



Oil prices

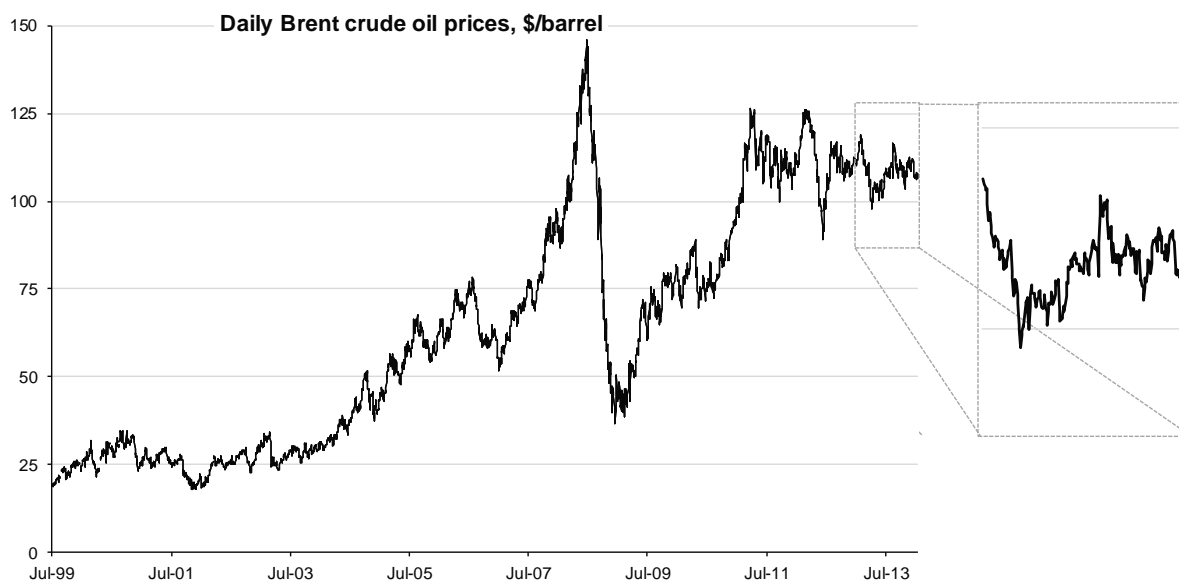
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Oil prices peaked at almost \$150 Dollars a barrel in July 2008 and fell sharply in the second half of 2008 as the global financial crisis hit. Prices have increased since then, despite a fairly weak global economy. Political unrest across the Middle East and the revolt in Libya contributed to further price rises in early 2011. Subsequent prices in 2011 and 2012 were volatile; falling amid concerns about the world economy and going up as tension between Iran and the West increases. Prices were less volatile in 2013 but the average was close to the near record levels seen in the previous two years. Some commentators have said that quantitative easing has contributed to the underlying price increases. Sustained high prices in 2011 meant the annual average price was above that seen in 2008 and the highest in real terms since 1864. The latest spot price is around \$107 per barrel. This is \$43 below the peak, but the weaker pound has meant that at times in early 2012 and early 2013 *Sterling* prices have approached or exceeded their 2008 peak. The International Energy Agency's business as usual projections put the price of oil at almost \$250 per barrel in 2035.

This note provides annual, monthly and daily data for Brent crude oil prices. It gives some possible reasons for the recent very large price increases in 2008 and also includes the longest available oil price series to help put more recent price rises in historical context.

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Most oil prices are quoted in cash terms (not inflation adjusted) even in relatively long time series. This generally means that when prices are compared over time increases are overstated and price falls understated. This is much less of a problem over short periods, especially as the price of oil has an important impact on underlying inflation. However, when prices are being compared over a number of decades and direct comparisons are being made –such as, is today’s oil price the highest ever? –then a series using real prices gives a more meaningful picture. The daily prices in this note are given in cash terms, the monthly and annual data are presented in both real and cash terms.

Data/charts on oil prices can be downloaded/viewed at:

- [US Energy Information Administration –spot prices](#)
- [DECC energy price statistics](#)
- [WRTG Economics](#)

Readers may also wish to refer to the following standard notes:

- [Petrol and diesel prices](#)
- [Energy imports and exports](#)
- [Road fuel prices: Social Indicators page](#)
- [Energy price rises and their impact on demand](#)

The Office for Budget Responsibility has produced [estimates](#) of the impact of a given level of temporary and permanent increases in the price of oil on the public finances. This also included an appendix with a summary of the estimated impact on the UK economy.

The top 20 oil producing and exporting countries are listed in the appendix to this note.

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1 Why did prices increase by so much in 2007 and 2008?

There are numerous reasons given for the especially rapid price increases since the second half of 2007. Unlike the more general rise in prices since 2002 they tend not to be based around single major events such as the invasion of Iraq, the subsequent insurgency or Hurricane Katrina. Demand had continued to grow throughout the period of rising prices. This growth is primarily from rapidly industrialising countries such as China and India. The global credit crunch drew investors and speculators away from poor performing equities and into the commodities market which further boosted oil and many food prices.

