

MACROECONOMIC ANALYSIS

Inflation in Europe: explanatory drivers and perspectives

Agustín García-Serrador / Miguel Jiménez

- The bulk of the prediction error for inflation in 2014, made a year earlier, is explained by oil prices
- The impact of 10% lower oil prices on inflation is between 0.2pp and 0.3pp, while the effect on core inflation is less than 0.1pp
- Our new scenario of oil around USD65 in 2015 and USD75 in 2016 has led us to revise downward our inflation expectations, with lows of between -0.6% and -0.7% YoY in February and March
- The risks are both upwards (through higher depreciation of the euro) and especially downwards (for oil prices stuck at current levels or even lower), and the de-anchoring of inflation expectations
- The role of the ECB in raising levels of inflation and balancing the downside risks is key

What explains the greater-than-expected decline in inflation? Fundamentally, oil prices

- The **recession of 2008 and 2012** ended with a cumulative fall in GDP of about 3.5%, almost 6% of domestic demand and an increase in the unemployment rate of around 5pp to 12%, which **resulted in a very low rate of core inflation in late 2013** (Figure 1).
- In this framework and with expectations of moderate recovery, **our models in late 2013 pointed to headline inflation moderating further in the first half of 2014, then increasing gradually during the second half of 2014** due to the disappearance of the falling energy prices base effect observed a year earlier, with a relatively stable core inflation at around 1%.
- However, **the strong and unexpected drop in oil prices** (Figure 2), which was largely due to a supply shock, **partly offset by further depreciation of the euro, led to a slowdown in headline inflation during the second half of 2014** that reached -0.2% YoY in December, compared with 1% YoY expected a year earlier. Nevertheless, **core inflation performed largely as expected**, with a slight downward error which was mainly explained by the evolution of processed food prices (Figure 3).
- The factors accounting for the error of the forecast made at the end of 2013, based on the Phillips curve¹, confirm this: **most of the error is explained by the surprising drop in oil prices** in euros, while the negative surprise in the evolution of activity (milder and later recovery than anticipated) explains only a very small part of that error (Figure 4). This suggests that a standard Phillips curve, using the ECB's target as a proxy for inflation expectations (specifically, we are using an implicit target of 2% up to 2003 and 1.8% since then), still works well to predict inflation if the assumptions on exogenous factors (mainly energy prices) are adequate².

¹ Hybrid Phillips curve including inflation expectations, approximated by the ECB's target, and past inflation, the output gap and the oil prices in euros.

² The prediction error made one year ahead of December 2014's inflation of the Phillips curve, taking the real data in oil prices, is only of one tenth.

What is the impact of the oil shock on inflation?

- The recent and continuing **decline in oil prices** seems to be determined **mainly by a positive supply shock** in production, **but also in part by lower-than-expected demand**. Therefore, despite the bearish effect it is having on prices, the impact of the oil shock is smaller than if it were caused by a pure demand shock, since reducing energy prices supports the recovery of domestic demand through private consumption and investment, by reducing production costs and the recovery of income. This recovery should partially offset the deflationary effect on prices.
- We have estimated the impact of an oil shock from a structural VAR model identified with restriction of signs to differentiate the nature of the shock (supply or demand). In particular, we identify a supply shock as one characterised by increased oil production, a fall in its price and an acceleration (or at least no deceleration) of global growth³. **Assuming that 70% of the current shock is a result of increased supply and 30% is from lower demand⁴, a fall of 10% in oil prices would mean a total reduction in inflation of about 0.2-0.3pp** (Figure 7).
- On the other hand, oil prices not only have a direct effect on consumer prices through energy products included in the households basket of consumer goods, but **there are also indirect effects that occur when companies translate their falling production costs to consumer prices** (especially given the weakness of domestic demand), **and second-round effects that could result from a reduction in wages** due to reduced inflation expectations. Also, it is worth noting that the direct effect of a permanent fall in oil prices has a lasting impact on price levels, but that the impact on inflation is of relatively short duration. By contrast, the impact of both indirect and second-round effects on inflation is more persistent due to a slower, more gradual transmission.
- **To calculate the impact on inflation due to indirect and second round effects**, we have estimated a VAR to analyse the interaction between GDP, core inflation (to discount the direct effect), Brent prices and nominal exchange rate. The results show that a 10% drop in the price of a barrel of Brent could reduce core inflation by **less than 0.1pp, although it would persist for over a year** (Figure 8).

