Box 2

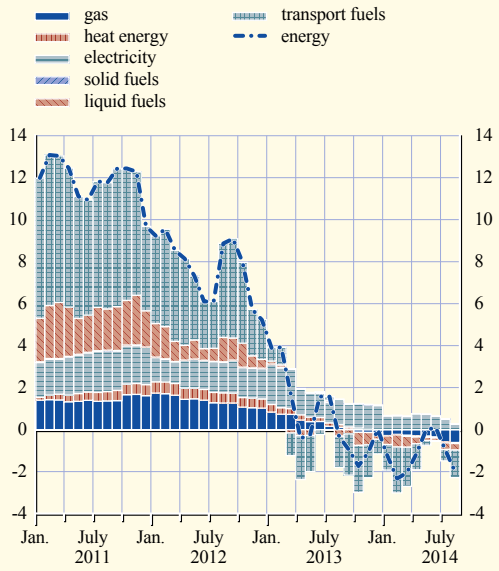
DEVELOPMENTS IN CONSUMER GAS PRICES IN THE EURO AREA

This box looks at the factors underlying the evolution of consumer natural gas prices, which have been one element behind the disinflation observed in the euro area since 2012. Natural gas prices are a sizeable component of HICP energy, accounting for one-sixth of the index. The annual rate of change in HICP energy fell from above 10% in late 2011 to being slightly negative, on average, over the last twelve months (see Chart A). The decline was strongest in oil-energy consumer prices (i.e. transport and liquid fuels), but electricity and especially gas consumer prices also played a role. The annual rate of change in consumer gas prices fell from a peak of 11% in early 2012 to around -4% in July 2014. The decline in consumer natural gas price inflation therefore accounted for 0.3 percentage point – or more than 10% – of the decline observed in overall HICP inflation since 2012, which is considerably greater than its share in the overall HICP (slightly less than 2%). This significant development is due to a combination of factors. To understand them, this box looks at the structure of the natural gas market and its evolution in Europe.

In comparison with oil markets, natural gas markets are much more segmented across geographical regions as a result of the higher transportation costs involved and the limited storability of natural gas. Despite this fragmentation, until about 2010 global oil prices and wholesale gas prices co-moved strongly. This is shown in Chart B, which plots crude oil prices alongside wholesale gas prices in the United States, Europe and Japan.

Chart A Contribution to annual rate of change in HICP energy

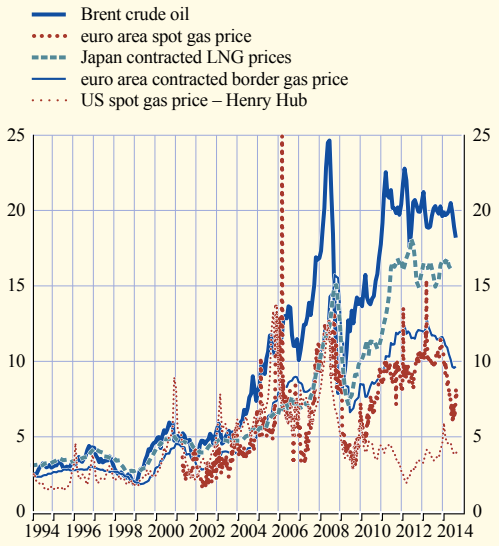
(annual percentage changes; percentages)



Sources: Eurostat and ECB calculations.

Chart B Evolution of crude oil and wholesale natural gas prices

(USD/MMBtu)



Sources: Haver Analytics and ECB calculations.
Notes: The European spot gas price is calculated as the average of Belgium (Zeebrugge) and Netherlands (TTF) prices. MMBtu stands for one million British thermal units.

Gas prices in Japan and Europe moved most closely with crude oil prices, as they were formally indexed to the price of oil. Wholesale gas prices in the United States were more volatile, but they also tended to co-move broadly with oil prices on account of some switching between energy types (natural gas and fuel oil).[1] However, since 2010, natural gas prices and crude oil prices in the United States have stopped co-moving, primarily owing to the growing production of shale gas. In Japan, wholesale gas prices continue to co-move with oil prices, although the indexation with oil prices may come under pressure as spot markets in Asia start to develop.[2]

The situation in Europe has become more nuanced in recent years.[3] In Europe, unlike in the United States, most gas has been supplied on the basis of long-term contracts agreed between incumbent gas companies and the key gas-producing countries of Norway, Russia and the Netherlands. These prices are captured by the "euro area contracted border price" series shown in Chart B. However, spot markets for natural gas have also grown steadily in importance in Europe. This evolution, combined with high oil prices and low demand for natural gas following the economic crisis, has led to a renegotiation of many indexed contracts, linking new contracts

1 See, for example, the discussion in Brown, S. P. A. and Yücel, M. K., "What Drives Natural Gas Prices?", *The Energy Journal*, International Association for Energy Economics, Vol. 29, No 2, 2008, pp. 45-60. "Natural gas market analysts generally emphasize weather and inventories as drivers of natural gas prices. … we show that when these and other additional factors are taken into account, movements in crude oil prices have a prominent role in shaping natural gas prices. Our findings imply a continuum of prices at which natural gas and petroleum products are substitutes."

2 See, for instance, the discussion in Medlock III, K. B., "Natural Gas Price in Asia: What to Expect and What It Means", James A. Baker III Institute for Public Policy, Rice University, Houston, 2014.