Oil supply is tight and OPEC quotas are frequently singled out as a cause of higher prices. There have been frequent disruptions to supply over this period due to the political and security situation in Iraq, attacks on pipelines in Nigeria and the Venezuelan Government's dispute with Exxon Mobil. Tensions around the Iranian nuclear programme led to an anticipation of future supply disruptions and again increased prices. Concerns about the actual level of oil reserves expressed by the International Energy Agency had the same effect as have various strikes and other short-term 'outages' in oil supply. Many of these 'lesser' impacts on supply would ordinarily have a relatively small effect, but combined with the tight supply situation and an increasingly febrile market their effect is magnified. Finally the weak US Dollar increases the purchasing power of non-dollar consumers as it makes dollar assets such as oil relatively cheap. With much of the increase in demand coming from such consumers the dollar price of oil is further inflated.¹

Why did prices fall by so much in the second half of 2008? Initially some of the factors mentioned above changed –OECD demand is down and is expected to fall further, OPEC supply initially increased in summer and the US Dollar has been much stronger. In addition there were no major outages from US Gulf hurricanes in the early part of the season.² The unfolding financial crisis initially led to an increase in oil prices to above \$100 a barrel as the equity markets fell. But as it deepened and a world economic downturn looked more likely the expectation was of lower oil demand in the future, earlier speculation went into reverse and the fall in prices continued.

Prices have recovered markedly since their February 2009 lows of less than \$40 a barrel. The various factors behind this increase include cuts in OPEC quotas, stronger global financial and equity markets and an expectation of strong demand for petrol in the summer. However, the International Energy Agency (IEA) has stated that:³

The link between a decelerating economic downturn and a recovery in oil demand appears to remain tenuous, given current overwhelmingly weak supply and demand fundamentals.

The biggest movement in prices over the last year was the sharp drop seen in May 2010 when prices fell from above \$80 to below \$70 per barrel in less than a fortnight. According to the IEA the Eurozone debt crisis precipitated this sharp drop.⁴ Prices have gradually recovered since then.

Some of the implications of higher oil prices are discussed in the standard note [The Economic Impact of High Oil Prices](#)

¹ *More on the price of oil* ESDS International 23 June 2008; *Oil Market Report*, various months, IEA

² *Oil Market Report August 2008*, IEA

³ *Oil Market Report May 2009*, IEA

⁴ *Oil Market Report June 2010*, IEA

1.1 Prospects for prices to 2035

In their 2012 *Oil Market Outlook* the International Energy Agency (IEA) predicted a continuation of the long-term increase in demand for oil. In its 'current policies' (business as usual) demand increases from 87 million barrels/day (mb/d) in 2010 to 109 mb/d in 2035.⁵ All the growth over this period is outside the OECD, particularly China, India and the Middle East. The model used produces energy prices in the future. These are not forecasts *per se*, but the level prices would need to reach in order that there is enough investment in new production to meet the growing demand. Real oil prices in the 'current policies' scenario are expected to increase to \$128 per barrel in 2020 and \$145 in 2035. In cash terms these prices are equivalent to around \$160 per barrel in 2020 and \$250 per barrel in 2035.^{6 7}

In contrast to this the IEA's *Medium Term Oil Market Report 2013* expects slightly lower levels of demand than previously forecast due initially to subdued economic growth and later to improvements in efficiency and fuel switching. Non-OPEC supply forecasts have been revised upwards due to higher expected production from North America. The IEA use data from the futures market to as a source of price assumptions over the period covered by this report (to 2018). These suggest gradual falls in average import prices of oil from around \$109 per barrel in 2013 to \$93 per barrel in 2017. The US Energy Information Administration projects a similar scale of price reductions with average Brent crude prices falling to £100 per barrel in 2014.⁸

2 Price trends

2.1 Daily prices

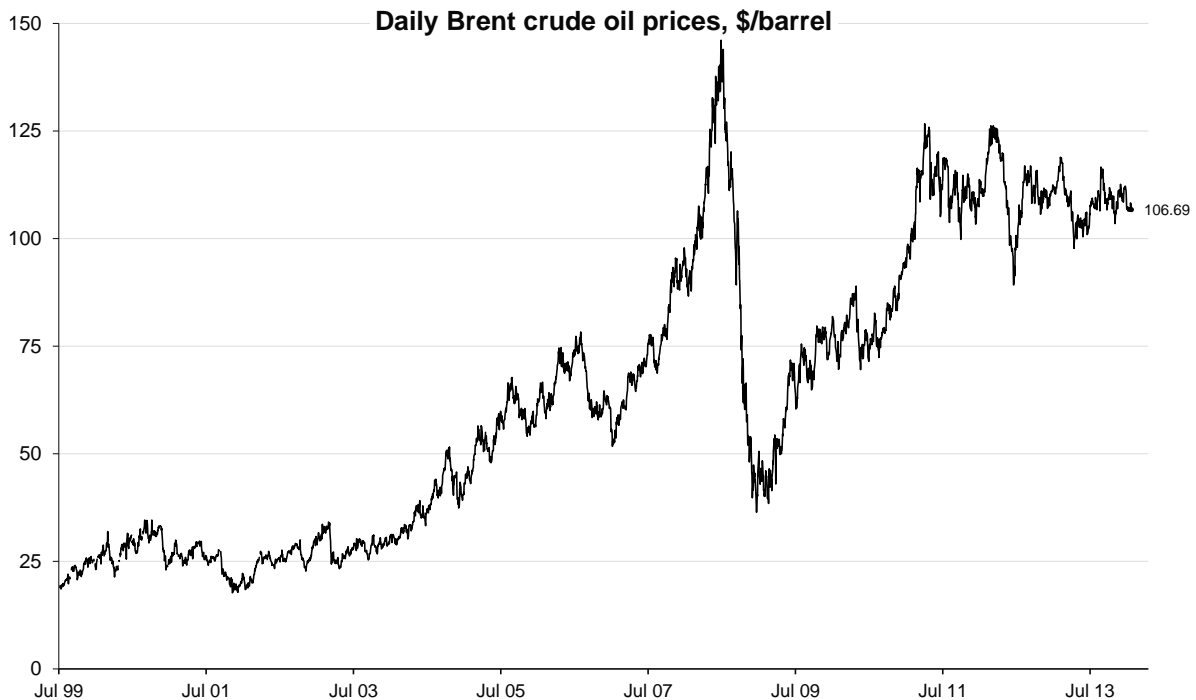
The spot price is the price for oil or oil products for immediate delivery. The future price is the price for purchase at a quantity and quality agreed in advance for delivery on a future specified date (for example, the future price fixed on 17 February was for delivery in April). The chart below shows the daily future price of Brent crude from summer 1999 onwards.