Future outlook: with our new oil scenario, headline inflation will be negative in the coming quarters and remain clearly below 2% over the forecast horizon

- **Our scenario of oil now considers that Brent prices will settle on average at around USD65 per barrel in 2015 and USD75 in 2016**, instead of our scenario of three months ago of USD105 and USD104 respectively, which means an oil price almost 40% lower in 2015 and 30% in 2016 compared to former scenario (Figure 2).
- Our best forecast is a result both of univariate models in the short term, that we usually use in our monthly forecasts to factor in the direct and almost instantaneous effect of lower oil prices, and Phillips curve projections and the estimate of impacts calculated with the structural VAR models described above. We now expect that the fall in headline inflation **will intensify in the coming months to about -0.6%/-0.7% YoY in February and March**, while more moderate **negative rates will be recorded in the second quarter and it will gradually creep up during the second part of the year** (to around 0.8% YoY in December). Therefore, the new oil scenario leads us to **revise downwards the average headline inflation for 2015 by 0.9pp to 0.1% in 2015** (Figure 9). **In 2016, headline inflation will settle at around 1%, still far from the ECB's objective.**

3: For details on structural VAR used, see Box 2:

https://www.bbvaresearch.com/wp-content/uploads/migrados/1105_Europeeconomicoutlook_tcm348-258116.pdf

4: For details on the determinants of the evolution of oil prices see:

https://www.bbvaresearch.com/wp-content/uploads/2014/12/2014.12-Macro-impact-of-lower-oil-prices-v05_i-1.pdf

- Regarding **core inflation**, the revision is much more moderate, by about 0.2pp to **0.8% for 2015 as a whole**, which is expected to remain relatively stable, **with a slight increase during 2016 to an average annual rate of 1.1%** (Figure 9). This is **in line with our measure of trend inflation** (trimmed inflation measure)⁵ (Figure 5). The criterion for choosing the optimal trim responds to the ability to predict the average annualised inflation in a forecast horizon of 30 months, thus suggesting that these low inflation rates will persist over the forecast horizon. **The revision essentially is a response to the estimated impact of possible indirect and second-round effects**, although the latter may be underestimated by the models, because historically there have been no episodes of reduced inflation expectations, while the downward rigidity of wages could have changed substantially after the economic crisis and the sharp deterioration in the labour market, as well as the implemented reforms, especially on the periphery.
- **However**, the evolution of **negotiated wages** published by the ECB and available until the third quarter of 2014 **so far shows no clear evidence of significant second-round effects** (Figure 6).

And risks remain tilted to the downside

- So far in 2015, the evolution of **oil prices has continued to surprise**, with an **additional fall after the decision by OPEC** to maintain oil production, and this could result in prices close to current levels (below USD50), or even lower, for an extended period. However, uncertainty is very high and a further rebound cannot be ruled out in the coming months. Therefore, given the sensitivity of inflation (direct effect) of energy products to oil prices and their weight in the overall index (about 11%), **we cannot rule out that further falls in the price of Brent in the short term could push general inflation to even more negative rates and/or for more quarters**.
- Given this increased uncertainty, we performed simulations of the change in oil prices, assuming that they remain at either **50 or 40 dollars during the forecast horizon**, which would imply **inflation of between -0.3% and -0.6% in 2015** (Figure 10). To this direct effect we would have to add the indirect and second-round effects, which, in addition, would be more persistent.
- **There are also upside risks from further depreciation of the euro** (which could come, for example, from the recent actions of other central banks), which could lead to a greater rise in import prices, mainly in intermediate products (Figure 11). However, the transmission to final consumer prices could be delayed because, given the still weak domestic demand, it is likely that companies will reduce their profit margins rather than risk losing market share. Our estimates suggest that depreciation of the euro of around 10% could lead to an increase in inflation of about 0.3pp.

