

Box 4

RECENT DEVELOPMENTS IN CONSUMER PRICES FOR OIL PRODUCTS

During September 2012 average consumer prices for oil products (transport and home heating fuels) in the euro area reached record highs, despite the fact that crude oil prices in US dollar terms remained some way below the levels reached briefly in mid-2008. Against this background,

this box discusses the main components of the pricing chain between crude oil prices and final consumer prices for oil products, such as exchange rates, refining and distribution margins, and the imposition of taxes.¹

Crude and refined oil prices

Oil products (both crude and refined) traded on international markets are generally quoted in US dollar terms, but it is their price in euro terms that has an impact on euro area consumer prices. In this regard, the USD/EUR exchange rate stood at around 1.28 in September 2012, compared with 1.58 in July 2008. Consequently, crude oil prices, which in US dollar terms were considerably lower in September 2012 than in July 2008 (USD 114 per barrel compared with USD 134 per barrel), were actually somewhat higher in euro terms (€89 per barrel compared with €85 per barrel; see Chart A).

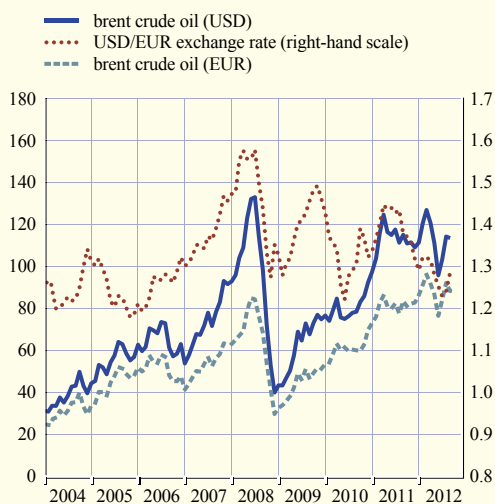
Going through the pricing chain, the refining of crude oil into either petrol (gasoline) or diesel (gas oil) adds a further price element. Chart B shows the refining margins (or “crack spreads”) for refined petrol and refined diesel, which are calculated simply as the difference between the price of the refined product and the price of the crude oil. Refining margins are reported in US dollar terms, as market prices are quoted in US dollars, although it should be noted that it is the level of refining margins in euro terms that matters most for consumer prices for oil products in the euro area.² Compared with mid-2008, the refining margins for petrol and diesel have moved in different directions. Those for diesel and gas oil, although still relatively high in a historical

1 See also the box entitled “The evolution of consumer prices for oil products in 2011”, *Monthly Bulletin*, ECB, Frankfurt am Main, January 2012.

2 In this box, Brent oil prices are used for crude oil and Rotterdam prices are used for refined oil. This is because they are considered to be the main benchmarks for these prices in Europe.

Chart A Crude oil prices in US dollar and euro terms and the USD/EUR exchange rate

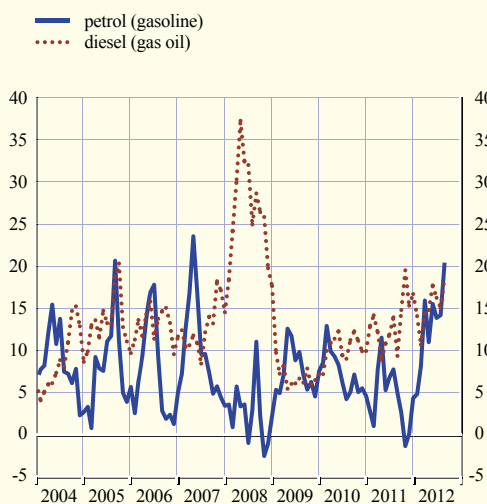
(USD/EUR per barrel; monthly averages)



Sources: Bloomberg, Thomson Reuters and ECB staff calculations.

Chart B Refining margins (crack spreads)

(USD per barrel; monthly averages)



Sources: Bloomberg, Thomson Reuters and ECB staff calculations.

context at USD 20 per barrel, are lower, whereas those for petrol are higher.³ The current level of crack spreads for petrol is also very different to that at the end of 2011, when crack spreads for petrol products were even in negative territory. Industry analysts attribute this more recent turnaround in refining margins to a reduction in excess capacity resulting from a combination of temporary and permanent refinery closures.⁴ In addition to impacting on margin levels, the reduction in the amount of excess supply may also result in higher volatility in refining margins.