⁵ The demand in the '450 scenario' –where action is taken to stabilised atmospheric concentrations of greenhouse gases at 450 ppm CO₂ equivalent- is still above 2011 levels in 2020, before falling to 2035. Compared to the 'current policies' scenario it is 6% lower in 2020 and 27% lower in 2035. Demand in the 'new policies' scenario – which takes account of the broad commitments and plans that have been announced around the world, including pledges to reduce greenhouse gas emissions, even where the measures to implement them have yet to be identified or announced- is 2% lower than 'current policies' in 2020 and 8% lower in 2035.

⁶ Oil prices in the 'new policies' scenario are forecast to increase much more gradually to \$125 per barrel (in 2011 prices) in 2035. Prices in the 450 scenario are predicted to remain broadly flat in cash terms and hence fall in real terms, reaching \$100 per barrel (in 2011 prices) by 2035.

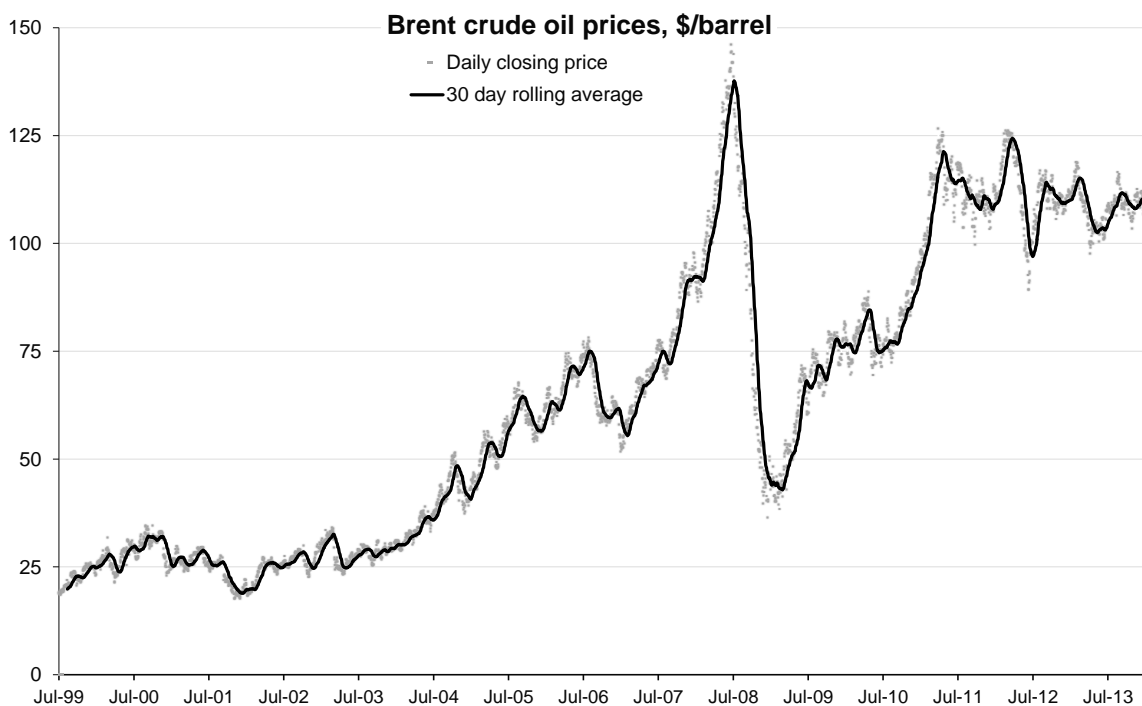
⁷ *World Energy Outlook 2012*, IEA. Table 1.4

⁸ *Short Term Energy Outlook, August 2013*, EIA



Source: Financial Times; HoC Library electronic holdings

The chart illustrates a number of patterns, perhaps most obvious of all is the general volatility. As the chart is based on daily prices it does not smooth out trends in the way monthly or weekly averages would. There was much volatility even in times of relatively stable prices (2000 and 2001). When the underlying trend was upwards there were still periods of sharp decline and *vice versa*. The following chart presents the same data alongside a 30 day rolling average to help reduce the 'noise' from large daily variations.



