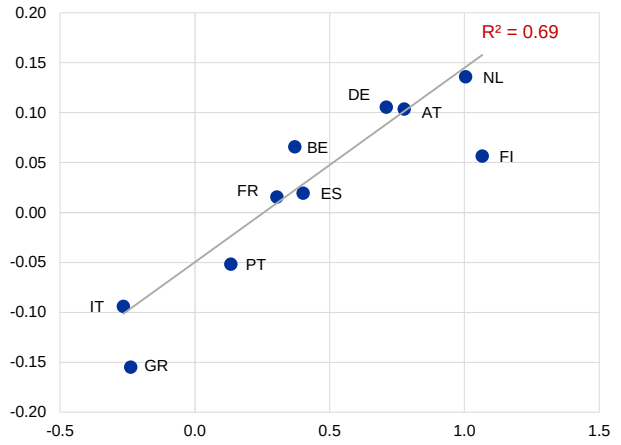
unemployment rate and the GDP growth rate, is also positively correlated with the start of an unemployment absorption episode. Table B suggests that a reform episode is associated with an increase of 9% in the probability of a successful unemployment absorption episode.

Overall, these results show that the implementation of significant reforms could contribute to ex post resilience by accelerating the reduction of unemployment.

3.2 Strengthening productivity and long-term growth

The importance of sound and efficient institutions for long-term growth has been established in a number of research contributions since the 1970s. In the early 1970s, the development of an efficient economic system and well-defined property rights had already been shown to be a key factor in allowing western economies to raise their wealth compared with the rest of the world.[143] Thirty years later, Acemoglu et al.[144] showed, by means of a number of historical episodes in developed and developing economies, how the existence (and enforceability) of property rights has determined individuals' incentives to invest in physical or human capital or adopt more efficient technologies.

Chart 8
Link between institutions and growth in Europe



Sources: Eurostat, World Bank and ECB calculations.
Notes: Institutional quality is measured as an average of the six World Bank Worldwide Governance Indicators (voice and accountability, government effectiveness, rule of law, regulatory quality, control of corruption, and political stability and absence of violence). In the y-axis expected growth is the outcome of a simple catching-up regression, where the average per capita GDP growth between 1999 and 2014 depends only on the level of GDP per capital in 1999 and a constant.

Empirical evidence for the importance of institutional quality in Europe is relatively limited. Chart 8 shows the correlation between the residual of a simple catching-up model and the quality of institutions in 1999, where the average per capita GDP growth between 1999 and 2014 depends only on the level of GDP per capita in 1999 and a constant. For the euro area countries a clear positive relationship emerges between institutional quality and the residual. Starting with the evidence shown in Chart 8, recent work (Masuch et al.[145]) provides some analysis in support of the view that the quality of institutions is an important determinant of long-term growth in European countries. The results seem particularly relevant for countries where institutional delivery is below the EU average and initial public debt is above a certain threshold. They are also consistent with the view that the quality of institutions may be more important for long-term growth in countries where the exchange rate tool is no longer available. A key channel through which higher quality

143 North, D. and Thomas, R., *The Rise of the Western World: A New Economic History*, Cambridge University Press, Cambridge, 1973.

144 See the reference in footnote 129.

145 Masuch et al. in, "Institutions and Growth in Europe", *CEPS Working Document*, No 421, 2016, find, among other things, that relatively weak institutions seem particularly detrimental to long-term growth in the presence of high public debt.

institutions affect growth is productivity growth. De Rosa et al.[146] find that for a panel including European countries corruption tends to reduce firm-level productivity growth.

Improving the functioning of product and labour markets also leads to higher economic growth in the long term. This has been shown in many empirical cross-country or country-specific studies. As regards product market regulation, there is considerable evidence that product market regulation raises barriers to entry for new firms, in turn contributing to higher prices and lower turnover, and is likely to slow the process of reallocation of resources.[147] Lower competition in one sector can also impact competition in other sectors in the value chain. Studies show that reducing regulation in sectors which provide input to the next level in the value chain could improve the access to key intermediate inputs and thereby increase competition at the next level.[148] Moreover, countries could expect significant productivity growth gains from structural reforms that would allow them to achieve the level of the best performers in labour and product markets. As regards labour market regulations, Bouis and Duval [149] and Bassanini et al.[150] find evidence that overly stringent EPL weakens productivity in sectors where labour turnover is generally relatively high. These findings are consistent with the view that strict EPL makes it more difficult for firms to respond quickly to changes in technology or product demand that require reallocation of staff or downsizing, thereby inducing them to use their resources less efficiently. Relatedly, Box 4 looks at labour market rigidities and how they affect wage responsiveness in euro area countries. It shows that better functioning labour market structures would affect wage responsiveness, in turn facilitating the adjustment process by allowing wages to react properly to developments in the level of unemployment. However, there are also some studies in which the impact of EPL on productivity is less clear. Koeniger[151] argues that the lack of clear impact could be driven by incumbent firms, which are pushed to innovate in order to avoid downsizing, whereas, on the other hand, higher EPL prevents the entry of new firms and therefore suppresses productivity. Stringent product market regulation can also have a negative impact of the allocation of labour, as it prevents the exit from the market or downsizing of less productive firms, thereby hampering allocative efficiency.

146 De Rosa, D., Gooroochurn, N. and Görg, H., "Corruption and Productivity: Firm-Level Evidence from the BEEPS Survey", *Policy Research Working Paper*, No 5348, World Bank, 2010.

147 See, for a literature overview, Schiantarelli, F., "Product Market Regulation and Macroeconomic Performance: A Review of Cross-Country Evidence", *Boston College Working Paper*, No 623, 2005.

148 Bourlès et al., "Do product market regulations in upstream sectors curb productivity growth? Panel data evidence for OECD countries", *The Review of Economics and Statistics*, Vol. 95, issue 5, December 2013, pp.1750-1768.

149 See the reference in footnote 142.

150 Bassanini, A. et al., Economic Growth: "The Role of Policies and Institutions: Panel Data. Evidence from OECD Countries", *OECD Economics Department Working Papers*, No 283, 2001.

151 Koeniger, W., "Dismissal costs and innovation", *Economics Letters*, Vol. 88, issue 1, July 2005, pp. 79-84.

Box 4

The impact of institutional rigidities on wage responsiveness in the euro area

This box looks at the relationship between institutional rigidities and wage responsiveness in various sectors and how this may affect the euro area's resilience and adjustment to shocks. It shows how institutional rigidities – such as labour and product market institutions and regulations –reduce the responsiveness of euro area wages to unemployment. Such institutional rigidities tend, therefore, to increase employment and output losses associated with downward asymmetric shocks, and impede adjustments which prevent excessive overheating of the economy during upward shocks. Reforms in product and labour markets can reduce wage rigidities, thereby enhancing the euro area's growth, resilience and adjustment to shocks.

Table

Institutional rigidities which weaken the responsiveness of euro area wages to unemployment

	EPL	ETCR	Union density
Manufacturing	**0.24**	**0.04**	**0.01**
Construction	**0.31**	0.03	0.00
Services*	**0.27**	0.01	0.00

Sources: Anderton et al. and ECB calculations.
Notes: Coefficients reported are the interaction terms between the unemployment rate and institutional rigidity indicators from separate wage Phillips curve regressions estimated on a sectoral level (nominal compensation per person hour). Coefficients are in bold if the significance is at least 10%. The positive sign of the interaction parameter implies a lower response of unemployment to wages – i.e., the Phillips curve becomes less steep – in the cases of: higher employment protection (OECD indicator measuring the strictness of regulation of individual and collective dismissals of employees on regular/indefinite contracts); stricter product market regulation (OECD indicator of regulation in energy, transport and communications); and higher union density (the ratio of wage and salary earners that are trade union members divided by the total number of wage and salary earners (OECD labour force statistics)).
* Coefficient refers to that obtained from a real wage Philips curve regression.

Evidence shows that wage rigidities appear to be present in key sectors of the euro area economy. Anderton et al.[152] obtain panel estimates of wage Phillips curves for four sectors of the euro area economy – manufacturing, market services, construction and the public sector – by pooling data across the individual euro area countries.[153] Interaction terms between institutional rigidity indicators and the unemployment rate are statistically significant and positively signed, indicating that the response of wages to unemployment is smaller – i.e. the Phillips curve is less steep – if labour and product markets are more regulated. The table shows that higher employment protection, stricter product market regulation and higher union density all seem to weaken the response of wages to unemployment in both upturns and downturns, especially in sectors such as manufacturing, thereby impeding the workings of the competitiveness channel.[154]

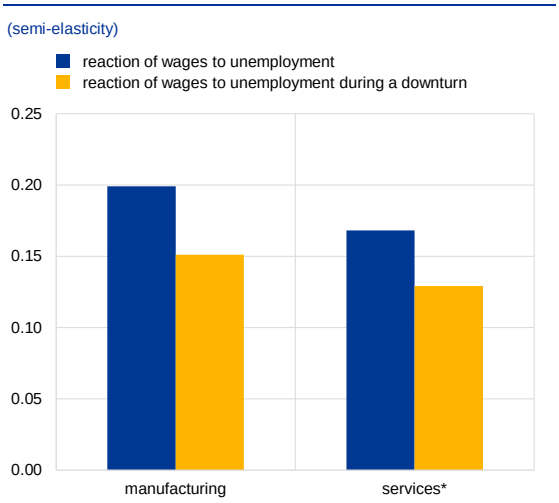
[152] Anderton, R., Hantzsche, A., Savsek, S. and Tóth M., "Sectoral Wage Rigidities and Labour and Product Market Institutions in the Euro Area", *CFCM Working Paper*, No 16/01, University of Nottingham, March 2016.

[153] Their findings are in line with standard Phillips curves, i.e. that wage growth rises with increases in productivity and inflation, and falls when unemployment rises.

[154] Furthermore, the estimated wage Phillips curves from Anderton et al. for manufacturing and services – sectors crucial for competitiveness adjustments – also show the slowest speed of adjustment when reacting to shocks.

Chart

Reaction of wages to unemployment in the manufacturing and services sectors



Source: Anderton et al. and ECB calculations.
Notes: The chart shows absolute values of coefficients from the regressions. It reports the percentage change in wages when unemployment changes by a percentage point, i.e. semi-elasticities. The downturn parameter indicates the extent to which the response of nominal wage growth to changes in unemployment is dampened during economic downturns (based on panel regressions pooling the data across euro area countries). All variables are statistically significant at the 10% level from separate regressions.* denotes the estimation of real wages.

In addition, the response of euro area wages to changes in unemployment seems to be even more limited during economic downturns, suggesting euro area wages are characterised by significant downward wage rigidities. The chart shows that the response of wages to unemployment is lower by about one-quarter during economic downturns, with downward wage rigidity particularly apparent in the manufacturing and service sectors, which further impedes competitiveness adjustments.[155] Downward wage rigidity seems to be confirmed by recent micro-level survey evidence[156] which seems to indicate that wage freezes are frequently a lower bound on wage flexibility due to institutional or negotiation-related difficulties in implementing wage cuts.[157]

Structural reforms are critical to increasing the reaction of wages to unemployment. Greater wage flexibility will deliver higher wage differentiation across different types of workers and sectors. This will allow wages to rise appropriately in growing sectors, which is necessary to help accelerate the reallocation process and ensure a more efficient match between labour supply and demand. Furthermore, eliminating rigidities in the economy will enable economic growth to pick up faster, promoting employment and dampening disinflationary pressures.

Combining and properly sequencing product and labour market reforms has also been shown to deliver larger gains than in the case of reforms implemented in isolation. Varga and in't Veld[158] compared structural indicators of labour and product markets and defined the gap for each indicator relative to the three best performers. Assuming that half of the gap vis-à-vis best performance is closed, the simulations show large potential gains in output and employment, raising EU GDP by 3% after five years and 6% after ten years. Cette et al. conduct an alternative analysis (Chart 9) supporting these findings. In their framework, the

155 For a more detailed explanation of how downward wage rigidity is derived, and further possible underlying reasons for such rigidities, see the box entitled "Downward wage rigidity and the role of structural reforms in the euro area", *Economic Bulletin*, Issue 8, ECB December 2015.

156 For more details see the article entitled "New evidence on wage adjustment in Europe during the period 2010-2013" in this issue of the Economic Bulletin.

157 Various papers find evidence that downward wage rigidity at the macro-level for euro area (or EU) countries is related to institutional rigidities such as, among other things, a high degree of employment protection or union coverage. See, for example: Anderton, R. and Bonthuis, B., "Downward Wage Rigidities in the Euro Area", *GEP Research Paper Series*, No 15/09, University of Nottingham, July 2015; Heinz, F. F. and Rusinova, D., "How flexible are real wages in EU countries? A panel investigation", *Working Paper Series*, No 1360, ECB, Frankfurt am Main, July 2011.

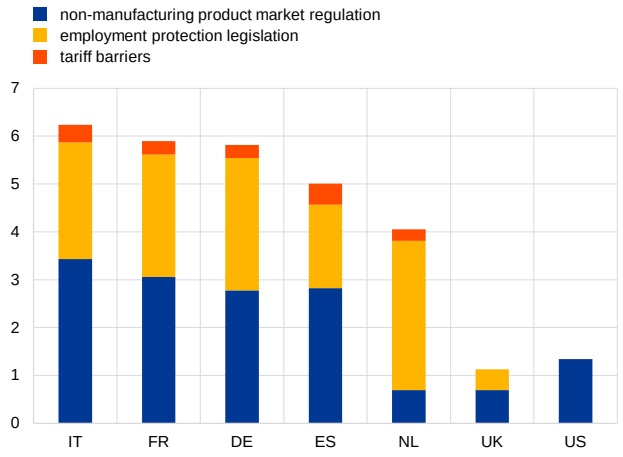
158 Varga, J. and in't Veld, J., "The potential growth impact of structural reforms in the EU: A benchmarking exercise", *European Economy – Economic Papers*, No 541, European Commission, 2014.

productivity impact of regulations is channelled via the effects on production, prices and wages. They simulate the impact on TFP of reforms towards the lightest regulations in product and labour markets. For the larger euro area countries, they show that all countries could achieve significantly higher productivity growth if they moved towards best practices.

