International developments

Oil and raw materials

A market balance is restored

In Q1 2016, the average price of a barrel of Brent crude hovered at around $35, with a sharp drop down to $28 in January followed by a recovery, which continued up to $50 at the start of June. Supply fell slightly, with the rise in Iranian output failing to offset the drop in American output. Demand continued to rise at its trend rate. All in all, the surplus has been reduced on the physical market.

Between now and the end of 2016, the gap between supply and demand should narrow further: American production is likely to lose more momentum, and demand – driven mainly by the emerging countries – should continue to rise.

Through to December 2016, the conventional assumption applied here is that the oil price will stabilise at around its level of early June ($50), especially as the bullish effect of the tightening of the physical market should be curbed by the high level of stocks. However, this forecast is surrounded by uncertainties. On the one hand, the rebound in Iranian output has been estimated, on the basis of its pre-embargo output and its recent trends, at +0.7 million barrels per day (mbpd) between now and the end of the year, after a rise of 0.3 million bdp in Q1. On the other hand, the drop in the output of the United States – the world's leading producer – looks likely to continue through to the end of 2016 but should remain limited, based on the assumption of a slight upturn in the rig count. Uncertainty prevails as to whether these Iranian and American outputs will prove to be higher or lower, and there is likely to be an upward or downward variation in the price of Brent crude.

Commodity prices in Euros slipped back in Q1 2016 (−2.2%). Nevertheless, there has been a sharp turnaround in ferrous metals since March, driven mainly by the upswing in steel production in China.

In Q1 2016, the price of Brent crude stood at around $35 per barrel, down by approximately $10 against Q4 2015

In Q1 2016, the average price of oil (Brent crude) settled at $35 per barrel. This very low level had not been seen since late 2004. After a sharp drop in early 2016 to as low as $28 in January, it has recovered strongly since mid-February, and stands at $50 at the beginning of June (*Graph 1*). In Q2 2016, the price of oil should bounce back by 33% in relation to the previous quarter, after dropping by 21% during Q1. This recovery can be mainly explained by a narrowing of the gap between supply and demand on the physical market: supply is falling and demand is rising, thereby reducing the surplus.

Supply is likely to decline until Q3 2016

After a sharp rise in 2015, oil supply fell back in Q1 2016 (−0.4 mbpd), for the first time since early 2013. The decline stems from non-OPEC countries in particular, especially the United States (−0.3 mbpd). However, output from the OPEC producers increased slightly (+0.1 mbpd), with the upswing in Iranian output (+0.3 mbpd) being partly offset by the drop in Nigerian and Emirati output. Although it is slowing down, the cartel's output remains very high (+1.3 mbpd compared

1 - Price of Brent in Euros and in dollars
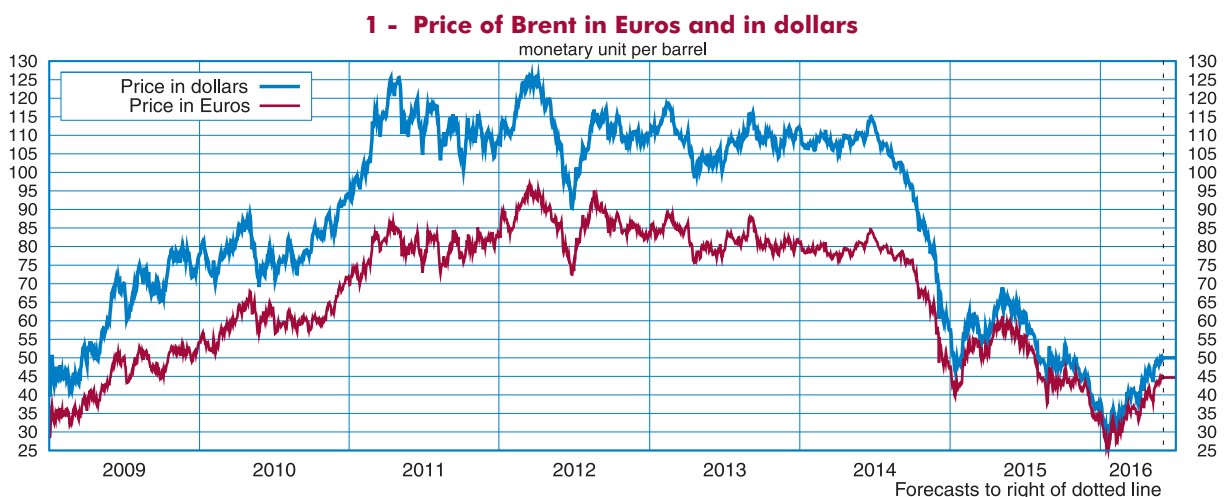
Source: Macrobond, INSEE forecast

with 2014), with Saudi output remaining in excess of 10 mbpd.

In the United States, the fall in oil prices has led to a collapse in the number of new rigs being drilled and, due to the limited lifespan of the existing shale oil wells (about two years), output should fall again in Q2 and Q3 (*Focus*). In addition, Canadian production in Alberta is suffering from the consequences of the wildfire at Fort McMurray. Consequently, global output is likely to decline in Q2 and Q3 before stabilising at the end of the year: the downturns in American and European output should be only partly offset by the ramping up of production in Iran (*Graph 2*).

## Demand should continue to rise at a trend rate of +0.3.mbpd each quarter

In Q4 2015, global demand shrank for the first time since 2011, particularly in OECD countries, due to the clement weather in the Northern Hemisphere. In Q1 2016, global demand

bounced back by 0.5 mbpd in a backlash effect. After this rebound, it should slow down in Q2 (+0.1 mbpd), especially in Europe. In Q2, it should accelerate slightly, driven mainly by the emerging economies. Thus in 2016 demand is likely to increase by 1.2 mbpd, similar to the rises seen in 2014 and 2015 (between +1.3 and +1.4 mbpd). The expected drop in supply should lead to a significant reduction in the surplus (*Graph 3*).

Despite the tightening of the physical market, the high level of stocks should curb price rises

The tightening of the physical market could lead to a rise in the price of the barrel; however, the high level of stocks should curb this upward trend. Indeed, stocks – particularly American – have risen very strongly over the past two years: in May 2016, they amounted to 2.1 billion barrels compared with an average of 1.7 billion from 2000 to 2013 (*Graph 4*).