The risk of inflation expectations de-anchoring increases

- One of the biggest problems of **reducing inflation expectations** is that it could condition consumption decisions (savings) and investment by agents (affecting activity) and in the process of wage setting have a **persistent impact on inflation in the medium term, endangering the fulfilment of the ECB's mandate, which could even result in deflation**.
- One common instrument to measure inflation expectations, often taken into account by the ECB, is the **5years/5years** inflation swap, which has **fallen significantly since mid-2014**, after having remained relatively stable at 2% in the first six months, **to about 1.6% earlier this year** (Figure 12).
- This fall is **different from the episode of 2009**, when inflation was also negative for almost half a year due to falling oil prices and core inflation stood at 1% YoY; on that occasion the swap inflation remained

⁵ For more details on the calculation of trend inflation through the trimmed means method, see Box 1 in: https://www.bbva.com/wp-content/uploads/migrados/1402_Spain_Economic_Outlook_tcm348-426396.pdf

relatively stable, not reacting to current data that were published and showing the anchoring of expectations. Unlike then, **now the set of standard monetary policy measures is over and there is more uncertainty about the implementation and effectiveness of unconventional ones, while the availability to use the room for manoeuvre through fiscal policy is limited.**

- In this context, **the role of the ECB to keep inflation close to 2% is crucial**, and that is the purpose of the QE measures approved this week⁶. Downward inflation expectations introduce a bias to the downside in price formation, with the consequent additional disinflationary bias, and reinforce the role of second-round effects that must be prevented, given an oil price shock as extreme as the current one.

⁶ For more details on our assessment, see the ECB Watch:
https://www.bbvarsearch.com/wp-content/uploads/2015/01/ECB-Watch_0115.pdf

Oil price shock in a context of very low inflation ...

Headline inflation fell by -0.2% YoY in December, due to the negative oil price shock in a context of low inflation rates over an extended period, while the core remains relatively stable at 0.7% YoY.

Figure 1

Domestic demand and inflation

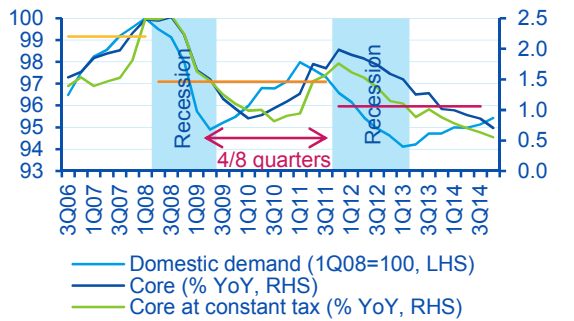
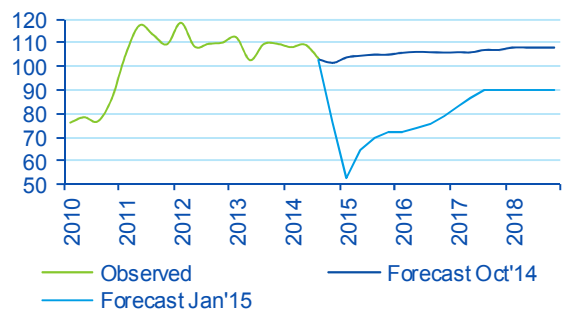


Figure 2

Oil Brent (USD/b)



... explaining 2/3 of the forecast error in 2014

Headline inflation in 4Q14 was at 1pp lower than expected a year earlier, and core was 0.2 pp. The error is mainly explained by the energy component (0.7 pp) and food (0.1 pp).

Figure 3

Inflation: forecast error by components

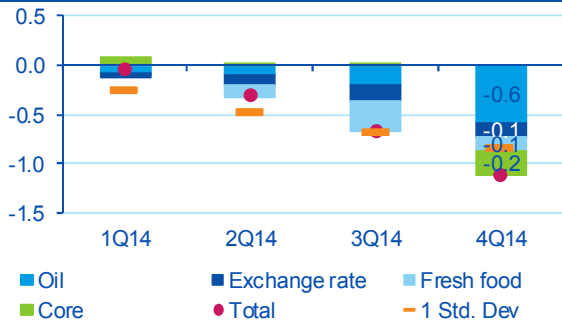
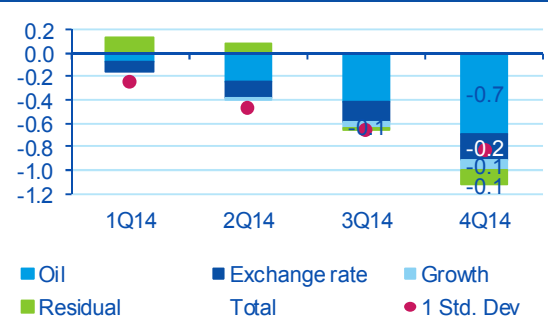


