EUROPEAN CENTRAL BANK
EUROSYSTEM

March 2016 ECB staff macroeconomic projections for the euro area[1]

1 Euro area outlook: overview and key features

The economic recovery in the euro area is expected to continue, albeit with less momentum than previously projected. The slower pace reflects weakening global growth and a strengthening of the effective exchange rate of the euro. In terms of annual averages, real GDP is projected to grow by 1.4% in 2016, 1.7% in 2017 and 1.8% in 2018. Following a further sharp drop in oil prices, the projection for HICP inflation has been revised downwards, to 0.1%, for 2016 and more moderately downwards, to 1.3%, for 2017. Inflation is expected to rise further to 1.6% in 2018.

The outlook for real GDP growth in the short term has softened as headwinds have strengthened recently. These headwinds relate to adverse developments in global activity, especially in emerging market economies, a strengthening of the effective exchange rate of the euro and an increase in uncertainty as reflected in heightened financial market volatility. Taking also into account a worsening of business and consumer confidence in January and February, the short-term outlook for real GDP growth has worsened since the December projections.

Nevertheless, a number of tailwinds are expected to support the continuation of the economic recovery. The ECB's accommodative monetary policy stance, further strengthened in December 2015 by the announcement of additional monetary policy measures, continues to be transmitted to the economy. Private consumption is expected to be supported in 2016 by the recent further sharp drop in oil prices and by continued ongoing labour market improvements. The global recovery should also contribute to a gradual pick-up in investment, in part due to accelerator effects. Domestic demand will also benefit from some fiscal easing, partly related to the influx of refugees.

The path of headline inflation over the projection horizon is expected to be strongly shaped by the profile of HICP energy inflation. Given the further sharp fall in oil prices over recent months, HICP energy inflation is envisaged posting

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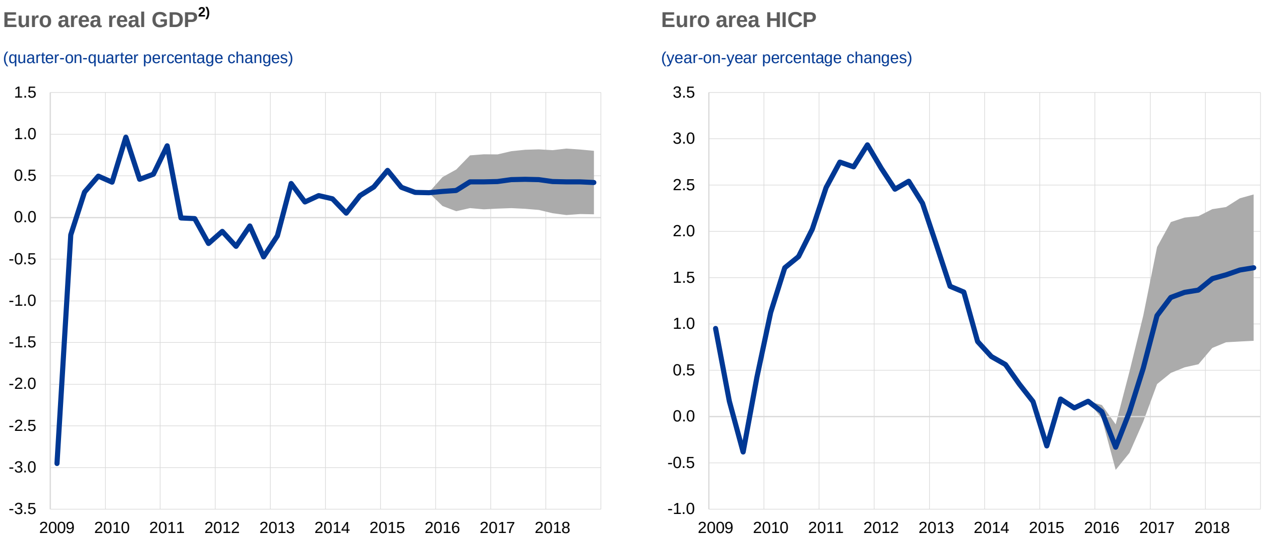
[1] ECB staff macroeconomic projections are an input to the Governing Council's assessment of economic developments and the risks to price stability. Information on the procedures and techniques used is given in *A guide to Eurosystem staff macroeconomic projection exercises*, ECB, June 2001, which is available on the ECB's website. The cut-off date for technical assumptions such as oil prices and exchange rates was 15 February 2016 (see Box 2). The cut-off date for including other information in this exercise was 25 February 2016.
The current macroeconomic projection exercise covers the period 2016-18. Projections for a period over such a long horizon are subject to very high uncertainty, and this should be borne in mind when interpreting them. See the article entitled "An assessment of Eurosystem staff macroeconomic projections" in the May 2013 issue of the ECB's Monthly Bulletin.

