Independent Statistics & Analysis
U.S. Energy Information Administration

The Availability and Price of Petroleum and Petroleum Products Produced in Countries Other Than Iran

The sixth in a series of reports required by section 1245 (d) (4) (A) of the National Defense Authorization Act for Fiscal Year 2012

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- U.S. Energy Information Administration (EIA) estimates that global liquid fuels consumption exceeded production in November and December 2012, resulting in a 1.4-million-barrels-per-day (bbl/d) draw in global oil stocks **(Figure 1)**. The call on global oil stocks occurred due to expected seasonal swings in consumption. Even though a drawdown in crude oil inventories occurred over the last two months, prices are down slightly. The front month Brent futures contract averaged $108.61 per barrel for the five-day period ending December 18, about $1 per barrel lower than levels during the five-day period ending October 24 **(Table 1)**.

- Global liquid fuels demand increased during November and December relative to September and October, the 60-day period covered by the previous edition of this report. The increase in consumption was largely attributable to increased winter heating fuel demand in the United States, Japan, and other member countries of the Organization for Economic Cooperation and Development (OECD), which mostly consists of industrialized countries in the Northern Hemisphere. However, non-OECD countries, particularly China, account for almost all of the increase in consumption over the last year.

- Global liquid fuels production decreased slightly over the last 60 days, but was 0.3 million bbl/d higher than during the same months in 2011. Most of the growth came from the tight oil plays of the United States **(Table 2)**. Production of non-crude liquids (natural gas plant liquids and lease condensate) from member states of the Organization of the Petroleum Exporting Countries (OPEC) also boosted global liquid fuels production relative to year-ago levels. However, OPEC crude oil production decreased slightly from year-ago levels, as production gains in Libya and Iraq were outweighed by a considerable decline in Iranian production **(Table 4)**. The total volume of production that is offline due to unplanned outages in non-OPEC countries is lower than it has been since January 2012, but remains high compared to the more typical levels that prevailed at the same time last year **(Figure 2)**.

- Global surplus capacity, which is mostly maintained by Saudi Arabia, remains tight by historical standards. EIA assesses that an average of 2.1 million bbl/d of surplus crude oil production capacity was available in November and December 2012, well below year-ago levels of 2.5 million bbl/d and the three-year average of 3.6 million bbl/d **(Table 1)**. The estimate of effective surplus crude oil production capacity does not include additional capacity that may be technically available in Iran, but which is offline due to the impacts of U.S. and European Union (EU) sanctions on Iran's ability to sell its oil.

- Crude oil prices continued to trade in a narrow range during November and December, much like in the two-month period covered in the last report **(Figure 3)**. Backwardation in the Brent market increased slightly from November to December, supporting evidence of inventory draws over the last two months. Over the five days ending on December 18, the spread on the Brent 1st – 13th month contracts averaged $6.54 per barrel, $0.49 per barrel higher than for the five-day period ending on October 24.

This is the sixth in a series of reports prepared in fulfillment of section 1245(d)(4)(A) of the National Defense Authorization Act (NDAA) for Fiscal Year 2012, as amended, which requires the U.S. Energy Information Administration (EIA) to submit to Congress a report on the availability and price of

petroleum and petroleum products produced in countries other than Iran in the two-month period preceding the submission of the report. EIA consulted with the U.S. Department of the Treasury, the U.S. Department of State, and the intelligence community in the process of developing this report. Readers are encouraged to consult previous editions of this report for detailed background and contextual information not repeated here.

Estimates of Production, Consumption, Surplus Capacity, and Inventories

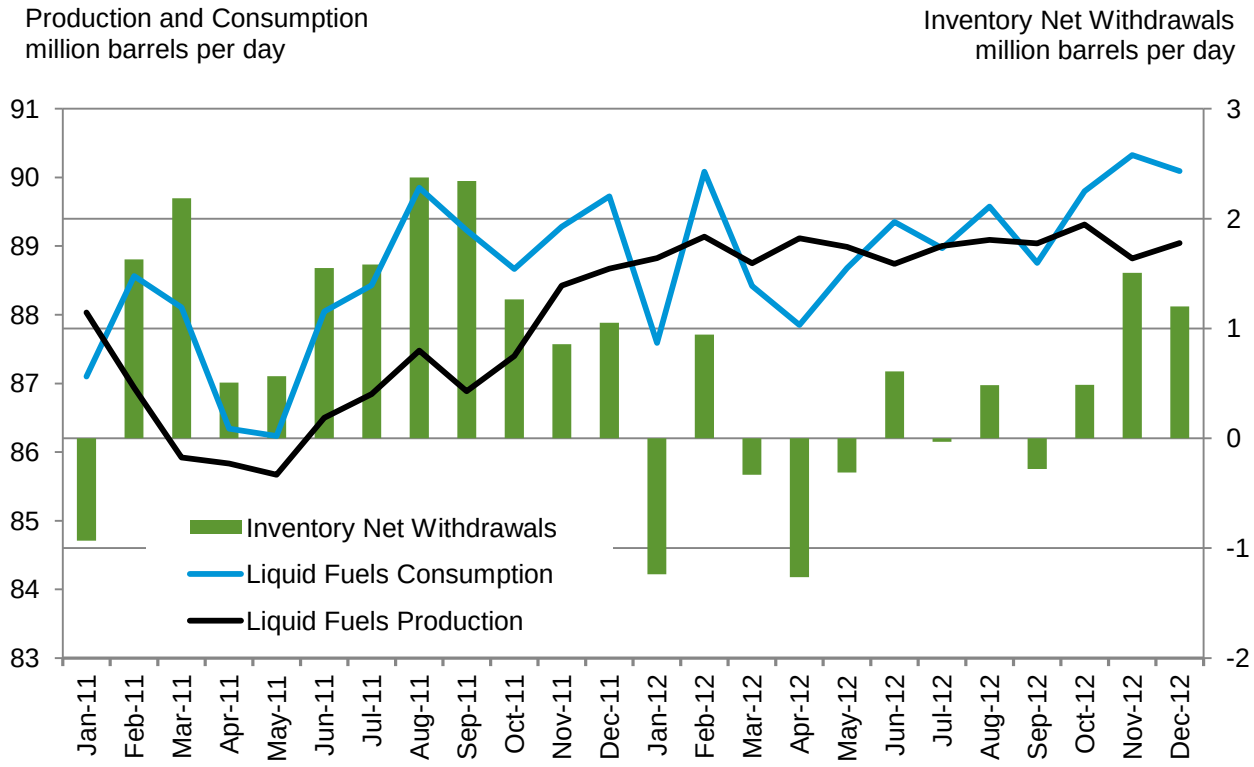
EIA estimates that global liquid fuels[1] production averaged 88.8 million bbl/d in November and December 2012, an increase of 0.3 million bbl/d[2] from the same period last year. Of this total, the production of petroleum and petroleum products in countries other than Iran averaged 83.9 million bbl/d, which is 3.9 million bbl/d, or almost 5 percent, above the three-year average. The increase in global production can be attributed largely to a combination of increased output from some OPEC members and continued growth in North American oil supply. Tables 3 and 4 provide further country-level reporting on supply estimates.

Global liquid fuels consumption was estimated to average 90.2 million bbl/d in November and December 2012, of which petroleum and petroleum products outside of Iran accounted for 86.7 million bbl/d.[3] The global total was 0.9 million bbl/d higher than the revised estimates for September and October, as a colder-than-normal November brought the United States, Japan, and other members of the OECD solidly into the winter heating season, one of the two traditional seasonal peaks in global fuel demand. Other notable demand-side developments include Hurricane Sandy, which affected millions of consumers in the northeastern United States in late October and early November. It is likely that the disruption in petroleum product supplies caused by Hurricane Sandy was at least somewhat offset by lower consumption. South Korea shut down two nuclear reactors in early November 2012 due to safety concerns, but EIA believes that the country's power sector will rely primarily on an increase in generation from natural gas rather than petroleum to compensate for the outages. Despite these developments in OECD markets, non-OECD countries – particularly China – were responsible for almost all of the increase in consumption over the last year. China was also the largest source of consumption growth in non-OECD countries over the last two months, which averaged 0.3 million bbl/d above the previous 60-day period. China's economy has shown signs of improvement over the past two months as key manufacturing indices, export volumes, and refining runs have increased, but a sustained rebound is still tentative.

The difference between global liquid fuels consumption and production in November and December was met with a 1.4 million bbl/d draw in global oil stocks over those months **(Table 1 and Figure 1)**. Oil inventories in the United States, which fell by an estimated 0.5 million bbl/d in November and 0.6 million bbl/d in December, accounted for the single largest global stock withdrawals **(Table 2)**. Revised data suggest that the market was looser in September 2012 than estimated in the previous report, causing slight global stock builds.

[1] The term "liquid fuels" encompasses petroleum and petroleum products and close substitutes, including crude oil, lease condensate, natural gas plant liquids, biofuels, coal-to-liquids, gas-to-liquids, and refinery processing gains.
[2] The growth rates referenced here, and throughout the report, may not exactly match corresponding values in the tables due to slight differences in rounding.
[3] The measure of petroleum and petroleum products outside of Iran does not include global biofuels.

Figure 1. World Liquid Fuels Production and Consumption and Net Inventory Withdrawals, January 2011 – December 2012

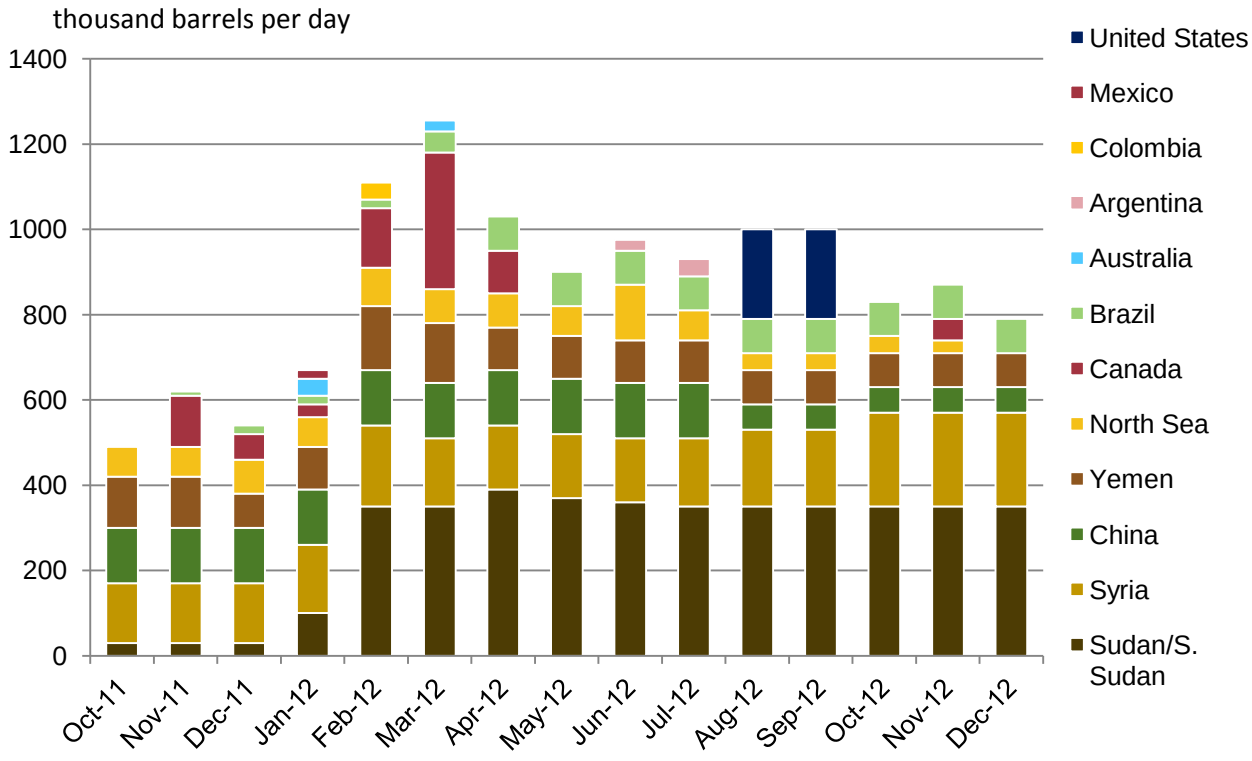


Source: U.S. Energy Information Administration.