Figure 4

Inflation: forecast error by factors



Core inflation has stabilised in 4Q14, with little evidence of second-round effects

Furthermore, trend inflation suggests that in the coming months core inflation will remain relatively stable at the current rates. In particular, there have still been no second-round effects observed in wage negotiations

Figure 5

Trend inflation (trimmed mean, % YoY)

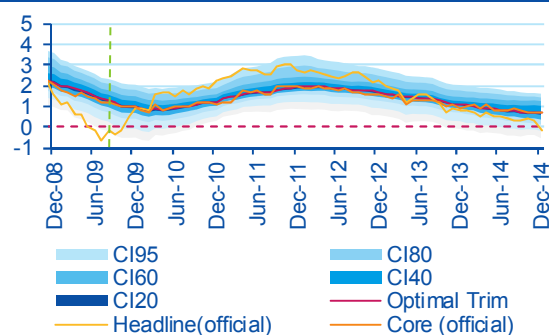
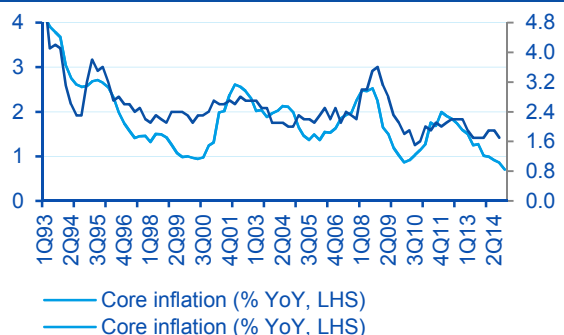


Figure 6

Negotiated wages and inflation



*Sources: Haver Analytics, Bloomberg, ECB and BBVA Research

Strong direct impact of the fall of Brent prices on inflation, while the indirect impact and second-round effects seem limited, but more persistent

The total impact of the fall of Brent prices should be about 0.9pp, of which around 0.7pp should be due to direct impact and the remaining 0.2pp to indirect and second round effects. There is a risk that the latter are somewhat higher, given the strong decline in both domestic demand and the labour market

Figure 7
Effect of oil prices on inflation from SVAR model

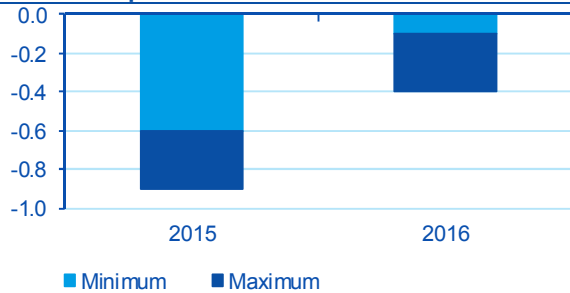
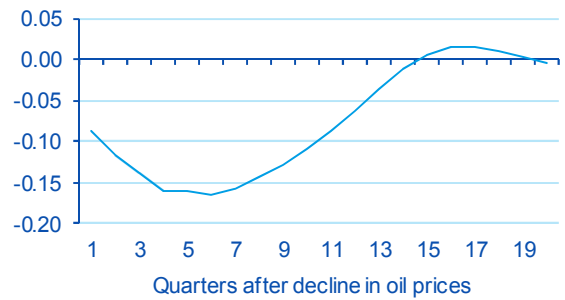


Figure 8
Indirect and second-round effects of a fall of 35% of Brent prices (pp)



Significant downward revision of headline inflation in the forecast horizon and risks continue to the downside

For 2015, the forecast for headline and core inflation was revised down by 0.9pp and 0.2pp to 0.1% and 0.8% respectively. However, uncertainty about an additional and persistent fall in the price of Brent could accentuate the decline in headline inflation in the forecast horizon.