Source: Financial Times; HoC Library electronic holdings

Between July 1999 and early 2004 prices were relatively stable and remained in the \$20-30 range for most of the period. One of the major falls during this time was just before the invasion of Iraq when, in early March 2003, prices fell by nearly \$10 a barrel. From early

2004 prices started to increase and the future price reached a (then) peak of \$78.30 per barrel on 7 August 2006. Prices fell through most of the second half of 2006 and were below \$52 a barrel in early 2007. The trend was upwards for most of the rest of 2007 and more rapidly and consistently so from the end of August 2007 to summer 2008.

Prices broke through the \$90 level at the end of October and were above \$95 towards the end of November 2007. After a short period below \$90 a barrel prices rose again towards the end of 2007 and broke through the \$100 mark in late February 2008, the \$110 level in mid-April, the \$120 mark in early May, \$130 in late May and went above \$140 per barrel in late June. The peak price on this series was \$146.08 per barrel on 3 July. In the second half of 2008 prices fell even more rapidly than they had risen. Spot oil prices fell to below \$125 a barrel in late July, below £100 in mid-September, below \$75 in mid-October and below \$50 in late November. Prices were relatively stable in the \$40-\$50 region from late November 2008 to early May 2009 before increasing rapidly again to the high \$60s in early June 2009. For the following year they were volatile without any clear trend up or down.

There was a consistent upward trend in prices from summer 2010 to spring 2011. Prices went from around \$75 per barrel in July and August to more than \$90 in early December. Political unrest across the Middle East coincided with further price rises in late January and early February, but the price rises were modest. The subsequent revolt in Libya contributed to much faster price rises to levels around \$125 per barrel in late April. These were the highest prices since July 2008. Prices generally fell during much of the rest of 2011, but remained volatile in the \$100-110 per barrel range at the end of the year.

A severe spell of cold weather across much of Europe in late January/early February 2012 and increasing tension between Iran and the West are both said to have contributed to pushing prices above \$120 per barrel in February 2012. Prices remained at around this level until mid-April when poor economic news particularly helped to cut prices. A further deterioration in prospects for the Eurozone, and the knock on impact on the world economy, helped to cut oil prices by around \$35 per barrel between April and June.⁹ There was a more modest increase in prices over the summer which reversed part of this earlier fall. Between August 2012 and the end of the year prices largely remained between \$105 and \$115 per barrel which, in recent history is relative stability. This continued at the start of 2013 before a combination of better economic prospects for the US and China and seasonal demand pushed prices up towards \$120 per barrel in mid February.¹⁰

Prices briefly fell below \$100 per barrel in April 2013 and remained at just above this level for much of the next two months as sentiment on world economic prospects, and those of China particularly, changed again.¹¹ Heightened tension over Syria has contributed to the recent price rises which pushed levels to over \$115 per barrel again in late summer. Since then prices have fallen somewhat as tensions between Iran and the West have reduced. Demand has been relatively buoyant recently and instability and violence in Libya and Iraq have affected their supply, but increases in supply from OPEC and the US have meant this has not translated into much higher prices and has contributed to the general stability in prices in recent months.¹² Table 1 at the end of this note summarises daily variations by month from 2003 onwards.

⁹ *Oil Market Report*, IEA (various months in 2012)

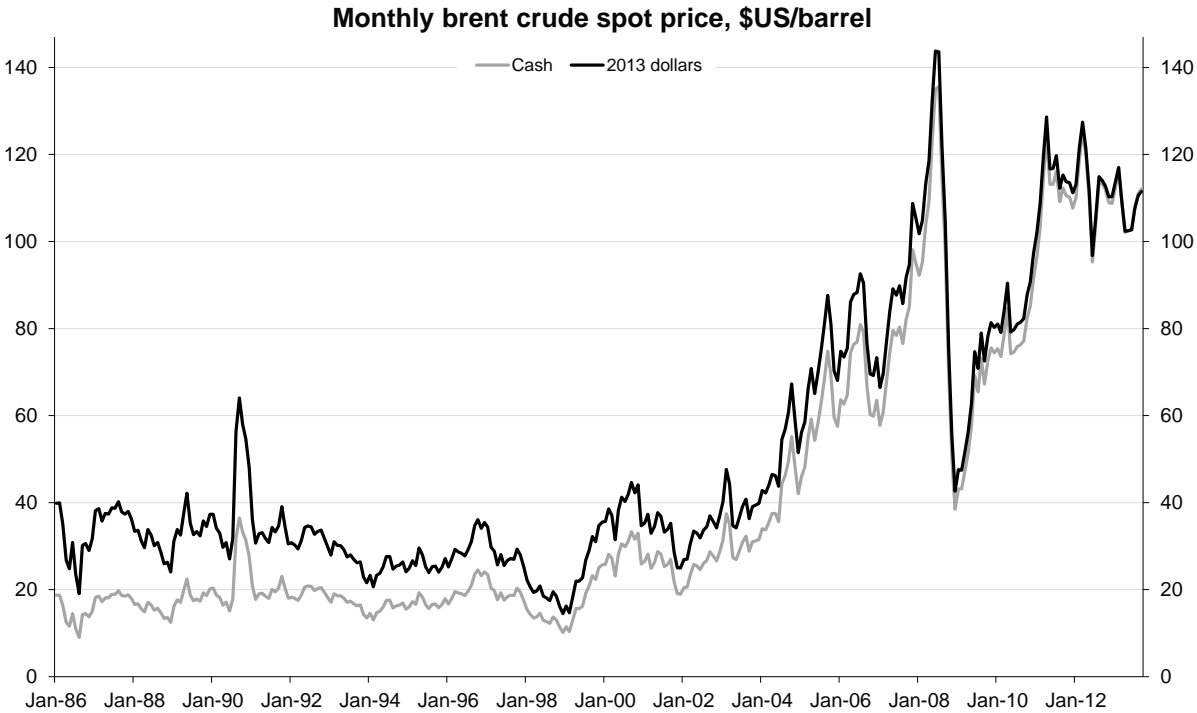
¹⁰ *Oil Market Report February 2013*, IEA