Non-OPEC liquids production in November and December 2012 is estimated to be 1.2 million bbl/d above the three-year average. The United States was the largest source of liquids production growth relative to the recent three-year averages for any country, largely due to continued production growth in onshore tight oil plays. Some of the other countries that are producing above their three-year averages are Canada, Colombia, Russia, and China **(Table 3)**. Meanwhile, European liquid fuels production was 0.5 million bbl/d below year-ago levels and 0.8 million bbl/d below the three-year average due to declines in the North Sea. After months of planned and unplanned maintenance, the United Kingdom's Buzzard field, which was originally expected to return to operation in September, finally resumed operations in the second half of November.

The volume of non-OPEC production that was offline due to unplanned disruptions declined to 0.8 million bbl/d in December, the lowest level since January, but still above the historical baseline that prevailed during the fourth quarter of 2011. Syria and Sudan are currently the most significant sources of disruption to non-OPEC production. Civil strife in Syria and its impact on oil production has become more severe since September, while Sudan and South Sudan must still overcome political and technical obstacles before significant flows from the latter will be restarted. Repeated attacks on the Marib pipeline in Yemen have led to a rather persistent 80,000 bbl/d supply loss, but this volume is below the amount that was offline over the first half of the year. EIA has downwardly revised its disruption estimate for China to 60,000 bbl/d starting in August based on indications that ConocoPhillips restarted the Peng Lai field.

Figure 2. Estimated Unplanned Production Disruptions Among non-OPEC Producers, October 2011 – December 2012



Source: U.S. Energy Information Administration.

OPEC member countries produced an estimated 30.4 million bbl/d of crude oil in November and December 2012, which is 0.3 million bbl/d below the average levels of September-October and 0.2 million bbl/d below the same time last year **(Table 4)**. OPEC crude oil production decreased from year-ago levels as production gains in Libya and Iraq, coupled with small growth in Kuwait and United Arab Emirates, were outweighed by a considerable decline in Iranian production. Libyan oil production increased by 0.7 million bbl/d between December 2011 and December 2012 and is within 0.2 million bbl/d of pre-crisis levels. However, the country's political stability is fragile, and oil production was briefly disrupted in early November as a consequence of one of the two protests that month at Libya's second-largest refinery, and in December as a result of a strike at the El Sharara field. Iraq has increased production by 0.4 million bbl/d since last year, in part due to new export infrastructure in the southern part of the country. On the other hand, Iraqi crude oil production has fallen by 0.2 million bbl/d since September 2012 and tensions between Baghdad and the Kurdistan Regional Government have increased. Crude oil production in Saudi Arabia – which often acts as a balancing force in the global oil market – dipped slightly to 9.7 million bbl/d in December, 0.1 million bbl/d below the previous month's and previous year's levels, but still considerably higher than the three-year average of 8.8 million bbl/d. OPEC members also produced an estimated 5.8 million bbl/d of non-crude liquids over the last two months, which is 0.4 million bbl/d higher than the year-ago level. OPEC supply in November 2012 dipped to its lowest level this year as Nigerian supply fell for the third consecutive month due to flooding, pipeline sabotage, and production delays; however, EIA believes that the country's production partially recovered in December.

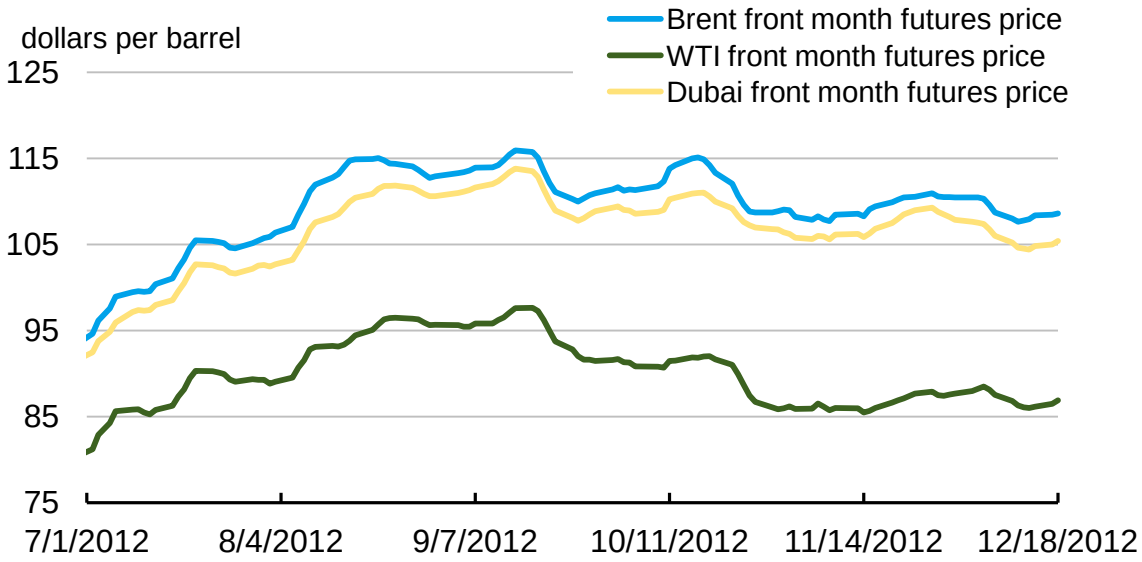
EIA estimates that liquid fuels production and consumption in Iran averaged 3.2 million bbl/d and 1.7 million bbl/d, respectively, during November and December 2012 **(Table 1)**. The difference between the estimates of Iran's liquid production and consumption levels includes Iran's implied net exports of crude oil, condensate, petroleum products, and natural gas liquids, as well as volumes slated for onshore and floating storage. Iran's production levels have stagnated since October and include an estimated 2.6 million bbl/d of crude oil. Iranian crude oil production had been falling since at least the last quarter of 2011, due to the country's inability to carry out investment projects that are necessary to offset the natural decline in production from existing wells, while the latest round of U.S. and EU sanctions contributed to steeper declines in Iranian exports and production during the second and third quarters of 2012. However, this tentative interpretation of a very fluid situation could change as EIA revises data, industry sources issue independent estimates of Iranian production, and more details about Iranian storage levels, refinery utilization, and domestic consumption emerge.

Global surplus crude oil production capacity totaled an estimated 2.0 million bbl/d and 2.1 million bbl/d in November and December 2012, respectively **(Table 1).** All of this surplus capacity was held by OPEC members in the Middle East, mostly in Saudi Arabia. EIA's definition of effective surplus crude oil production capacity does not include additional capacity that may be technically available in Iran, but which is offline due to the impacts of U.S. and EU sanctions on Iran's ability to sell its oil. The current level of surplus capacity is quite modest by historical standards (e.g., 3.6 million bbl/d average from 2009 to 2011 and 2.5 million bbl/d average in November and December 2011), especially when measured as a percentage of global oil production and consumption.

Crude Oil and Petroleum Product Prices

In contrast to data on petroleum and petroleum product volumes, price data are available on a real-time or near-real-time basis.[4] Over the last 60 days, crude oil prices have declined slightly, but, overall, have traded in a narrow range **(Figure 3)**. For the five days ending on December 18, the price of the front-month futures contract for Brent crude from the North Sea, a proxy for the global oil price, averaged $108.61 per barrel, a $1.01-per-barrel decrease from its average over the five-day period ending October 24.

Figure 3. Front Month Crude Oil Futures Prices



Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME), Intercontinental Exchange (ICE) and Dubai Mercantile Exchange (DME).

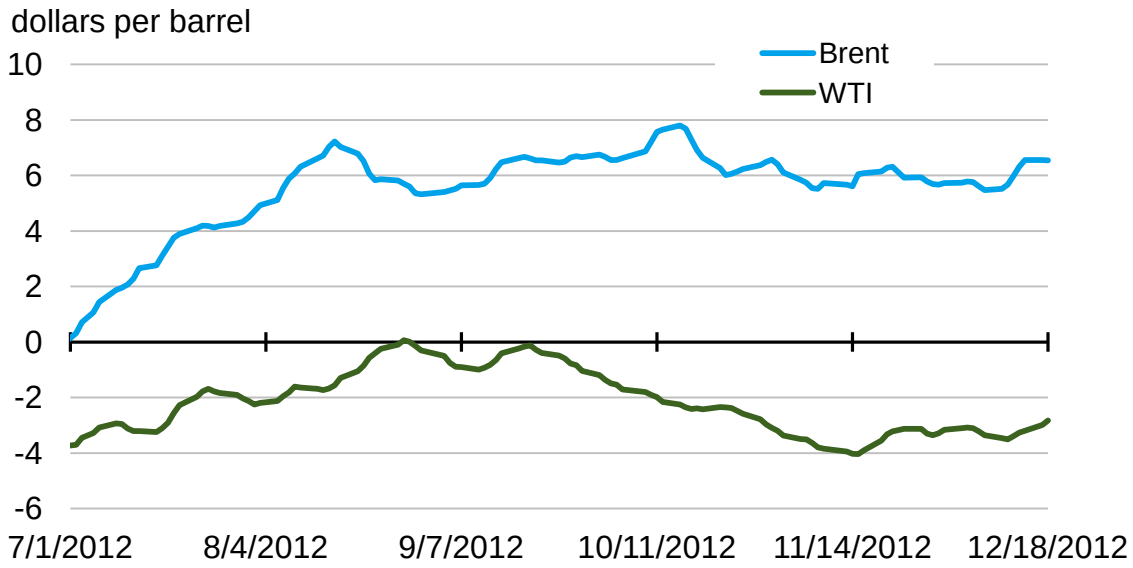
Brent is still slightly higher than its year-ago levels, while West Texas Intermediate (WTI) prices are lower. The average price for the Brent front month contract in November and December 2012 was $109.20 per barrel and the two-month average for the WTI front month contract was $86.86 per barrel **(Table 5)**. The November and December average prices for Brent were $0.12 per barrel higher than at this time a year ago and $24.56 per barrel higher than the three-year average from 2009 to 2011. Average WTI prices in November and December, on the other hand, were $11.03 per barrel lower than at the same time in 2011.

The Brent market has remained in backwardation, with prompt month prices higher than prices for future delivery, during all of November and December **(Figure 4)**. For the five-days ending December 18, the 1st – 13th month spread averaged $6.54 per barrel, a small increase of $0.49 per barrel since the five-day period ending on October 24 and a sign of slight tightening in the crude oil market. Larger inventory draws compared with this time last year may be contributing to some of the price strength in near-month Brent futures prices compared with farther dated contracts.

[4] The price data in this report are current as of December 18, 2012. In order to make it more understandable, and to respect contractual restrictions on EIA republication of certain data, most price data are reported using 5-day rolling or monthly averages and some are reported only in the figures.

The WTI 1st – 13th month spread has remained in contango, averaging -$3.34 per barrel in November and December, but this is a much smaller spread than the three-year average of -$5.59 per barrel from 2009 through 2011. WTI prices continue to reflect transportation bottlenecks in the midcontinent region, with crude oil inventories at Cushing, Oklahoma, the delivery point for the WTI futures contract, well above their five-year averages. The recent announcement that TransCanada's planned Gulf Coast oil pipeline project will not be completed until the end of the fourth quarter of 2013 tended to lower WTI futures prices relative to Brent futures prices.

Figure 4. Crude Oil 1st - 13th Month Futures Price Spread



Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME) and Intercontinental Exchange (ICE).

For the five days ending December 18, the average price of the March 2013 WTI crude oil futures contract was $87.96 per barrel, and the average price of the March 2013 Brent contract was $106.95 per barrel. WTI average prices for the five days ending December 18 for the March 2013 contract have decreased by $2.35 per barrel since October 24, and Brent prices have decreased by $0.72 per barrel over the same time period. Based on implied volatilities calculated from options and futures prices over the five days ending December 18, the probability of the March 2013 WTI futures contract expiring above $100 per barrel is 12 percent, a decrease of 14 percentage points from the same calculation made using price data from the five-day period ending October 24 **(Figure 17)**. Given the higher absolute level of Brent prices relative to WTI prices over the last two months, the probabilities that the March Brent contract will exceed specified dollar thresholds are higher.

