

## Oil prices – their impact on inflation and economic activity

### 1. Oil prices and their determinants

After having fluctuated around USD 110 per barrel on average over the last four years, Brent oil prices dropped significantly starting with the latter half of 2014. At end-January 2015, Brent oil traded on international markets slightly below USD 50 per barrel.

*Which was the driver of the oil price fall in 2014?*

The recent decline in oil prices is mainly ascribable to a supply shock. In 2014, the cumulated oil production of OPEC and the US rose by 1.2 million barrels per day on average, owing solely to the higher-than-expected increase in the latter's oil production (up 16.4 percent from 2013) as a result of fracking. The rise in the crude oil supply occurred amid modest dynamics of world liquid fuel consumption, on the back of the lower-than-expected global economic activity – against the backdrop of escalating geopolitical tensions and the weakening growth momentum in Europe, the IMF forecast for global growth in 2014 was revised downwards by 0.4 percentage points to 3.3 percent.

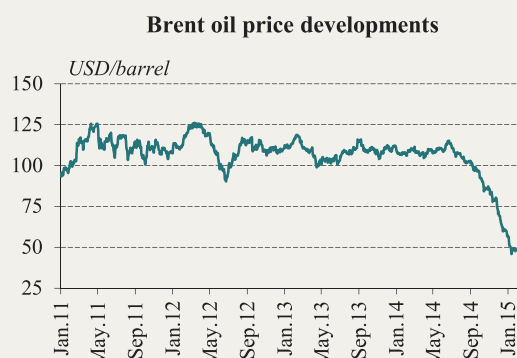
The last four-and-a-half decades saw only five such episodes of plummeting crude oil prices caused by geopolitical tensions, financial and economic crises or by OPEC's decision to lift production quotas. A similar price fall to the recent adjustment occurred in 1986, when oil prices dropped by over 60 percent within a half-year following OPEC's decision to increase its market share to the detriment of non-OPEC countries.

The heightened uncertainty surrounding developments in demand for and particularly supply of oil worldwide fuelled oil price volatility, which hit, in January 2015, record highs since the outbreak of the financial crisis. Given this context, the path of future oil prices is highly unpredictable.

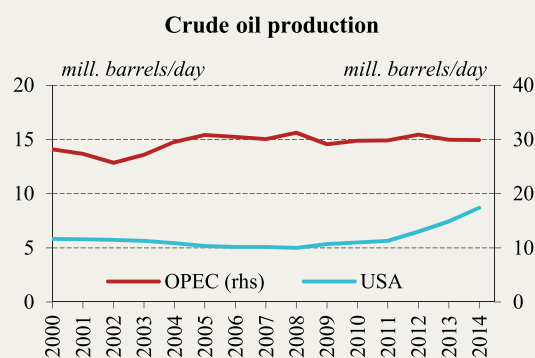
### 2. The impact on inflation

International oil price fluctuations pass through into domestic inflation via various channels and their final impact can be broken down into direct and indirect first-round effects and second-round effects.

First-round effects are characterised by a temporary upturn or downturn in the general price level, therefore they do not exert persistent inflationary or deflationary pressure. However, mention should be made that these effects, albeit transitory, translate into the annual inflation rate over four quarters. Two types of first-round effects can be distinguished: direct first-round effects, which have an impact on fuel prices, a CPI component,

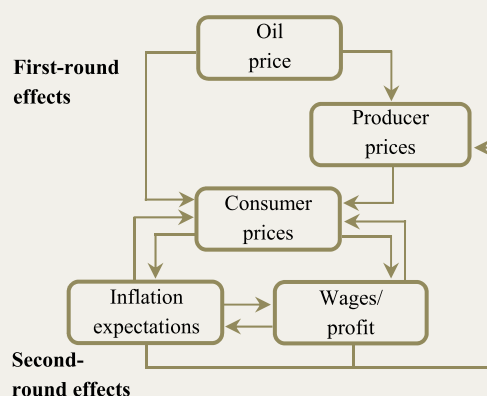


Source: Bloomberg



Source: EIA

### Transmission channels of oil price movements to consumer prices



Source: ECB

and indirect first-round effects, which pass through to consumer prices via production costs, including economic operators' transportation costs.

Unlike first-round effects, second-round effects may exert a persistent impact on inflation. The short-lived change in consumer prices due to first-round effects can be incorporated in inflation expectations and thus influence economic agents' future price and wage setting behaviour. In this case, the initially transitory shock may have long-term effects.

