What drives crude oil prices?

An analysis of 7 factors that influence oil markets, with chart data updated monthly and quarterly

November 6, 2017 | Washington, DC
Crude oil prices react to a variety of geopolitical and economic events

Sources: U.S. Energy Information Administration, Thomson Reuters
World oil prices move together due to arbitrage

Sources: Bloomberg, Thomson Reuters
Crude oil prices are the primary driver of petroleum product prices

Sources: EIA Short Term Energy Outlook, Thomson Reuters

November 6, 2017
Economic growth has a strong impact on oil consumption

Sources: U.S. Energy Information Administration, IHS Global Insight

November 6, 2017
Changes in expectations of economic growth in can affect oil prices

% GDP growth in non-OECD countries (annual expectations)

Note: Starting in January of each year, each line shows the expected forecast of GDP growth for the specified calendar year, which tends to move toward the actual realized growth outcome as the year progresses. Expectations continue to evolve into the next calendar year as revised GDP data become available (e.g., 2008 GDP expectations are revised even during 2009).

Source: IHS Global Insight
In OECD countries, price increases have coincided with lower consumption.

Sources: EIA Short Term Energy Outlook, Thomson Reuters

November 6, 2017
Rising oil prices held down global oil consumption growth from 2005-2008, despite high economic growth

Sources: EIA Short Term Energy Outlook, Thomson Reuters
Changes in non-OPEC production can affect oil prices

Sources: EIA Short Term Energy Outlook, Thomson Reuters
Non-OPEC supply expectations indicate changes in market sentiment concerning oil supply

Sources: EIA Short Term Energy Outlook

Note: Starting in January of each year, each line shows the expected forecast of non-OPEC supply for the specified calendar year, which tends to move toward the actual realized supply outcome as the year progresses.
Changes in Saudi Arabia crude oil production can affect oil prices

Sources: U.S. Energy Information Administration, Thomson Reuters

November 6, 2017
Unplanned supply disruptions tighten world oil markets and push prices higher

Sources: U.S. Energy Information Administration
During 2003-2008, OPEC’s spare production levels were low, limiting its ability to respond to demand and price increases.
The years 2003-2008 experienced periods of very strong economic and oil demand growth, slow supply growth and tight spare capacity.

Sources: EIA Short Term Energy Outlook, Thomson Reuters
Inventory builds go hand-in-hand with increases in future oil prices relative to current prices (and vice versa)

Sources: EIA Short Term Energy Outlook, Thomson Reuters
Open interest in crude oil futures grew over the last decade as more participants entered the market.

Source: Bloomberg

November 6, 2017
Physical participants’ (producers, merchants, processors, and end users) U.S. futures market contract positions

Source: Commodity Futures Trading Commission, Commitments of Traders

November 6, 2017
Money managers tend to be net long in the U.S. oil futures market

Source: Commodity Futures Trading Commission, Commitments of Traders
Crude oil plays a major role in commodity investment

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td>8.0%</td>
</tr>
<tr>
<td>Crude Oil: Brent</td>
<td>7.8%</td>
</tr>
<tr>
<td>Crude Oil: WTI</td>
<td>7.2%</td>
</tr>
<tr>
<td>Heating Oil</td>
<td>3.8%</td>
</tr>
<tr>
<td>Gasoline</td>
<td>3.8%</td>
</tr>
<tr>
<td>Corn</td>
<td>7.4%</td>
</tr>
<tr>
<td>Soybeans</td>
<td>5.8%</td>
</tr>
<tr>
<td>Tobacco</td>
<td>5.8%</td>
</tr>
<tr>
<td>Soybean Oil</td>
<td>2.8%</td>
</tr>
<tr>
<td>Soy Meal</td>
<td>2.9%</td>
</tr>
<tr>
<td>Coffee</td>
<td>2.4%</td>
</tr>
<tr>
<td>Sugar</td>
<td>3.4%</td>
</tr>
<tr>
<td>Gold</td>
<td>11.2%</td>
</tr>
<tr>
<td>Silver</td>
<td>4.1%</td>
</tr>
<tr>
<td>Copper</td>
<td>7.6%</td>
</tr>
<tr>
<td>Zinc</td>
<td>2.7%</td>
</tr>
<tr>
<td>Nickel</td>
<td>2.5%</td>
</tr>
<tr>
<td>Live Cattle</td>
<td>4.0%</td>
</tr>
<tr>
<td>Lean Hogs</td>
<td>2.1%</td>
</tr>
<tr>
<td>Aluminum</td>
<td>4.6%</td>
</tr>
<tr>
<td>Wheat</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Source: Bloomberg

November 6, 2017
Commodity index investment flows have tended to move together with commodity prices

* Note: CFTC discontinued the collection of index investment data in November 2015.

Source: Bloomberg, Commodity Futures Trading Commission (CFTC)
Correlations (+ or -) between daily price changes of crude oil futures and other commodities generally rose in recent years.

<table>
<thead>
<tr>
<th>Natural Gas</th>
<th>Gold</th>
<th>Copper</th>
<th>Silver</th>
<th>Soy</th>
<th>Corn</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; -0.65</td>
<td>-0.65 to -0.4</td>
<td>-0.4 to -0.25</td>
<td>-0.25 to 0.25</td>
<td>0.25 to 0.4</td>
<td>0.4 to 0.65</td>
<td>&gt; 0.65</td>
</tr>
</tbody>
</table>

Negative correlation

Positive correlation

Note: Correlations computed quarterly
Correlations (+ or -) between daily returns on crude oil futures and financial investments have also strengthened.
For more information


Short-Term Energy Outlook | www.eia.gov/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

EIA Information Center
(202) 586-8800 | email: InfoCtr@eia.gov