Reformulated blendstock for oxygenate blending (RBOB) is a widely traded unfinished gasoline that requires blending with an oxygenate, such as ethanol, before being sold. RBOB prices increased through much of November as gasoline markets in the Northeast remained tight after Hurricane Sandy disrupted distribution systems, but then dropped in early December after sizeable increases in gasoline inventories. Comparing the five-day periods ending October 24, 2012 and December 18, the price of the front month of the RBOB contract, which calls for delivery in New York Harbor, was nearly unchanged, decreasing from $2.66 per gallon to $2.65 per gallon **(Figure 22)**. During November and December, the

average price for the front month RBOB futures contract was $2.68 per gallon, $0.46 per gallon higher than the average front month price over the three-year period from 2009-2011 and $0.09 per gallon above the November and December 2011 average **(Table 5)**.

The average price of the March 2013 RBOB futures contract for the five-day period ending December 18 was $2.66 per gallon, nearly unchanged since the five-day period ending October 24. Based on implied volatilities calculated from options and futures prices over the five days ending December 18, the probability of the March 2013 RBOB futures contract expiring above $2.90 per gallon (comparable to a $3.50 per gallon national average retail price for regular grade gasoline) is now 21 percent, a 7-percentage-point decrease from October 24 **(Figure 26)**. Lower implied volatilities and less time to expiration contributed to the lower probability of retail gasoline exceeding different price points.

Table 1. Summary of Estimated Liquid Fuels Quantities and Prices

Item	November 2012	December 2012	Nov – Dec 2012 Average	Nov – Dec 2011 Average	2009 – 2011 Average
Total Global Liquid Fuels					
Total Global Liquid Fuels Production (a) (million bbl/d)	88.8	88.8	88.8	88.6	86.1
Total Global Liquid Fuels Consumption (b) (million bbl/d)	90.3	90.1	90.2	89.5	86.8
Biofuels Production (c) (million bbl/d)	1.8	1.6	1.7	1.7	1.8
Biofuels Consumption (c) (million bbl/d)	1.8	1.8	1.8	1.8	1.7
Iran Liquid Fuels Production (million bbl/d)	3.2	3.2	3.2	4.2	4.2
Iran Liquid Fuels Consumption (million bbl/d)	1.7	1.7	1.7	1.8	1.8
Petroleum and Petroleum Products Produced and Consumed in Countries Other Than Iran					
Production (d) (million bbl/d)	83.8	84.1	83.9	82.7	80.0
Consumption (d) (million bbl/d)	86.8	86.6	86.7	86.0	83.3
Production minus Consumption	-3.0	-2.5	-2.8	-3.3	-3.3
World Inventory Net Withdrawals Including Iran (million bbl/d)	1.5	1.2	1.4	1.0	0.7
Estimated OECD Inventory Level (e) (million barrels)	2,690	2,664	2,677	2,635	--
Surplus Production Capacity					
OPEC Surplus Crude Oil Production Capacity (f) (million bbl/d)	2.0	2.1	2.1	2.5	3.6
Oil Price Level					
WTI Front Month Futures Price (g) ($ per barrel)	86.73	87.09	86.86	97.89	78.94
Brent Front Month Futures Price (h) ($ per barrel)	109.53	108.61	109.20	109.07	84.64
RBOB Front Month Futures Price (i) ($ per gallon)	2.69	2.65	2.68	2.59	2.21
Oil Price Time Spread					
WTI 1st - 13th Month Futures Spread ($ per barrel)	-3.53	-3.02	-3.34	1.56	-5.59
Brent 1st - 13th Month Futures Spread ($ per barrel)	5.80	6.16	5.93	4.65	-3.23

Note: The term "liquid fuels" encompasses crude oil, lease condensate, natural gas plant liquids, biofuels, coal-to-liquids, gas-to-liquids, and refinery processing gains, which are important to consider in concert due to the inter-related supply, demand, and price dynamics of petroleum, petroleum products, and related fuels.

(a) Production includes crude oil (including lease condensates), natural gas plant liquids, other liquids, and refinery processing gains.

(b) Consumption of petroleum by the OECD countries is synonymous with "products supplied," defined in the glossary of the EIA Petroleum Supply Monthly, DOE/EIA-0109. Consumption of petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

(c) Biofuels production and consumption are based on 2011 EIA estimates, as published in the International Energy Statistics. Biofuels production in the third quarter tends to be at its highest level in the year since ethanol production in Brazil reaches its seasonal peak and tends to be lowest in the first quarter as seasonal production falls in the South/South-Central region of Brazil.

(d) Global production of petroleum and petroleum products outside of Iran is derived by subtracting biofuels production and Iran liquid fuels production from global liquid fuels production. The same method is used to calculate global consumption outside of Iran.

(e) Estimated inventory level is for OECD countries only.

(f) EIA defines surplus oil production capacity as potential oil production that could be brought online within 30 days and sustained for at least 90 days, consistent with sound business practices. This does not include oil production increases that could not be sustained without degrading the future production capacity of a field. It also does not include additional capacity that may be available in Iran, but which is currently offline due to the impacts of U.S. and EU sanctions on Iran's ability to sell its oil.

(g)WTI refers to West Texas Intermediate crude oil traded on the New York Mercantile Exchange (NYMEX), owned by Chicago Mercantile Exchange (CME) Group.

(h) Brent refers to Brent crude oil traded on the Intercontinental Exchange (ICE).

(i) RBOB refers to reformulated blendstock for oxygenate blending traded on the NYMEX.

Note: December prices include data through market close on December 18, 2012.

Source: U.S. Energy Information Administration.

Table 2. International Liquid Fuels Production, Consumption, and Inventory Estimates

Item	November 2012	December 2012	Nov – Dec 2012 Average	Nov – Dec 2011 Average	2009 – 2011 Average
Production (million barrels per day) (a)					
OECD	22.6	22.8	22.7	22.5	21.4
U.S. (50 States)	11.3	11.4	11.4	10.8	9.7
Canada	3.9	4.1	4.0	3.8	3.5
Mexico	2.9	2.9	2.9	2.9	3.0
North Sea (b)	2.8	2.8	2.8	3.3	3.7
Other OECD	1.5	1.5	1.5	1.6	1.6
Non-OECD	66.2	66.1	66.2	66.1	64.7
OPEC	36.2	36.2	36.2	36.0	34.6
Crude Oil Portion	30.4	30.5	30.4	30.6	29.6
Non-crude Liquids	5.7	5.8	5.8	5.4	5.1
Former Soviet Union	13.4	13.4	13.4	13.3	13.1
China	4.4	4.4	4.4	4.2	4.2
Other Non-OECD	12.3	12.0	12.1	12.7	12.7
Total World Production	88.8	88.8	88.8	88.6	86.1
Non-OPEC Production	52.7	52.6	52.6	52.6	51.4
Consumption (million barrels per day) (c)					
OECD	45.9	46.2	46.1	46.3	45.9
U.S. (50 States)	18.9	19.0	18.9	18.9	19.0
U.S. territories	0.3	0.3	0.3	0.3	0.3
Canada	2.3	2.4	2.4	2.3	2.2
Europe	13.8	13.5	13.6	14.0	14.5
Japan	4.9	5.1	5.0	5.0	4.4
Other OECD	5.7	6.0	5.8	5.8	5.5
Non-OECD	44.4	43.9	44.1	43.2	40.9
Former Soviet Union	4.9	4.9	4.9	4.8	4.5
Europe	0.8	0.8	0.8	0.8	0.7
China	10.8	10.5	10.6	10.1	9.3
Other Asia	10.5	10.5	10.5	10.4	9.8
Other Non-OECD	17.5	17.2	17.3	17.2	16.6
Total World Consumption	90.3	90.1	90.2	89.5	86.8
Inventory Net Withdrawals (million barrels per day)					
U.S. (50 States)	0.5	0.6	0.5	0.3	(d)0.0
Other OECD	0.4	0.3	0.3	0.2	0.1
Other Stock Draws and Balance	0.6	0.4	0.5	0.4	0.7
Total Stock Draw	1.5	1.2	1.4	1.0	0.7
End-of-period Inventories (million barrels)					
U.S. Commercial Inventory	1,099	1,080	1,089	1,064	--
OECD Commercial Inventory	2,690	2,664	2,677	2,636	--

OECD = Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Monthly OECD supply and consumption does not yet include Chile, Estonia, Israel, or Slovenia.
OPEC = Organization of the Petroleum Exporting Countries: Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.
Former Soviet Union = Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.
(a) Supply includes production of crude oil (including lease condensates), natural gas plant liquids, biofuels, other liquids, and refinery processing gains.
(b) Includes offshore supply from Denmark, Germany, the Netherlands, Norway, and the United Kingdom.
(c) Consumption of petroleum by the OECD countries is synonymous with "products supplied," defined in the glossary of the EIA Petroleum Supply Monthly, DOE/EIA-0109. Consumption of petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.
(d) The estimate is -0.01 million bbl/d.
Source: U.S. Energy Information Administration.

Table 3. Non-OPEC Liquid Fuels Supply Estimates

Production (million barrels per day)	November 2012	December 2012	Nov – Dec 2012 Average	Nov – Dec 2011 Average	2009 – 2011 Average
North America	18.2	18.4	18.3	17.5	16.1
Canada	3.9	4.1	4.0	3.8	3.5
Mexico	2.9	2.9	2.9	2.9	3.0
United States	11.3	11.4	11.4	10.8	9.7
Central and South America	4.9	4.7	4.8	4.8	4.7
Argentina	0.7	0.7	0.7	0.8	0.8
Brazil	2.7	2.5	2.6	2.6	2.7
Colombia	1.0	1.0	1.0	1.0	0.8
Other Central and South America	0.4	0.4	0.4	0.4	0.5
Europe	3.8	3.8	3.8	4.3	4.6
Norway	1.7	1.7	1.7	2.0	2.2
United Kingdom (offshore)	0.9	0.9	0.9	1.1	1.3
Other North Sea	0.2	0.2	0.2	0.2	0.3
Former Soviet Union (FSU)	13.4	13.4	13.4	13.3	13.1
Azerbaijan	0.9	0.9	0.9	1.0	1.0
Kazakhstan	1.6	1.6	1.6	1.6	1.6
Russia	10.4	10.4	10.4	10.2	10.1
Turkmenistan	0.3	0.3	0.3	0.2	0.2
Other FSU	0.3	0.3	0.3	0.2	0.2
Middle East	1.3	1.3	1.3	1.3	1.5
Oman	0.9	0.9	0.9	0.9	0.9
Syria	0.2	0.2	0.2	0.2	0.4
Yemen	0.2	0.2	0.2	0.2	0.2
Asia and Oceania	8.8	8.8	8.8	8.7	8.7
Australia	0.5	0.5	0.5	0.5	0.6
China	4.4	4.4	4.4	4.2	4.2
India	1.0	1.0	1.0	0.9	0.9
Indonesia	1.0	1.0	1.0	1.0	1.0
Malaysia	0.6	0.5	0.6	0.6	0.7
Vietnam	0.4	0.4	0.4	0.4	0.3
Africa	2.3	2.3	2.3	2.7	2.6
Egypt	0.7	0.7	0.7	0.7	0.7
Equatorial Guinea	0.3	0.3	0.3	0.3	0.3
Gabon	0.2	0.2	0.2	0.2	0.2
Sudan	0.1	0.1	0.1	0.5	0.5
Total non-OPEC liquids	52.7	52.6	52.6	52.6	51.4
OPEC non-crude liquids	5.7	5.8	5.8	5.4	5.1
Non-OPEC + OPEC non-crude liquids	58.4	58.4	58.4	58.0	56.5

Former Soviet Union = Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.
Sudan production represents total production from both north and south.
OPEC = Organization of the Petroleum Exporting Countries: Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.
The sum of individual countries may not add to regional totals.
Source: U.S. Energy Information Administration.