Chart 9

Simulated long-term impact on TFP levels of the adoption of lightest regulation in labour and product markets in the largest euro area countries, the United Kingdom and United States

(percentages)



Source: Cette, G et al., Market Regulations, Prices, and Productivity, *American Economic Review*, Vol.106(5), 2016, pp.104-108.
Note: Simulation assumes that the "lightest practice" regulations observed as of 2013 could be immediately enforced in all industries. "Lightest practices", according to Cette et al., are the lowest levels of regulations in the 14 countries of their sample for the following three indicators: OECD indicators for non-manufacturing regulation, OECD harmonized tariffs indicator and OECD EPL indicator.

While the literature is unanimous on the positive long-term impact of reforms, the effect on economic growth in the short term is less clear. For example, the IMF[159] and Bouis et al.[160] find that while product market reforms can already deliver gains in the short term, the impact of some labour market reforms depends significantly on the prevailing economic conditions at the time of implementation. Reductions in labour tax wedges, for example, would have larger effects during periods of slack. By contrast, reforms to employment protection arrangements and unemployment benefit systems would exert positive effects in good times, but can have negative distributional consequences in the short to medium term in periods of slack. This calls for a proper sequencing of reforms. For example, reforms addressing key bottlenecks and inefficiencies in the regulatory environment, business conditions, public administration or the judicial system, and thereby incentivising market entry and business expansion, should help domestic demand and boost output even in the short term. While an appropriate sequencing of reforms can overcome potential short-term costs, a protracted postponing of necessary reforms can be welfare-decreasing in the long run and hinder the necessary adjustment capacity of countries.

3.3 Reform progress

Although there is a clear case for reforms given the prevailing gap in institutions and economic structures compared with the best performers, structural reform momentum has overall been relatively weak across the euro area countries in recent years. The financial crisis created additional reform momentum compared with pre-crisis years. However, the more far-reaching policy measures have generally been confined to the most vulnerable countries. In particular, countries under macroeconomic adjustment programmes have implemented significant reforms aimed at reducing rigidities in labour and product

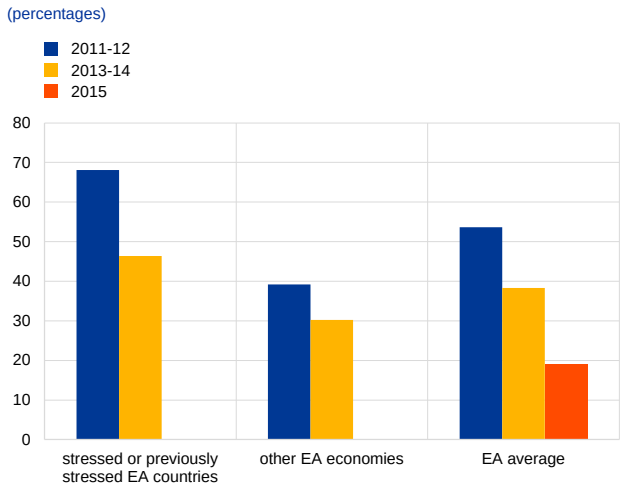
159 *World Economic Outlook: Too slow for too long*, IMF, April 2016.

160 Bouis, R. et al., "The Short-Term Effects of Structural Reforms: an Empirical Analysis", *OECD Economics Department Working Papers*, No 949, 2012.

markets. This is also mirrored in the track record of addressing the OECD's Going for Growth policy recommendations (Chart 10).[161] Despite the remarkable progress during crisis years, the OECD identified a significant slowdown of reform momentum in the more vulnerable euro area countries in more recent years, often associated with the end of an adjustment programme. The track record is also moderate as regards following the EU's country-specific recommendations (CSRs).[162]

Chart 10

Share of OECD Going for Growth recommendations implemented



Sources: OECD Going for Growth (2015, 2016).
Notes: The chart illustrates the pace of reform as captured by the OECD indicator of reform responsiveness. The data for 2015 refer to fully implemented measures and are not available for individual countries. The stressed and previously stressed countries are Ireland, Greece, Spain, Italy, Portugal and Slovenia. "Other EA economies" comprises the euro area economies not captured in the former group. Cyprus, Latvia, Lithuania and Malta are not captured in the OECD report.

The weak reform momentum is a cause for concern given the still large stock imbalances. High level of public and private debt and high unemployment rates are weighing on the ability of the economy to recover and call for renewed reform impetus. Despite some adjustment of imbalances in recent years, further structural reforms would increase resilience to any future adverse shock and increase the countries' capacity to grow.

More competitive and many larger euro area countries have shown little effort to improve economic structures and institutions. The track records for implementing both the OECD's Going for Growth recommendations and the CSRs indicate that major reforms have not taken place in recent years. While these countries are less prone to shocks, the lack of structural reforms reduces their economic growth, and to some extent also the economic growth of the euro area overall (see in more detail Section 4).

4 Facilitating a smooth functioning of EMU

In a monetary union, there are many channels through which national economic (and other) policies can affect other member countries as well as the union as a whole. Structural reforms in one member country can have a positive impact on the euro area as a whole, although the effect will probably be relatively small.[163] If necessary structural reforms are not made, however, this could undermine the smooth functioning of EMU, as it is likely to increase the vulnerabilities of the countries in question and thereby make the euro area as a whole more susceptible to adverse shocks.

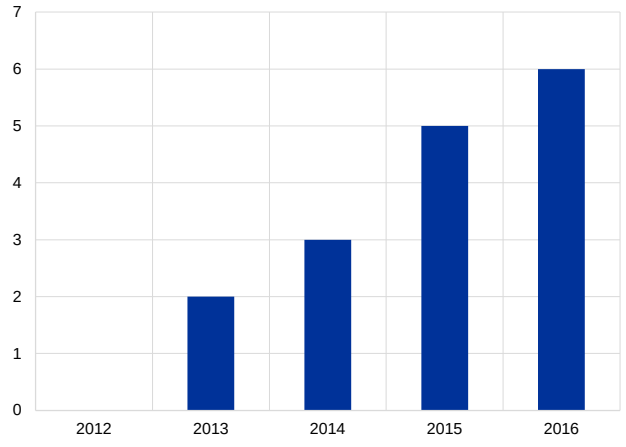
161 *Economic Policy Reforms 2016: Going for Growth Interim Report*, OECD, 2016.

162 See the box entitled "The 2016 macroeconomic imbalance procedure and the implementation of the 2015 country-specific recommendations", *Economic Bulletin*, Issue 2, ECB, March 2016.

163 See "Cross-border spillovers in euro area countries", *Quarterly report on the euro area*, Vol. 13, No 4, European Commission, 2014; Weyerstrass, K. et al., "Economic spillover and policy coordination in the Euro Area", *European Economy – Economics Papers*, No 246, European Commission, March 2006; Gomes, S. et al., "Structural reforms and macroeconomic performance in the euro area countries: a model-based assessment", *Working Paper Series*, No 1323, ECB, Frankfurt am Main, April 2011.

Chart 11

Number of countries with excessive imbalances under the macroeconomic imbalance procedure since 2012



Source: ECB computations
Note: The chart counts for each year the countries which the European Commission deemed to exhibit "excessive imbalances". Countries under an economic adjustment programme enter the MIP automatically after the end of their programme. In 2014 Ireland, in 2015 Portugal, and in 2016 Cyprus were added to the procedure.

The common EU economic governance framework is meant to ensure sound national economic policies for a smooth functioning of EMU. The increased interdependence that arises from sharing a single currency and monetary policy calls for greater scrutiny of national economic policies in the euro area. As a lesson from the crisis, the governance framework has been strengthened. As regards the proper functioning of economic structures, the creation of the macroeconomic imbalance procedure (MIP) and the reinforced country-specific (reform) recommendations were meant to ensure sufficient reform momentum. Like CSRs, the MIP applies to all EU countries but is of particular importance for the euro area countries, as it provides a surveillance framework for ensuring that harmful imbalances do not endanger the smooth functioning of EMU.

However, the existing procedures have not yet been effective enough to ensure that necessary reforms are implemented in euro area countries. As outlined, for example, in the Five Presidents' Report, the full application of the existing governance tools is essential to facilitating reform efforts and ensuring a smooth functioning of EMU. Yet, as regards the MIP, despite the identification of excessive imbalances in an increasing number of countries over several years (see Chart 11), the corrective arm (the excessive imbalance procedure) has not been applied so far. The full application of the corrective arm of the MIP, including the agreement of corrective action plans with the countries concerned, could facilitate the timely correction of excessive imbalances and increase the reform momentum. The current framework, if fully applied, could improve the scrutiny of national economic policies in the short term.

In the longer term, as envisaged in the Five Presidents' Report, the next stage could then include a more binding convergence process towards resilient structures. This new convergence process towards more resilient economic structures would help to outline a clear path of reforms which would increase the resilience of euro area countries and the euro area as a whole. A first step in this respect was taken with the European Commission's communication of 21 October 2015, which suggests progressively identifying best practices and carrying out cross-examinations across policy or thematic areas in the application of the governance framework. The implementation of such best practices would increase the resilience and the growth potential of euro area countries as described in Section 3.

5 Conclusion

This article has shown how sound institutions and economic structures are key for achieving greater resilience and sustainable growth. It has discussed how improving national institutions and economic structures can lead to a double

dividend by raising individual countries' well-being and improving the smooth functioning of EMU. While there is ample empirical evidence for this double dividend, reform progress towards best practices has, overall, been relatively modest since the inception of EMU. This comes at a high cost. Weak trend GDP and employment growth seem to be caused predominantly by relatively weak national institutions and rigid market structures and thus a lack of proper structural and institutional reforms. After a strong pick-up in reform momentum between 2011 and 2013, particularly in the countries involved in adjustment programmes, there seems to have been a return to the slow pace observed in the pre-crisis period. However, this slowdown seems unjustified in the light of the performance of the euro area countries compared with peer OECD countries.

The euro area countries appear still very far from best practices. This is a concern as productivity growth remains weak and the stock of debt, in particular public and non-performing private debt, is elevated and only declining at a slow pace. Fostering reform implementation is one of the objectives of the new economic governance structure. However, this objective has hardly been met during the first four years of application of the MIP. A more forceful application of the economic governance instruments is essential if the timeline for completing EMU proposed in the Five Presidents' Report is to be met.

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	1.5	1.9	1.4	7.7	-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	0.9	1.7	1.8	1.6	1.5	2.7	2.0	0.4
2015	3.1	2.4	2.2	0.6	6.9	1.7	0.6	1.7	0.1	0.0	0.8	1.4	0.0
2015 Q3	0.8	0.5	0.4	0.4	1.8	0.3	0.5	1.7	0.1	0.0	0.2	1.7	0.1
Q4	0.7	0.3	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	0.3	0.4	0.5	1.1	0.6	1.0	1.9	1.1	0.3	0.1	2.1	0.0
Q2	.	.	.	.	.	.	.	.	1.1	0.3	.	2.1	-0.1
2016 Jan.	-	-	-	-	-	-	1.2	1.9	1.4	0.3	0.0	1.8	0.3
Feb.	-	-	-	-	-	-	1.0	1.9	1.0	0.3	0.3	2.3	-0.2
Mar.	-	-	-	-	-	-	0.8	1.9	0.9	0.5	-0.1	2.3	0.0
Apr.	-	-	-	-	-	-	0.8	1.8	1.1	0.3	-0.3	2.3	-0.2
May	-	-	-	-	-	-	0.8	1.9	1.0	0.3	-0.4	2.0	-0.1
June	-	-	-	-	-	-	.	.	1.0	0.5	.	1.9	0.1

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	3.2	-0.1	5.7
2014	54.2	57.3	57.9	50.9	51.1	52.7	53.1	54.1	51.5	2.9	3.8	2.2
2015	53.3	55.8	56.3	51.4	50.4	53.8	51.7	53.9	50.3	0.7	3.8	-1.5
2015 Q3	53.0	55.4	55.1	51.9	49.0	53.9	50.2	54.0	48.8	0.9	0.4	1.2
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	51.1	51.5	54.2	51.2	50.3	53.2	50.6	51.3	49.4	-1.1	0.6	-2.4
Q2	50.8	51.5	52.5	49.0	50.5	53.1	49.7	51.1	48.8	.	.	.
2016 Jan.	52.2	53.2	56.2	52.6	50.1	53.6	51.0	52.7	50.1	0.3	-0.5	0.9
Feb.	50.2	50.0	52.7	51.0	49.4	53.0	49.9	50.3	48.9	-0.2	0.0	-0.4
Mar.	51.0	51.3	53.6	49.9	51.3	53.1	51.0	51.1	49.3	-1.1	0.6	-2.4
Apr.	51.1	52.4	51.9	48.9	50.8	53.0	49.9	51.6	48.7	-1.0	1.1	-2.6
May	50.5	50.9	53.0	49.2	50.5	53.1	49.5	50.9	48.4	.	.	.
June	50.6	51.2	52.4	49.0	50.3	53.1	49.8	50.9	49.3	.	.	.