negative rates in 2016 but is expected to turn positive in 2017 in view of strong upward base effects and the assumed increases in oil prices embedded in the oil price futures curve. At the same time, HICP inflation excluding food and energy is seen as increasing gradually in the coming years as improving labour market conditions and declining economic slack translate into higher wages and profit margins. In addition, lagged impacts from the past strong euro depreciation and indirect effects from the assumed increases in energy and non-energy commodity prices, together with fading downward effects from their past declines, are expected to support the pick-up in HICP inflation excluding food and energy.

Chart 1
Macroeconomic projections[1)]

(quarterly data)



1) The ranges shown around the central projections are based on the differences between actual outcomes and previous projections carried out over a number of years. The width of the ranges is twice the average absolute value of these differences. The method used for calculating the ranges, involving a correction for exceptional events, is documented in *New procedure for constructing Eurosystem and ECB staff projection ranges*, ECB, December 2009, available on the ECB's website.
2) Working day-adjusted data.

2 Real economy

The recovery in euro area activity is expected to continue, albeit with somewhat less momentum than previously projected. Real GDP maintained its moderate momentum in the final quarter of 2015, rising by 0.3% compared to the previous quarter. Recent consumer and business sentiment indicators declined but still suggest continued moderate growth in activity in the first half of 2016.

Private consumption expenditure is projected to benefit strongly from low oil prices in 2016. Oil prices in USD terms are assumed to average USD 34.9 per barrel in 2016, 33% lower than assumed in the December projection (see Box 1). Nominal disposable income should rise over the projection horizon, supported by steady growth in employment and rising growth in nominal compensation per employee, while other personal income is also expected to contribute positively.

Growth in real disposable income is expected to lose momentum in 2017 with the projected pick-up in energy price inflation. Over the whole projection horizon, low financing costs and moderately rising household net worth, both reinforced by the ECB's recent monetary policy package, should support private consumption. Overall, annual growth in private consumption is projected to increase from 1.6% in 2015 to 1.9% in 2016, before easing to 1.8% and 1.6% in 2017 and 2018 respectively.

Box 1

Technical assumptions about interest rates, exchange rates and commodity prices

Compared with the December projections, the main changes in the technical assumptions are significantly lower US dollar-denominated oil prices, a 5% appreciation of the effective exchange rate of the euro, and lower short and long-term market interest rates.

Technical assumptions

	March 2016				December 2015		
	2015	2016	2017	2018	2015	2016	2017
Three-month EURIBOR (percentage per annum)	0.0	-0.3	-0.3	-0.2	0.0	-0.2	-0.1
Ten-year government bond yields (percentage per annum)	1.2	1.2	1.4	1.7	1.2	1.4	1.7
Oil price (in USD/barrel)	52.5	34.9	41.2	44.9	53.8	52.2	57.5
Non-energy commodity prices, in USD (annual percentage change)	-19.9	-14.8	3.0	4.7	-18.7	-5.2	4.1
USD/EUR exchange rate	1.11	1.11	1.12	1.12	1.11	1.09	1.09
Euro nominal effective exchange rate (EER38) (annual percentage change)	-7.1	4.8	0.2	0.0	-7.1	0.1	0.0