Table 4. OPEC Crude Oil (Excluding Condensates) and Liquid Fuels Supply Estimates

Production (million barrels per day)	November 2012	December 2012	Nov – Dec 2012 Average	Nov – Dec 2011 Average	2009 – 2011 Average
Crude Oil					
Algeria	1.2	1.2	1.2	1.3	1.3
Angola	1.7	1.7	1.7	1.8	1.8
Ecuador	0.5	0.5	0.5	0.5	0.5
Iran	2.6	2.6	2.6	3.6	3.7
Iraq	3.1	3.1	3.1	2.7	2.4
Kuwait	2.6	2.6	2.6	2.6	2.4
Libya	1.5	1.5	1.5	0.7	1.3
Nigeria	1.9	2.1	2.0	2.0	2.0
Qatar	0.7	0.7	0.7	0.9	0.8
Saudi Arabia	9.8	9.7	9.7	9.8	8.8
United Arab Emirates	2.7	2.7	2.7	2.6	2.4
Venezuela	2.2	2.2	2.2	2.2	2.2
OPEC Total	30.4	30.5	30.4	30.6	29.6
Other Liquids	5.7	5.8	5.8	5.4	5.1
Total OPEC Supply	36.2	36.2	36.2	36.0	34.6
Crude Oil Production Capacity					
Africa	6.2	6.4	6.3	5.8	6.3
South America	2.7	2.7	2.7	2.7	2.7
Middle East	23.5	23.5	23.5	24.6	24.2
OPEC Total	32.4	32.6	32.5	33.1	33.1
Surplus Crude Oil Production Capacity (a)					
Africa	0.0	0.0	0.0	0.0	0.0
South America	0.0	0.0	0.0	0.0	0.0
Middle East	2.0	2.1	2.1	2.5	3.6
OPEC Total	2.0	2.1	2.1	2.5	3.6

OPEC = Organization of the Petroleum Exporting Countries: Algeria, Angola, Libya, and Nigeria (Africa); Ecuador and Venezuela (South America); Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates (Middle East).
a) EIA defines surplus crude oil production capacity as potential oil production that could be brought online within 30 days and sustained for at least 90 days, consistent with sound business practices. This does not include oil production increases that could not be sustained without degrading the future production capacity of a field. It also does not include additional capacity that may be available in Iran, but which is currently offline due to the impacts of U.S. and EU sanctions on Iran's ability to sell its oil.
Source: U.S. Energy Information Administration.

Table 5. Crude Oil and Petroleum Product Price Data

Item	November 2012 Average	December 2012 Average*	Nov – Dec 2012 Average*	Nov – Dec 2011 Average	2009–2011 Average
Brent Front Month Futures Price ($ per barrel)	109.53	108.61	109.20	109.07	84.64
WTI Front Month Futures Price ($ per barrel)	86.73	87.09	86.86	97.89	78.94
Dubai Front Month Futures Price ($ per barrel)	107.30	105.55	106.66	108.16	82.51
Brent 1st - 13th Month Futures Spread ($ per barrel)	5.80	6.16	5.93	4.65	-3.23
WTI 1st - 13th Month Futures Spread ($ per barrel)	-3.53	-3.02	-3.34	1.56	-5.59
RBOB Front Month Futures Price ($ per gallon)	2.69	2.65	2.68	2.59	2.21
Heating Oil Front Month Futures Price ($ per gallon)	3.01	2.97	3.00	2.98	2.26
RBOB - Brent Futures Crack Spread ($ per gallon)	0.08	0.06	0.08	-0.01	0.20
Heating Oil - Brent Futures Crack Spread ($ per gallon)	0.40	0.38	0.40	0.39	0.24

*Note: December prices include data through market close on December 18, 2012.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME), Intercontinental Exchange (ICE) and Dubai Mercantile Exchange (DME).

Appendix

Market Indicators Considered in this Report

Due to time lags in the collection of production and consumption data, nearly all of the petroleum and petroleum product volumes presented in this report are estimates rather than actual data.[5] EIA revises estimates as new information becomes available, and production and consumption estimates featured in the previous reports in this series have since changed accordingly. For example, after incorporating the latest data for September and October, EIA's current estimate for average global liquid fuels production over that time period is 0.1 million bbl/d higher than previously estimated, while consumption is 0.3 million bbl/d lower.

In addition to estimated volumes of production and consumption, as well as spot market and futures prices, this report focuses on a variety of other indicators of volumes, surplus production capacity, and price spreads relevant to the "availability and price of petroleum and petroleum products."
EIA defines surplus capacity as the amount of additional production that can be brought onstream within 30 days and sustained for at least 90 days, and in a manner consistent with sound business and reservoir management practices. Surplus capacity is an indicator of the world oil market's ability to respond to potential disruptions that reduce oil supply. Oil prices tend to rise when surplus capacity reaches very low levels, as occurred in the 2003 to 2008 period.

Crude oil and petroleum product inventories, also referred to as stocks, act as the balancing point between supply and demand. Given the uncertainty of supply and demand, inventories are often seen as a precautionary measure and, along with surplus capacity, serve to cushion the market in addressing negative supply shocks and/or positive demand shocks. The term structure of prices for future delivery, discussed below, is one factor that signals the market to build or reduce stocks.

Petroleum and petroleum product prices are indicators of the relative balance of supply and demand. Rising prices suggest that demand is growing more rapidly (or declining at a slower rate) than supply, while falling prices imply that demand is growing less quickly (or falling more rapidly) than supply. Prices also reflect expectations regarding future changes in the balance between supply and demand, which can be influenced by a variety of supply and demand drivers. This report reflects price data through December 18, 2012.

Differences in prices, commonly referred to as price spreads, also convey important information about the current state of the market and market expectations. The term structure of prices for future delivery is one key indicator of market participants' expectations regarding changes in market tightness over time. For example, the difference between the price of the front month and thirteenth month futures contracts provides insight into current market tightness relative to expectations for the coming year. A positive difference, referred to as backwardation, indicates tightness in the current market,

[5] Liquid fuels consumption and inventory data for most OECD member countries outside of the United States are based upon published International Energy Agency (IEA) estimates, which are lagged by two to three months and are trended forward using forecast economic growth, weather, and related assumptions. Weekly data on U.S. stock changes, refinery activity, and imports together with estimates of primary liquids production, exports, and product supplied are available through EIA's *Weekly Petroleum Status Report*. EIA's estimates of liquid fuels consumption for non-OECD countries are primarily based upon estimated changes in economic activity and related assumptions.

while a negative difference, called contango, indicates a relatively looser near-term supply-demand balance and encourages stock building.

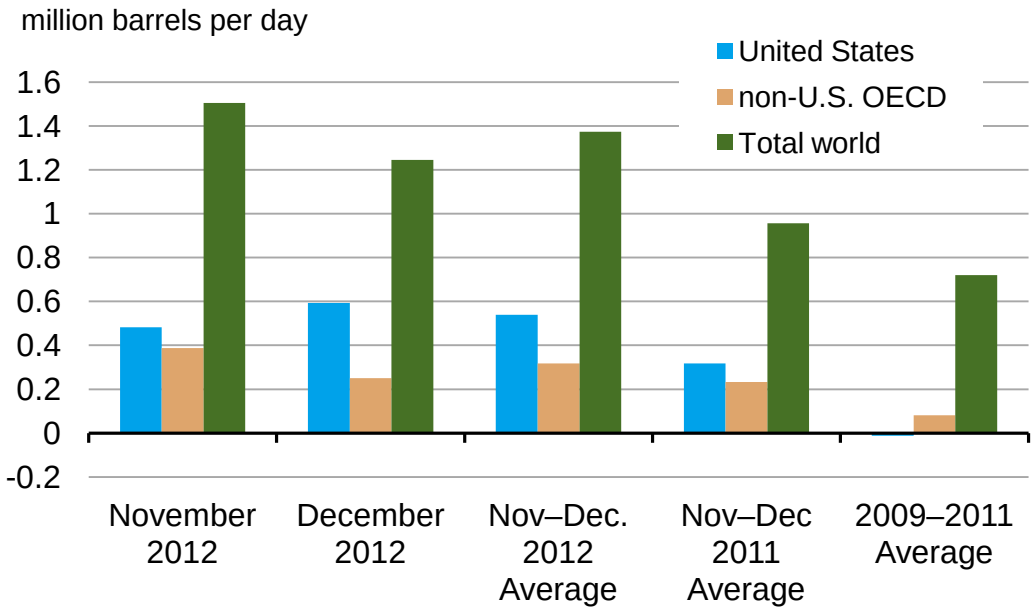
There are a variety of other spreads that also provide important market insights. These include the price spread across different crude streams that can arise due to differences in physical characteristics (for example, American Petroleum Institute [API] gravity and sulfur content) or their location. With respect to location, transportation bottlenecks can result in significant price differences between physically similar crudes in markets with different balances between crude supply and demand.

The price spread between crude oil and refined products, often referred to as a crack spread, provides an indication of the relative tightness in the supply-demand balance for different petroleum products. In recent years, the crack spread for distillate fuels (a category that includes diesel fuel and heating oil) has generally been greater than the crack spread for gasoline. Crack spreads also provide insight into the profitability of refining operations, which is often a reflection of the availability of refinery capacity relative to the demand for refined products.

The value of options on futures contracts is another current indicator of forward-looking market sentiment. Call options provide the holder with the right to buy a commodity at a specified price up to a specified future date, while put options provide the right to sell at a specified price up to a specified future date. Given strike prices and the time to expiration, the value of options contracts can be used to calculate the market's current assessment of the uncertainty range for future prices and/or the market's view that prices for future delivery at specified dates will exceed or fall below any particular level.