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	0.31	0.09
2015 Dec.	-0.20	-0.19	-0.13	-0.04	0.06	0.53	0.08
2016 Jan.	-0.24	-0.22	-0.15	-0.06	0.04	0.62	0.08
Feb.	-0.24	-0.25	-0.18	-0.12	-0.01	0.62	0.01
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

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
2015 Dec.	-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 Jan.	-0.45	-0.45	-0.47	-0.23	0.44	0.89	1.47	1.18	-0.47	-0.46	0.43	1.55
Feb.	-0.50	-0.51	-0.54	-0.36	0.22	0.73	1.14	1.01	-0.54	-0.56	0.18	1.23
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

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
2015 Dec.	346.0	3,288.6	652.5	262.8	630.2	278.1	180.2	494.9	391.7	263.6	363.3	811.0	2,054.1	19,202.6
2016 Jan.	320.8	3,030.5	589.3	250.1	584.0	252.6	161.6	463.6	379.6	254.3	345.1	769.6	1,918.6	17,302.3
Feb.	304.3	2,862.6	559.2	245.9	569.1	250.5	144.0	449.9	352.5	245.7	332.8	732.6	1,904.4	16,347.0
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

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 June	0.15	0.78	0.77	1.11	6.97	17.02	4.88	6.15	6.47	2.59	2.03	2.27	2.12	2.31	2.48	2.18
July	0.15	0.74	0.67	1.14	6.83	17.08	5.10	6.20	6.53	2.61	2.06	2.32	2.21	2.35	2.56	2.22
Aug.	0.14	0.67	0.67	1.00	6.83	17.03	5.30	6.28	6.62	2.60	2.12	2.35	2.30	2.33	2.60	2.26
Sep.	0.14	0.67	0.67	1.08	6.85	17.06	5.21	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	0.86	6.54	16.82	5.20	5.98	6.33	2.56	1.86	2.09	2.17	2.23	2.41	2.09
May [(p)]	0.10	0.56	0.54	0.88	6.56	16.74	5.15	6.08	6.45	2.56	1.84	2.03	2.06	2.12	2.37	2.02

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 June	0.18	0.31	1.09	3.25	3.19	3.47	2.87	2.09	2.33	2.23	1.59	1.91	2.03	2.24
July	0.17	0.32	0.86	3.19	3.27	3.60	2.87	2.07	2.36	2.20	1.50	1.73	2.04	2.17
Aug.	0.17	0.24	0.92	3.16	3.25	3.57	2.91	2.07	2.32	2.22	1.42	1.53	2.03	2.15
Sep.	0.17	0.26	0.98	3.20	3.23	3.51	2.89	2.03	2.25	2.21	1.53	1.87	2.17	2.22
Oct.	0.16	0.26	0.80	3.09	3.18	3.42	2.89	2.04	2.28	2.20	1.45	1.69	2.02	2.15
Nov.	0.16	0.23	0.84	3.05	3.14	3.39	2.88	2.02	2.16	2.20	1.43	1.62	1.98	2.12
Dec.	0.14	0.23	0.85	3.01	3.07	3.18	2.77	2.01	2.13	2.17	1.47	1.77	1.92	2.08
2016 Jan.	0.13	0.27	0.77	2.97	3.23	3.25	2.78	2.00	2.22	2.17	1.39	1.67	2.07	2.09
Feb.	0.13	0.24	0.70	2.93	3.16	3.28	2.76	1.96	2.11	2.09	1.33	1.47	1.74	2.01
Mar.	0.13	0.16	0.87	2.89	3.03	3.20	2.68	1.92	2.03	2.02	1.35	1.74	1.77	2.03
Apr.	0.12	0.19	0.64	2.80	2.99	3.12	2.66	1.93	1.96	1.98	1.34	1.59	1.82	1.99
May [(p)]	0.11	0.13	0.63	2.77	2.91	3.10	2.62	1.91	1.94	1.92	1.27	1.68	1.75	1.91

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
2015 Dec.	1,262	517	140	.	61	478	65	296	133	53	.	27	57	26
2016 Jan.	1,284	524	142	.	68	483	67	329	141	35	.	33	87	33
Feb.	1,302	536	142	.	71	487	66	318	144	32	.	30	81	31
Mar.	1,283	515	135	.	72	493	69	321	123	38	.	30	89	40
Apr.	1,285	519	126	.	77	495	68	352	155	36	.	33	82	46
May	1,296	530	123	.	79	495	68	332	153	36	.	34	75	34
Long-term														
2013	15,111	4,403	3,091	.	921	6,069	628	222	70	39	.	16	89	9
2014	15,130	4,046	3,162	.	995	6,285	642	220	65	43	.	16	85	10
2015	15,242	3,783	3,273	.	1,067	6,481	637	213	67	44	.	13	81	8
2015 Dec.	15,242	3,783	3,273	.	1,067	6,481	637	154	49	61	.	16	23	4
2016 Jan.	15,214	3,753	3,252	.	1,054	6,521	634	206	75	25	.	6	93	8
Feb.	15,152	3,750	3,172	.	1,047	6,549	633	209	66	42	.	4	88	10
Mar.	15,154	3,728	3,126	.	1,058	6,603	639	249	73	39	.	26	94	17
Apr.	15,118	3,724	3,139	.	1,075	6,548	633	217	61	33	.	25	91	7
May	15,250	3,731	3,176	.	1,098	6,611	634	235	58	48	.	34	87	8

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	16,366.6	4,886.3	3,214.7	.	987.4	6,598.1	680.0	5,649.0	569.1	742.5	4,337.4
2014	16,448.2	4,588.1	3,290.8	.	1,053.4	6,823.2	692.7	5,958.0	591.1	780.6	4,586.3
2015	16,503.1	4,300.8	3,413.2	.	1,128.3	6,959.4	701.4	6,744.7	586.1	911.6	5,247.0
2015 Dec.	16,503.1	4,300.8	3,413.2	.	1,128.3	6,959.4	701.4	6,744.7	586.1	911.6	5,247.0
2016 Jan.	16,498.7	4,277.2	3,394.1	.	1,121.5	7,004.9	701.1	6,343.7	490.7	858.0	4,995.0
Feb.	16,453.5	4,286.2	3,313.9	.	1,118.0	7,036.4	698.9	6,240.5	471.7	877.4	4,891.5
Mar.	16,436.9	4,243.4	3,260.2	.	1,129.4	7,096.6	707.2	6,419.6	483.4	902.0	5,034.2
Apr.	16,402.5	4,243.1	3,264.5	.	1,152.2	7,042.5	700.2	6,462.3	505.5	909.8	5,047.0
May	16,545.5	4,261.0	3,298.7	.	1,177.5	7,106.7	701.6	6,552.2	491.5	915.6	5,145.0
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	.	5.3	1.8	0.5	1.1	4.5	1.5	0.6
2015 Dec.	0.2	-6.9	5.1	.	5.3	1.8	0.5	1.1	4.5	1.5	0.6
2016 Jan.	-0.3	-7.7	3.6	.	4.4	2.0	0.6	1.0	3.3	1.5	0.7
Feb.	-0.7	-7.1	1.1	.	2.8	2.0	-0.5	1.0	3.3	1.2	0.7
Mar.	-0.9	-6.9	-0.9	.	3.4	2.2	0.1	0.9	3.3	1.5	0.6
Apr.	-0.9	-6.7	-0.2	.	4.1	1.7	-0.2	0.9	2.6	1.8	0.6
May	-0.5	-5.9	-0.1	.	6.0	1.6	0.6	0.9	2.5	1.5	0.6

Source: ECB.

2 Financial developments

2.8 Effective exchange rates [1)]

(period averages; index: 1999 Q1=100)

	EER-19						EER-38	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM [2)]	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2013	101.2	98.2	96.7	91.1	101.0	99.1	111.9	95.5
2014	101.8	97.8	96.8	91.2	100.8	100.5	114.7	96.0
2015	92.4	88.4	89.1	83.4	89.5	91.5	106.5	87.8
2015 Q3	92.7	88.7	89.6	83.8	90.2	91.9	107.6	88.6
Q4	92.4	88.3	89.3	83.9	88.8	91.4	107.7	88.2
2016 Q1	94.1	89.5	90.8	85.4	90.0	92.3	110.4	90.1
Q2	94.9	90.2	91.5	.	.	.	110.8	90.3
2016 Jan.	93.6	89.1	90.2	-	-	-	109.9	89.6
Feb.	94.7	90.0	91.4	-	-	-	111.3	90.8
Mar.	94.1	89.5	90.8	-	-	-	110.0	89.8
Apr.	94.8	90.1	91.6	-	-	-	110.6	90.2
May	95.1	90.4	91.7	-	-	-	111.1	90.6
June	94.7	90.2	91.3	-	-	-	110.5	90.2
Percentage change versus previous month								
2016 June	-0.3	-0.2	-0.4	-	-	-	-0.5	-0.5
Percentage change versus previous year								
2016 June	2.6	1.9	2.4	-	-	-	4.3	3.0

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 Q3	7.008	7.578	27.075	7.462	312.095	135.863	4.188	0.717	4.4290	9.429	1.072	1.112
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
2016 Jan.	7.139	7.658	27.027	7.462	314.679	128.324	4.407	0.755	4.5311	9.283	1.094	1.086
Feb.	7.266	7.636	27.040	7.463	310.365	127.346	4.397	0.776	4.4814	9.410	1.102	1.109
Mar.	7.222	7.559	27.051	7.457	311.154	125.385	4.293	0.780	4.4666	9.285	1.092	1.110
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
Percentage change versus previous month												
2016 June	0.2	0.3	0.1	0.0	-0.2	-3.9	-0.1	1.6	0.5	0.4	-1.5	-0.7
Percentage change versus previous year												
2016 June	6.4	-0.7	-0.9	-0.3	0.6	-14.6	5.8	9.7	1.3	0.7	4.2	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 Q2	22,097.0	23,303.8	-1,206.8	9,376.5	7,521.5	7,195.1	10,684.5	-29.3	4,896.2	5,097.9	658.5	13,264.2
Q3	21,671.7	22,842.6	-1,170.9	9,391.6	7,625.3	6,854.1	10,158.7	-36.3	4,818.1	5,058.6	644.2	13,116.6
Q4	22,191.1	23,156.8	-965.7	9,747.6	7,960.0	7,178.8	10,282.5	-28.3	4,648.8	4,914.3	644.2	12,962.3
2016 Q1	22,117.4	23,375.2	-1,257.7	9,683.3	8,217.7	7,097.5	10,059.8	-28.0	4,689.4	5,097.6	675.3	13,287.1
Outstanding amounts as a percentage of GDP												
2016 Q1	211.1	223.1	-12.0	92.4	78.4	67.7	96.0	-0.3	44.7	48.6	6.4	126.8
Transactions												
2015 Q2	98.1	19.0	79.0	114.3	128.5	136.8	21.4	4.1	-154.8	-130.8	-2.4	-
Q3	90.0	32.3	57.7	114.0	124.4	25.5	-68.8	-1.2	-51.0	-23.3	2.7	-
Q4	106.6	-64.0	170.6	181.3	142.0	105.4	-16.1	54.2	-238.9	-190.0	4.6	-
2016 Q1	433.4	384.6	48.9	165.7	122.1	135.0	-7.7	18.6	113.3	270.1	1.0	-
2015 Dec.	-106.4	-200.0	93.6	98.5	31.7	25.1	-57.4	21.8	-260.0	-174.3	8.1	-
2016 Jan.	234.1	250.5	-16.4	37.4	69.3	35.8	-51.2	14.8	147.1	232.3	-1.2	-
Feb.	176.9	182.4	-5.5	84.3	39.3	47.2	13.1	6.8	37.5	130.0	1.1	-
Mar.	22.5	-48.3	70.8	44.0	13.5	51.9	30.4	-3.1	-71.3	-92.2	1.1	-
Apr.	185.5	142.6	42.9	20.3	12.4	73.2	-47.9	-6.1	99.7	178.1	-1.6	-
May	136.5	92.4	44.1	57.5	20.7	31.1	21.2	-1.6	46.4	50.5	3.1	-
12-month cumulated transactions												
2016 May	886.7	470.5	416.2	558.6	458.6	411.4	-136.7	57.6	-153.8	148.6	12.8	-
12-month cumulated transactions as a percentage of GDP												
2016 May	8.5	4.5	4.0	5.3	4.4	3.9	-1.3	0.5	-1.5	1.4	0.1	-

Source: ECB.

1) Net financial derivatives are included in total assets.