3 For a more detailed discussion of wholesale gas prices in Europe, see also Section 5, "Wholesale gas prices", *Quarterly Report on European Gas Markets*, Vol. 6, issue 2, Market Observatory for Energy, DG Energy, European Commission, second quarter 2013.

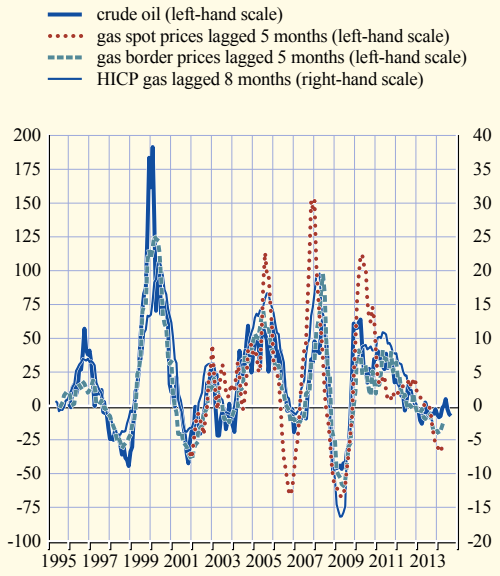
to spot markets (so-called "gas-to-gas pricing"). In Europe, spot market prices for natural gas have tended to be below those of contracted border prices and to be more volatile, as they reflect supply-demand developments in the natural gas market (e.g. increased demand owing to cold weather will tend to push up prices even if only for a limited period of time). As also shown in Chart B, since 2009 gas prices in Europe have increasingly decoupled from oil prices and did not increase as strongly as oil prices between 2009 and 2011. In 2012 and 2013 there were no strong movements in either oil or natural gas prices.

Since the beginning of 2014, wholesale gas prices in Europe have declined, despite the difficult political situation in Ukraine and uncertainties concerning Russia's gas supply. This has surprised many analysts. Market evidence suggests that, despite the geopolitical risks, the weakness of European gas prices is due to a combination of factors: ongoing low demand, resulting from subdued economic activity; the very mild winter (lower heating demand) and relatively cool summer (lower air conditioning demand) in 2014; and the fact that gas storage facilities are almost full across Europe. The decline in wholesale gas prices (border and, in particular, spot market prices) has been higher than expected on the basis of past co-movements with oil prices (see Chart C). In addition, consumer prices thus far have followed contracted border gas prices more closely, perhaps because spot markets are more oriented towards larger industrial users.

Another noteworthy feature is that there are some differences in consumer gas prices across the larger euro area economies, despite a high degree of co-movement in terms of year-on-year changes (see Chart D). For instance, consumer natural gas prices in Italy declined by around 10%

Chart C Co-movement of HICP gas with crude oil and wholesale natural gas prices

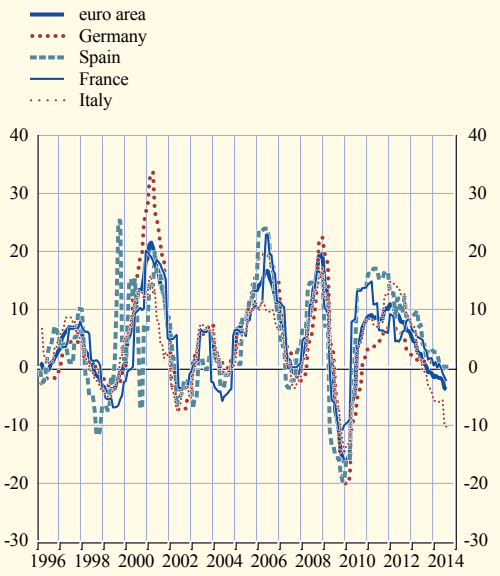
(annual percentage changes; percentages)



Sources: Eurostat, Haver Analytics and ECB calculations.

Chart D Annual rates of change in consumer gas prices in largest euro area economies

(annual percentage changes; percentages)



Sources: Eurostat and ECB calculations.

in year-on-year terms in August 2014. While this decline was greater than in the other large euro area countries, in the second half of 2013 Italy had the highest consumer gas prices among the large euro area economies: 9.5 euro cent per kwh, compared with 8.9 euro cent in Spain, 7.3 euro cent in France, 6.9 euro cent in Germany and 7.9 euro cent in the euro area on average. One reason for this decline may be the convergence of Italian gas spot market prices (PSV – Virtual Trading Point) with those on the euro EU gas spot markets, as the Italian energy regulator uses spot prices as an input for retail price regulation. More generally, it is worth noting that, despite increased price correlation between European hubs, price differentials in European retail gas markets remain significant. Efforts to improve the functioning of the internal energy markets could be beneficial to consumers.[4]

Looking ahead, the recent decline in oil prices, moderate demand growth for natural gas and the growing importance of spot markets suggest subdued pressures on wholesale natural gas prices. However, tensions between the EU and Russia over the situation in Ukraine are a source of upward risks. Furthermore, colder than usual winter weather could also lead to a rise in spot market prices, although such an increase would likely be short-lived.

4 In the "Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2012", published by the Agency for the Cooperation of Energy Regulators (ACER) and Council of European Energy Regulators (CEER) in November 2013, it is stated that "In gas, although price correlation between European hubs remains high, price differentials in parts of Europe remain significant, leading to substantial welfare losses."