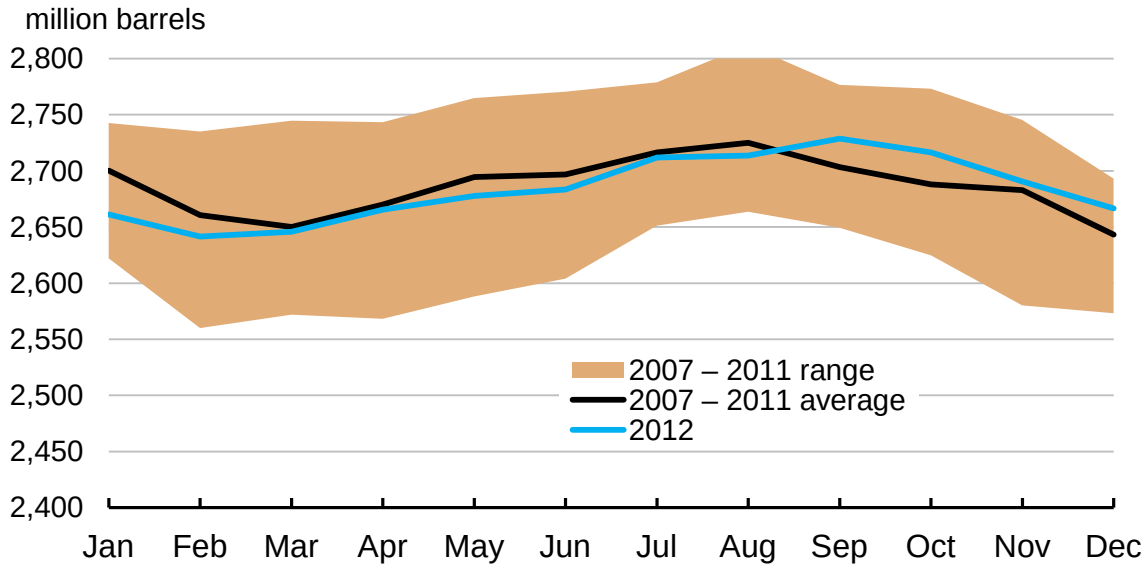
Figures

Figure 5. Global Total Liquids Inventories Net Withdrawals



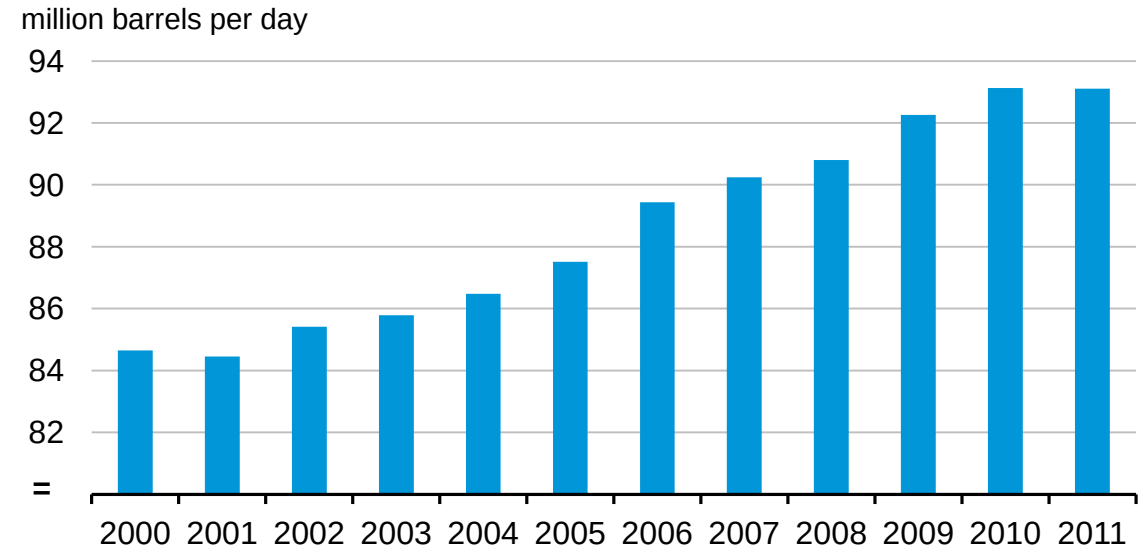
Source: U.S. Energy Information Administration.

Figure 6. OECD Total Liquid Fuels Inventories



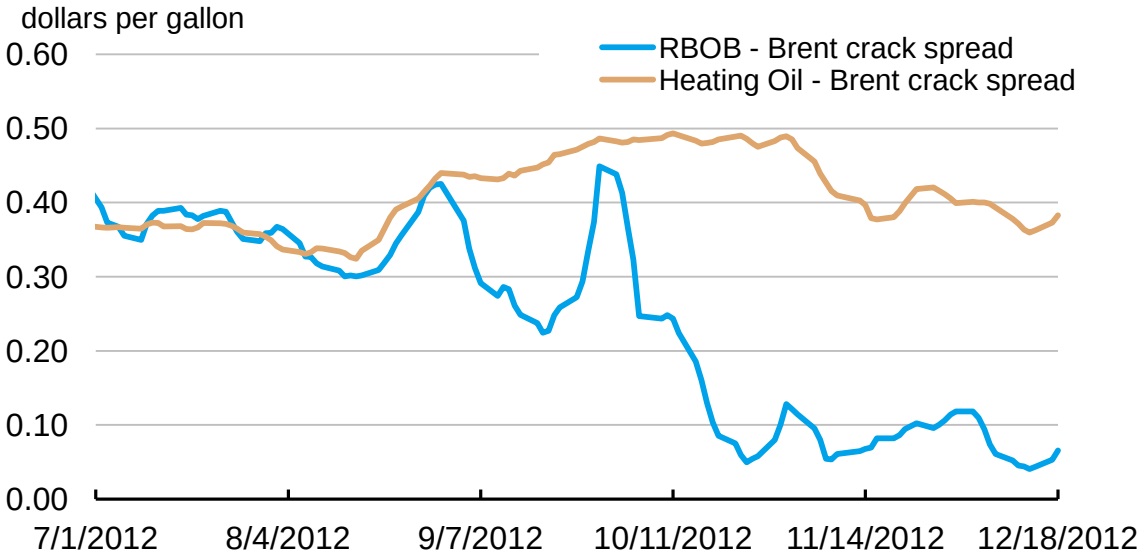
Source: U.S. Energy Information Administration.

Figure 7. Global Crude Oil Distillation Capacity



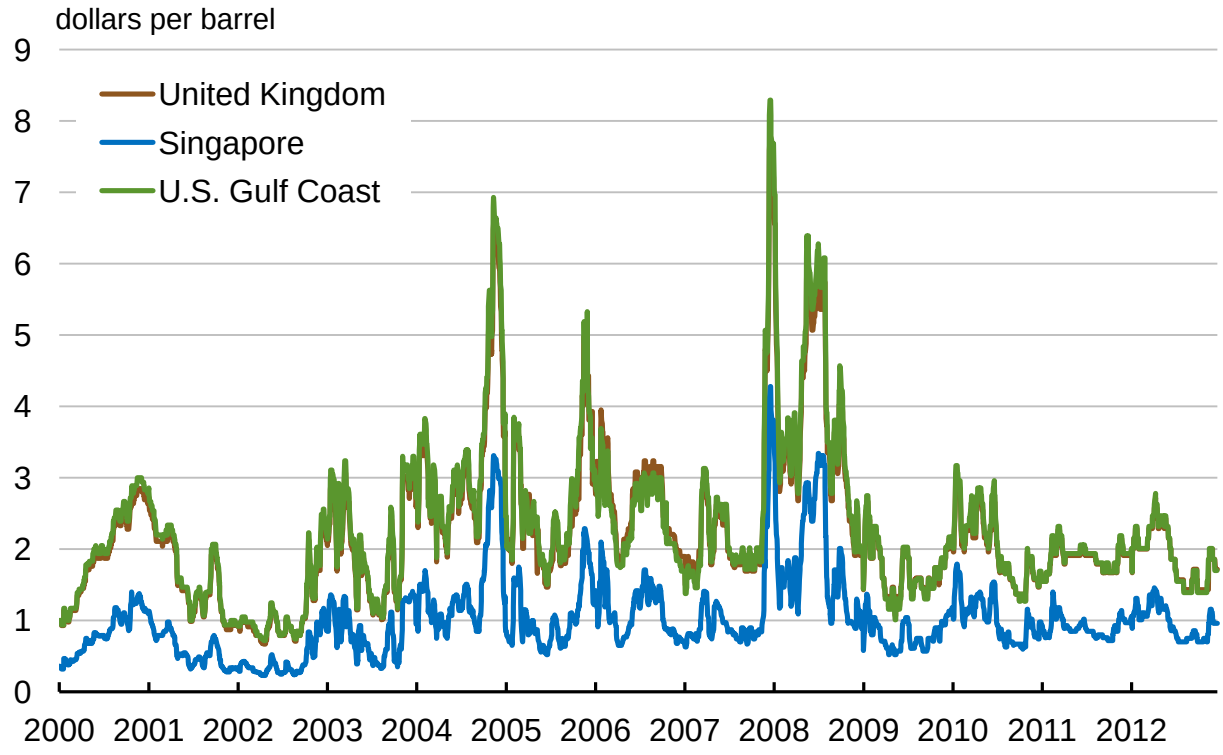
Source: Purvin & Gertz.

Figure 8. Front Month Futures Crack Spreads



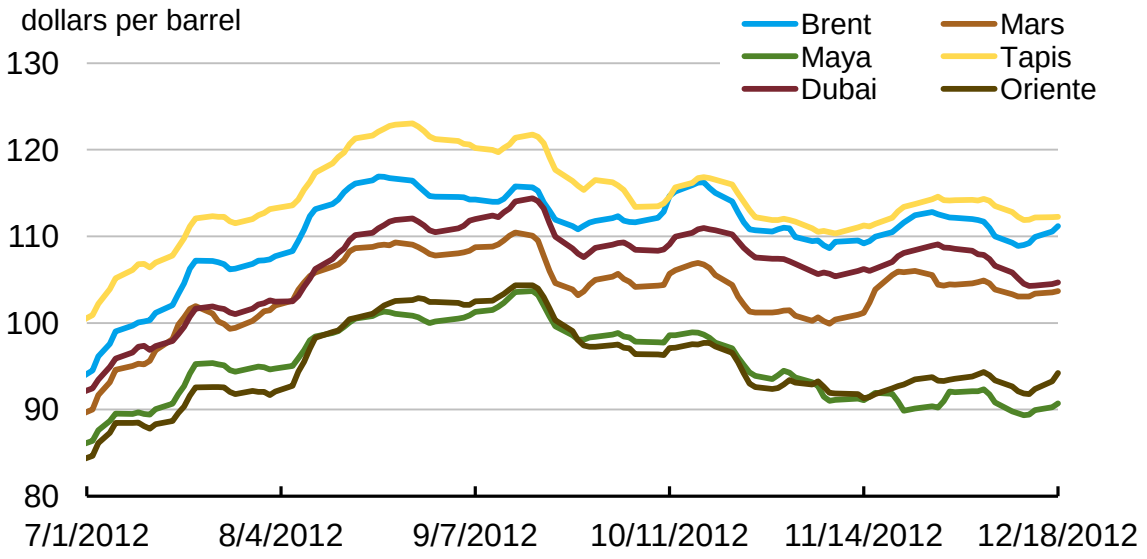
Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME) and Intercontinental Exchange (ICE).

Figure 9. Very Large Crude Carrier Shipping Rates for Delivery from the Persian Gulf



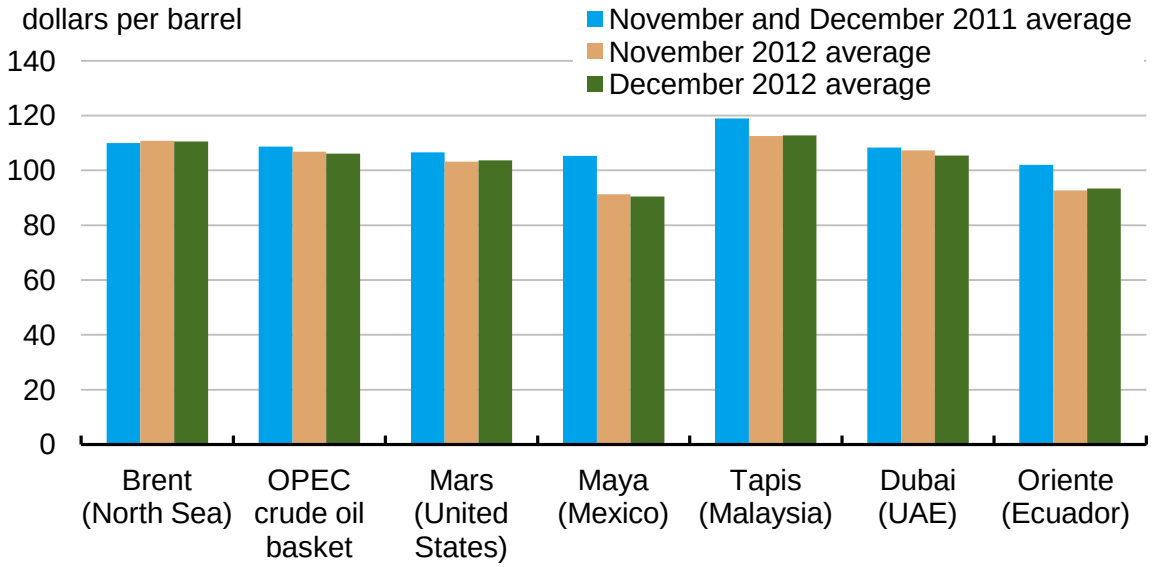
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 10. Global Crude Oil Spot Prices