3 Economic activity

3.1 GDP and expenditure components

(quarterly data seasonally adjusted; annual data unadjusted)

	GDP											
	Total	Domestic demand								External balance [1]		
		Total	Private consumption	Government consumption	Gross fixed capital formation				Changes in inventories [2]	Total	Exports [1]	Imports [1]
						Total construction	Total machinery	Intellectual property products				
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2013	9,931.8	9,595.2	5,558.5	2,094.5	1,949.0	1,004.3	573.1	366.7	-6.8	336.6	4,373.3	4,036.8
2014	10,106.2	9,732.6	5,631.1	2,128.1	1,984.5	1,007.4	595.7	376.3	-11.1	373.5	4,521.3	4,147.8
2015	10,406.5	9,944.9	5,738.4	2,169.4	2,056.7	1,022.2	630.9	398.3	-19.5	461.6	4,769.9	4,308.2
2015 Q2	2,591.5	2,474.6	1,432.6	540.6	509.8	253.4	155.6	99.5	-8.4	116.9	1,197.0	1,080.0
Q3	2,608.3	2,491.4	1,439.9	543.6	513.5	254.2	156.7	101.4	-5.6	116.9	1,197.5	1,080.6
Q4	2,629.9	2,513.2	1,446.0	546.9	522.7	257.9	162.9	100.6	-2.4	116.7	1,201.5	1,084.8
2016 Q1	2,650.1	2,530.5	1,450.5	551.8	528.4	260.9	164.4	101.8	-0.1	119.5	1,191.6	1,072.1
	as a percentage of GDP											
2015	100.0	95.6	55.1	20.8	19.8	9.8	6.1	3.8	-0.2	4.4	-	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2015 Q2	0.4	0.0	0.3	0.3	0.1	-0.9	0.3	2.5	-	-	1.6	0.9
Q3	0.3	0.7	0.5	0.3	0.5	0.2	0.5	1.2	-	-	0.4	1.3
Q4	0.4	0.7	0.3	0.5	1.4	1.3	3.2	-0.9	-	-	0.7	1.4
2016 Q1	0.6	0.7	0.6	0.4	0.8	0.7	1.1	0.7	-	-	0.4	0.7
	annual percentage changes											
2013	-0.3	-0.7	-0.6	0.2	-2.6	-3.6	-2.5	0.1	-	-	2.1	1.3
2014	0.9	0.9	0.8	0.8	1.3	-0.5	4.1	2.1	-	-	4.1	4.5
2015	1.7	1.8	1.7	1.3	2.9	1.0	5.1	4.6	-	-	5.3	6.1
2015 Q2	1.6	1.4	1.7	1.2	2.6	0.4	4.7	5.0	-	-	6.1	5.9
Q3	1.6	1.9	1.8	1.2	2.6	0.7	3.2	6.6	-	-	4.8	5.6
Q4	1.7	2.3	1.6	1.6	3.6	1.8	6.1	4.1	-	-	4.2	5.9
2016 Q1	1.7	2.1	1.7	1.5	2.9	1.3	5.1	3.6	-	-	3.1	4.3
	contributions to quarter-on-quarter percentage changes in GDP; percentage points											
2015 Q2	0.4	0.0	0.2	0.1	0.0	-0.1	0.0	0.1	-0.2	0.4	-	-
Q3	0.3	0.7	0.3	0.1	0.1	0.0	0.0	0.0	0.2	-0.4	-	-
Q4	0.4	0.7	0.2	0.1	0.3	0.1	0.2	0.0	0.1	-0.3	-	-
2016 Q1	0.6	0.7	0.3	0.1	0.2	0.1	0.1	0.0	0.1	-0.1	-	-
	contributions to annual percentage changes in GDP; percentage points											
2013	-0.3	-0.7	-0.4	0.0	-0.5	-0.4	-0.2	0.0	0.2	0.4	-	-
2014	0.9	0.9	0.4	0.2	0.3	-0.1	0.2	0.1	0.0	0.0	-	-
2015	1.7	1.8	0.9	0.3	0.6	0.1	0.3	0.2	0.0	-0.1	-	-
2015 Q2	1.6	1.3	1.0	0.3	0.5	0.0	0.3	0.2	-0.4	0.3	-	-
Q3	1.6	1.8	1.0	0.3	0.5	0.1	0.2	0.2	0.0	-0.2	-	-
Q4	1.7	2.2	0.9	0.3	0.7	0.2	0.4	0.2	0.3	-0.5	-	-
2016 Q1	1.7	2.0	1.0	0.3	0.6	0.1	0.3	0.1	0.2	-0.4	-	-

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	8,927.3	152.3	1,737.0	458.1	1,680.2	412.6	442.3	1,030.6	945.2	1,751.4	317.6	1,004.5
2014	9,073.2	146.7	1,756.9	461.6	1,711.0	417.6	453.9	1,051.0	968.0	1,781.8	324.8	1,033.0
2015	9,335.6	146.1	1,817.9	469.3	1,770.7	433.6	455.3	1,075.1	1,009.6	1,823.9	334.1	1,070.9
2015 Q2	2,323.9	36.1	453.7	116.3	440.7	108.0	113.9	267.4	251.1	453.6	83.0	267.7
Q3	2,339.3	36.6	455.0	116.9	444.2	108.8	113.4	270.1	253.3	457.1	83.8	269.0
Q4	2,357.3	37.5	455.6	118.7	447.3	110.2	113.4	272.0	256.9	460.9	84.7	272.7
2016 Q1	2,378.2	36.0	461.7	120.7	453.0	110.8	114.6	273.0	258.6	464.3	85.5	271.9
	as a percentage of value added											
2015	100.0	1.6	19.5	5.0	19.0	4.6	4.9	11.5	10.8	19.5	3.6	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2015 Q2	0.3	0.2	0.4	-0.5	0.3	0.9	0.0	0.1	0.8	0.1	0.2	1.0
Q3	0.3	0.6	0.3	-0.1	0.4	0.5	-0.4	0.6	0.4	0.3	0.5	0.3
Q4	0.3	0.9	-0.3	0.9	0.3	0.6	0.9	0.4	0.7	0.2	0.7	1.3
2016 Q1	0.6	-0.5	1.0	0.7	1.0	0.5	0.9	0.0	0.3	0.3	0.3	0.3
	annual percentage changes											
2013	-0.2	3.2	-0.6	-3.3	-0.8	2.5	-2.5	1.1	0.3	0.4	-0.5	-1.1
2014	0.9	3.1	0.6	-0.9	1.4	2.0	-0.6	1.3	1.4	0.5	1.2	0.8
2015	1.5	0.5	1.9	0.3	2.0	2.8	0.8	1.0	2.7	0.9	1.1	2.7
2015 Q2	1.5	0.1	1.7	0.1	2.1	3.2	1.0	0.7	2.8	0.8	0.9	2.7
Q3	1.5	-0.1	1.8	0.3	1.9	2.5	0.0	1.0	2.6	1.0	0.9	3.0
Q4	1.5	1.9	1.4	1.0	1.7	2.5	1.0	1.3	2.9	0.9	1.6	2.9
2016 Q1	1.5	1.2	1.5	1.0	2.0	2.5	1.5	1.2	2.3	0.8	1.7	2.9
	contributions to quarter-on-quarter percentage changes in value added; percentage points											
2015 Q2	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	-
Q3	0.3	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	-
Q4	0.3	0.0	-0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	-
2016 Q1	0.6	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	-
	contributions to annual percentage changes in value added; percentage points											
2013	-0.2	0.1	-0.1	-0.2	-0.2	0.1	-0.1	0.1	0.0	0.1	0.0	-
2014	0.9	0.1	0.1	0.0	0.3	0.1	0.0	0.1	0.1	0.1	0.0	-
2015	1.5	0.0	0.4	0.0	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
2015 Q2	1.5	0.0	0.3	0.0	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
Q3	1.5	0.0	0.4	0.0	0.4	0.1	0.0	0.1	0.3	0.2	0.0	-
Q4	1.5	0.0	0.3	0.0	0.3	0.1	0.1	0.1	0.3	0.2	0.1	-
2016 Q1	1.5	0.0	0.3	0.0	0.4	0.1	0.1	0.1	0.2	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	24.7	2.7	2.7	1.0	12.9	24.0	7.0
2014	100.0	85.0	15.0	3.4	15.2	6.1	24.8	2.7	2.7	1.0	13.0	24.1	7.1
2015	100.0	85.2	14.8	3.4	15.0	6.0	24.8	2.7	2.6	1.0	13.3	24.0	7.1
annual percentage changes													
2013	-0.6	-0.6	-0.7	-1.6	-1.2	-4.0	-0.8	0.3	-1.0	-1.5	0.4	0.2	-0.1
2014	0.6	0.7	0.0	0.4	-0.2	-1.8	0.8	0.8	-0.9	0.9	2.0	0.8	1.1
2015	1.1	1.2	0.1	0.1	0.3	-0.1	1.4	1.1	-0.2	1.6	2.9	0.9	0.8
2015 Q2	1.0	1.1	0.4	0.5	0.1	0.6	1.1	0.9	0.2	1.9	2.8	0.8	0.6
Q3	1.1	1.3	0.0	0.2	0.4	-0.5	1.4	1.5	-0.2	1.7	3.0	1.0	0.6
Q4	1.3	1.5	-0.1	0.2	0.4	-0.3	1.7	1.5	0.0	1.4	3.0	1.0	1.4
2016 Q1	1.4	1.7	-0.2	0.1	0.7	-0.4	1.7	2.6	0.4	1.8	3.1	1.1	1.9
Hours worked													
as a percentage of total hours worked													
2013	100.0	80.1	19.9	4.4	15.7	6.9	25.7	2.9	2.8	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	21.9	6.3
2015	100.0	80.5	19.5	4.3	15.6	6.7	25.7	2.9	2.7	1.0	12.9	21.9	6.3
annual percentage changes													
2013	-1.4	-1.4	-1.7	-1.4	-1.5	-5.4	-1.6	-0.1	-1.5	-2.8	-0.8	-0.3	-1.4
2014	0.5	0.8	-0.4	-1.0	0.2	-1.6	0.6	0.9	-1.1	0.5	2.0	1.0	0.4
2015	1.3	1.5	0.4	1.0	0.8	0.6	1.1	2.1	-0.2	1.9	3.1	1.1	1.0
2015 Q2	1.1	1.3	0.4	0.9	0.9	1.1	0.7	2.0	0.1	2.4	3.1	1.0	0.7
Q3	1.4	1.6	0.4	0.9	1.0	0.2	1.0	3.0	-0.3	2.9	3.6	1.3	0.9
Q4	1.5	1.8	0.5	1.5	1.1	0.8	1.7	2.3	0.4	1.0	3.2	1.0	1.5
2016 Q1	1.6	1.8	0.4	1.7	0.9	0.3	1.8	3.1	0.7	1.4	3.8	0.9	1.1
Hours worked per person employed													
annual percentage changes													
2013	-0.8	-0.7	-1.0	0.2	-0.2	-1.5	-0.8	-0.4	-0.6	-1.3	-1.1	-0.6	-1.3
2014	-0.1	0.1	-0.5	-1.4	0.4	0.1	-0.1	0.1	-0.2	-0.4	0.0	0.2	-0.7
2015	0.2	0.3	0.2	0.9	0.5	0.7	-0.2	1.0	0.0	0.4	0.2	0.2	0.2
2015 Q2	0.1	0.2	-0.1	0.4	0.7	0.4	-0.4	1.1	-0.1	0.5	0.2	0.2	0.1
Q3	0.3	0.3	0.4	0.7	0.6	0.7	-0.4	1.4	-0.2	1.2	0.6	0.3	0.3
Q4	0.3	0.3	0.6	1.3	0.7	1.1	0.0	0.8	0.4	-0.4	0.2	-0.1	0.1
2016 Q1	0.2	0.1	0.7	1.6	0.2	0.7	0.1	0.5	0.3	-0.5	0.6	-0.2	-0.8

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	159.334	4.6	19.217	12.0	5.9	15.623	10.7	3.595	24.4	10.299	11.9	8.918	12.1		1.4
2014	160.308	4.6	18.629	11.6	6.1	15.213	10.4	3.417	23.7	9.931	11.5	8.699	11.8		1.5
2015	160.553	4.6	17.439	10.9	5.6	14.293	9.8	3.145	22.3	9.253	10.7	8.186	11.0		1.6
2015 Q2	160.457	4.6	17.688	11.0	5.7	14.517	9.9	3.171	22.5	9.404	10.9	8.283	11.2		1.5
Q3	160.589	4.4	17.220	10.7	5.3	14.105	9.6	3.115	22.2	9.139	10.6	8.082	10.9		1.5
Q4	161.081	4.5	16.912	10.5	5.4	13.841	9.4	3.071	21.9	8.942	10.3	7.970	10.7		1.6
2016 Q1	161.003	4.5	16.616	10.3	5.2	13.617	9.2	3.000	21.5	8.721	10.1	7.895	10.6		1.7
2015 Dec.	-	-	16.818	10.4	-	13.767	9.4	3.051	21.8	8.893	10.3	7.926	10.7		-
2016 Jan.	-	-	16.722	10.4	-	13.689	9.3	3.033	21.7	8.788	10.1	7.934	10.7		-
Feb.	-	-	16.673	10.3	-	13.652	9.3	3.021	21.6	8.755	10.1	7.918	10.6		-
Mar.	-	-	16.454	10.2	-	13.509	9.2	2.945	21.1	8.621	9.9	7.833	10.5		-
Apr.	-	-	16.378	10.2	-	13.464	9.1	2.914	20.9	8.533	9.8	7.845	10.5		-
May	-	-	16.266	10.1	-	13.381	9.1	2.885	20.7	8.467	9.8	7.800	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	-0.6	-0.6	-0.9	-0.5	-0.4	-0.8	-2.3	-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	1.8	3.2	1.5	0.7	2.4	-0.1	3.8
2015	1.5	1.7	0.9	2.0	2.0	0.9	-0.8	2.5	2.8	1.7	3.7	2.7	8.8
2015 Q3	2.0	2.2	1.0	2.7	2.8	1.1	-1.1	2.0	3.4	2.6	4.1	2.9	9.4
Q4	1.3	1.7	1.6	1.7	1.7	-1.8	0.7	1.5	2.5	1.3	3.4	2.2	10.0
2016 Q1	1.4	2.2	1.9	3.3	1.3	-3.5	2.8	0.7	2.2	1.8	2.8	1.0	9.4
Q2	.	.	.	.	.	.	.	.	.	.	.	.	8.5
2016 Jan.	3.5	4.6	2.6	5.3	6.7	-3.4	5.4	1.2	2.1	1.3	3.3	-0.1	10.8
Feb.	0.9	2.1	2.4	3.4	0.9	-6.7	3.8	1.2	2.7	2.6	3.2	1.2	10.3
Mar.	0.2	0.2	0.8	1.7	-3.0	-0.5	0.0	-0.4	1.7	1.5	1.9	2.0	7.6
Apr.	2.2	2.2	1.6	3.6	1.1	3.3	-1.0	-2.6	1.4	0.3	2.1	2.1	8.5
May	0.5	0.6	0.8	0.3	0.6	-1.1	-0.8	.	1.6	0.2	2.5	2.2	10.4
June	.	.	.	.	.	.	.	.	.	.	.	.	6.9
month-on-month percentage changes (s.a.)													
2016 Jan.	2.4	2.4	1.2	3.9	2.8	2.4	2.1	-0.6	0.2	0.4	0.4	0.0	0.6
Feb.	-1.2	-1.1	0.1	-1.1	-2.1	-1.8	-0.7	-0.2	0.3	0.4	0.4	-0.2	-0.5
Mar.	-0.8	-1.3	-1.0	-1.1	-2.9	3.1	-1.5	-0.5	-0.6	-1.2	-0.7	-0.5	-1.5
Apr.	1.4	1.5	0.4	1.7	2.6	1.5	-0.3	-0.3	0.2	0.1	0.5	0.2	1.1
May	-1.2	-1.0	-0.4	-2.3	-0.4	-4.3	-0.5	.	0.4	0.0	0.7	0.0	0.4
June	.	.	.	.	.	.	.	.	.	.	.	.	-1.2