The technical assumptions about interest rates and commodity prices are based on market expectations, with a cut-off date of 15 February 2016. Short-term rates refer to the three-month EURIBOR, with market expectations derived from futures rates. The methodology gives an average level for these short-term interest rates of -0.3% for 2016 and 2017 and -0.2% for 2018. The market expectations for euro area ten-year nominal government bond yields imply an average level of 1.2% in 2016, 1.4% in 2017 and 1.7% in 2018.[2] Reflecting the path of forward market interest rates and the gradual pass-through of changes in market rates to lending rates, composite bank lending rates on loans to the euro area non-financial private sector are expected to decline somewhat in 2016, remain broadly unchanged in 2017 and rise modestly in 2018. As regards commodity prices, on the basis of the path implied by futures markets in the two-week period ending on the cut-off date of 15 February, the price of a barrel of Brent crude oil is assumed to fall from USD 52.5 in 2015 to USD 34.9 in 2016, before rising to USD 41.2 in 2017 and USD 44.9 in 2018, which is USD 17 lower in

2 The assumption for euro area ten-year nominal government bond yields is based on the weighted average of countries' ten-year benchmark bond yields, weighted by annual GDP figures and extended by the forward path derived from the ECB's euro area all-bonds ten-year par yield, with the initial discrepancy between the two series kept constant over the projection horizon. The spreads between country-specific government bond yields and the corresponding euro area average are assumed to be constant over the projection horizon.

2016 and USD 16 lower in 2017 than in the December projections. The prices of non-energy commodities in US dollars are assumed to fall substantially in 2016 and to rise somewhat in 2017 and 2018.[3] Bilateral exchange rates are assumed to remain unchanged over the projection horizon at the average levels prevailing in the two-week period ending on the cut-off date of 15 February. This implies an average exchange rate of USD 1.11 per euro in 2016 and USD 1.12 per euro in 2017 and 2018, compared with USD 1.09 in the December projection. The effective exchange rate of the euro (against 38 trading partners) is assumed to appreciate by 5% over the projection horizon.

The pattern of the household saving ratio is envisaged to be mostly driven by consumption smoothing in view of oil price developments. The saving ratio is estimated to increase in 2016, reflecting a staggered pass-through of oil price-related real income gains into consumer spending. This effect is expected to be partly unwound in 2017. The saving ratio is then projected to stagnate over the remainder of the projection horizon. The broadly flat pattern of the saving ratio reflects opposing developments in euro area countries. In some countries, still high unemployment, elevated gross debt levels and the impact of the very low level of interest rates on pension-related savings are expected to maintain some upward pressure on savings. In other countries, downward pressures on savings are expected to prevail. First, gradually declining unemployment should result in lower precautionary savings, allowing households to undertake major purchases that might have previously been postponed. Second, the very low interest returns tend to discourage savings via an inter-temporal substitution effect.

Residential investment in the euro area is projected to gain momentum, albeit from a very low level. The recovery in residential investment is expected to be supported by sustained growth in real disposable income and very low mortgage rates. In addition, adjustment processes in housing markets in several countries appear to have come to an end, and house price prospects have improved. Nonetheless, in many countries, high levels of household debt are likely to prevent a strong increase in residential investment. Overall, given its expected modest recovery, housing investment in 2018 is likely to still be about 20% below its 2007 peak.

Business investment is expected to show a subdued recovery. In the near term, the outlook for business investment is expected to be adversely affected by the recent financial market volatility and the weakening of economic growth in emerging market economies. Nevertheless, a number of factors should support investment over time. The very accommodative monetary policy stance, accelerator effects in the context of the projected strengthening of demand, the need to modernise the capital stock after several years of subdued investment, expansionary fiscal

[3] Oil and food commodity price assumptions are based on futures prices up to the end of the projection horizon. The prices of other non-energy hard commodities are assumed to follow futures until the first quarter of 2017 and thereafter to evolve in line with global economic activity.

measures in specific countries and a strengthening of profit mark-ups in the context of an already cash-rich non-financial corporations sector are all projected to support capital spending. Moreover, the overall pressure from corporate deleveraging in the euro area should, over the projection horizon, be less of a constraint for business investment than in the past. Indeed, debt-to-equity ratios have declined substantially from the peaks reached during the financial crisis and remain significantly below their historical average levels. However, the recovery of business investment will still be held back by remaining financial bottlenecks and high indebtedness levels in some countries, as well as by expectations of lower potential output growth.