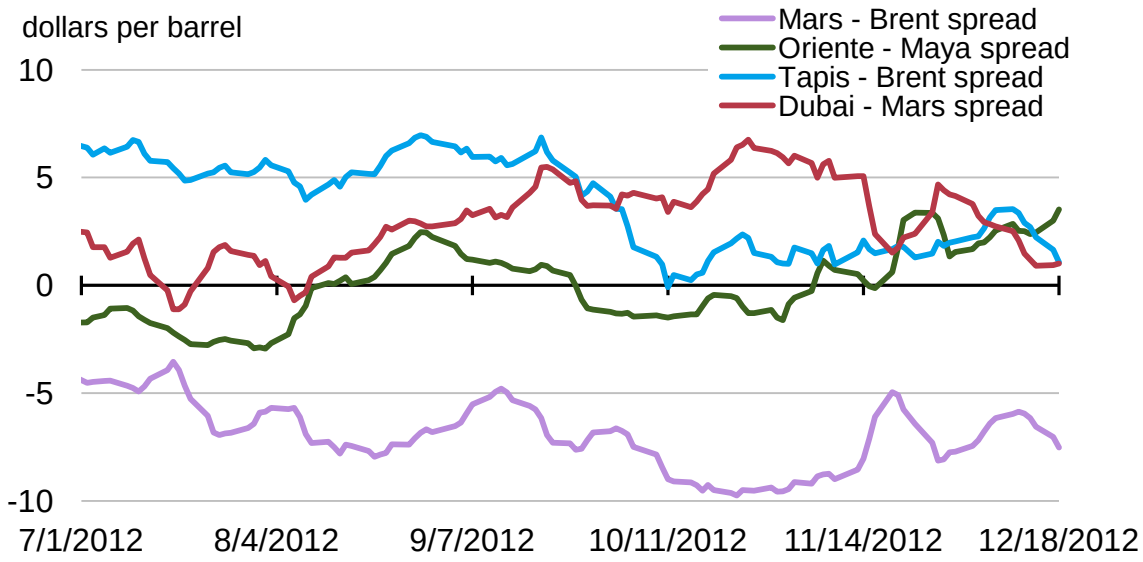
Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 11. Global Crude Oil Spot Price Averages



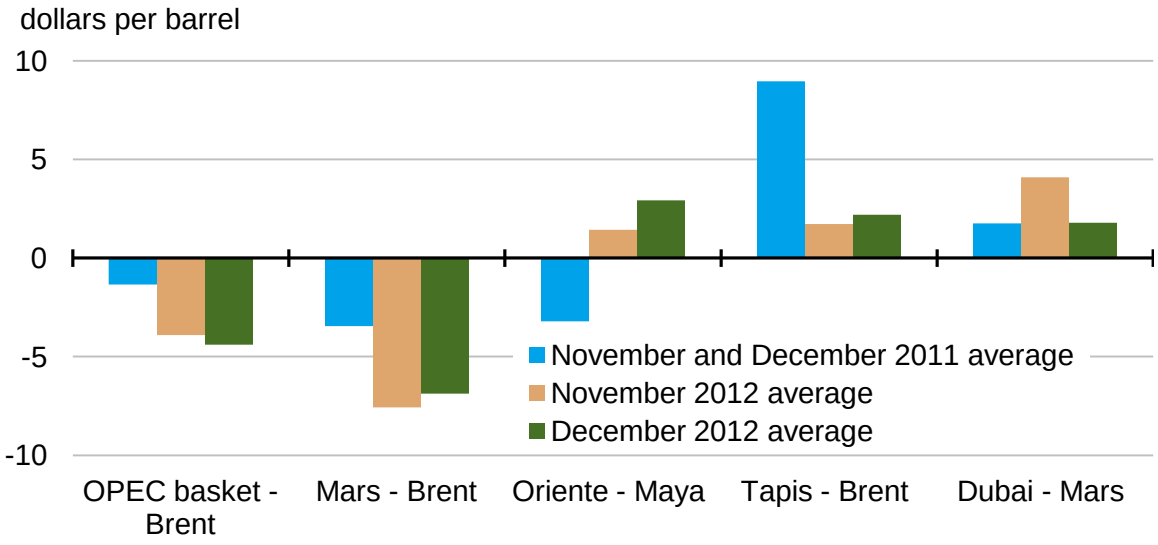
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 12. Global Crude Oil Spot Price Differentials



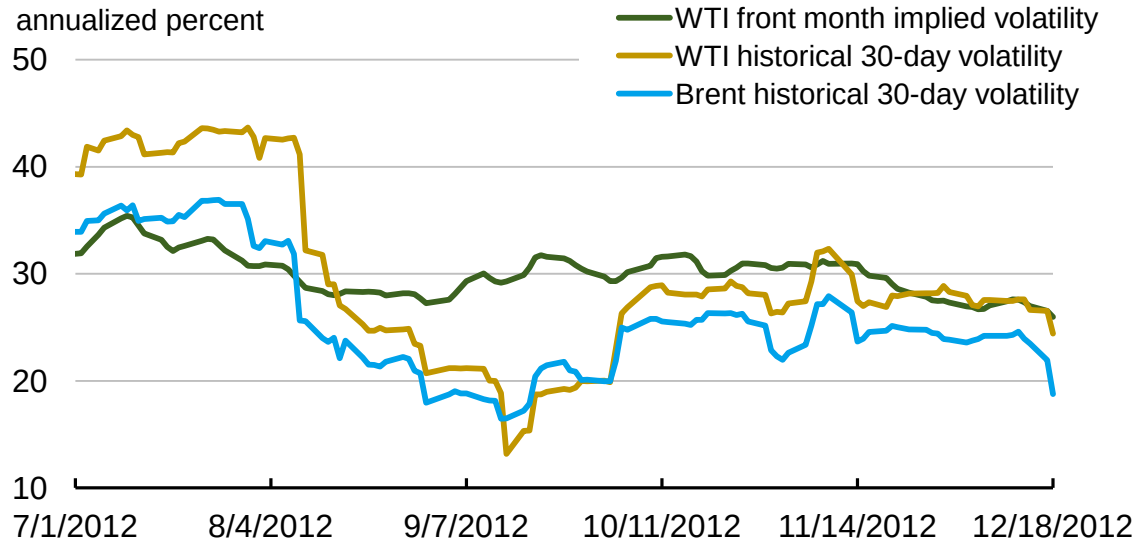
Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 13. Global Crude Oil Spot Price Differentials Monthly Averages



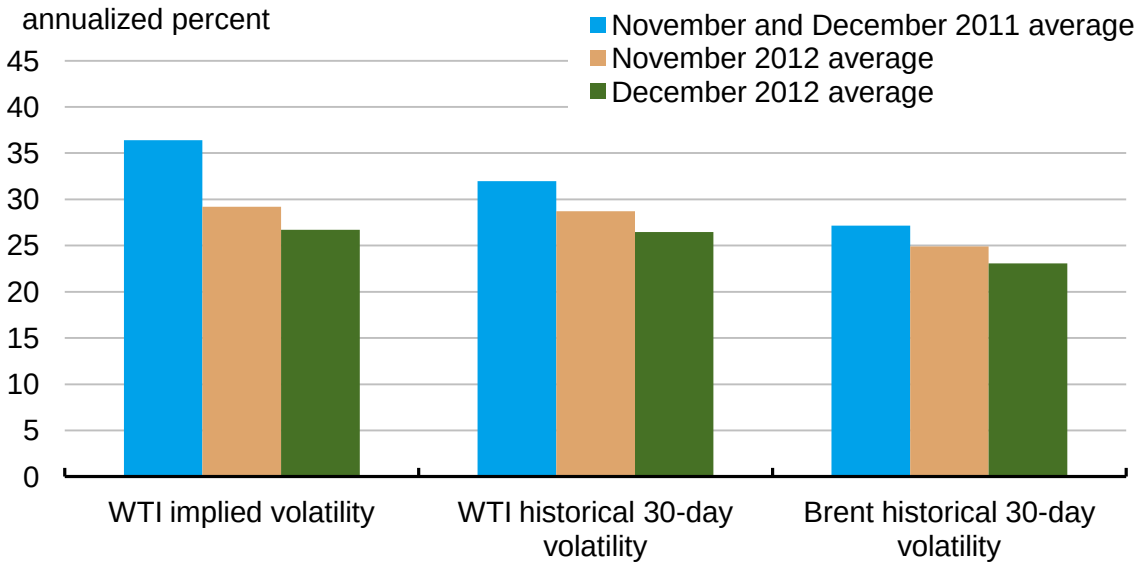
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 14. Crude Oil Historical and Implied Volatility



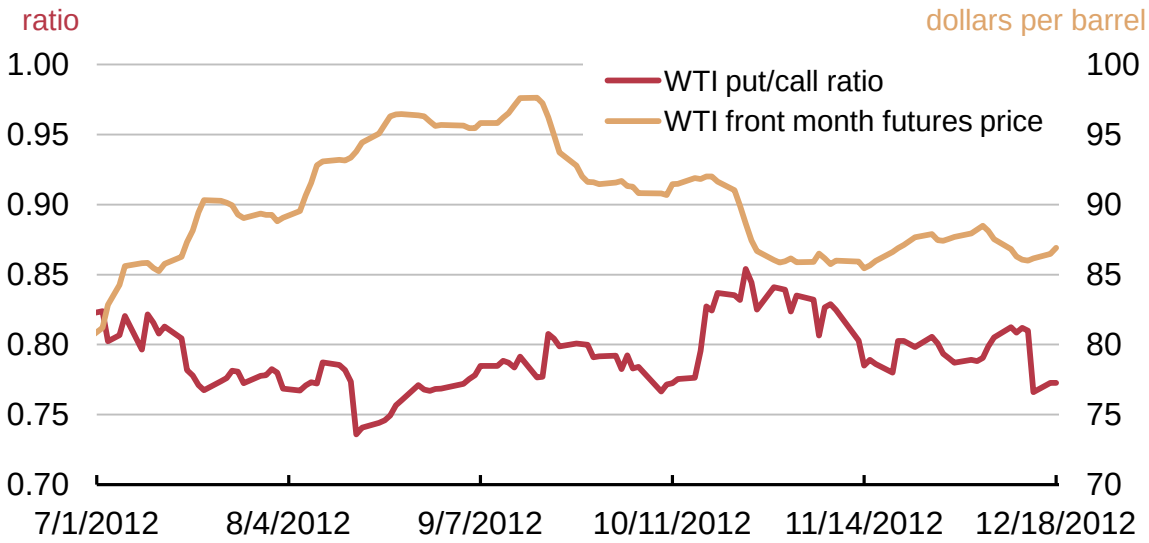
Note: Historical volatility is shown as a 30-day rolling average. Implied volatility is a 5-day rolling average.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME) and Intercontinental Exchange (ICE).

Figure 15. Crude Oil Historical and Implied Volatility Averages



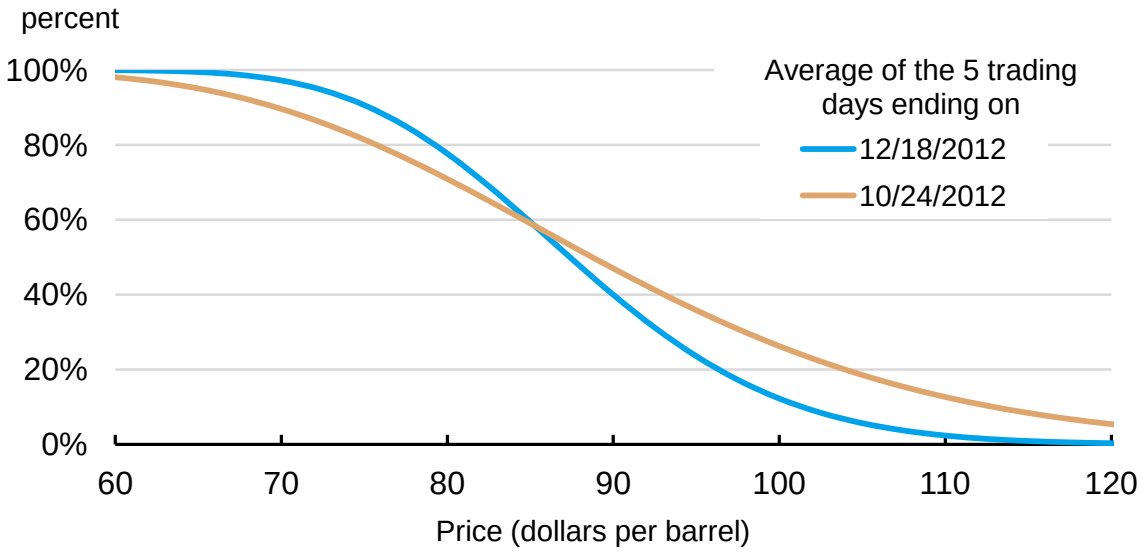
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME).