¹¹ *Oil Market Report August 2013 (and earlier)*, IEA

¹² *Oil Market Report January 2014*, IEA

2.2 Monthly prices

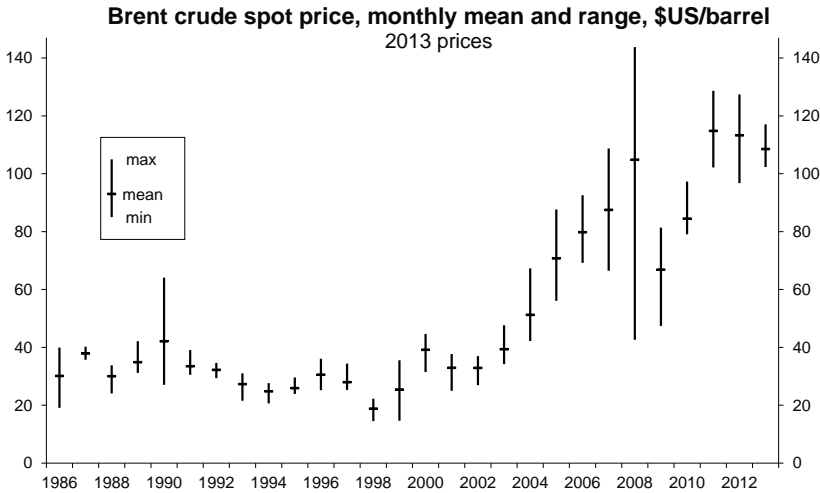
Trends in the monthly average spot price of Brent crude to September 2013 are illustrated in the next chart in both cash and real terms. Monthly variations are summarised by year in Table 2 at the end of this note.



The most obvious element in the period before the daily price chart (before summer 1999) is the very sharp peak following the Iraqi invasion of Kuwait. The price of Brent crude went from £17.80 a barrel in July 1990 to £31.80 in August, a real increase of 77% or more than \$20 a barrel. The largest monthly increase since the invasion of Iraq was 25% in July 2004. The real price level in September 1990 was the highest over this period until March 2005.

The real price level generally fell between the late 1980s and the mid 1990s. After (2013) prices reached more than \$30 a barrel in late 1996 there followed a consistent period of decline to a low of \$10.19 in December 1998 (\$14.38 in 2012 prices). This was due to an increase in supply (OPEC raised its quota in early 1998) and underlying weak demand due to the Asian economic crisis. The following economic upturn and (earlier) cuts in OPEC quotas saw real prices reach more than \$40 a barrel in late 2000.

The chart opposite looks at the range of monthly real prices over the same period and shows the increased volatility in prices over the second half of the period and in 2008 especially. Prices in 2011 varied much less than in 2008 and their peak price was lower, but the average was clearly above the 2008 level. The average daily spot price in 2012 was marginally lower than the 2011 annual average, but prices varied to a slightly greater degree. The average fell slightly

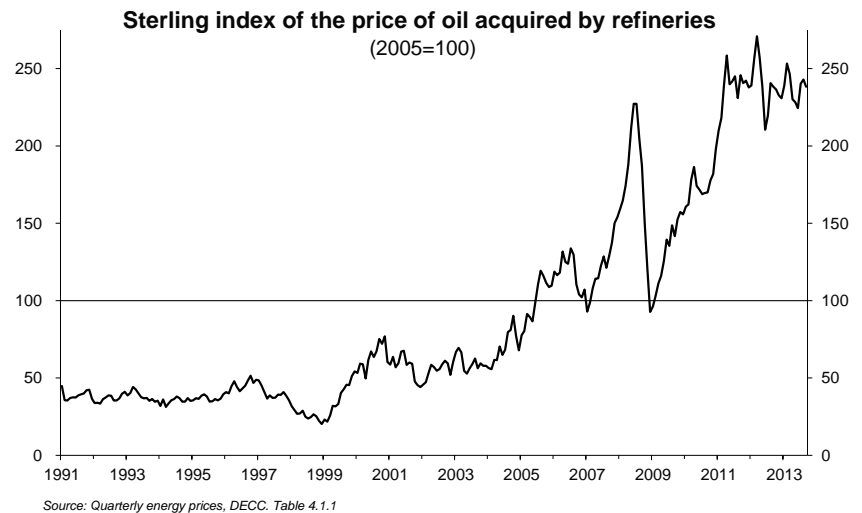


again in 2013 (to September)