Extra-euro area exports should benefit from an expected recovery in euro area foreign demand (see Box 2) and from the lagged effects of the past depreciation of the euro. After weakening recently, extra-euro area export growth is projected to recover gradually in 2016 and to gain further momentum thereafter, slightly above the expected pick-up in foreign demand. Export market shares are expected to rise slightly over the projection horizon on account of the lagged effects of past competitiveness gains. Extra-euro area import growth is expected to be driven by domestic demand, remaining slightly stronger than extra-euro area export growth. As a consequence, the current account surplus is expected to decrease from 3.0% of GDP in 2015 and 2016 to 2.5% in 2018.

Overall, real GDP is expected to rise by 1.4% in 2016, 1.7% in 2017 and 1.8% in 2018.

Box 2
The international environment

Developments in both advanced and emerging market economies turned out to be weaker than expected at the end of 2015, confirming that the global growth momentum continues to be fragile. Following the loss of momentum at the turn of the year, global economic activity is projected to expand gradually, at a moderate pace, driven by still resilient growth prospects in most advanced economies and the expected progressive easing of the deep recessions seen in certain large emerging market economies. Favourable financing conditions and improving labour markets should support the outlook for advanced economies. Moreover, the elevated levels of consumer sentiment in certain key advanced economies may imply favourable growth prospects. By contrast, the medium-term outlook for emerging market economies remains more uncertain. On top of the trend growth slowdown of the Chinese economy and its negative spillovers to other emerging market economies, particularly in Asia, commodity exporters will need to continue their macroeconomic adjustment to adapt to lower commodity prices. Moreover, these economies will face an environment of tighter external financing conditions, derived from the normalisation of US monetary policy, higher political uncertainty and increased geopolitical tensions.

Global trade has disappointed recently and is expected to grow only slowly over the projection horizon. Relative to global GDP, the profile for global imports and euro area foreign demand is projected to be rather weak over the projection horizon. Euro area foreign demand growth is expected to increase from 0.4% in 2015 to 2.2% in 2016, and to 3.8% in 2017 and 4.1% in

2018. This compares with annual average growth rates in the order of 7.7% in the period 1999-2007.

The international environment

(annual percentage changes)

	March 2016				December 2015		
	2015	2016	2017	2018	2015	2016	2017
World (excluding euro area) real GDP	3.1	3.2	3.8	3.9	3.1	3.6	3.9
Global (excluding euro area) trade[1)]	0.7	2.2	3.8	4.1	0.5	2.9	3.8
Euro area foreign demand[2)]	0.4	2.2	3.8	4.1	-0.1	2.7	3.8

1) Calculated as a weighted average of imports.
2) Calculated as a weighted average of imports of euro area trade partners.

Compared with the projections published in December, global activity has been revised downwards, especially in 2016. Euro area foreign demand has also been revised substantially downwards for 2016.

As actual GDP growth is expected to be well above the rate of potential output, the output gap is expected to narrow steadily over the projection horizon. Potential output growth is estimated to rise somewhat over the projection horizon, to slightly above 1%, remaining far below its pre-crisis rate.

Euro area labour market conditions should continue to improve. Employment is projected to continue rising over the projection horizon, albeit at a slightly lower rate than previously expected, mainly reflecting the more subdued economic recovery. Wage moderation and past labour market reforms are seen as supporting employment growth over the projection horizon. The labour force is expected to expand strongly over the projection horizon, reflecting the continued influx of refugees and the fading of discouragement effects. The unemployment rate, which declined to 10.3% in January 2016, is expected to decline further.

The real GDP growth outlook has been revised downwards compared with the December projection. This revision reflects the combined adverse impact of lower euro area foreign demand and the stronger exchange rate of the euro on export growth, as well as the impact of heightened financial market volatility and weaker sentiment indicators on the short-term outlook. Together, these adverse effects more than compensate for the favourable impact of lower oil prices and the recent additional monetary policy measures on domestic demand.

3 Prices and costs

According to Eurostat's flash estimate (released after the cut-off date for including the latest information in the exercise), HICP inflation stood at -0.2% in February 2016, 0.3 percentage point lower than in November 2015, reflecting declines across all main components. A substantial negative contribution of 0.8 percentage point from HICP energy inflation, related to the recent sharp fall in oil prices, is envisaged to continue to significantly dampen headline inflation in 2016, which is expected to average 0.1% for the year. HICP inflation excluding food and energy is projected to pick up somewhat in 2016 to 1.1% after 0.8% in 2015, albeit remaining rather muted on account of indirect effects from the lower oil prices, the recent effective appreciation of the euro and remaining slack in the economy.