2 - Principal contributing factors to the variation in global oil supply
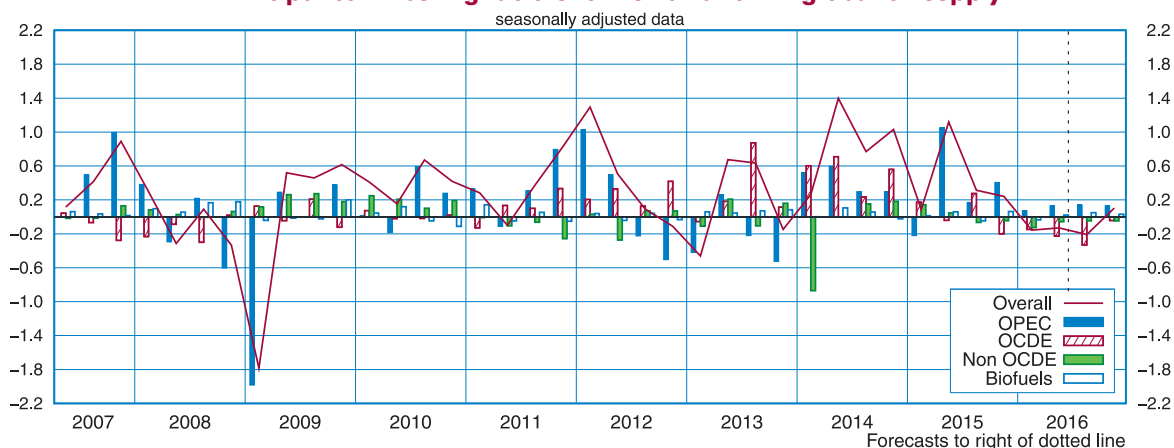
Sources: International Energy Agency (IEA), INSEE seasonal adjustment and forecast

3 - World oil market
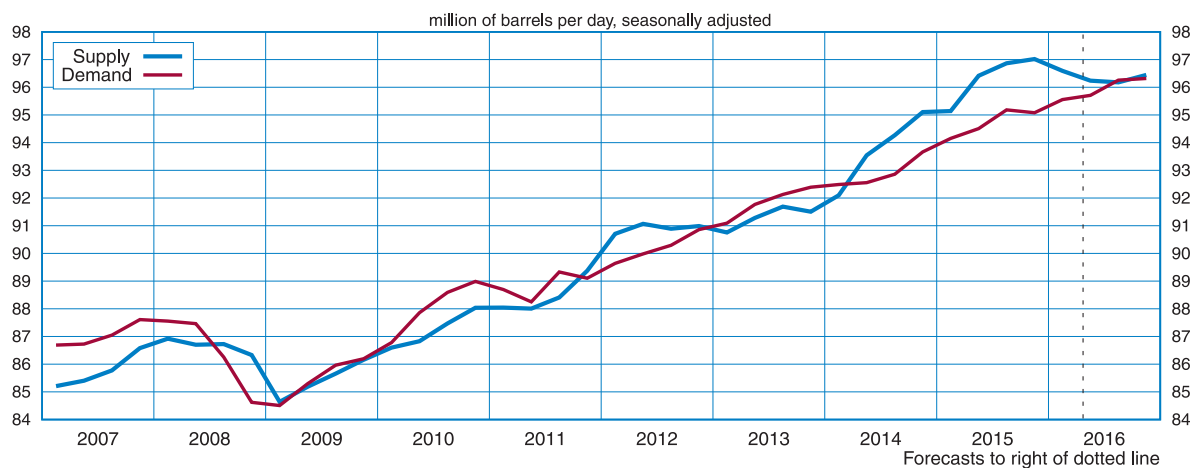
Source: International Energy Agency (IEA), INSEE seasonal adjustment and forecast

Two main uncertainties could affect this scenario on the supply side. On the one hand, Iranian production has already risen significantly and the additional output expected by the end of the year (+0.7 mbpd) could be limited by the existing infrastructures or, on the contrary, could provide an upside surprise. On the other hand, American production is likely to fall back in late 2016 by 1.0 mbpd over one year, but the severity of this decline could depend on the behaviour of firms with regard to drilling activity.

Prices of other commodities fell again in Q1 but iron is back on the rise

In Q1 2016, commodity prices (excluding energy) expressed in Euros were down again (–2.2%, *Graph 5*). Food commodity prices plummeted (–3.9%) under the effect of abundant production and slackening demand. The drop in industrial commodity prices was smaller (–0.8%), due to a sharp upswing in the prices of ferrous metals (+3.9% in Q1 2016), further to rising steel production in China. ∎

4 - U.S. crude oil and hydrocarbons inventories

Source: United States Department of Energy
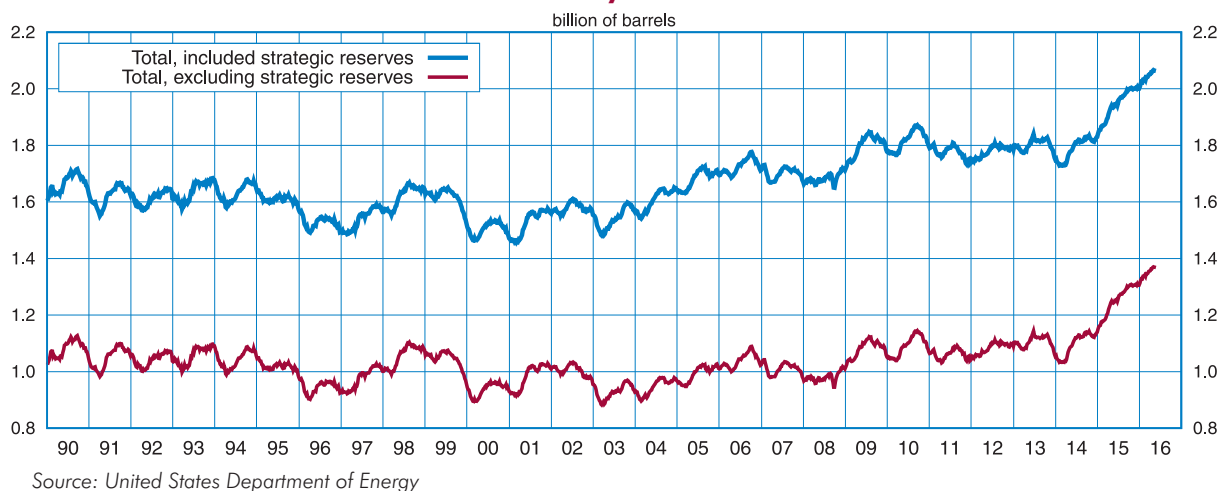
5 - Prices of non-energy commodities