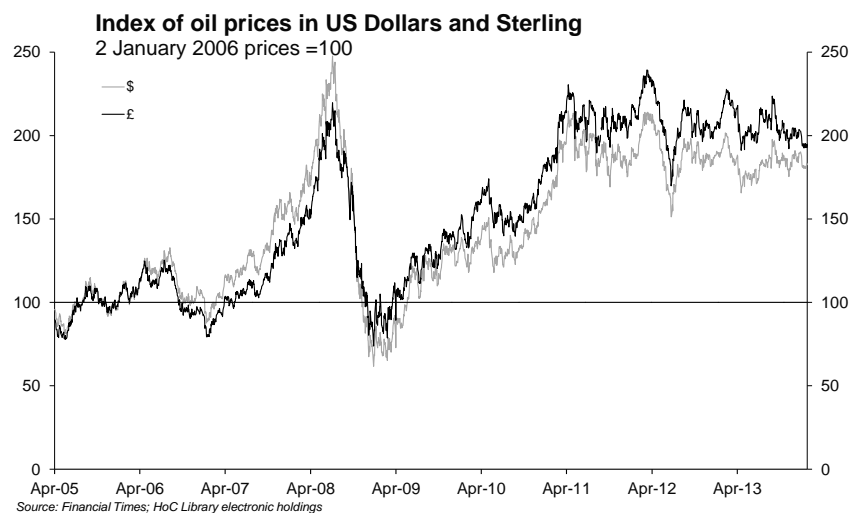
2.3 Prices in Sterling

The impacts of oil price rises up to their peak were limited to some extent by changes in exchange rates. Starting in spring 2006 a weaker Dollar meant oil prices increased less when converted to Sterling for the period to spring 2007. The exchange rate was relatively stable over the period to July 2008, so oil price changes in Sterling and Dollar terms were very similar. Price falls in the second half of 2008 were also limited in Sterling terms by the relative strength of the Dollar. So, for instance between February 2006 and April 2007 the Dollar price of oil increased by 11%, but the price in Sterling fell by 4%. Between mid-July and early December 2008 the Dollar price of oil fell by 73%, but the price in Sterling fell by 56%.¹³

The chart opposite illustrates a Sterling series over a longer period. This gives actual prices paid, rather than converting spot prices with spot exchange rates and shows generally smaller increases especially up to the 2008 peak. Sterling prices increased by 240% between June 2000 and June 2008, while dollar prices (seen earlier) went up by 340%. Sterling prices in 2012 and 2013 have at times been well above their 2008 peak; the March 2012 level was 20% higher. These comparisons are in cash terms.



The next chart plots an index of daily prices in Dollars and Sterling (converted using daily exchange rates) over a shorter time period. This illustrates the widening gap during 2006 and early 2007 as Sterling prices became relative less expensive. The change from the summer 2008 peak is even clearer as Dollar prices fell more rapidly. Price rises since 2009 have not been accompanied by any sustained shift in the exchange rate. This has meant