Figure 16. Put/Call Ratio for all Options on WTI Futures Contracts



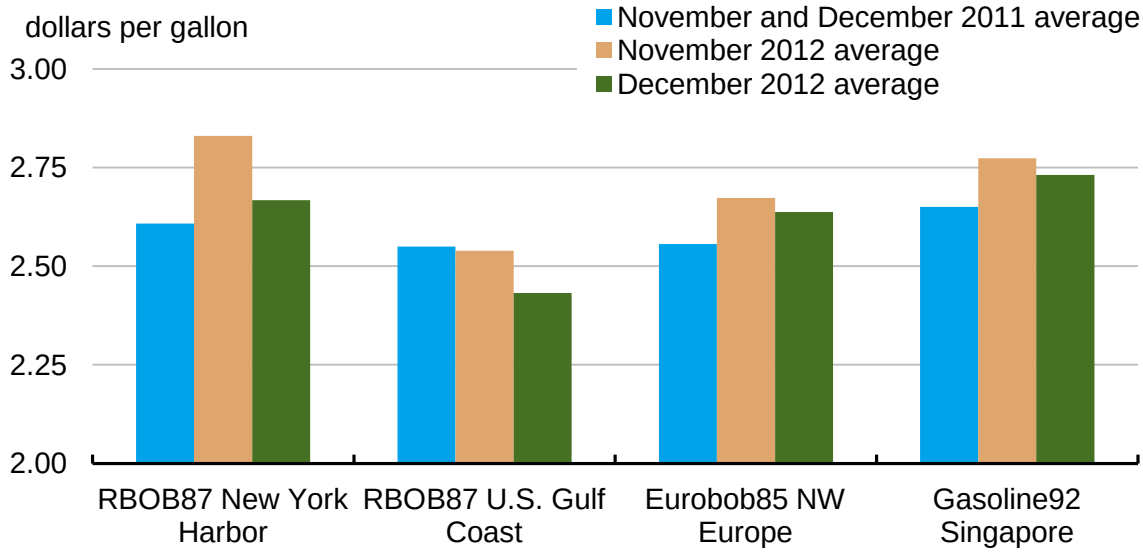
Note: The futures price is a 5-day rolling average.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME) and Intercontinental Exchange (ICE).

Figure 17. Probability of the March 2013 WTI Contract Expiring Above Different Price Levels



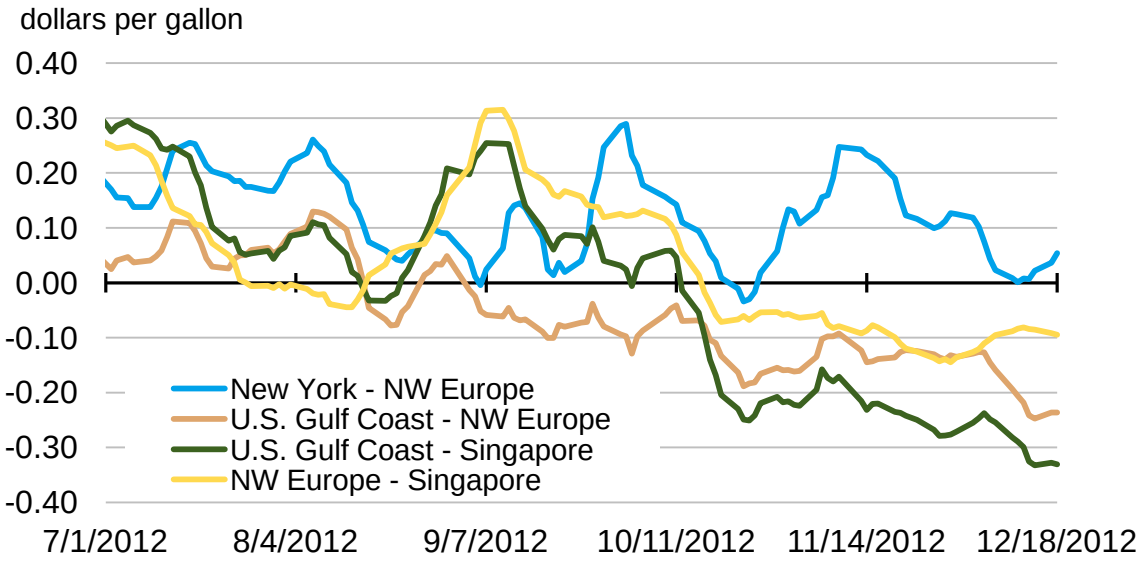
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME).

Figure 18. Global Gasoline Spot Price Averages



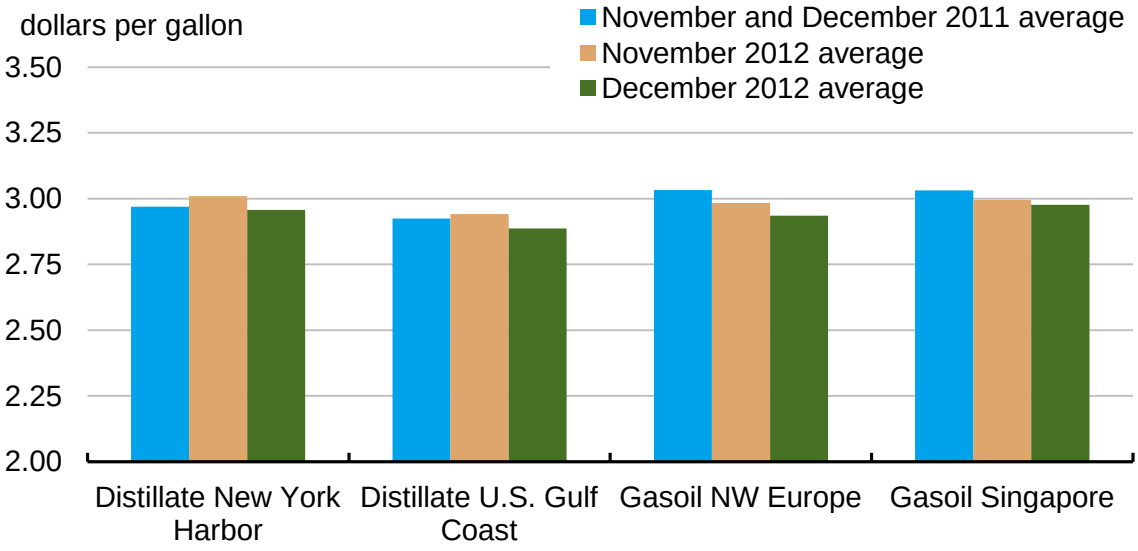
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 19. Global Gasoline Spot Price Differentials



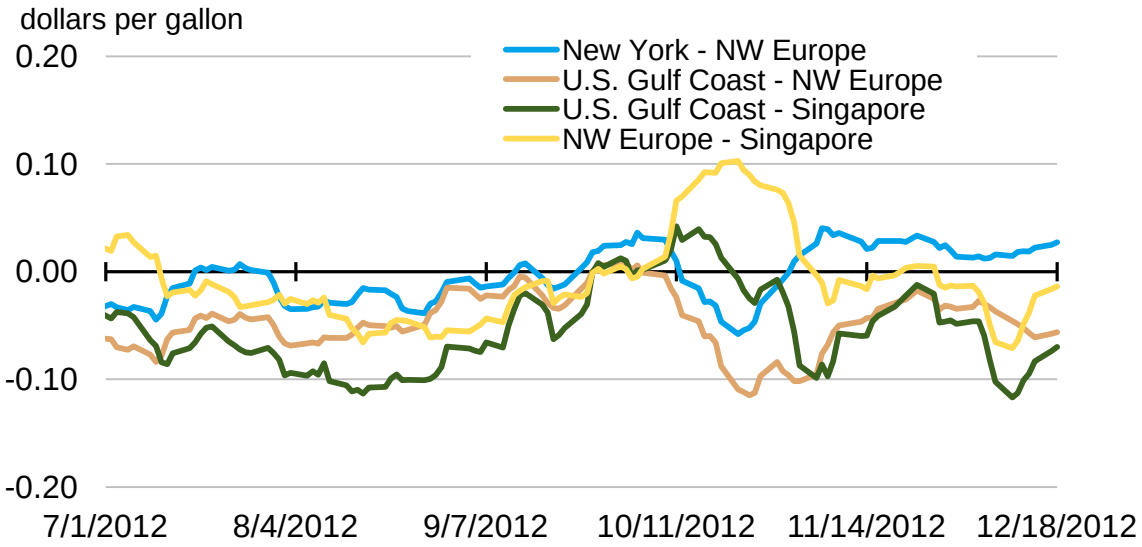
Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 20. Global Distillate Spot Price Averages



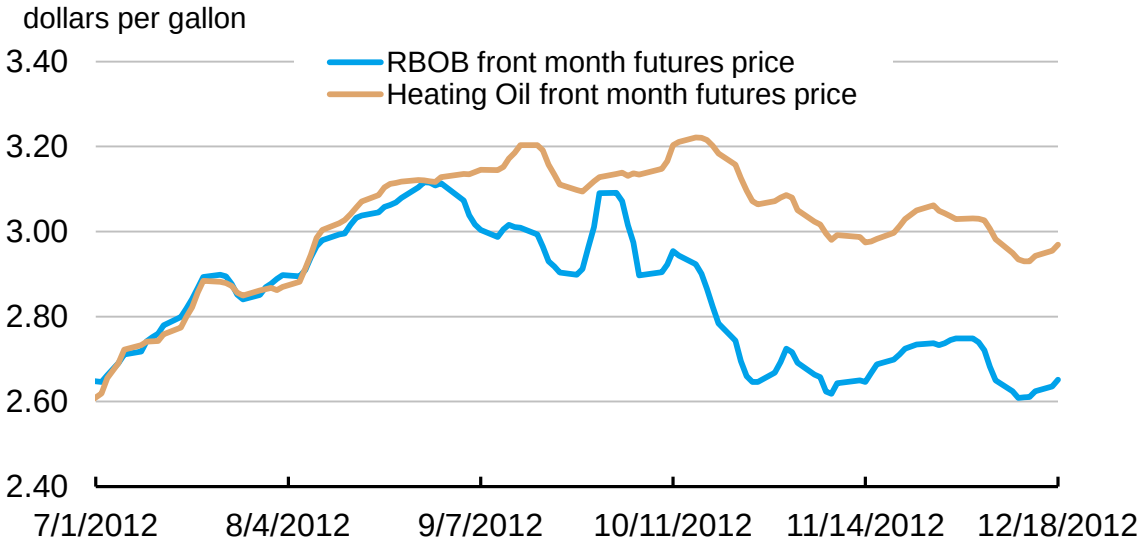
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 21. Global Distillate Spot Price Differentials



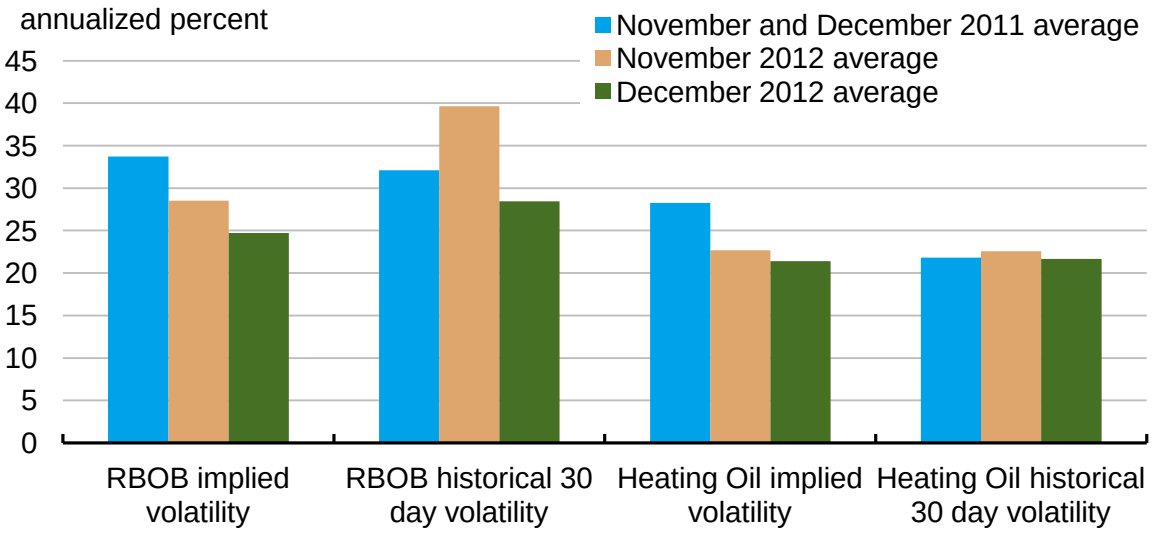
Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 22. Front Month RBOB Gasoline and Heating Oil Futures Prices