Source: HWWI
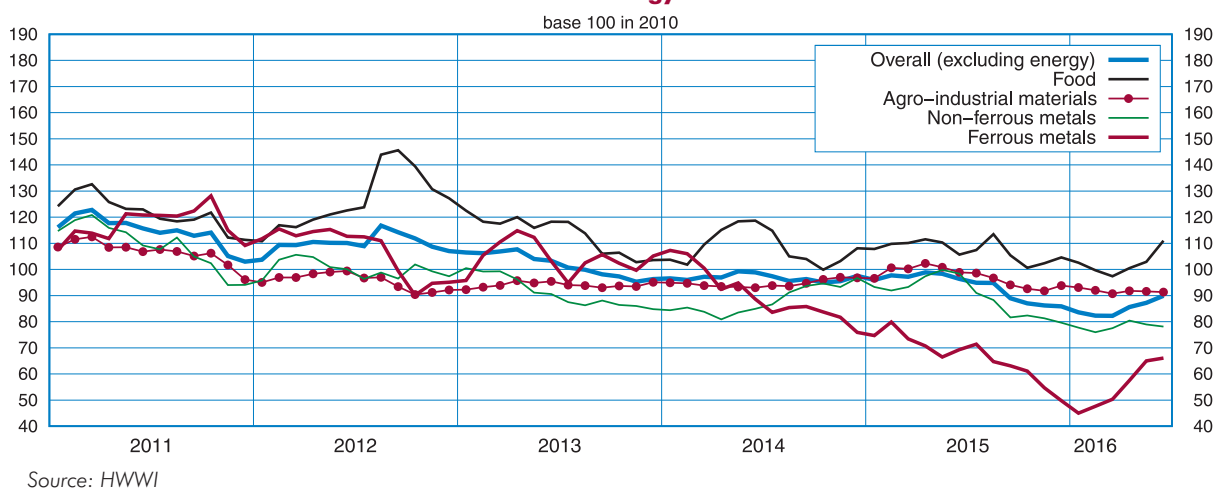
A sharp downturn in American oil production expected by the end of 2016

After five years of strong growth, American production has been falling since mid-2015

Between 2010 and mid-2015, against a backdrop of high oil prices, oil production in the United States grew from 7.4 to 13.0 million barrels per day (mbpd)[1] (*Graph 1*). This sharp rise was the result of the intensive use of new techniques for exploiting unconventional hydrocarbons (shale oil and gas in particular): the rig count[2] rose even-fold between 2009 and 2012, with 83% of the increase coming from these new production modes.

The slump in oil prices that began in mid-2014 led to a fall in the rig count (−76% between October 2014 and March 2016). Since mid-2015, the new production capacity from the new rigs has no longer been sufficient to make up for the progressive closure of the old wells. Since then American production has thus fallen and this decline became more marked in Q1 2016: −0.2 million barrels a day on average.

Nevertheless, considering the collapse in the number of rigs, the drop in production seems limited at this stage. Indeed, the impact of the reduction in the rig count is not immediate: the fall in number leads to a drop in production in subsequent quarters. In addition, industrial firms have kept the most productive rigs in use, to the detriment of rigs in less productive areas and exploratory drilling. Thus, by a composition effect, the average productivity of new installations has increased sharply, limiting the fall in production.

American production can be reconstituted based on the number of past rigs

In order to estimate future oil production in the United States, the production of the main producing zones[3] in the country is modelled independently. For each zone, two distinct lead times are applied to the rig count. The first corresponds to the length of the development time (time between the beginning of drilling and the well going into production) and the second corresponds to the length of time the well is operated.[4] Average productivity data are also available for new wells. Assuming that the productivity of a well is constant throughout its operation, the variation in production of a given month can therefore be estimated as the balance between the production of the new wells (product of the number of rigs after development and their productivity) and the production of the wells closed (product of the rig count after development and exploitation of wells and their productivity). For a zone, the variation in production is therefore estimated by the following relationship:

$$\Delta \operatorname{Pr}od_t = \beta(Forage_{t-D1} * \operatorname{Pr}oductivité_{t-D1} \\ -Forage_{t-(D1+D2)} * \operatorname{Pr}oductivité_{t-(D1+D2)})$$

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1. This figure includes crude oil, natural-gas condensates and liquefied natural gases.

2. A rig here means one new well; this statistic aggregates rigs to put wells into operation and exploratory drillings which are investment operations for future production.

3. This includes the Permian Basin (Texas), the Bakken formation (North Dakota) and the Eagle Ford formation (Texas), which are the main unconventional oil-producing zones to have seen substantial development since 2010, as well as the Gulf of Mexico, and the rest of the United States (made up for a large part of the conventional land-based oilfields). The first four zones represent half of the United States' oil production at the end of 2015 and two thirds of its variations between 2007 and 2015.

4. The production profile of an oil well comprises several phases. For the sake of simplicity, the model concentrates on the first phase during which the largest part of the production takes place. It excludes the long residual production phase. The actual life of a well is therefore longer than the exploitation period used here.