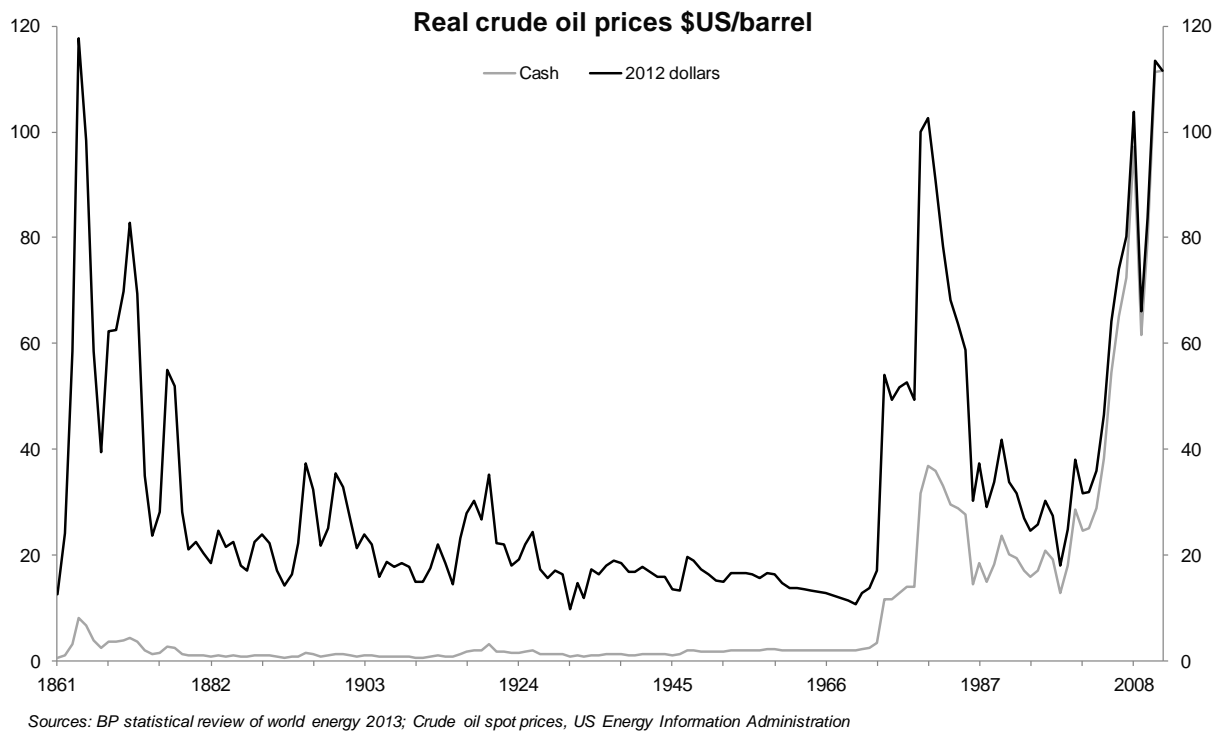


that prices in Sterling were above their 2008 peak levels for most of April 2011 and reached even higher levels in March 2012. Underlying oil price rises and a weaker Sterling pushed mid-February 2013 Sterling prices up to their highest level since April 2012. Since then Sterling prices have generally fallen due to a combination of the underlying trend in oil prices and a slight awakening in the value of the Dollar.

¹³ Financial Times; HoC Library electronic holdings. Prices converted using daily closing exchange rates

2.4 Long term annual prices

The longest crude oil price series goes back to the 1860s. Demand was created by the invention of the kerosene lamp in 1859 and petroleum began to replace the (much more expensive) whale oil in the following decades.¹⁴ This series is illustrated below.¹⁵



Prices in the 19th century were extremely volatile as there was much speculation, demand grew rapidly and new discoveries were made. The major peak in the first seven decades of the 20th century was towards the end of the first world war and the period immediately afterwards. Prices were at their lowest real levels in the early 1930s as demand was low and production had increased, especially in Texas. The following 40 years saw oil prices at their most stable.

US market control of production ended in 1971 which reduced its power to influence oil prices. The Arab oil embargo that followed the Yom Kippur War (October 1973) cut net production by 4 million barrels a day. Prices increased more than three-fold between 1973 and 1974. They remained at these levels despite the ending of the embargo in March 1974. The second 'oil shock' happened in 1979-80 when the Iranian revolution (1979) and the start of the Iran-Iraq war (1980) both led to cuts in production which caused further large increases in prices.¹⁶ The real price in 1980 averaged \$105 a barrel in 2012 values. The 2008 average price marginally surpassed this level and the 2011 and 2012 averages, at \$116 and \$114 per barrel respectively were clearly higher, although still just below the 1864 peak in this series in real terms.

¹⁴ U Bardi *Prices and Production over a complete Hubbert Cycle: the Case of the American Whale Fisheries in 19th Century* www.energybulletin.net

¹⁵ 1861-1944 US Average, 1945-1983 Arabian Light posted at Ras Tanura, 1984-2006 Brent dated

¹⁶ Oil price history and analysis WRTG Economics www.wtrg.com/prices.htm

3 Reference Tables

Table 1

Brent crude futures price, daily data summarised by month

\$US per barrel cash prices

	Mean	Maximum	Minimum
Jan 2004	30.43	31.23	29.05
Jan 2005	44.29	46.96	40.46
Jan 2006	63.66	66.59	58.98
Jan 2007	54.67	60.44	51.70
Jan 2008	91.91	97.84	86.62
Jan 2009	45.27	50.53	41.44
Jan 2010	77.10	81.89	71.46
Jan 2011	96.97	101.01	93.33
Jan 2012	111.27	113.70	107.38
Jul 2012	102.69	107.80	97.34
Aug 2012	112.68	116.90	105.90
Sep 2012	112.96	116.90	108.19
Oct 2012	111.33	115.80	107.85
Nov 2012	109.53	111.70	105.68
Dec 2012	109.19	111.11	107.02
Jan 2013	112.36	115.55	110.30
Feb 2013	116.07	118.90	111.38
Mar 2013	109.54	111.61	107.45
Apr 2013	103.43	111.08	97.69
May 2013	103.28	105.46	99.95
Jun 2013	103.34	106.12	100.91
Jul 2013	107.38	109.40	103.00
Aug 2013	110.24	116.61	106.42
Sep 2013	111.16	116.12	106.63
Oct 2013	109.44	111.80	106.93
Nov 2013	107.90	111.31	103.46
Dec 2013	110.64	112.62	108.44