Base effects from commodity prices explain most of the expected strong pick-up in HICP inflation, to 1.3%, in 2017. Upward base effects, once the sharp falls in oil and energy prices disappear from the year-on-year comparison, and assumed further commodity price increases are expected to lead to higher external price pressures in 2017.

Wage growth has been subdued so far but should strengthen gradually over the projection horizon. While high unemployment and low productivity growth have limited wage growth so far, over the projection horizon continued employment growth is expected to reduce slack in the labour market. Moreover, the projected pick-up in inflation should also support wage increases, mostly towards the end of the projection horizon. However, the pace of wage growth is expected to remain subdued, also reflecting continued weak productivity growth.

Profit margins should benefit from the ongoing economic recovery and the lower oil prices. The further improvements in domestic demand and declines in economic slack foreseen for the coming years are expected to provide businesses with more pricing power, to the benefit of their profit margins. Profit margins are, furthermore, expected to continue to benefit from the windfall gains from the lower oil prices in 2016.

Reflecting rising domestic price pressures, HICP inflation is expected to rise further to 1.6% in 2018.

Compared with the December projections, the outlook for HICP inflation has been revised downwards, especially for 2016. Significantly weaker external price pressures, related in particular to much lower than assumed oil prices and a somewhat stronger than assumed effective exchange rate of the euro, account for most of the downward revision in inflation. In addition, more moderate wage growth than previously projected also contributes to the downward revision.

4 Fiscal outlook

The fiscal stance is expected to be expansionary in the period to 2017 and to turn more neutral in 2018. The fiscal stance is measured as the change in the cyclically adjusted primary balance net of government support to the financial sector. The expansionary fiscal stance in the period to 2017 stems mainly from direct tax cuts in some countries and refugee related expenditures.

Over the projection horizon, the general government budget deficit is projected to stabilise at around 2% of GDP and the debt-to-GDP ratio is projected to decline slightly. The favourable contribution of the cyclical component and lower interest payments to the fiscal balance are likely to be offset, especially in 2016, by the loosening of the fiscal policy stance. Over the period to 2018, the gradual reduction in government debt is expected to be mainly supported by the favourable growth-interest rate differential in the light of the projected economic recovery and assumed low interest rates. Small primary surpluses should also have a favourable impact on the projected debt path.

Compared with the projections published in December, the fiscal outlook has worsened slightly. The government budget balance has been revised slightly downwards for 2015 owing to the impact of lower nominal GDP, and this downward revision will carry through to 2016-17. The debt-to-GDP ratio is projected to be higher over the projection horizon, reflecting a slightly lower primary surplus and, particularly in 2015-16, a less favourable growth-interest rate differential, which stems from the downward revision to inflation and nominal GDP growth.

Table 1
Macroeconomic projections for the euro area[1]

(annual percentage changes)