1 - Oil production and the oil rig count in the United States
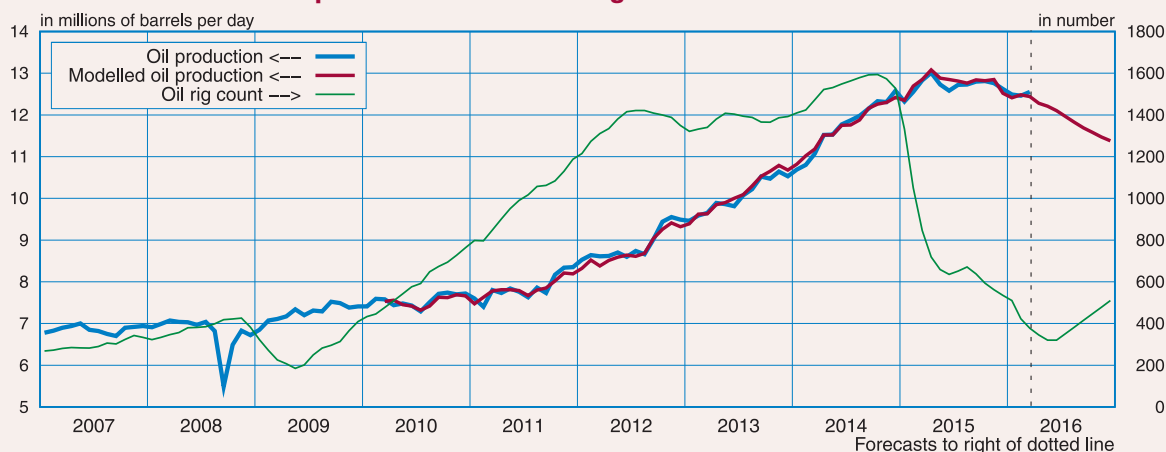
Source: US Energy Information Administration, Baker Hughes and INSEE calculations

The adjustment factor (β) and the lead times (D1 and D2) are determined for each geographical zone so as to minimise the deviation from production observed in the zone. The estimate of total American production is then calculated by aggregation.[5] The rig count considered, both for the United States as a whole and for each zone considered, is that calculated by American oilfield services company Baker Hughes. The oil production and productivity data, at national and local level, are for their part provided by the US Energy Information Administration.

This model provides a picture of the expansion of unconventional oil production, whose development and exploitation times are considerably shorter than for conventional oil operations (estimated at between 18 and 28 months, *Table 1*). For example, the model used for oil production in the Bakken formation in North Dakota[6] accounts for the phase of strong growth in the rig count between mid-2009 and mid-2015 and a decline since then (*Graph 2*). At the same time, the productivity of the new wells increased sharply until the end of 2014 and then accelerated substantially during the course of 2015, as operators selected the «best» rigs to put into operation.

Production is expected to fall by a million barrels a day between the end of 2015 and the end of 2016

With the methodology used, assuming that the rig count and the productivity per rig of new installations remain at their April 2016 level, the fall in production would continue in Q2 (−0.2 mbpd) and would become more marked in H2 (between −0.3 and −0.4 mbpd per quarter). This would mean production falling from 12.7 mbpd at the end of 2015 to 11.6 mbpd at the end

of 2016, or a drop of 1.1 mbpd in one year. This fall is expected to be the result of the historical series of the rig count; however, the assumption of stable productivity per rig of the new installations has little influence on production forecasts through to the end of this year, insofar as it only concerns the last wells drilled.

However, the recent rebound in the price of the barrel of oil, which has risen from just under 30 dollars at the beginning of the year to 50 dollars at the beginning of June, should lead the mining sector to increase the rig count in H2. Indeed, many drilling operations were abruptly stopped due to the past falls in oil prices and could be quickly completed. Assuming that the rig counts returns to its level of the beginning of the year by December, the drop in production would be 1.0 mbpd (*Table 2*).

In its scenario, the International Energy Agency (IEA) forecasts a less marked drop in American production: output is expected to fall in Q2 and Q3 by 0.2.mbpd and then stabilise in Q4. Over one year, the drop would be 0.6 mbpd to reach 12.4.mbpd at the end of 2016. However, the US Energy Information Administration's scenario is closer to the one used here: output is expected to fall further in Q3 (−0.5.mbpd) before stabilising in Q4. The fall over one year is expected to reach 1.0 mbpd. ∎

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5. This estimation method does not lend itself to conventional land-based oil production, where the times are much longer, leading to a tenuous link with the rig count. Furthermore, conventional land-based production only contributed to a limited extent to the dynamics of national production between 2007 and 2015. Thus in the forecasts the production of the rest of the United States is deemed to be constant at its Q1 2016 level.
6. Oil production in the Bakken formation is essentially unconventional.

2 - Oil production and the oil rig count in Bakken Basin, North Dakota
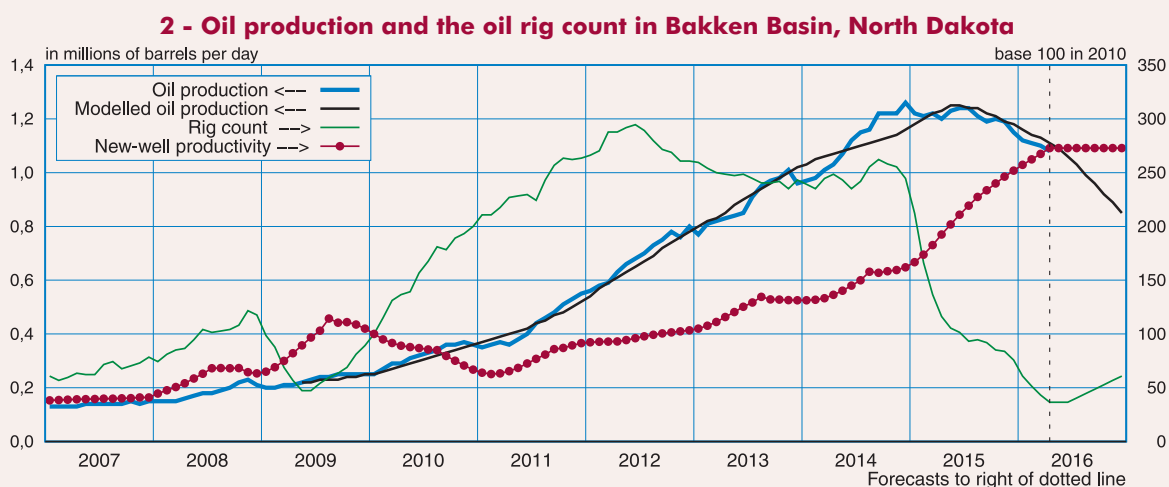
Source: US Energy Information Administration, Baker Hughes and INSEE calculations