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 Q3	104.5	-2.9	81.4	-7.0	-22.5	3.0	10.8	88.5	52.3	53.6	54.0	53.9
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	81.8	-8.3	-18.9	1.9	10.8	88.8	51.7	52.9	53.3	53.2
Q2	104.3	-3.4	.	-7.8	-18.4	1.8	11.2	.	52.0	53.0	53.1	53.1
2016 Feb.	103.9	-4.1	-	-8.8	-17.5	1.3	10.8	-	51.2	52.3	53.3	53.0
Mar.	103.0	-4.1	-	-9.7	-20.4	1.8	9.8	-	51.6	53.1	53.1	53.1
Apr.	104.0	-3.6	81.5	-9.3	-19.2	1.3	11.6	88.9	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	10.8	-	52.8	53.9	52.8	53.1
July	.	.	-	-7.9	.	.	.	-	.	.	.	.

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

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

	Households							Non-financial corporations					
	Saving ratio (gross) [1]	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth [2]	Housing wealth	Profit share [3]	Saving ratio (net)	Debt ratio [4]	Financial investment	Non-financial investment (gross)	Financing
	Percentage of gross disposable income (adjusted)		Annual percentage changes					Percentage of net value added		Percentage of GDP	Annual percentage changes		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2012	12.3	96.5	-1.7	1.7	-5.3	-0.1	-3.0	30.9	1.5	132.9	1.4	-6.7	1.2
2013	12.6	95.0	-0.3	1.2	-4.1	0.6	-1.9	32.6	4.1	130.4	2.0	-0.8	0.9
2014	12.7	94.2	0.7	2.0	0.9	2.7	1.1	32.8	4.8	132.0	1.6	3.5	1.0
2015 Q2	12.7	93.6	1.8	1.9	0.1	2.9	1.7	33.5	5.7	133.1	2.4	3.9	1.4
Q3	12.6	93.5	1.6	2.0	1.3	2.7	2.2	33.6	6.1	132.0	2.6	2.4	1.6
Q4	12.5	93.5	2.2	2.1	3.9	3.5	2.9	33.8	6.4	131.6	3.3	6.8	1.8
2016 Q1	.	.	2.1	2.1	4.6	2.4	3.7	33.6	6.3	133.1	3.0	5.9	1.7

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 Q2	910.5	827.9	82.7	534.5	447.0	192.7	176.6	156.9	145.8	26.5	58.5	9.8	38.0
Q3	896.3	815.5	80.8	523.9	436.9	191.7	177.8	155.6	144.0	25.1	56.9	9.9	4.6
Q4	898.8	815.7	83.1	525.3	433.5	195.2	182.0	152.5	143.2	25.8	57.1	15.7	9.3
2016 Q1	881.7	794.3	87.4	516.0	424.0	193.8	176.7	147.5	137.7	24.4	55.9	10.2	11.1
2015 Dec.	294.8	269.3	25.4	173.3	142.9	65.0	60.3	48.0	47.6	8.5	18.5	6.3	5.4
2016 Jan.	294.6	266.0	28.6	172.1	141.9	64.3	59.8	50.3	46.3	8.0	18.1	2.7	4.9
Feb.	293.6	267.2	26.4	170.6	142.1	65.5	59.4	49.4	46.7	8.1	19.0	3.8	2.5
Mar.	293.5	261.1	32.4	173.3	139.9	64.1	57.6	47.8	44.8	8.3	18.8	3.6	3.7
Apr.	293.3	257.0	36.4	172.8	139.3	62.0	55.8	50.0	43.5	8.5	18.4	2.1	1.9
May	286.1	255.3	30.8	167.7	137.1	62.4	56.5	47.2	44.1	8.7	17.6	1.9	1.9
12-month cumulated transactions													
2016 May	3,558.6	3,211.5	347.1	2,084.3	1,719.3	769.2	707.7	604.1	560.3	100.9	224.3	43.1	63.6
12-month cumulated transactions as a percentage of GDP													
2016 May	34.0	30.6	3.3	19.9	16.4	7.3	6.8	5.8	5.3	1.0	2.1	0.4	0.6

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	Consumption goods	Manufacturing		Intermediate goods	Capital goods	Consumption goods	Manufacturing	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 Q2	8.2	4.2	516.7	243.2	106.2	154.1	431.7	456.5	266.3	71.2	111.8	319.6	60.0
Q3	4.4	0.8	502.5	232.6	104.7	153.0	423.6	444.9	252.7	70.9	112.6	317.8	50.5
Q4	3.6	2.2	509.1	236.8	105.5	153.7	426.4	443.3	247.0	73.0	114.3	324.3	44.6
2016 Q1	-1.1	-2.6	502.5	233.6	103.8	151.0	421.9	436.9	240.7	71.1	116.2	325.3	37.2
2015 Dec.	4.1	3.3	171.3	79.3	35.4	51.9	142.1	147.7	81.7	23.9	38.8	108.2	14.5
2016 Jan.	-2.1	-0.9	167.5	78.1	34.2	50.6	141.0	146.8	81.4	23.3	38.9	109.5	12.6
Feb.	1.2	2.0	167.0	78.2	33.9	50.3	140.1	146.9	80.4	24.0	39.0	109.9	12.1
Mar.	-2.2	-8.1	168.1	77.3	35.7	50.1	140.8	143.2	78.9	23.8	38.3	105.9	12.6
Apr.	-0.9	-5.3	168.7	77.6	35.4	50.9	145.8	143.3	77.9	23.8	38.2	109.0	13.2
May	1.9	-2.2	165.6	.	.	.	139.6	141.1	.	.	.	104.4	.
Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)													
2015 Q2	2.9	2.4	118.4	114.7	120.2	122.8	118.8	105.1	104.9	104.7	106.0	107.9	99.4
Q3	1.2	2.9	116.2	111.5	118.6	122.7	116.9	105.9	105.4	106.3	106.4	108.0	98.9
Q4	0.9	4.9	118.3	115.2	119.1	122.6	117.5	107.3	107.3	107.0	107.7	110.1	101.5
2016 Q1	-1.1	2.3	118.4	116.0	117.2	121.6	116.9	109.6	110.7	105.3	109.4	110.9	110.3
2015 Nov.	3.9	7.3	117.8	114.3	119.0	122.1	117.4	106.6	106.0	107.4	107.8	110.8	95.3
Dec.	0.8	4.4	119.0	116.2	118.3	123.6	116.6	107.7	108.3	101.9	109.3	108.8	107.0
2016 Jan.	-3.7	1.1	117.8	115.7	115.6	121.8	116.7	109.6	111.1	103.9	108.8	111.3	110.6
Feb.	1.2	7.0	118.2	116.7	115.1	121.6	116.7	110.6	111.4	106.4	109.7	112.2	114.0
Mar.	-0.9	-0.7	119.1	115.6	120.9	121.3	117.4	108.5	109.6	105.6	109.7	109.3	106.4
Apr.	1.4	3.0	119.4	115.4	120.1	124.0	121.7	107.8	106.8	105.8	109.1	112.5	103.8

Sources: ECB and Eurostat.

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

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

4 Prices and costs

4.1 Harmonised Index of Consumer Prices [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	-	-	-	-	-	-	1.3	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 Q3	100.0	0.1	0.9	-0.8	1.2	0.0	0.1	0.5	0.2	-2.5	0.4	0.0	0.8
Q4	100.2	0.2	1.0	-0.6	1.2	-0.1	0.1	1.0	0.1	-3.0	0.2	0.1	0.6
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
2016 Jan.	98.7	0.3	1.0	-0.3	1.2	-0.2	0.0	-0.4	0.2	-2.7	0.0	0.3	0.3
Feb.	98.9	-0.2	0.8	-1.0	0.9	-0.1	0.0	0.0	0.0	-1.3	0.0	-0.2	0.3
Mar.	100.1	0.0	1.0	-1.1	1.4	0.3	0.0	0.6	-0.1	1.0	0.3	-0.1	0.3
Apr.	100.2	-0.2	0.7	-1.1	0.9	0.0	0.2	0.2	0.1	0.1	-0.2	-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	0.1
June	100.7	0.1	0.9	-0.7	1.1	0.2	0.1	-0.1	0.0	1.7	0.2	0.0	0.2

	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 Q3	1.2	0.6	2.1	-1.8	0.4	-7.2	1.1	0.9	1.4	-0.4	1.7	1.0
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
2016 Jan.	1.0	0.8	1.4	-1.0	0.7	-5.4	1.1	1.0	0.8	0.0	1.6	1.2
Feb.	0.6	0.6	0.6	-1.9	0.7	-8.1	1.1	1.0	0.4	-0.1	1.0	1.3
Mar.	0.8	0.4	1.3	-2.1	0.5	-8.7	1.1	1.0	0.7	0.1	2.1	1.3
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

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	78.0	72.1	29.3	20.0	22.7	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	0.2	1.0
2015	104.0	-2.7	-2.3	-0.5	-1.3	0.7	-0.6	-1.0	0.2	-8.1	0.2	1.6	3.8
2015 Q2	104.9	-2.1	-1.6	-0.3	-0.7	0.7	-0.8	-1.4	0.1	-6.5	0.4	1.3	4.0
Q3	104.0	-2.6	-2.6	-0.5	-1.1	0.6	-0.6	-1.1	0.1	-8.3	0.3	1.6	3.5
Q4	102.7	-3.1	-2.5	-0.7	-2.0	0.6	-0.2	-0.3	0.2	-9.3	-0.3	2.2	4.9
2016 Q1	100.6	-3.7	-2.7	-0.9	-2.2	0.4	-0.4	-0.5	-0.1	-11.1	-0.2	2.9	.
2015 Dec.	102.1	-3.0	-2.2	-0.7	-1.9	0.5	-0.3	-0.4	0.2	-8.9	-	-	-
2016 Jan.	101.0	-3.0	-2.0	-0.7	-1.8	0.4	-0.2	-0.2	0.0	-8.9	-	-	-
Feb.	100.3	-4.1	-3.0	-0.8	-2.2	0.4	-0.4	-0.5	-0.1	-12.4	-	-	-
Mar.	100.6	-4.1	-3.1	-1.1	-2.7	0.4	-0.6	-1.0	-0.1	-11.9	-	-	-
Apr.	100.3	-4.4	-3.2	-1.2	-2.9	0.4	-0.6	-1.0	0.0	-12.5	-	-	-
May	100.8	-3.9	-2.9	-1.2	-2.9	0.4	-0.5	-0.8	0.1	-10.8	-	-	-

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	35.0	65.0	100.0	45.0	55.0
2013	103.6	1.3	0.9	1.1	1.2	0.4	-0.4	-1.3	81.7	-9.0	-13.3	-6.9	-8.2	-9.9	-6.9
2014	104.5	0.9	0.5	0.5	0.8	0.5	-0.7	-1.7	74.5	-8.8	-1.8	-12.1	-4.7	0.4	-8.7
2015	105.9	1.3	0.3	0.2	0.6	0.7	0.2	-2.1	48.3	-4.1	5.2	-9.0	-0.8	4.8	-5.6
2015 Q3	106.0	1.4	0.4	0.3	0.6	0.7	0.1	-2.3	46.1	-6.5	6.4	-13.1	-3.3	5.7	-10.6
Q4	106.5	1.4	0.5	0.3	0.7	0.8	-0.1	-2.3	40.7	-9.1	3.9	-16.2	-9.3	-3.0	-14.8
2016 Q1	106.7	1.3	0.6	0.4	1.0	0.9	-1.1	-3.0	32.5	-13.4	-4.9	-18.2	-13.7	-9.8	-17.2
Q2	.	.	.	.	.	.	.	.	42.0	-8.9	-1.1	-13.4	-11.3	-9.3	-13.1
2016 Jan.	-	-	-	-	-	-	-	-	29.7	-14.9	-3.8	-21.2	-14.7	-9.7	-19.3
Feb.	-	-	-	-	-	-	-	-	31.0	-14.4	-5.5	-19.5	-14.1	-9.5	-18.3
Mar.	-	-	-	-	-	-	-	-	36.5	-10.9	-5.3	-14.1	-12.3	-10.2	-14.2
Apr.	-	-	-	-	-	-	-	-	38.2	-10.1	-6.4	-12.3	-13.2	-12.9	-13.5
May	-	-	-	-	-	-	-	-	42.7	-9.8	0.1	-15.4	-11.9	-8.8	-14.7
June	-	-	-	-	-	-	-	-	44.9	-6.8	3.4	-12.7	-8.7	-6.2	-10.9