Figure 9
Inflation forecasts (%)

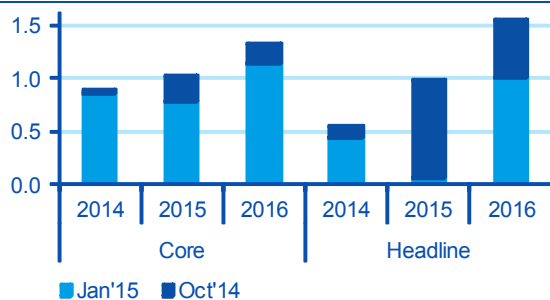
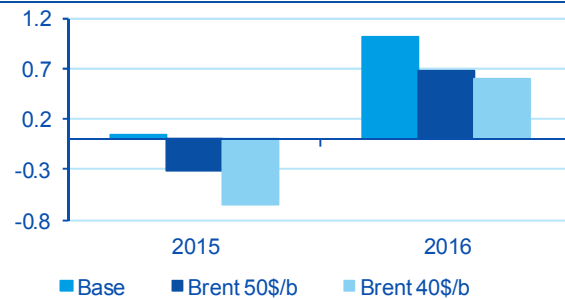


Figure 10
Inflation under different scenarios of oil Brent prices (%)



Upside risks arising from a possible depreciation of the euro are more difficult to pass through to final prices, while inflation expectations have fallen

The weakening of the euro in recent months end up increasing import prices, mainly intermediate goods, but given the weak demand is difficult to translate to consumer prices. In addition, risks to the downside are larger, reflecting in a reduction in inflation expectations.

Figure 11
Exchange rate and import prices

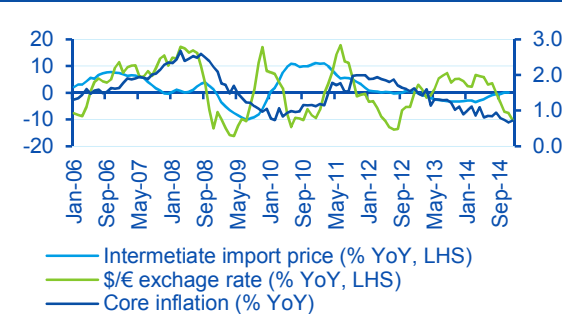
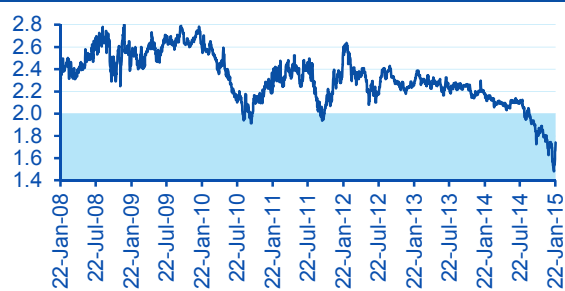


Figure 12
Inflation swap 5 years / 5 years forward (%)



* Sources: Haver Analytics, Bloomberg, ECB and BBVA Research

DISCLAIMER

This document has been prepared by BBVA Research Department, it is provided for information purposes only and expresses data, opinions or estimations regarding the date of issue of the report, prepared by BBVA or obtained from or based on sources we consider to be reliable, and have not been independently verified by BBVA. Therefore, BBVA offers no warranty, either express or implicit, regarding its accuracy, integrity or correctness.

Estimations this document may contain have been undertaken according to generally accepted methodologies and should be considered as forecasts or projections. Results obtained in the past, either positive or negative, are no guarantee of future performance.

This document and its contents are subject to changes without prior notice depending on variables such as the economic context or market fluctuations. BBVA is not responsible for updating these contents or for giving notice of such changes.

BBVA accepts no liability for any loss, direct or indirect, that may result from the use of this document or its contents.

This document and its contents do not constitute an offer, invitation or solicitation to purchase, divest or enter into any interest in financial assets or instruments. Neither shall this document nor its contents form the basis of any contract, commitment or decision of any kind.

In regard to investment in financial assets related to economic variables this document may cover, readers should be aware that under no circumstances should they base their investment decisions in the information contained in this document. Those persons or entities offering investment products to these potential investors are legally required to provide the information needed for them to take an appropriate investment decision.

The content of this document is protected by intellectual property laws. It is forbidden its reproduction, transformation, distribution, public communication, making available, extraction, reuse, forwarding or use of any nature by any means or process, except in cases where it is legally permitted or expressly authorized by BBVA.