Table 1 - Estimation of American oil production

	Permian (Texas)	Gulf of Mexico	Eagle Ford (Texas)	Bakken (North Dakota)	Rest of United States	**Total**
Estimated development time	4 months	7 months	2 months	4 months		
Estimated exploitation time	28 months	28 months	18 months	24 months		
Rig count (oil and gas) in April 2016	139	27	42	27	199	**434**
New-well oil average production per rig in April 206 in bpd	469	553*	949	799		
Actual production 2015 Q4 (in bpd)	2.0	1.6	1.5	1.2	6.4	**12.7**
Actual production 2016 Q1 (in bpd)	2.0	1.6	1.4	1.1	6.4	**12.5**
Modelled production 2016 Q4 (in bpd)	2.0	1.5	0.9	0.9	6.4	**11.7**

* estimate

Sources: US Energy Information Administration, Baker Hughes and INSEE calculations

Table 2 - Comparison of the different forecast scenarios

in millions of barrels per day

	2015 Q4	**2016 Q1**	**2016 Q2**	**2016 Q3**	**2016 Q4**	**2016 Q4 / 2015 Q4**
International Energy Agency forecast	13.0	12.7	12.5	12.3	12.4	−0.6
US Energy Information Administration forecast	12.7	12.5	12.2	11.7	11.7	−1.0
INSEE forecast	12.7	12.5	12.3	11.9	11.7	−1.0

Sources: AIE, US Energy Information Administration and INSEE

Financial markets

Rates fall again and credit picks up in the Eurozone

After raising its base rates at the end of 2015 – for the first time since 2006 – the Fed seems to be hesitating about the pace at which it should normalise its monetary policy. However, it is expected to raise its rates again by the end of 2016, thereby confirming the divergence of its monetary policy from that of the other major central banks. At the same time, the European Central Bank (ECB) is amplifying its accommodating monetary policy, as announced in March 2016: it reduced its base rates and increased the size and scope of its securities purchase programme.

The recovery in the European credit market is solidifying, driven by France and Germany where outstanding loans have grown substantially compared to last year.

The main financial markets – sovereign bonds, capital, money markets – are performing well. The principal sovereign yields fell again during Q1 and have been stable at a very low level since March. After the turmoil of the very beginning of the year, the stock markets started to rise again, and the volatility indicators started to fall.

Since the beginning of the year, the Euro has been appreciating against other currencies, except the yen. The real effective exchange rate (REER) in France is therefore expected to reach 1.1% during H1 2016, and then stabilise. By convention, the Euro exchange rate is set at 1.12 dollars, 0.8 pounds sterling and 122 yen until the end of 2016.
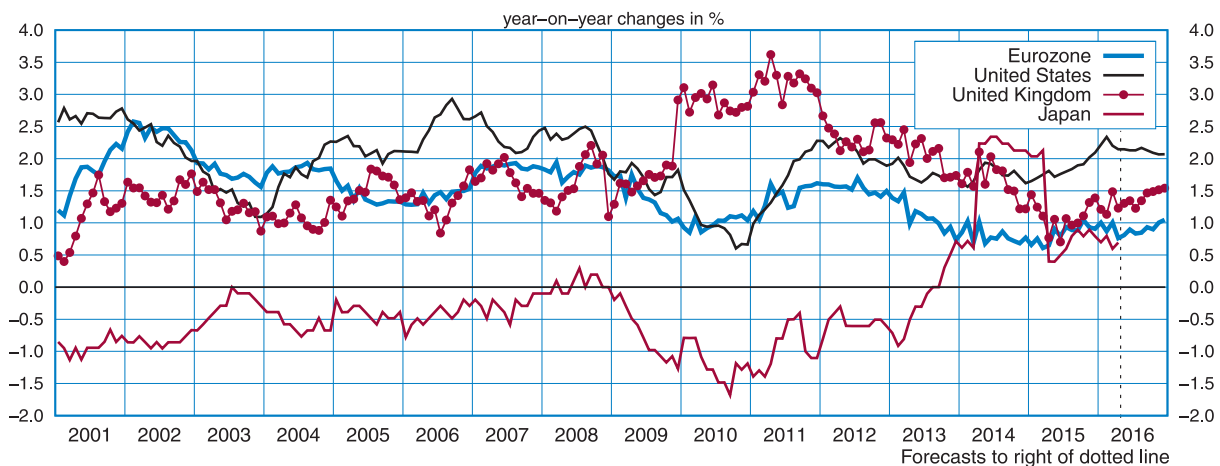
The Fed is expected to raise its base rates slightly

After raising its base rates in December 2015 for the first time in almost ten years, the US Federal Reserve (Fed) opted for status quo in Q1 2016. And yet the unemployment rate has stabilised at a low rate (just under 5%) and American core inflation is in an upward trend, slightly over the 2% threshold since January 2016 (*Graph 1*). By the end of the year, the Fed is likely to tighten its monetary policy prudently, probably with one or two modest increases in its base rate, which would not be likely to cause massive outflows of capital from the emerging countries.

The ECB ramps up its accommodating monetary policy

For its part, the European Central Bank (ECB) decided on 10 March to amplify its accommodating monetary policy. Inflation is virtually zero in the Eurozone and core inflation is struggling to exceed 1%. Several quantitative easing channels are being used. First of all, the base rates have been lowered: the deposit facility rate was cut by 10 base points to reach −0.40%. Next, the ECB increased the size of its securities purchase programme on the secondary market, from 60 billion to 80 billion Euros a month. In addition, the scope of the securities eligible for the purchase programme was extended to include investment-grade corporate bonds issued by non-bank corporations. This increase in volume and quality is intended to stimulate the corporate bond market in order to encourage the financing of

1 - Core inflation in the world

year–on–year changes in %

Eurozone / United States / United Kingdom / Japan

Forecasts to right of dotted line

Source: Eurostat, BLS, JSB, ONS, INSEE forecast

very large European industrial groups. Finally, the ECB has decided to carry out a new series of long-term refinancing operations, whilst incentivising loans to the real economy. This last easing lever should facilitate more directly the funding of SMEs that have limited access to the bond market.

### European sovereign yields stabilise at a very low level

Under the effect of the quantitative easing policies, the sovereign yields of the European countries deemed the most robust (Germany, France) fell again in Q1 2016 and have stabilised at a very low level since March: the French 10-year yield has settled around 0.5% and the German yield at around 0.2% (*Graph 2*). In both these countries, all securities with a maturity of 5 years or less have negative yields. The Spanish and Italian 10-year yields are stable at around 1.5%. However, the political uncertainty in Portugal has caused its sovereign yields to rise (+50 basis points). Finally,

after increasing at the beginning of the year, Greek sovereign yields fell back in May following the agreement reached between the government and its main creditors.