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 2004-06 average import structure; use-weighted: weighted according to 2004-06 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
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
2016	.	.	.	.	.	.	.	.	.
2015 Q3	-2.0	1.1	2.5	-12.5	-0.2	49.5	53.6	49.9	49.9
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	-0.9	1.9	4.6	-8.2	-2.2	47.5	54.4	48.5	49.0
2016 Jan.	-4.1	0.2	3.5	-7.9	-0.9	42.1	52.7	48.3	49.1
Feb.	-5.6	1.4	3.8	-10.4	-1.4	40.8	52.4	47.6	48.9
Mar.	-4.6	0.4	3.8	-9.6	-2.9	41.6	52.5	47.1	49.1
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	0.7	2.0	3.7	-7.8	-1.3	49.6	54.8	49.3	49.0

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	1.1	1.2	1.9	1.8
2014	102.7	1.3	1.3	1.2	1.4	1.2	1.7
2015	104.3	1.6	1.8	0.7	1.6	1.5	1.5
2015 Q2	108.4	1.8	2.2	0.5	1.8	1.6	1.5
Q3	101.1	1.2	1.5	0.3	1.3	1.0	1.5
Q4	110.3	1.3	1.5	0.7	1.1	1.6	1.5
2016 Q1	99.1	1.7	1.8	1.5	1.8	1.6	1.4

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

4 Prices and costs

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

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

	Total (index: 2010 =100)	Total	By economic activity									
			Agriculture, forestry and fishing	Manu-facturing, energy and utilities	Con-struction	Trade, transport, accom-modation and food services	Information and commu-nication	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12
						Unit labour costs						
2013	103.8	1.2	-2.3	2.0	0.7	0.9	-1.4	3.4	-2.5	1.3	1.4	2.3
2014	104.8	1.0	-2.6	1.3	0.7	0.4	0.8	1.2	0.6	2.0	1.3	0.5
2015	105.5	0.7	0.5	0.1	0.6	0.8	0.6	-0.3	3.5	1.8	1.1	1.0
2015 Q2	105.3	0.8	0.7	0.6	1.3	0.5	0.5	-0.3	3.4	1.5	1.0	1.3
Q3	105.6	0.8	0.9	0.1	0.5	0.9	1.5	0.4	3.6	2.1	1.0	1.1
Q4	106.0	0.9	0.0	0.3	-0.2	1.8	1.1	-0.3	3.9	1.5	1.4	1.0
2016 Q1	106.0	0.9	0.5	0.5	0.2	1.1	0.0	0.8	2.2	2.3	1.4	1.2
						Compensation per employee						
2013	105.2	1.6	2.5	2.6	1.3	0.9	0.8	1.7	0.1	1.3	1.6	1.9
2014	106.5	1.3	0.1	2.1	1.6	1.0	2.0	1.6	1.1	1.4	1.1	0.6
2015	107.9	1.3	0.9	1.7	1.0	1.4	2.4	0.7	2.9	1.6	1.1	1.3
2015 Q2	107.8	1.4	0.4	2.1	0.8	1.5	2.8	0.6	2.1	1.4	1.0	1.5
Q3	108.1	1.3	0.5	1.5	1.3	1.4	2.5	0.6	2.9	1.8	1.0	1.5
Q4	108.5	1.3	1.8	1.3	1.1	1.8	2.1	0.7	3.8	1.4	1.3	1.1
2016 Q1	108.8	1.2	1.7	1.3	1.6	1.4	-0.1	1.9	1.5	1.5	1.2	1.0
						Labour productivity per person employed						
2013	101.4	0.4	4.9	0.6	0.6	0.0	2.2	-1.6	2.6	0.0	0.1	-0.4
2014	101.7	0.3	2.7	0.8	0.9	0.6	1.2	0.4	0.4	-0.6	-0.2	0.1
2015	102.3	0.6	0.4	1.6	0.4	0.6	1.7	0.9	-0.5	-0.2	0.0	0.3
2015 Q2	102.3	0.6	-0.3	1.5	-0.5	1.0	2.3	0.8	-1.2	-0.1	0.0	0.3
Q3	102.3	0.5	-0.3	1.4	0.8	0.5	1.0	0.2	-0.7	-0.3	0.0	0.4
Q4	102.4	0.4	1.7	1.0	1.3	0.0	1.0	1.1	-0.1	-0.1	-0.1	0.1
2016 Q1	102.6	0.3	1.1	0.8	1.4	0.3	-0.1	1.1	-0.6	-0.8	-0.2	-0.2
						Compensation per hour worked						
2013	107.2	2.3	2.3	2.8	2.8	1.9	0.9	2.3	1.5	2.5	2.0	3.2
2014	108.5	1.2	1.3	1.6	1.4	1.1	1.8	1.6	0.8	1.2	0.8	1.3
2015	109.6	1.0	0.4	1.2	0.3	1.4	1.2	0.9	2.5	1.3	0.9	1.0
2015 Q2	109.4	1.1	0.0	1.4	0.3	1.6	1.5	0.7	1.1	1.1	0.8	1.5
Q3	109.6	1.0	0.1	0.9	0.6	1.5	1.2	1.0	2.4	1.4	0.7	1.0
Q4	110.0	1.0	0.7	0.4	0.3	1.6	1.2	0.6	3.9	1.1	1.4	1.0
2016 Q1	110.4	1.1	0.0	1.1	1.5	1.2	-0.5	1.6	1.7	0.7	1.4	1.9
						Hourly labour productivity						
2013	103.5	1.2	4.7	0.8	2.2	0.8	2.6	-1.0	4.0	1.1	0.7	0.9
2014	103.8	0.4	4.2	0.3	0.8	0.8	1.0	0.5	0.8	-0.6	-0.4	0.8
2015	104.2	0.4	-0.4	1.1	-0.3	0.8	0.8	0.9	-0.9	-0.4	-0.2	0.1
2015 Q2	104.3	0.5	-0.7	0.8	-0.9	1.4	1.2	0.9	-1.7	-0.3	-0.1	0.2
Q3	104.1	0.2	-1.1	0.8	0.2	0.9	-0.4	0.3	-1.8	-0.9	-0.3	0.0
Q4	104.1	0.1	0.5	0.3	0.2	0.0	0.2	0.6	0.2	-0.3	-0.1	0.0
2016 Q1	104.5	0.1	-0.4	0.6	0.7	0.2	-0.6	0.8	-0.2	-1.5	0.0	0.6

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	4,952.3	5,920.9	1,598.5	2,148.8	3,747.2	9,668.1	123.9	423.4	106.4	653.6	10,321.7
2015	1,034.5	5,569.7	6,604.1	1,448.1	2,160.6	3,608.6	10,212.8	77.1	474.2	72.9	624.3	10,837.1
2015 Q2	1,014.0	5,298.7	6,312.6	1,480.1	2,160.5	3,640.7	9,953.3	90.3	436.8	100.6	627.6	10,580.9
Q3	1,028.2	5,425.1	6,453.3	1,449.3	2,164.4	3,613.7	10,067.0	98.4	452.8	75.2	626.4	10,693.4
Q4	1,034.5	5,569.7	6,604.1	1,448.1	2,160.6	3,608.6	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	1,426.9	2,163.7	3,590.5	10,357.2	88.7	463.3	89.9	642.0	10,999.1
2015 Dec.	1,034.5	5,569.7	6,604.1	1,448.1	2,160.6	3,608.6	10,212.8	77.1	474.2	72.9	624.3	10,837.1
2016 Jan.	1,044.5	5,625.5	6,670.0	1,450.1	2,156.8	3,606.9	10,276.9	86.0	474.2	78.8	639.0	10,915.9
Feb.	1,046.9	5,669.4	6,716.2	1,430.2	2,165.1	3,595.2	10,311.4	92.6	468.1	88.3	648.9	10,960.3
Mar.	1,051.5	5,715.1	6,766.6	1,426.9	2,163.7	3,590.5	10,357.2	88.7	463.3	89.9	642.0	10,999.1
Apr.	1,047.5	5,747.6	6,795.1	1,408.6	2,162.6	3,571.2	10,366.3	88.4	470.4	98.4	657.1	11,023.5
May [p]	1,051.2	5,785.9	6,837.2	1,406.7	2,172.1	3,578.8	10,416.0	88.2	476.3	88.2	652.7	11,068.7
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	437.6	-90.9	3.2	-87.7	349.9	1.0	10.8	12.8	24.6	374.5
2015	64.8	576.3	641.1	-143.3	12.0	-131.3	509.8	-47.8	48.9	-26.2	-25.1	484.7
2015 Q2	20.5	151.9	172.3	-47.6	10.9	-36.7	135.6	-35.2	4.0	4.0	-27.2	108.4
Q3	14.3	129.0	143.3	-35.3	3.1	-32.3	111.0	8.2	18.3	-18.5	8.0	119.0
Q4	6.3	128.8	135.0	-3.4	-4.0	-7.4	127.6	-21.5	21.4	-2.7	-2.8	124.8
2016 Q1	17.2	155.9	173.1	-17.0	3.3	-13.7	159.4	12.1	-10.9	14.9	16.1	175.5
2015 Dec.	-3.0	31.3	28.4	1.3	-1.9	-0.6	27.8	-14.0	-6.5	-12.2	-32.7	-4.9
2016 Jan.	10.1	57.6	67.8	2.5	-3.7	-1.3	66.5	9.0	0.6	4.6	14.1	80.6
Feb.	2.4	43.1	45.5	-18.2	8.3	-10.0	35.5	6.4	-6.1	8.5	8.9	44.4
Mar.	4.7	55.2	59.9	-1.2	-1.3	-2.5	57.4	-3.4	-5.4	1.9	-6.9	50.5
Apr.	-4.0	32.5	28.5	-18.4	-1.0	-19.5	9.0	2.8	6.8	8.7	18.4	27.4
May [p]	3.7	33.8	37.4	-3.3	9.4	6.2	43.6	-0.3	5.9	-9.7	-4.1	39.5
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	18.7	4.0	3.8
2015	6.7	11.6	10.8	-9.0	0.6	-3.5	5.3	-38.2	11.5	-25.5	-3.9	4.7
2015 Q2	8.8	12.4	11.8	-10.7	0.5	-4.4	5.2	-30.9	6.9	24.3	0.6	4.9
Q3	8.3	12.4	11.7	-11.4	0.5	-4.7	5.2	-23.0	9.0	-0.6	0.7	4.9
Q4	6.7	11.6	10.8	-9.0	0.6	-3.5	5.3	-38.2	11.5	-25.5	-3.9	4.7
2016 Q1	5.9	11.0	10.1	-6.8	0.6	-2.4	5.4	-28.9	7.6	-2.1	-0.9	5.0
2015 Dec.	6.7	11.6	10.8	-9.0	0.6	-3.5	5.3	-38.2	11.5	-25.5	-3.9	4.7
2016 Jan.	6.1	11.4	10.5	-7.4	0.7	-2.7	5.5	-29.3	10.1	-14.3	-0.9	5.1
Feb.	5.7	11.2	10.3	-7.4	0.9	-2.6	5.4	-28.1	7.6	-11.0	-2.2	4.9
Mar.	5.9	11.0	10.1	-6.8	0.6	-2.4	5.4	-28.9	7.6	-2.1	-0.9	5.0
Apr.	4.6	10.7	9.7	-7.3	0.4	-2.8	5.1	-28.4	6.1	-4.1	-2.1	4.6
May [p]	4.5	10.0	9.1	-5.8	0.7	-2.0	5.0	-16.7	8.9	-2.3	2.8	4.9

Source: ECB.