	March 2016				December 2015		
	2015	2016	2017	2018	2015	2016	2017
Real GDP[1]	1.5	1.4	1.7	1.8	1.5	1.7	1.9
		[1.0 - 1.8] [2]	[0.7 - 2.7] [2]	[0.6 - 3.0] [2]	[1.4 - 1.6] [2]	[1.1 - 2.3] [2]	[0.9 - 2.9] [2]
Private consumption	1.6	1.9	1.8	1.6	1.6	1.9	1.7
Government consumption	1.4	1.5	1.1	1.2	1.4	1.2	1.0
Gross fixed capital formation	2.5	2.7	3.6	3.3	2.3	2.8	3.8
Exports[3]	4.8	3.0	4.3	4.6	4.8	4.0	4.8
Imports[3]	5.4	4.6	5.3	5.1	5.3	4.8	5.3
Employment	1.1	0.9	0.8	0.9	1.0	1.0	1.0
Unemployment rate (percentage of labour force)	10.9	10.4	10.2	9.9	11.0	10.5	10.1
HICP	0.0	0.1	1.3	1.6	0.1	1.0	1.6
		[-0.2 - 0.4] [2]	[0.6 - 2.0] [2]	[0.8 - 2.4] [2]	[0.1 - 0.1] [2]	[0.5 - 1.5] [2]	[0.9 - 2.3] [2]
HICP excluding energy	0.9	1.1	1.3	1.5	0.9	1.3	1.5
HICP excluding energy and food	0.8	1.1	1.3	1.6	0.9	1.3	1.6
HICP excluding energy, food and changes in indirect taxes[4]	0.8	1.1	1.3	1.6	0.8	1.3	1.6
Unit labour costs	0.9	1.1	0.9	1.2	0.9	0.9	1.2
Compensation per employee	1.3	1.5	1.9	2.1	1.4	1.5	2.1
Labour productivity	0.4	0.4	0.9	0.9	0.5	0.7	0.9
General government budget balance (percentage of GDP)	-2.1	-2.1	-2.1	-2.0	-2.0	-2.0	-1.8
Structural budget balance (percentage of GDP)[5]	-1.7	-2.1	-2.2	-2.1	-1.7	-1.9	-1.9
General government gross debt (percentage of GDP)	91.1	90.8	90.0	89.2	91.1	90.1	88.9
Current account balance (percentage of GDP)	3.0	3.0	2.6	2.5	3.0	2.9	2.7

1) Working day-adjusted data.
2) The ranges shown around the projections are based on the differences between actual outcomes and previous projections carried out over a number of years. The width of the ranges is twice the average absolute value of these differences. The method used for calculating the ranges, involving a correction for exceptional events, is documented in *New procedure for constructing Eurosystem and ECB staff projection ranges*, ECB, December 2009, available on the ECB's website.
3) Including intra-euro area trade.
4) The sub-index is based on estimates of actual impacts of indirect taxes. This may differ from Eurostat data, which assume a full and immediate pass-through of tax impacts to the HICP.
5) Calculated as the government balance net of transitory effects of the economic cycle and temporary measures taken by governments (for the ESCB approach, see *Working Paper Series*, No 77, ECB, September 2001, and *Working Paper Series*, No 579, ECB, January 2007). The projection of the structural balance is not derived from an aggregate measure of the output gap. Under the ESCB methodology, cyclical components are calculated separately for different revenue and spending items. For more details, see the box entitled "Cyclical adjustment of the government budget balance" in the March 2012 issue of the ECB's Monthly Bulletin and the box entitled "The structural balance as an indicator of the underlying fiscal position" in the September 2014 issue of the ECB's Monthly Bulletin.

Box 3
Sensitivity and scenario analyses

Projections rely heavily on technical assumptions regarding the evolution of certain key variables. Given that some of these variables can have a large impact on the projections for the euro area, examining the sensitivity of the latter with respect to alternative paths of these underlying assumptions can help in the analysis of risks around the projections. This box discusses the uncertainty around some key underlying assumptions and the sensitivity of the projections with respect to these variables. In addition, this box also includes a scenario on the possible impact on euro area growth and inflation stemming from a sharper, synchronised downturn in emerging market economies.

1) An alternative oil price path

Alternative oil price models show oil prices rising somewhat faster over the projection horizon than suggested by futures. The technical assumptions for oil price developments underlying the baseline projections, based on futures markets, foresee a 40% increase in oil prices from the first quarter of 2016 to the fourth quarter of 2018. A combination of alternative models used by ECB staff[4] to project oil prices over the projection horizon currently suggests a higher oil price over the projection horizon than assumed in the technical assumptions. This would be consistent with either a stronger recovery of world oil demand in the medium term or with a reduction in oil supply owing to lower investment in the oil sector and thus a reduction in oil exploitation capacity in some countries, in response to the recent fall in oil prices. The materialisation of this alternative path, in which oil prices would be 11.6% higher than in the baseline by 2018, would marginally dampen real GDP growth, while entailing a somewhat faster increase in HICP inflation (up by about 0.1-0.2 percentage point in 2016, 2017 and 2018).