### Lending to enterprises has picked up in the Eurozone, in France and Germany in particular

In the Eurozone, outstanding loans to non-financial corporations returned to growth in mid-2015. Over one year to March 2016, outstanding loans increased by 1% (*Graph 3*). Nevertheless, the divergence remains strong between the dynamic growth in outstanding loans in France (+4% in one year) and in Germany (+3%) and their decline – albeit less marked than a year ago – in Italy and Spain (between –2% and –1%). The most recent European bank lending surveys suggest that momentum is picking up across the board. Interest rates on new loans are stable, at around 1.6% in France, Germany and Italy and 2.6% in Spain.

2 - Ten-year sovereign yields
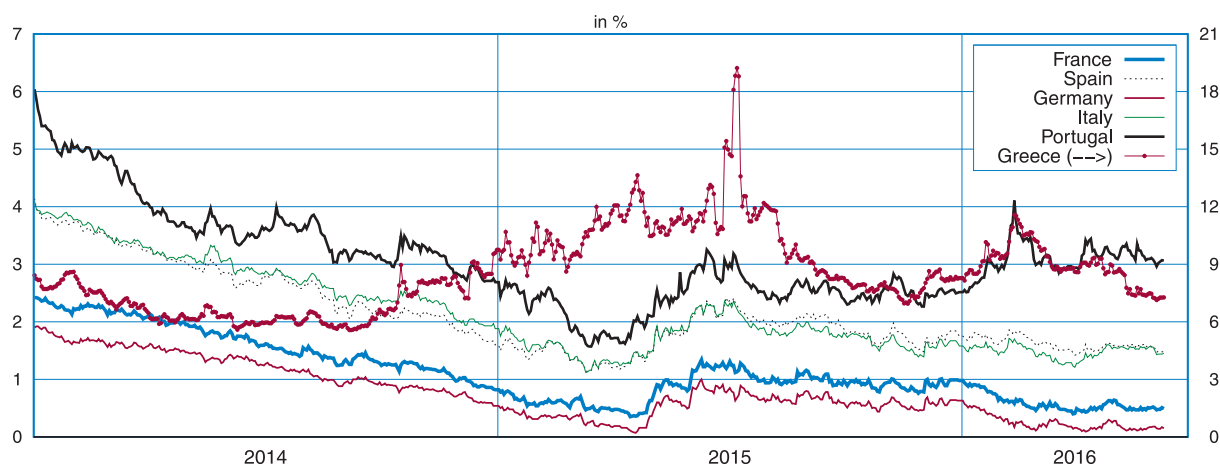
Source: Macrobond

3 - Variation in the volume of outstanding loans in the Eurozone
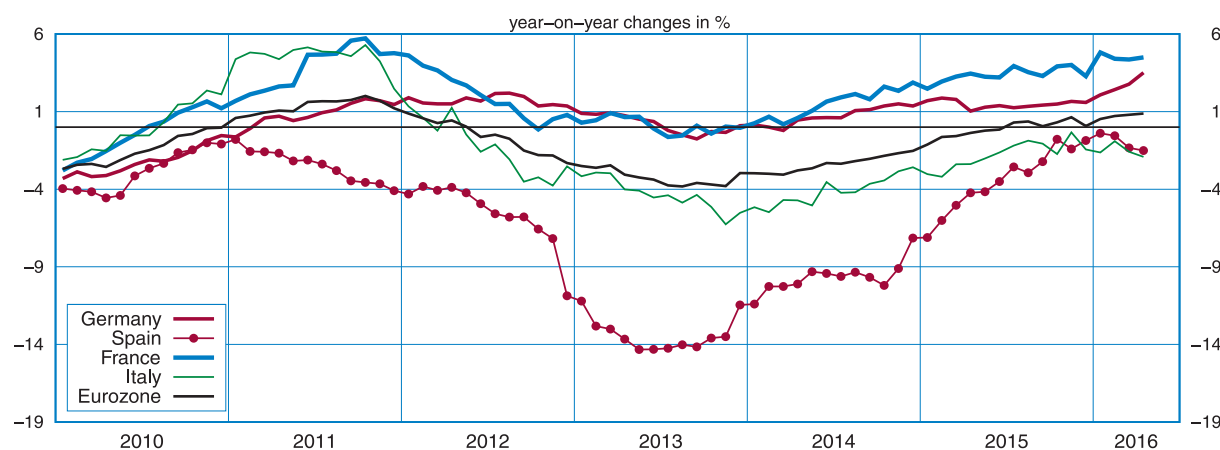
Source: European Central Bank

The interbank market is seeing a timid recovery

In the past, a reduction in the ECB's base rates led to a reduction in both the interbank rates and the volumes traded. With the cut in the ECB's rates in March 2016, the interbank rates did indeed fall, but the slight recovery in volumes seen at the beginning of the year has been confirmed. Although the volumes remain well below pre-crisis levels, this timid recovery is evidence of an improvement in confidence between banking institutions. In Italy, where the share of non-performing loans in balance sheets remains high, the set-up of a guarantee fund named Atlante seems to have eased the tensions that arose in Q1.

## The capital markets bounce back after the turbulence of the beginning of the year

The main stock markets in the advanced and emerging economies have seen a strong recovery after a widespread downturn at the beginning of

the year. This recovery is accompanied by a drop in the volatility indicators (*Graph 4*), a sign that investor confidence is gradually returning.