As for indirect and second-round effects, they can only be estimated. It is hardly possible to gauge them precisely, given that econometric models use a simplified representation of the economy and the strength at which shocks propagate may vary over time. According to ECB estimates<sup>1</sup> for the euro area, a 10 percent change in the oil price has an approximately 0.6 percentage point impact on the annual HICP inflation (excluding food and energy) over three years. Dybczak, Voňka and van der Windt (2008)<sup>2</sup> showed that, as far as the Czech economy is concerned, an oil price increase by 5 percent per annum over four years would cause the annual inflation rate to accelerate by 0.4 percentage points each year.

*How does an oil price fall pass through into domestic inflation?*

### Direct effects

In 2014, fuels held 8.3 percent of the CPI basket in Romania, with petrol and diesel together accounting for around a half of the said share.

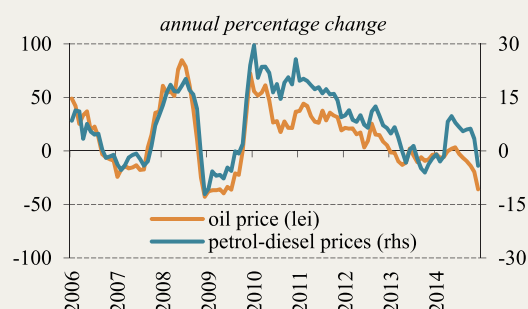
NBR estimates show that the transmission of a decline in oil prices to fuel prices is relatively fast, i.e. a 10 percent drop in Brent oil prices results in an approximately 3.3 percent decrease in petrol and diesel prices within a quarter after the oil price shock. The pass-through is marginally asymmetric, in that the response of fuel prices is slightly stronger to oil price increases than to oil price declines.

### Indirect effects

Around 17 percent of the change in fuel prices passes through into producer prices for consumer goods over a one-year horizon. Changes in the latter prices feed through into core inflation by around 70 percent over the same horizon.

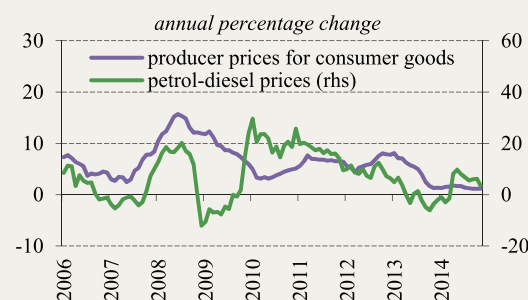
The assessment of a 10 percent oil price fall scenario indicates an approximately -0.2 percentage point impact (direct and indirect effects) on the annual CPI inflation rate over a one-year horizon<sup>3</sup>.

**Oil and fuel price developments**



Source: Bloomberg, NIS, NBR calculations

**Fuel and producer price developments**



Source: Eurostat, NIS, NBR calculations

<sup>1</sup> "Oil prices – their determinants and impact on euro area inflation and the macroeconomy", *Monthly Bulletin*, ECB, August 2010.

<sup>2</sup> "The effect of oil price shocks on the Czech economy", *Working Paper Series* No. 5/2008, Czech National Bank.

<sup>3</sup> The said assessment used several multivariate and univariate models that produced similar results.

### **Second-round effects**

As first-round effects fade away from the annual inflation rate after four quarters since becoming manifest, the inflation path following the initial shock will be influenced by the size and persistence of second-round effects. Thus, a downward revision of inflation expectations as a result of a 10 percent decline in the oil price is expected to exert a relatively low impact on CPI inflation, adding to first-round effects about -0.05 percentage points over a one-year horizon. This assessment strictly depends on the specific context of the economy under investigation at the time the shock hits, and particularly on the stance of the monetary policy, which aims to steadily anchor, over the medium term, inflation expectations at the set inflation targets. For instance, if the oil price fall results in lower inflation expectations and core inflation implicitly, a potential monetary policy easing could foster economic activity and thus partly offset the initial slowdown in the inflation rate owing to the aforementioned first and second-round effects.

### **3. The impact on economic activity**

Given the low dependence of the Romanian economy on crude oil imports, the impact of a 10 percent oil price decline on domestic economic growth over a one-year horizon is estimated to be only marginally positive, with potentially benign influences coming from companies' lower production costs (e.g. energy costs) and more favourable prospects for external demand. Under a 10 percent oil price change scenario, the ECB<sup>1</sup> estimated that the overall impact on the euro area GDP would be of approximately 0.24 percentage points after three years since the shock hit.