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

5 Money and credit

5.2 Deposits in M3 [1]

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

	Non-financial corporations [2]					Households [3]					Financial corporations other than MFIs and ICPFs [2]	Insurance corporations and pension funds	Other general government [4]
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Outstanding amounts													
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	1,814.9	1,318.7	365.4	111.6	19.2	5,556.8	2,751.5	809.6	1,992.7	3.0	896.0	222.7	333.1
2015	1,927.4	1,480.8	321.8	116.5	8.2	5,750.9	3,060.9	694.3	1,993.1	2.6	990.0	224.5	362.5
2015 Q2	1,858.2	1,410.7	322.6	112.8	12.2	5,647.3	2,911.4	735.1	1,998.0	2.8	955.1	228.0	340.9
Q3	1,901.1	1,451.1	324.0	115.8	10.1	5,695.3	2,987.9	707.4	1,997.0	3.0	966.6	218.0	356.2
Q4	1,927.4	1,480.8	321.8	116.5	8.2	5,750.9	3,060.9	694.3	1,993.1	2.6	990.0	224.5	362.5
2016 Q1	1,986.5	1,534.8	325.6	115.9	10.1	5,832.8	3,140.3	694.3	1,995.5	2.6	980.1	220.2	374.8
2015 Dec.	1,927.4	1,480.8	321.8	116.5	8.2	5,750.9	3,060.9	694.3	1,993.1	2.6	990.0	224.5	362.5
2016 Jan.	1,966.0	1,520.9	319.8	115.5	9.8	5,764.6	3,077.4	694.5	1,989.1	3.5	986.0	224.2	377.7
Feb.	1,976.9	1,530.7	320.7	116.0	9.6	5,795.2	3,102.9	693.4	1,996.0	2.9	979.4	232.1	373.5
Mar.	1,986.5	1,534.8	325.6	115.9	10.1	5,832.8	3,140.3	694.3	1,995.5	2.6	980.1	220.2	374.8
Apr.	2,009.0	1,561.8	322.9	115.7	8.6	5,849.0	3,158.7	693.0	1,994.0	3.3	957.9	213.8	377.5
May [p]	2,011.3	1,567.6	319.2	116.4	8.1	5,878.1	3,184.3	691.2	1,998.9	3.7	974.2	214.7	374.8
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	100.1	140.1	-33.7	4.9	-11.2	194.5	302.4	-108.2	0.7	-0.4	76.5	-1.8	27.9
2015 Q2	13.6	32.0	-16.8	1.0	-2.6	50.9	73.5	-28.0	6.4	-1.0	11.8	2.8	0.9
Q3	42.5	41.0	0.4	3.1	-2.1	48.3	77.7	-27.7	-1.9	0.2	10.8	-10.1	13.4
Q4	14.5	18.5	-2.8	0.7	-2.0	56.1	71.9	-11.4	-3.9	-0.5	19.0	4.2	6.1
2016 Q1	64.6	58.2	4.9	-0.5	2.0	84.2	80.7	1.0	2.5	0.1	-3.8	-4.1	13.3
2015 Dec.	-3.2	-3.4	1.3	-0.3	-0.8	24.1	28.3	-3.9	1.0	-1.3	2.5	2.1	-8.8
2016 Jan.	40.2	41.2	-1.7	-0.9	1.6	14.3	16.7	0.6	-4.0	1.0	-3.8	-0.4	15.0
Feb.	10.7	9.4	1.0	0.4	-0.2	30.6	25.4	-1.0	6.8	-0.6	-6.8	7.8	-2.7
Mar.	13.8	7.6	5.6	0.0	0.6	39.4	38.7	1.4	-0.4	-0.3	6.8	-11.4	0.9
Apr.	22.3	26.7	-2.6	-0.2	-1.5	17.0	19.2	-1.4	-1.5	0.7	-19.6	-6.4	2.6
May [p]	0.1	4.1	-4.2	0.8	-0.6	28.2	24.9	-2.0	4.9	0.4	13.6	0.7	-2.9
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	6.3	4.0	7.3
2015	5.5	10.6	-9.4	4.4	-57.9	3.5	11.0	-13.4	0.0	-14.2	8.4	-0.8	8.3
2015 Q2	4.3	10.6	-13.9	1.3	-23.5	3.0	10.8	-13.9	0.1	-37.8	13.6	-1.1	5.3
Q3	5.1	10.9	-12.3	2.4	-32.3	3.0	11.1	-15.5	0.0	-37.7	14.2	-4.9	5.8
Q4	5.5	10.6	-9.4	4.4	-57.9	3.5	11.0	-13.4	0.0	-14.2	8.4	-0.8	8.3
2016 Q1	7.3	10.8	-4.2	3.8	-30.8	4.3	10.7	-8.7	0.2	-30.7	4.0	-3.2	9.8
2015 Dec.	5.5	10.6	-9.4	4.4	-57.9	3.5	11.0	-13.4	0.0	-14.2	8.4	-0.8	8.3
2016 Jan.	6.5	10.8	-9.0	4.3	-17.6	3.7	10.5	-11.3	0.2	-12.8	9.4	-3.1	9.8
Feb.	6.5	10.5	-7.5	4.6	-29.2	4.0	10.5	-10.0	0.4	-26.4	6.8	1.8	7.8
Mar.	7.3	10.8	-4.2	3.8	-30.8	4.3	10.7	-8.7	0.2	-30.7	4.0	-3.2	9.8
Apr.	8.4	12.0	-3.3	2.4	-23.5	4.3	10.6	-8.1	0.0	-6.6	0.5	-7.3	9.3
May [p]	8.0	11.1	-2.3	3.6	-33.2	4.6	10.7	-7.0	0.1	-5.3	2.0	-7.2	7.9

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 for loan sales and securitisation [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	10,929.9	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	12,562.7	10,510.6	10,921.2	4,271.5	5,200.4	909.8	128.9	1,277.4	774.7
2015	3,896.5	1,110.0	2,784.1	12,680.5	10,591.3	10,989.2	4,273.1	5,307.3	887.3	123.6	1,301.7	787.5
2015 Q2	3,683.4	1,137.9	2,543.1	12,636.8	10,592.2	10,986.4	4,291.3	5,258.5	906.8	135.5	1,255.3	789.4
Q3	3,819.0	1,127.6	2,689.0	12,653.1	10,564.8	10,963.1	4,274.9	5,277.6	891.1	121.2	1,310.9	777.3
Q4	3,896.5	1,110.0	2,784.1	12,680.5	10,591.3	10,989.2	4,273.1	5,307.3	887.3	123.6	1,301.7	787.5
2016 Q1	4,049.0	1,115.0	2,920.9	12,708.9	10,645.2	11,029.0	4,290.2	5,338.3	908.1	108.6	1,312.3	751.4
2015 Dec.	3,896.5	1,110.0	2,784.1	12,680.5	10,591.3	10,989.2	4,273.1	5,307.3	887.3	123.6	1,301.7	787.5
2016 Jan.	3,967.5	1,117.0	2,848.1	12,689.3	10,616.8	11,013.0	4,288.7	5,311.7	890.8	125.5	1,306.1	766.4
Feb.	4,007.2	1,117.5	2,887.4	12,728.5	10,658.6	11,043.9	4,301.9	5,329.9	900.4	126.4	1,309.1	760.8
Mar.	4,049.0	1,115.0	2,920.9	12,708.9	10,645.2	11,029.0	4,290.2	5,338.3	908.1	108.6	1,312.3	751.4
Apr.	4,096.2	1,125.8	2,957.3	12,705.6	10,639.8	11,023.3	4,290.3	5,343.4	892.6	113.6	1,317.9	748.0
May [(p)]	4,146.3	1,127.2	3,005.9	12,741.4	10,656.8	11,048.6	4,307.5	5,346.5	891.6	111.2	1,330.8	753.8
Transactions												
2013	-25.0	-73.5	48.5	-305.7	-248.1	-270.7	-132.9	-4.0	-120.9	9.7	-72.7	15.1
2014	72.0	15.9	56.1	-104.0	-50.3	-33.9	-60.9	-15.4	14.3	11.7	-90.0	36.2
2015	284.2	-20.8	304.6	99.9	71.1	51.1	3.1	98.1	-24.7	-5.5	24.5	4.3
2015 Q2	58.1	-10.7	68.6	2.7	10.2	5.0	1.5	31.5	-23.8	1.0	-14.1	6.7
Q3	112.2	-10.2	122.4	54.9	-7.9	-3.7	-5.9	24.7	-12.3	-14.4	64.4	-1.6
Q4	73.5	-16.4	89.8	7.8	23.4	18.0	-0.9	22.7	-1.0	2.6	-22.4	6.8
2016 Q1	123.2	2.7	120.5	68.5	84.2	74.7	38.6	36.0	24.5	-14.9	14.2	-29.9
2015 Dec.	26.9	-7.1	33.9	-27.0	-39.2	-38.6	-20.2	-0.7	-17.8	-0.5	17.1	-4.9
2016 Jan.	61.2	5.1	56.2	25.8	35.4	32.6	22.0	6.6	4.8	2.0	7.0	-16.6
Feb.	36.2	0.0	36.1	45.0	43.5	41.0	15.6	18.2	8.9	0.8	4.1	-2.7
Mar.	25.8	-2.4	28.3	-2.3	5.2	1.0	1.0	11.3	10.7	-17.7	3.2	-10.6
Apr.	49.3	5.9	43.3	9.6	7.7	6.4	6.3	5.8	-9.4	5.0	5.1	-3.2
May [(p)]	40.0	1.4	38.6	30.5	12.2	18.2	13.0	2.9	-1.3	-2.4	11.3	7.0
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	0.8	0.7	0.5	0.1	1.9	-2.7	-4.2	1.9	0.5
2015 Q2	5.1	1.6	6.7	0.2	0.6	0.3	-0.2	1.2	-1.0	17.8	-5.2	3.0
Q3	7.2	0.5	10.2	0.8	0.6	0.4	0.1	1.6	-2.0	-1.4	1.0	1.9
Q4	7.9	-1.8	12.3	0.8	0.7	0.5	0.1	1.9	-2.7	-4.2	1.9	0.5
2016 Q1	10.1	-3.0	16.0	1.1	1.0	0.9	0.8	2.2	-1.3	-19.1	3.3	-2.4
2015 Dec.	7.9	-1.8	12.3	0.8	0.7	0.5	0.1	1.9	-2.7	-4.2	1.9	0.5
2016 Jan.	8.6	-2.5	13.7	0.9	0.8	0.6	0.5	1.9	-2.5	-9.6	2.5	-0.3
Feb.	10.1	-2.4	15.8	1.2	1.2	0.9	0.7	2.2	-1.4	-6.9	3.1	-1.4
Mar.	10.1	-3.0	16.0	1.1	1.0	0.9	0.8	2.2	-1.3	-19.1	3.3	-2.4
Apr.	10.3	-2.6	16.2	1.1	1.0	0.8	0.9	2.2	-2.2	-16.4	4.1	-2.4
May [(p)]	11.1	-1.9	16.9	1.3	1.1	1.0	1.2	2.1	-1.3	-21.0	5.1	-2.4

Source: ECB.

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

2) Adjusted for the derecognition of loans on the MFI balance sheet on account of their sale or securitisation.

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 for loan sales and securi-tisation [4)]					Adjusted for loan sales and securi-tisation [4)]			
	1	2	3	4	5	6	7	8	9	10
	Outstanding amounts									
2013	4,353.6	4,408.4	1,065.7	740.9	2,547.0	5,222.8	5,547.4	573.6	3,853.7	795.5
2014	4,271.5	4,330.8	1,080.7	720.5	2,470.3	5,200.4	5,546.2	563.3	3,861.1	776.0
2015	4,273.1	4,333.5	1,038.5	758.2	2,476.5	5,307.3	5,639.0	595.6	3,948.0	763.6
2015 Q2	4,291.3	4,347.6	1,080.8	743.1	2,467.3	5,258.5	5,589.0	578.7	3,908.9	771.0
Q3	4,274.9	4,333.8	1,058.3	745.9	2,470.7	5,277.6	5,611.3	582.4	3,926.5	768.7
Q4	4,273.1	4,333.5	1,038.5	758.2	2,476.5	5,307.3	5,639.0	595.6	3,948.0	763.6
2016 Q1	4,290.2	4,352.3	1,045.2	767.8	2,477.3	5,338.3	5,657.0	603.4	3,972.9	762.0
2015 Dec.	4,273.1	4,333.5	1,038.5	758.2	2,476.5	5,307.3	5,639.0	595.6	3,948.0	763.6
2016 Jan.	4,288.7	4,351.8	1,048.9	765.6	2,474.2	5,311.7	5,642.8	596.5	3,953.2	762.0
Feb.	4,301.9	4,361.1	1,049.4	774.0	2,478.4	5,329.9	5,650.5	601.4	3,966.7	761.8
Mar.	4,290.2	4,352.3	1,045.2	767.8	2,477.3	5,338.3	5,657.0	603.4	3,972.9	762.0
Apr.	4,290.3	4,353.9	1,043.4	772.3	2,474.5	5,343.4	5,662.2	604.5	3,979.9	759.0
May [(p)]	4,307.5	4,369.3	1,051.1	771.1	2,485.4	5,346.5	5,672.5	601.5	3,986.2	758.8
	Transactions									
2013	-132.9	-144.0	-44.3	-44.6	-44.0	-4.0	-17.2	-18.2	27.4	-13.2
2014	-60.9	-64.4	-14.2	2.3	-49.0	-15.4	4.7	-3.0	-3.4	-9.0
2015	3.1	8.6	-44.9	32.6	15.4	98.1	75.9	21.8	80.0	-3.6
2015 Q2	1.5	3.6	-2.7	7.7	-3.6	31.5	21.6	9.4	22.8	-0.7
Q3	-5.9	-0.7	-19.1	4.0	9.2	24.7	25.7	5.2	19.8	-0.3
Q4	-0.9	1.0	-22.1	13.4	7.8	22.7	18.1	5.1	20.0	-2.4
2016 Q1	38.6	43.6	15.5	12.7	10.4	36.0	23.0	9.1	27.0	-0.1
2015 Dec.	-20.2	-18.3	-32.0	5.9	5.9	-0.7	1.5	-0.6	3.9	-4.0
2016 Jan.	22.0	23.8	13.2	6.4	2.4	6.6	5.7	1.3	6.3	-1.0
Feb.	15.6	18.6	1.4	10.0	4.2	18.2	8.9	5.1	13.1	-0.1
Mar.	1.0	1.2	0.9	-3.8	3.8	11.3	8.4	2.8	7.5	1.0
Apr.	6.3	7.2	0.4	5.0	1.0	5.8	5.6	0.9	7.0	-2.2
May [(p)]	13.0	9.4	5.5	-1.0	8.4	2.9	9.6	-3.2	6.1	0.0
	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	0.1	0.2	-4.1	4.5	0.6	1.9	1.4	3.8	2.1	-0.5
2015 Q2	-0.2	-0.3	-1.1	2.3	-0.5	1.2	0.6	1.8	1.6	-0.8
Q3	0.1	0.2	-2.6	3.6	0.3	1.6	1.1	2.6	1.8	-0.4
Q4	0.1	0.2	-4.1	4.5	0.6	1.9	1.4	3.8	2.1	-0.5
2016 Q1	0.8	1.1	-2.6	5.1	1.0	2.2	1.6	5.1	2.3	-0.5
2015 Dec.	0.1	0.2	-4.1	4.5	0.6	1.9	1.4	3.8	2.1	-0.5
2016 Jan.	0.5	0.7	-3.0	4.7	0.8	1.9	1.4	4.0	2.1	-0.5
Feb.	0.7	1.0	-3.0	6.2	0.7	2.2	1.5	5.0	2.3	-0.3
Mar.	0.8	1.1	-2.6	5.1	1.0	2.2	1.6	5.1	2.3	-0.5
Apr.	0.9	1.2	-2.8	5.6	1.1	2.2	1.5	5.3	2.3	-0.8
May [(p)]	1.2	1.4	-2.0	4.9	1.5	2.1	1.6	4.4	2.3	-0.7

Source: ECB.