Source: *Financial Times*; HoC Library electronic holdings

Table 2**Brent crude spot price, monthly variations summarised by year**

\$US per barrel

	Cash prices			2013 dollars		
	Minimum	Average	Maximum	Minimum	Average	Maximum
1986	9.00	14.17	18.75	19.11	30.11	39.96
1987	17.20	18.48	19.75	35.74	37.88	40.22
1988	12.45	15.22	17.05	24.07	30.01	33.80
1989	16.20	18.56	22.40	31.16	34.86	42.15
1990	15.10	23.70	36.50	27.08	42.08	64.08
1991	17.75	19.57	23.05	30.49	33.46	39.08
1992	17.55	19.41	20.85	29.35	32.22	34.64
1993	13.50	16.93	19.05	21.57	27.32	31.01
1994	13.00	15.79	17.60	20.64	24.81	27.63
1995	15.65	16.95	17.90	23.91	25.91	29.60
1996	16.70	20.61	24.51	25.20	30.58	36.07
1997	17.50	19.26	23.47	25.27	27.96	34.37
1998	10.19	13.15	15.46	14.48	18.80	22.29
1999	10.36	18.23	25.67	14.67	25.44	35.53
2000	23.15	28.98	33.30	31.48	39.19	44.66
2001	18.96	25.05	28.76	25.00	32.96	37.70
2002	20.48	25.41	28.72	26.94	32.88	36.98
2003	26.93	31.07	37.44	34.19	39.35	47.63
2004	34.02	41.61	49.48	42.19	51.26	67.29
2005	45.91	59.40	74.79	56.08	70.75	87.64
2006	59.85	69.11	80.90	69.19	79.82	92.61
2007	57.75	78.00	98.12	66.46	87.50	108.75
2008	38.46	97.22	135.59	42.62	104.87	143.77
2009	43.11	61.68	75.55	47.43	66.88	81.36
2010	73.59	79.11	91.55	79.10	84.51	97.31
2011	96.60	110.91	124.20	102.19	114.84	128.65
2012	95.33	111.65	125.49	96.78	113.29	127.44
2013	102.14	108.51	116.65	102.33	108.56	117.05

(to September)

Note: Prices converted to average 2012 dollars using monthly US CPI index for all urban consumers

Sources: Institute of Petroleum IP Statistics ¹⁴www.bls.gov

Table 3**Average annual spot crude oil prices, \$US per barrel**

	Cash prices	2012 dollars
1861	0.49	12.47
1870	3.86	69.80
1880	0.95	22.51
1890	0.87	22.14
1900	1.19	32.71
1910	0.61	14.97
1920	3.07	35.17
1930	1.19	16.35
1940	1.02	16.69
1950	1.71	16.30
1960	1.90	14.71
1970	1.80	10.64
1980	36.83	102.62
1990	23.73	41.68
1991	20.00	33.72
1992	19.32	31.62
1993	16.97	26.97
1994	15.82	24.50
1995	17.02	25.64
1996	20.67	30.24
1997	19.09	27.31
1998	12.72	17.91
1999	17.97	24.76
2000	28.50	37.99
2001	24.44	31.69
2002	25.02	31.94
2003	28.83	35.97
2004	38.27	46.51
2005	54.52	64.09
2006	65.14	74.19
2007	72.39	80.16
2008	97.26	103.71
2009	61.67	66.00
2010	79.50	83.70
2011	111.26	113.56
2012	111.67	111.67

1861-1944 US Average

1945-1983 Arabian Light posted at Ras Tanura

1984-2012 Brent dated

Sources: *BP statistical review of world energy 2011*; *Crude oil spot prices*, US Energy Information Administration

Appendix- top oil producing and exporters

Top 20 oil producing nations in 2012

		Million barrels per day of crude and NGLs	% of world total
1	Saudi Arabia	11.5	13.0%
2	Russian Federation	10.6	12.0%
3	United States	9.9	11.2%
4	People's Republic of China	4.1	4.7%
5	Canada	3.9	4.4%
6	Islamic Republic of Iran	3.8	4.3%
7	United Arab Emirates	3.6	4.1%
8	Venezuela	3.1	3.5%
9	Kuwait	3.0	3.4%
10	Iraq	3.0	3.4%
11	Mexico	2.9	3.3%
12	Nigeria	2.7	3.0%
13	Brazil	2.2	2.4%
14	Qatar	2.0	2.3%
15	Norway	1.9	2.2%
16	Angola	1.8	2.0%
17	Algeria	1.6	1.8%
18	Kazakhstan	1.6	1.8%
19	Libya	1.6	1.8%
20	United Kingdom	1.0	1.1%

Source: Oil information 2013, IEA

Top 20 oil exporting nations in 2011

		Million barrels per day of crude and NGLs	% of world total
1	Saudi Arabia	7.1	16.1%
2	Russian Federation	5.0	11.4%
3	Nigeria	2.6	5.9%
4	Islamic Republic of Iran	2.5	5.6%
5	Canada	2.4	5.4%
6	United Arab Emirates	2.4	5.4%
7	Iraq	2.2	5.0%
8	Venezuela	1.8	4.0%
9	Kuwait	1.8	4.0%
10	Angola	1.6	3.6%
11	Norway	1.5	3.3%
12	Mexico	1.4	3.2%
13	Kazakhstan	1.4	3.1%
14	Qatar	1.2	2.7%
15	Algeria	0.8	1.9%
16	Azerbaijan	0.8	1.8%
17	Oman	0.7	1.7%
18	United Kingdom	0.7	1.6%
19	Brazil	0.6	1.4%
20	Colombia	0.6	1.4%

Source: Oil information 2013, IEA