Distribution costs and margins

The next steps in the pricing chain are the costs and margins for the distribution of refined products to consumers. These can be estimated using data on consumer prices for transport and liquid heating fuels from the European Commission's weekly Oil Bulletin

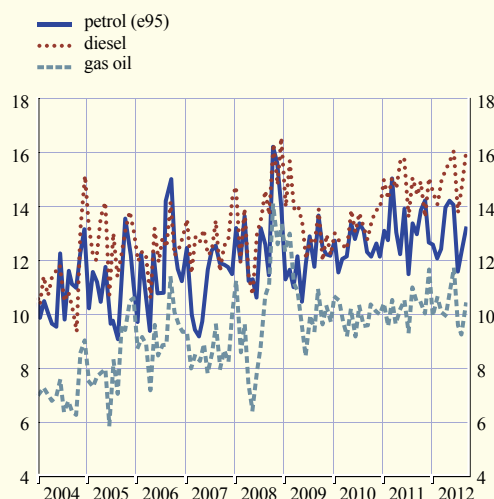
and are calculated on the basis of the difference between refined prices and pre-tax consumer prices. With regard to distribution costs and margins, most of the movements in prices for refined oil products (in euro terms) tend to be passed on to consumer prices relatively quickly, with a slight lag of about three to five weeks before they are fully passed through.⁵ This implies that, in the very short run, distribution margins to some extent buffer movements in oil prices. Overall, although there appears to have been some slight upward drift over time, distribution margins do not appear to be a set percentage mark-up over crude or refined oil prices and have not been a key factor driving movements in consumer oil prices (see Chart C). Compared with mid-2008, the current levels of distribution costs and margins for petrol are slightly lower, while those for diesel and gas oil are slightly higher.

Indirect taxes

With regard to indirect taxes, these can be imposed either as an excise duty (as a specified amount per litre) or as a value added tax (VAT, which is specified as a percentage of both the pre-tax price and the excise duty). As excise duties are levied as a fixed amount, they do not vary as pre-tax prices vary. However, as VAT is levied as a percentage of the pre-tax price, an increase

Chart C Distribution costs and margins

(euro cent per litre; monthly averages)



Sources: European Commission's weekly Oil Bulletin and ECB staff calculations.
Note: Oil Bulletin data available up to 24 September 2012.

3 In 2008 refining margins for diesel and gas oil were particularly elevated. This was most likely due to a combination of factors, including strong demand both inside and outside Europe, and constrained supply.

4 The International Energy Agency (IEA) reports in its August 2012 Oil Market Report that "European refinery runs stood 280 kb/d below year-earlier rates, with the closure of more than 0.8 mb/d of capacity since early 2011". This 0.8 mb/d equates to approximately 5% of total estimated capacity. The IEA estimated capacity utilisation rates at around 77% in June 2012. For a detailed discussion of the European refining industry, see Muller, I., "Can Europe retain its domestic refining industry?", *European Energy Journal*, Vol. 2, No 2, April 2012, pp. 21-36.

5 For a more detailed description and discussion, see Meyler, A., "The pass-through of oil prices into euro area consumer liquid fuel prices in an environment of high and volatile oil prices", *Energy Economics*, Vol. 31, No 6, November 2009, pp. 867-881.

in crude oil prices which is passed on to consumer prices will also result in an increase in the amount of VAT included in the final price.

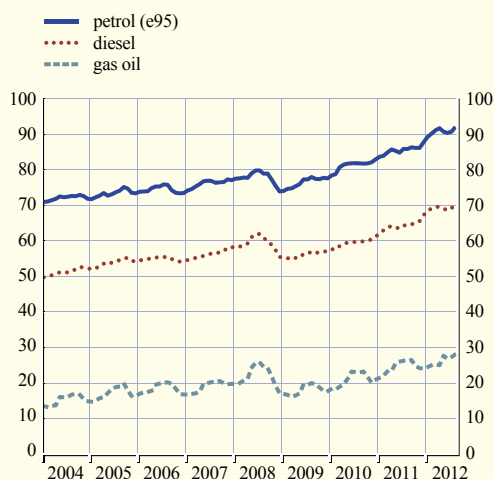
In recent years, partly as a reflection of the strong pressures on public finances, there have been a number of increases in both excise duties on energy products and general VAT rates, in particular since 2010. Compared with mid-2008, excise duty and VAT in fuel prices has increased for all fuel types (see Chart D). On average, VAT rates have increased by slightly less than 1 percentage point, while the amount of excise duty levied has increased more for petrol and diesel than for gas oil.