## The Euro gained ground in Q1, except against the yen

The appreciation of the Euro against the pound, affected by the uncertainties surrounding the referendum, strongly contributed to the rise of France's real effective exchange rate (REER) in Q1 2016. The Euro has also risen against other currencies, but not the yen. By convention, for the forecasting period the Euro exchange rate is set at its last known rate at the beginning of June (1.12 dollars, 0.8 pounds sterling and 122 yen) until the end of 2016. But in view of the carry-over effects, the REER is expected to appreciate again in Q2 before stabilising in H2 (*Graph 5*). ∎

4 - Monthly average volatility of stock market indices of the advanced countries
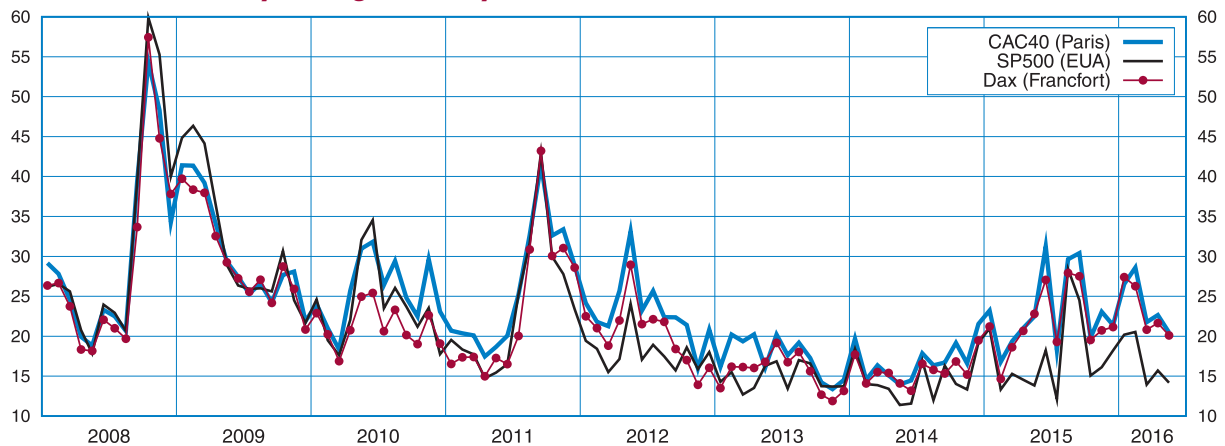
Source: Macrobond

5 - Quarterly change in real effective exchange rate (REER) and its contributing indicators
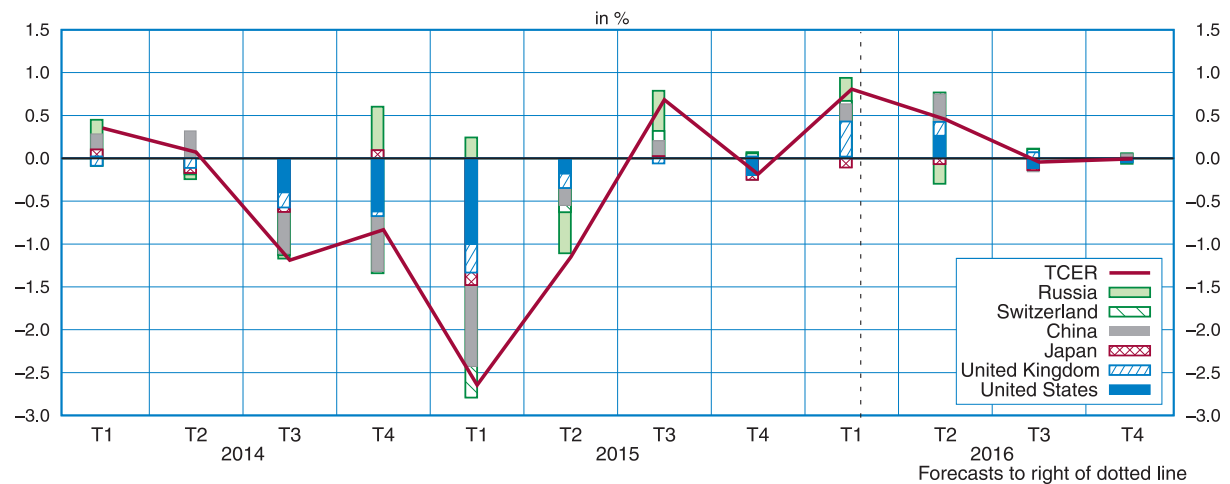
Source: Macrobond, INSEE calculations and forecast

Eurozone

Exports slow down, residential investment speeds up

In Q1 2016, gross domestic product (GDP) in the Eurozone gathered pace (+0.6% after +0.4% in Q4 2015). Growth was slightly higher than forecast in Germany (+0.7%), France (+0.6%) and Italy (+0.3%). Activity remained buoyant in Spain (+0.8%).
In Q2, activity should slow due to a backlash effect (+0.3%) before returning in H2 to its average growth rate observed since the end of 2014 (+0.4% per quarter). All in all over the year, GDP in the Eurozone is expected to accelerate slightly (+1.7% after +1.6% in 2015). Private consumption, boosted by the rise in employment and despite the upturn in inflation, should remain the main driver. Another strong increase is expected in investment in capital goods, with European demand remaining robust and financing terms easing. In addition, investment in construction should gather momentum: the sector is likely to be dynamic in Germany and should stop declining in Italy and France. However, foreign trade is expected to have a strong negative impact on growth in the zone for the first time since 2009.

Activity should slow in Q2 after a dynamic start to the year

In Q1 2016, gross domestic product (GDP) in the Eurozone accelerated (+0.6% after +0.4% in Q4 2015). Activity regained momentum in Germany (+0.7% after +0.3%), driven by industrial production, and in France (+0.6% after +0.4%). In Italy, it picked up more moderately (+0.3% after +0.2%), while growth remained buoyant in Spain (+0.8% after +0.8%).

In Q2, GDP should slow slightly (+0,3%). In particular, total industrial production should decelerate after a particularly dynamic first quarter. All components of domestic demand are expected to slow down, especially household consumption. In addition, investment in construction is likely to level off in Germany, after two quarters of strong growth under the effect of favourable temperatures. On the other hand, exports should pick up markedly (+0.9%) after a gloomy first quarter (+0.4%).

In Q2, activity should return to its average rate observed since late 2014

The business climate remains generally favourable (*Graph 1*) and in H2, activity should return to its average growth rate observed since late 2014 (+0.4% per quarter). Domestic demand is likely to remain buoyant, especially household consumption. Indeed, household purchasing power should improve thanks to the rise in employment, although real wages should slow under the effect of the expected upturn in inflation.