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

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

3) Including non-profit institutions serving households.

4) Adjusted for the derecognition of loans on the MFI balance sheet on account of their sale or securitisation.

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	7,187.7	2,248.9	92.2	2,380.9	2,465.8	1,378.2	225.0	184.5	139.7
2015	278.6	7,066.0	2,184.2	79.8	2,253.1	2,549.0	1,324.9	279.7	205.9	135.6
2015 Q2	265.2	7,168.6	2,223.1	86.7	2,329.7	2,529.0	1,453.9	240.6	224.6	147.1
Q3	287.6	7,100.6	2,223.8	83.7	2,263.4	2,529.7	1,356.0	253.7	213.6	140.0
Q4	278.6	7,066.0	2,184.2	79.8	2,253.1	2,549.0	1,324.9	279.7	205.9	135.6
2016 Q1	318.8	7,027.0	2,182.9	76.8	2,174.7	2,592.6	1,279.7	307.4	247.1	152.1
2015 Dec.	278.6	7,066.0	2,184.2	79.8	2,253.1	2,549.0	1,324.9	279.7	205.9	135.6
2016 Jan.	306.1	7,046.6	2,174.2	78.6	2,221.8	2,571.9	1,313.7	298.2	215.0	141.7
Feb.	294.6	7,073.5	2,185.7	77.6	2,193.4	2,616.8	1,288.1	304.6	246.6	142.5
Mar.	318.8	7,027.0	2,182.9	76.8	2,174.7	2,592.6	1,279.7	307.4	247.1	152.1
Apr.	316.8	7,048.9	2,184.1	75.4	2,173.1	2,616.3	1,273.9	313.4	237.0	140.0
May [(p)]	292.1	7,054.9	2,182.2	75.2	2,185.9	2,611.6	1,238.3	289.7	227.0	138.6
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	-161.3	-122.3	2.0	-151.4	110.3	238.5	1.0	0.7	17.8
2015	7.8	-218.8	-104.0	-13.5	-203.8	102.4	-98.5	-11.8	21.4	-4.0
2015 Q2	-18.0	-86.1	-34.7	-3.9	-50.5	3.0	0.6	-57.1	-11.8	-13.6
Q3	22.0	-37.7	6.1	-3.1	-58.6	17.9	-64.7	0.9	-11.0	-7.1
Q4	-11.7	-58.0	-47.5	-3.9	-42.3	35.7	-37.0	10.9	-7.7	-4.3
2016 Q1	40.1	-61.6	1.4	-2.9	-49.9	-10.2	-70.9	33.1	41.3	17.3
2015 Dec.	-17.9	-12.9	-3.0	-0.5	-18.5	9.1	-32.5	-3.1	-11.7	-10.4
2016 Jan.	27.6	-33.9	-9.3	-1.1	-22.5	-1.0	-24.2	11.4	9.1	6.9
Feb.	-11.4	-13.0	11.9	-1.0	-30.8	6.9	-74.1	13.0	31.6	0.9
Mar.	23.9	-14.7	-1.2	-0.8	3.4	-16.2	27.4	8.7	0.7	9.5
Apr.	-2.2	9.6	1.3	-2.0	-3.9	14.2	-22.6	-1.4	-10.1	-12.0
May [(p)]	-24.9	6.2	-3.2	-0.1	2.4	7.1	-27.6	-22.2	-10.1	-1.5
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	-8.4	4.1	-	-	11.6	-2.9
2015 Q2	-6.1	-3.0	-5.3	-3.4	-8.1	4.4	-	-	31.0	23.5
Q3	11.8	-3.4	-3.7	-9.1	-9.3	3.1	-	-	30.5	15.0
Q4	3.2	-3.0	-4.6	-14.4	-8.4	4.1	-	-	11.6	-2.9
2016 Q1	11.4	-3.3	-3.3	-15.2	-8.4	1.8	-	-	4.6	-4.8
2015 Dec.	3.2	-3.0	-4.6	-14.4	-8.4	4.1	-	-	11.6	-2.9
2016 Jan.	3.4	-3.4	-4.4	-15.3	-8.8	3.3	-	-	5.7	7.0
Feb.	10.0	-3.4	-3.5	-15.4	-9.4	3.0	-	-	8.2	-1.8
Mar.	11.4	-3.3	-3.3	-15.2	-8.4	1.8	-	-	4.6	-4.8
Apr.	17.4	-2.7	-2.6	-15.9	-7.8	2.4	-	-	12.0	4.7
May [(p)]	6.1	-2.5	-2.6	-14.8	-6.9	2.2	-	-	1.8	-1.5

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 Q1	-2.5	.	.	.	.	0.1
Q2	-2.4	.	.	.	.	0.1
Q3	-2.1	.	.	.	.	0.4
Q4	-2.1	.	.	.	.	0.3

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

6.2 Revenue and expenditure

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

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure					Capital expenditure
			Direct taxes	Indirect taxes	Net social contributions				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 Q1	46.7	46.2	12.5	13.1	15.5	0.5	49.2	45.3	10.3	5.3	2.6	23.1	3.9
Q2	46.6	46.2	12.5	13.1	15.4	0.5	49.0	45.2	10.3	5.3	2.5	23.1	3.9
Q3	46.6	46.1	12.5	13.2	15.4	0.5	48.7	45.0	10.2	5.2	2.5	23.1	3.8
Q4	46.6	46.1	12.6	13.2	15.4	0.5	48.7	44.8	10.2	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 Q1	93.0	2.7	16.9	73.4	.	.	.	.	.	.	.	.	.	.
Q2	92.4	2.8	16.3	73.3	.	.	.	.	.	.	.	.	.	.
Q3	91.8	2.8	16.2	72.8	.	.	.	.	.	.	.	.	.	.
Q4	90.8	2.8	16.1	71.8	.	.	.	.	.	.	.	.	.	.

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

6 Fiscal developments

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

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

	Change in debt-to-GDP ratio [2)]	Primary deficit (+)/ surplus (-)	Deficit-debt adjustment								Interest-growth differential	Memo item: Borrowing requirement
			Total	Transactions in main financial assets					Revaluation effects and other changes in volume	Other		
				Total	Currency and deposits	Loans	Debt securities	Equity and investment fund shares				
	1	2	3	4	5	6	7	8	9	10	11	12
2012	3.4	0.6	0.0	1.0	0.3	0.3	-0.1	0.5	-1.3	0.3	2.7	5.0
2013	1.8	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 Q1	0.9	-0.1	0.1	0.0	0.4	-0.1	-0.2	-0.1	0.0	0.1	0.9	2.6
Q2	-0.6	-0.1	-0.9	-1.0	-0.3	-0.3	-0.2	-0.2	0.1	0.0	0.5	1.4
Q3	-0.6	-0.4	-0.4	-0.4	0.2	-0.3	-0.1	-0.2	0.1	-0.1	0.1	1.6
Q4	-1.3	-0.3	-0.8	-0.4	0.1	-0.2	-0.1	-0.1	0.0	-0.4	-0.2	1.3

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

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

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

6.5 Government debt securities [1)]

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

	Debt service due within 1 year [2)]					Average residual maturity in years [3)]	Average nominal yields [4)]						
	Total	Principal		Interest			Outstanding amounts					Transactions	
			Maturities of up to 3 months		Maturities of up to 3 months		Total	Floating rate	Zero coupon	Fixed rate		Issuance	Redemption
											Maturities of up to 1 year		
	1	2	3	4	5	6	7	8	9	10	11	12	13
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	14.9	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 Q1	15.1	13.0	4.5	2.0	0.5	6.5	3.1	1.3	0.3	3.5	2.9	0.6	1.7
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	14.9	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 Jan.	15.1	13.2	5.4	2.0	0.5	6.6	2.8	1.2	0.1	3.3	3.0	0.3	1.2
Feb.	15.4	13.5	4.9	1.9	0.5	6.6	2.8	1.2	0.0	3.2	3.0	0.3	1.2
Mar.	15.6	13.7	4.8	1.9	0.5	6.6	2.8	1.2	0.0	3.2	2.8	0.3	1.1
Apr.	15.1	13.2	4.3	1.9	0.5	6.7	2.7	1.2	0.0	3.2	2.9	0.3	1.3
May	15.2	13.3	4.5	1.9	0.5	6.7	2.7	1.1	-0.1	3.2	2.9	0.4	1.2
June	15.3	13.5	5.0	1.8	0.5	6.7	2.7	1.1	0.0	3.1	2.9	0.3	1.1

Source: ECB.

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

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

3) Residual maturity at the end of the period.

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

6 Fiscal developments

6.6 Fiscal developments in euro area countries

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

	Belgium	Germany	Estonia	Ireland [1]	Greece	Spain	France	Italy	Cyprus
	1	2	3	4	5	6	7	8	9
	Government deficit (-)/surplus (+)								
2012	-4.2	-0.1	-0.3	-8.0	-8.8	-10.4	-4.8	-2.9	-5.8
2013	-3.0	-0.1	-0.2	-5.7	-13.0	-6.9	-4.0	-2.9	-4.9
2014	-3.1	0.3	0.8	-3.8	-3.6	-5.9	-4.0	-3.0	-8.9
2015	-2.6	0.7	0.4	-2.3	-7.2	-5.1	-3.5	-2.6	-1.0
2015 Q1	-3.2	0.4	0.5	-3.4	-4.3	-6.0	-3.9	-2.9	-0.2
Q2	-3.1	0.4	0.6	-2.5	-4.7	-5.4	-4.0	-2.9	-0.4
Q3	-2.9	0.9	0.7	-1.9	-4.4	-5.3	-3.9	-2.6	-0.9
Q4	-2.6	0.7	0.4	-2.3	-7.2	-5.1	-3.5	-2.6	-1.0
	Government debt								
2012	104.1	79.6	9.5	120.1	159.6	85.4	89.6	123.3	79.3
2013	105.2	77.2	9.9	120.0	177.7	93.7	92.4	129.0	102.5
2014	106.5	74.7	10.4	107.5	180.1	99.3	95.4	132.5	108.2
2015	106.0	71.2	9.7	93.8	176.9	99.2	95.8	132.7	108.9
2015 Q1	110.8	74.4	10.0	104.6	170.5	100.2	97.6	135.4	107.5
Q2	109.4	72.6	9.9	101.6	169.4	99.8	97.8	136.0	110.7
Q3	108.9	72.0	9.8	98.3	171.8	99.7	97.1	134.5	110.2
Q4	106.0	71.2	9.7	93.8	176.9	99.2	96.1	132.7	108.9

	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	-3.5	-3.9	-2.2	-5.7	-4.1	-4.3	-2.2
2013	-0.9	-2.6	0.8	-2.6	-2.4	-1.3	-4.8	-15.0	-2.7	-2.6
2014	-1.6	-0.7	1.7	-2.0	-2.4	-2.7	-7.2	-5.0	-2.7	-3.2
2015	-1.3	-0.2	1.2	-1.5	-1.8	-1.2	-4.4	-2.9	-3.0	-2.7
2015 Q1	-1.9	-0.7	1.1	-2.4	-2.1	-2.2	-7.1	-4.6	-2.9	-3.5
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	-2.0	-2.5	-3.1	-4.1	-2.6	-3.0
Q4	-1.3	-0.2	1.2	-1.5	-1.8	-1.2	-4.4	-2.9	-3.0	-2.7
	Government debt									
2012	41.4	39.8	22.0	67.5	66.4	81.6	126.2	53.9	52.4	52.9
2013	39.1	38.8	23.3	68.6	67.9	80.8	129.0	71.0	55.0	55.5
2014	40.8	40.7	22.9	67.1	68.2	84.3	130.2	81.0	53.9	59.3
2015	36.4	42.7	21.4	63.9	65.1	86.2	129.0	83.2	52.9	63.1
2015 Q1	35.6	38.0	22.3	68.6	69.3	85.3	130.2	82.0	54.4	60.5
Q2	35.3	37.6	21.7	67.2	67.1	86.4	128.4	81.0	54.7	62.3
Q3	36.4	38.1	21.5	66.0	66.2	86.4	130.3	84.4	53.9	61.0
Q4	36.4	42.7	21.4	63.9	65.1	86.2	129.0	83.2	52.9	63.1

Source: Eurostat.

1) Differences may occur between quarterly and annual ratios owing to data vintages.
For more information see Eurostat's explanatory note (http://ec.europa.eu/eurostat/documents/24987/6390465/Irish_GDP_communication.pdf).

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