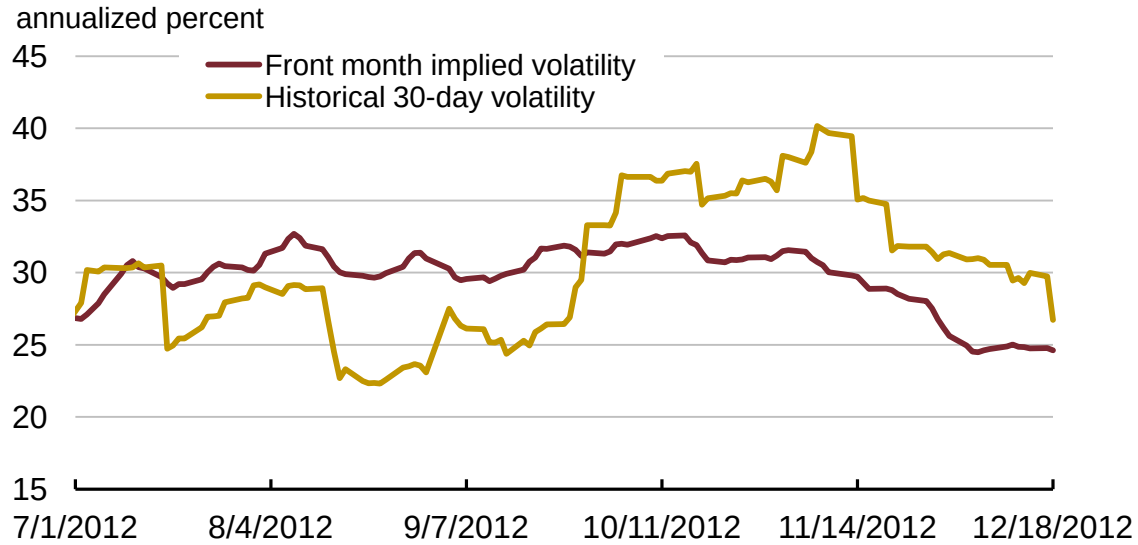
Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME).

Figure 23. Front Month Gasoline and Heating Oil Futures Volatility



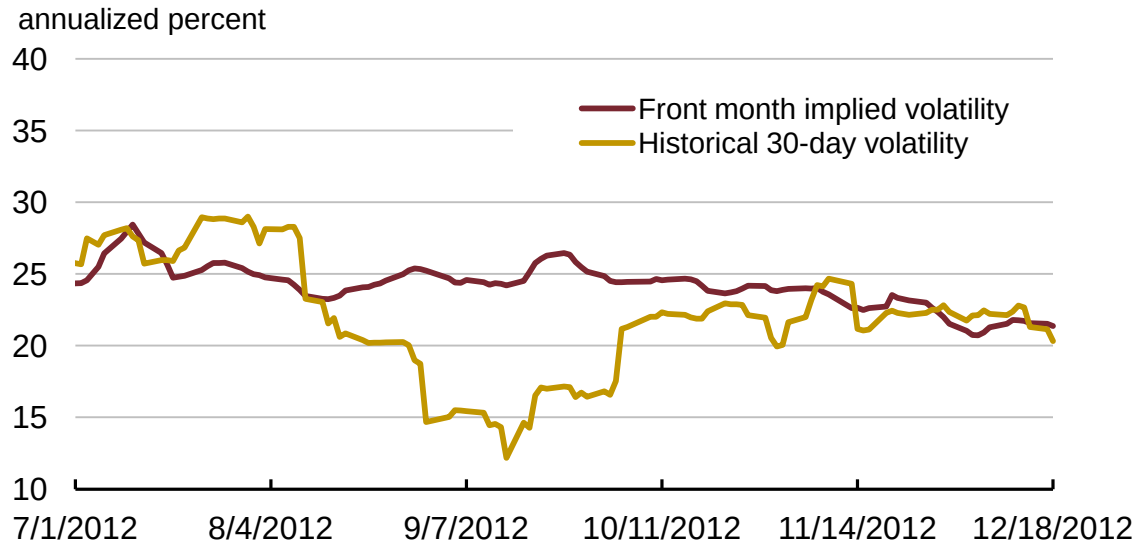
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME).

Figure 24. RBOB Gasoline Historical and Implied Volatility



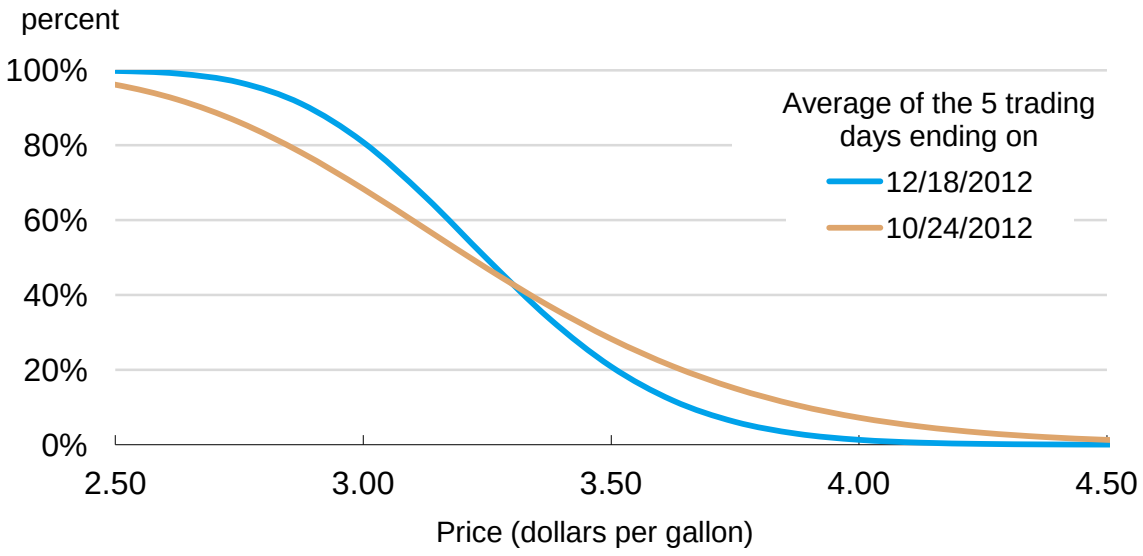
Note: Historical volatility is shown as a 30-day rolling average. Implied volatility is a 5-day rolling average.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME).

Figure 25. Heating Oil Historical and Implied Volatility



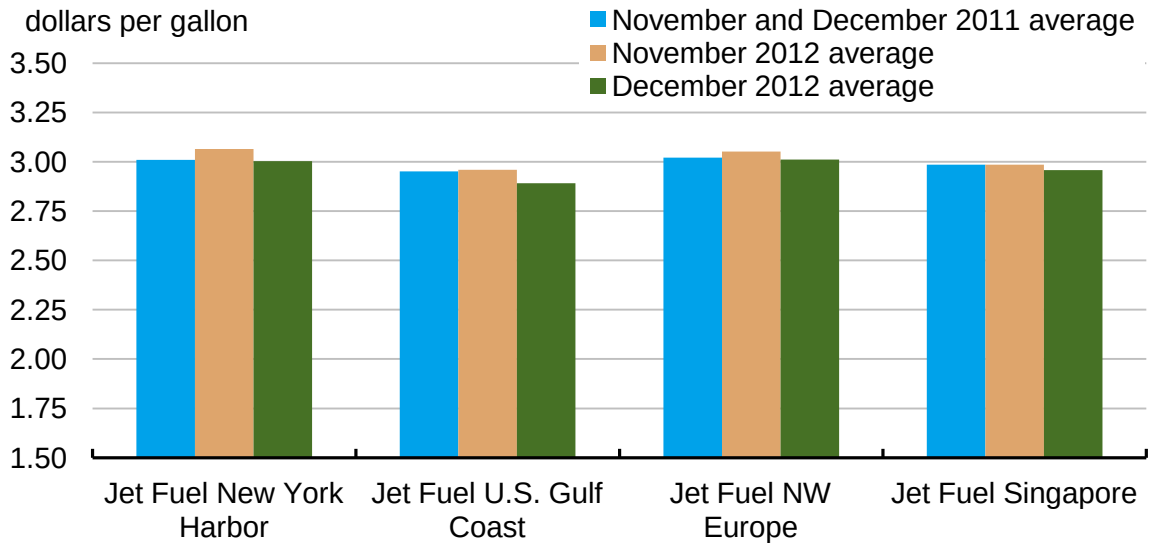
Note: Historical volatility is shown as a 30-day rolling average. Implied volatility is a 5-day rolling average.
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME).

Figure 26. Probability of March 2013 Retail Gasoline Exceeding Different Price Levels at Expiration



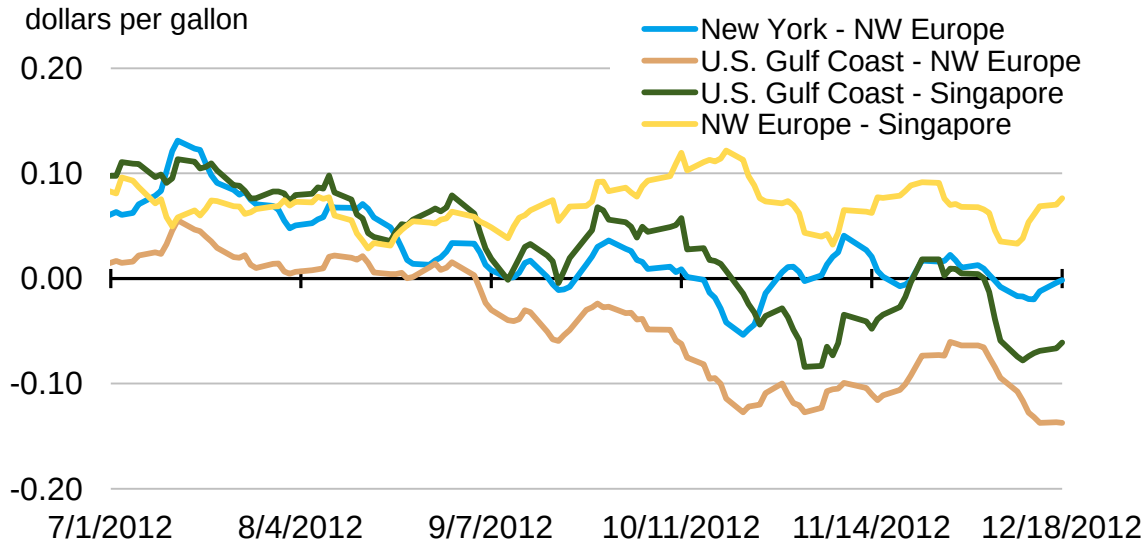
Source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME).

Figure 27. Global Jet Fuel Spot Price Averages



Source: U.S. Energy Information Administration, based on Bloomberg, L.P.

Figure 28. Global Jet Fuel Spot Price Differentials



Note: All prices represent rolling 5-day averages.
Source: U.S. Energy Information Administration, based on Bloomberg, L.P.