Overview

The table illustrates numerically why consumer prices for oil products in the euro area have recently reached record highs. Each component has been converted into euro cent per litre terms for comparability purposes. Considering first final consumer petrol prices including taxes, in September 2012 these stood, on average, at 171.2 euro cent per litre in the euro area (up 25.1 euro cent from the level – 146.1 euro cent per litre – they stood at in July 2008, when crude oil prices peaked in US dollar terms). Of this increase, approximately half was attributable to indirect taxes (which rose from 79.9 euro cent per litre to 92.4 euro cent per litre, reflecting a combination of higher excise duties, higher VAT rates and the interaction of VAT with the increase in pre-tax prices). Pre-tax consumer prices also rose, notwithstanding the decline in crude oil prices in US dollar terms, reflecting both exchange rate movements and the increase

Chart D Total indirect taxes

(euro cent per litre; monthly averages)



Sources: European Commission's weekly Oil Bulletin and ECB staff calculations.
Note: Oil Bulletin data available up to 24 September 2012.

Decomposition of euro area consumer prices for oil products

(euro cent per litre, unless otherwise indicated)

| | Petrol | | Diesel | | Gas oil | |
|------------------------------------|--------------|----------------|--------------|----------------|--------------|----------------|
| | July 2008 | September 2012 | July 2008 | September 2012 | July 2008 | September 2012 |
| Crude oil (USD/barrel) | 133.9 | 113.9 | 133.9 | 113.9 | 133.9 | 133.9 |
| USD/EUR exchange rate | 1.58 | 1.28 | 1.58 | 1.28 | 1.58 | 1.28 |
| Crude oil (EUR/barrel) | 84.9 | 88.8 | 84.9 | 88.8 | 84.9 | 88.8 |
| (1) Crude oil | 53.4 | 37% | 55.8 | 33% | 53.4 | 53% |
| (2) Refining costs and margins | -0.4 | 0% | 9.8 | 6% | 13.2 | 13% |
| (3) Distribution costs and margins | 13.2 | 9% | 13.2 | 8% | 8.8 | 9% |
| (4) Pre-tax consumer price | 66.2 | 45% | 78.8 | 46% | 75.4 | 75% |
| (5) Taxes | 79.9 | 55% | 92.4 | 54% | 25.8 | 25% |
| of which: | | | | | | |
| (5a) Excise duties | 56.4 | 39% | 63.8 | 37% | 9.6 | 10% |
| VAT rate (%) | 19.1 | | 20.0 | | 19.0 | |
| (5b) VAT | 23.4 | 16% | 28.6 | 17% | 16.2 | 16% |
| (6) Final consumer price | 146.1 | 100% | 171.2 | 100% | 101.2 | 100% |

Sources: Bloomberg, Thomson Reuters, European Commission's weekly Oil Bulletin and ECB staff calculations.
Note: Oil Bulletin data available up to 24 September 2012.

in refining margins. The latter were slightly negative in July 2008, but reached 9.8 euro cent per litre in September 2012. By contrast, average distribution costs and margins for petrol remained unchanged at 13.2 euro cent per litre.

With regard to consumer prices for diesel and gas oil, there are some similarities to developments in petrol prices, but also some noteworthy differences. In terms of similarities, both developments in exchange rates and indirect taxes contributed to driving up prices, although the increase in indirect taxes was less strong. However, refining margins for diesel and gas oil in September 2012 were lower than the record high levels that prevailed in mid-2008 (accounting for 8.9 euro cent per litre compared with 13.2 euro cent per litre). Another difference is that average distribution costs and margins increased somewhat for diesel and gas oil (to 16.0 euro cent per litre and 10.4 euro cent per litre respectively).

To sum up, although crude oil prices in US dollar terms in September 2012 were some way below their peak in 2008, consumer prices for oil products reached record high levels, owing to a combination of factors: the lower USD/EUR exchange rate, higher refining margins (especially for petrol) and increases in indirect taxes (both excise duties and VAT).