2) Alternative exchange rate paths

This sensitivity analysis includes two alternative paths of the exchange rate of the euro to the baseline. The first is based on the 25th percentile of the distribution provided by the option-implied risk-neutral densities for the USD/EUR exchange rate on 15 February 2016. This path implies a gradual depreciation of the euro vis-à-vis the US dollar to an exchange rate of 1.00 USD/EUR in 2018, which is 10.8% below the baseline assumption for that year. The second path is based on the 75th percentile of the same distribution and implies a gradual appreciation of the euro vis-à-vis the US dollar to an exchange rate of 1.24 USD/EUR in 2018, which is 11.2% above the baseline assumption for that year. The corresponding assumptions for the nominal effective exchange rate of the euro reflect historical regularities, whereby changes in the USD/EUR exchange rate reflect changes in the effective exchange rate with an elasticity of around 52%. In the case of depreciation, this assumption results in a gradual downward divergence of the effective exchange rate of the euro from the baseline, bringing it to a level 5.8% below the baseline in 2018. In this scenario, the average of the results from a number of staff macroeconomic models points to

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

higher real GDP growth (up by 0.1-0.3 percentage point) and higher HICP inflation (up by 0.1-0.4 percentage point) in 2016, 2017 and 2018. In the case of appreciation, this assumption results in a gradual upward divergence of the effective exchange rate of the euro from the baseline, bringing it to a level 5.5% above the baseline in 2018. In this scenario, the average of the results from a number of staff macroeconomic models points to lower real GDP growth (down by 0.1-0.3 percentage point) and lower HICP inflation (down by 0.1-0.4 percentage point) in 2016, 2017 and 2018.

3) A scenario of a synchronised downturn in emerging market economies

The outlook for growth in emerging market economies has worsened in recent months, and downside risks to the global growth projections have intensified. Nevertheless, the baseline of this projection assumes a gradual, subdued recovery in activity in emerging market economies over the projection horizon. Against this background, a scenario has been constructed to analyse the impact of a sharper, synchronised slowdown in emerging markets on euro area real GDP growth and HICP inflation.

The scenario assumes that the slowdown is triggered by a "hard landing" in China as financial stability risks materialise and capital outflows dent Chinese consumer and business confidence. A "hard landing" scenario in China would entail a stronger unwinding of domestic Chinese imbalances, with a slowdown in investment leading to a rise in unemployment. In addition, in this scenario, growth in private consumption in China would slow down significantly. Worsening financial conditions and a weaker outlook in China are modelled to spread to other emerging market economies, which would be affected through the direct trade channel and via an assumed increase in global uncertainty. In this scenario, global uncertainty is proxied by a temporary rise of 10 percentage points in the VIX[5], with the increase fading away over the projection horizon. The assumed stock price decline in China is also assumed to lead to a global decline in stock prices. The stronger slowdown in emerging market economies is modelled to imply a lower path for commodity prices over the projection horizon. It is also assumed that the Chinese authorities mitigate the "hard landing" by allowing the renminbi to depreciate. Owing to contagion effects, this is assumed to lead to a depreciation of emerging market economies' currencies. As a result, in this scenario the US dollar, the yen and the euro appreciate in nominal effective terms. In turn, the appreciation of these three currencies adversely impacts the export sectors of the United States, Japan and the euro area, leading to further downward pressures on inflation in these regions, primarily because of lower import prices.

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5 The VIX is a measure of the implied volatility of S&P 500 stock index option prices, computed by the Chicago Board Options Exchange.

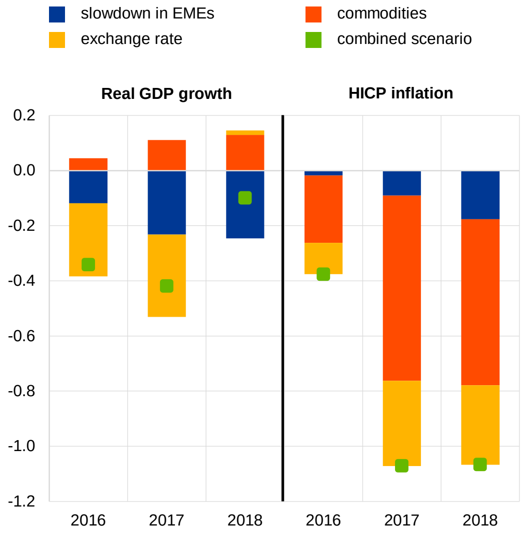
Main assumptions for the scenario

	2016	2017	2018
Chinese domestic demand	-2.3	-4.7	-3.0
Global stock markets	-20.0	-20.0	-20.0
Depreciation of Chinese and EMEs' currencies vis-a-vis advanced economies' currencies	-5.0	-10.0	-10.0
Euro nominal effective exchange rate	1.1	2.8	2.8
Oil prices (in USD/barrel)	-8.8	-26.0	-37.8