In addition, the gradual recovery of investment in construction in the Eurozone should be confirmed, gathering pace in H2 (+0.5% in Q3 followed by

1 - Business climate in the Eurozone
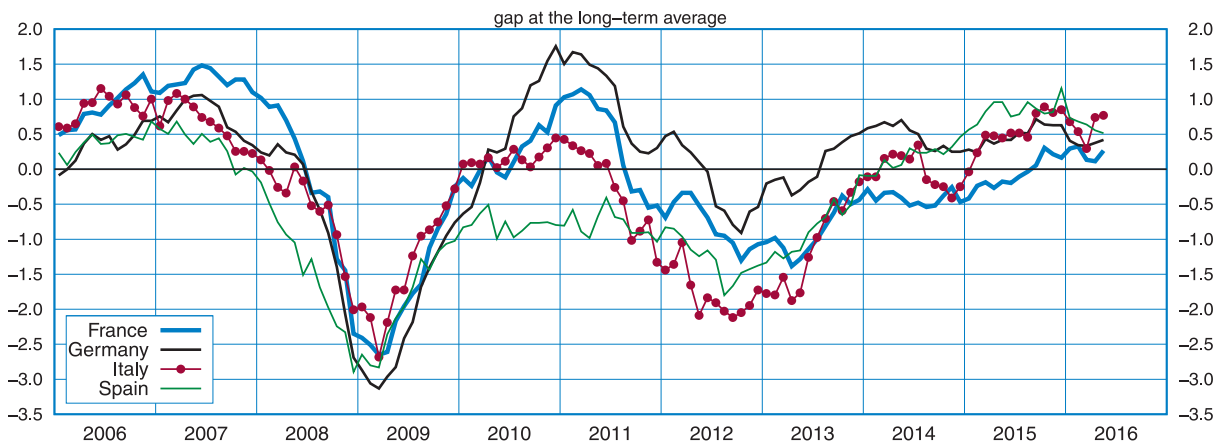
Source: European Commission

+0.6% in Q4). It should become dynamic again in Germany and stop declining in France and Italy. Finally, investment in capital goods should continue to increase strongly (+0.8% per quarter), with in particular recovery underway in Italy and growth remaining strong in Spain, although it is easing.

Buoyed by domestic demand, imports are not expected to weaken. Exports, by contrast, should only rise moderately: demand from the emerging economies is likely to remain weak and that from the USA and the UK should slacken, while the favourable effects of the past depreciation of the single currency are expected to fade. Consequently, foreign trade is once again likely to contribute negatively to growth in H2, after holding it back significantly between the summer of 2015 and the winter of 2016.

A very slight acceleration in activity is expected in annual terms

On average over 2016, there is expected to be a very slight acceleration in activity (+1.7% after +1.6% in 2015). It should once again be buoyed by consumption and investment. Investment in capital goods should remain dynamic (+4.6%, after +4.4% in 2015). The upswing in investment in construction (+2.0% after +0.5% in 2015 and −0.5% in 2014) should also bolster activity.

However, exports from the Eurozone should slow significantly as an annual average (+2.7% in 2016, after +5.1% in 2015), and more sharply than imports (+3.9% after +5.9%). All in all, with the domestic recovery underway and the deterioration of the short-term outlook for its

trading partners, foreign trade is expected to have a clearly adverse effect on growth in the Eurozone (−0.4 GDP points) for the first time since 2009.

Cyclical divergences should be further reduced

With the catch-up dynamics expected to run out of steam in Spain (+0.7% in Q2 2016 followed by +0.6% per quarter in H2), the growth rates of the main Eurozone countries are likely to be increasingly convergent, pointing towards a more balanced distribution of the recovery throughout the zone. In particular, Italian growth (between +0.2% and +0.3% per quarter) should come close to that expected in France and Germany (between +0.3% and +0.5% per quarter).

Headline inflation is expected to stage a gradual recovery

Since the start of 2015, headline inflation in the Eurozone has remained very low (*Graph 2*). This weak inflation is mainly due to the slump in oil prices: in early 2016, it even became negative again (−0.1% in May). However, on the conventional assumption that the price of a barrel of Brent crude will stabilise at $50 until the end of the year, headline inflation is expected to increase gradually during 2016. It is likely to become positive again in the summer and should reach +1.0% over one year at the end of 2016. In this way, it should converge with core inflation, which should continue to increase by approximately 1.0% over one year in the zone, and slightly faster in Germany than elsewhere due to stronger growth in wages. ∎

2 – Inflation in the Eurozone
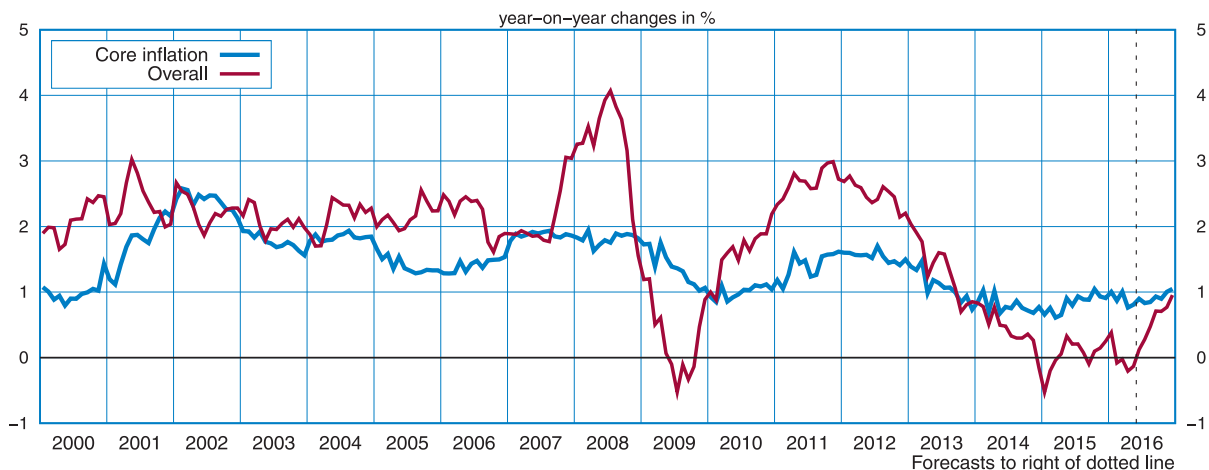
Sources: Eurostat, INSEE forecast