Source: ECB staff.
Notes: Calculated as percentage change deviation from baseline levels, except Chinese domestic demand, which is calculated as the percentage point deviation from baseline growth rates. The Chinese stock price index declines by 40% from its baseline level. "EMEs" stands for emerging market economies.

Contributions to euro area real GDP growth and HICP inflation

(percentage point deviation from baseline growth)



Source: ECB staff.
Notes: Scenarios are conducted with various models. Monetary policy is assumed to be exogenous. "EMEs" stands for emerging market economies.

In this scenario, both euro area real GDP growth and HICP inflation would be lower than in the baseline. Evidence from various ECB staff macroeconomic models suggests that the slowdown of activity in emerging markets would result in lower euro area foreign demand, thus dampening euro area real GDP growth and HICP inflation in both 2017 and 2018. The associated lower commodity prices (both oil and non-oil) following the slowdown in emerging markets would boost euro area activity, following an increase in household real income and higher corporate profits. At the same time, lower commodity prices would exert strong downward pressure on euro area HICP inflation. Finally, the appreciation of the euro vis-à-vis the renminbi and other emerging market currencies would put further downward pressure on euro area activity and prices. In sum, a synchronised slowdown in emerging market economies, triggered by China, would imply significant downside risks to the baseline projections for both euro area real GDP growth and HICP inflation.

Box 4
Forecasts by other institutions

A number of forecasts for the euro area are available from both international organisations and private sector institutions. However, these forecasts are not strictly comparable with one another or with the ECB staff macroeconomic projections, as they were finalised at different points in time. Additionally, they use different (partly unspecified) methods to derive assumptions for fiscal, financial and external variables, including oil and other commodity prices. Finally, there are differences in working day adjustment methods across different forecasts (see the table). As indicated in the table, most of the currently available forecasts from other institutions show higher real GDP growth and higher inflation for 2016, but do not differ greatly from the point forecasts of the March ECB staff projections for 2017 and 2018 and are well within the ranges surrounding these projections (shown in brackets in the table).

Comparison of forecasts for euro area real GDP growth and HICP inflation

(annual percentage changes)

	Date of release	GDP growth			HICP inflation		
		2016	2017	2018	2016	2017	2018
ECB staff projections	March 2016	1.4	1.7	1.8	0.1	1.3	1.6
		[1.0-1.8]	[0.7-2.7]	[0.6-3.0]	[-0.2-0.4]	[0.6-2.0]	[0.8-2.4]
European Commission	February 2016	1.7	1.9	-	0.5	1.5	-
OECD	Feb. 2016/Nov. 2015	1.4	1.7	-	0.9	1.3	-
Euro Zone Barometer	February 2016	1.7	1.8	1.6	0.5	1.4	1.7
Consensus Economics Forecasts	February 2016	1.6	1.7	-	0.5	1.5	-
Survey of Professional Forecasters	January 2016	1.7	1.8	1.7	0.7	1.4	1.6
IMF	Jan. 2016/Oct. 2015	1.7	1.7	-	1.0	1.3	-

Sources: European Commission's European Economic Forecast, Winter 2016; IMF World Economic Outlook, Update January 2016 (GDP), IMF World Economic Outlook, October 2015 (HICP inflation); OECD Economic Outlook, Update February 2016 (GDP), OECD Economic Outlook, November 2015 (HICP inflation); Consensus Economics Forecasts; MJEconomics; and the ECB's Survey of Professional Forecasters.
Notes: The Eurosystem and ECB staff macroeconomic projections and the OECD forecasts both report working day-adjusted annual growth rates, whereas the European Commission and the IMF report annual growth rates that are not adjusted for the number of working days per annum. Other forecasts do not specify whether they report working day-adjusted or non-working day-adjusted data.

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