Higher demand pushed oil prices higher over the past week

- Over the past week, an increase in anticipated supply was offset by an increase in demand expectations and the residual, resulting in higher oil prices. In 2020:Q4, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. In 2020:Q3, oil prices fell owing to increased supply. Oil prices rose in 2019 due to increasing demand expectations.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices.

---

Our analysis of oil price movements does not necessarily represent the views of the Federal Reserve Bank of New York, the Federal Reserve System, or the Federal Open Market Committee.
Cumulative Weekly Decomposition, Oct 02-Jan 01, 2021

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from October 2, 2020.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 2, 2020

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 18, 2020</td>
<td>16.0</td>
<td>19.5</td>
<td>-6.9</td>
<td>28.6</td>
</tr>
<tr>
<td>Dec 25, 2020</td>
<td>15.2</td>
<td>17.5</td>
<td>-6.4</td>
<td>26.3</td>
</tr>
<tr>
<td>Jan 01, 2021</td>
<td>15.5</td>
<td>15.6</td>
<td>-3.3</td>
<td>27.8</td>
</tr>
</tbody>
</table>

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.

Cumulative Weekly Decomposition, 2010-Present

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.
1. **What is the goal of the oil price decomposition?**
   
   Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

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   Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

   Sparse partial least squares regression allows us to construct linear combinations from the variables in our financial market data set—called factors—which have maximum explanatory content for oil price changes. We first use this procedure to generate factors that best capture the patterns in the data, and then examine the estimated factors to determine how they reflect demand or supply dynamics.

   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. **How to interpret the results?**
   
   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

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**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Higher demand and lower supply pushed oil prices higher over the past week

- Over the past week, an increase in demand expectations and a decrease in anticipated supply resulted in higher oil prices. In 2020:Q4, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. In 2020:Q3, oil prices fell owing to increased supply. Oil prices rose in 2019 due to increasing demand expectations.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices.

Our analysis of oil price movements does not necessarily represent the views of the Federal Reserve Bank of New York, the Federal Reserve System, or the Federal Open Market Committee.
Cumulative Weekly Decomposition, Oct 02-Jan 08, 2021

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from October 2, 2020.
- The table below presents the most recent cumulative values.

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 25, 2020</td>
<td>15.3</td>
<td>17.4</td>
<td>-6.4</td>
<td>26.3</td>
</tr>
<tr>
<td>Jan 01, 2021</td>
<td>15.3</td>
<td>15.2</td>
<td>-3.5</td>
<td>27.0</td>
</tr>
<tr>
<td>Jan 08, 2021</td>
<td>18.6</td>
<td>21.5</td>
<td>-4.6</td>
<td>35.5</td>
</tr>
</tbody>
</table>

Cumulative Percentage Changes since October 2, 2020

Cumulative Weekly Decomposition, 2010-Present

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
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Oil Price Decomposition Q&A

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   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. How to interpret the results?
   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices remained broadly the same over the past three weeks.

- Over the past three weeks, a decrease in anticipated supply was offset by a decrease in demand expectations, resulting in broadly unchanged oil prices. For the most recent week, anticipated supply fell and, despite the adverse move in expected demand, this led to somewhat higher prices. In 2020:Q4, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. In 2020:Q3, oil prices fell owing to increased supply. Oil prices rose in 2019 due to increasing demand expectations.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices.

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<th>Rest</th>
<th>Brent</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Jan 22, 2021</td>
<td>18.9</td>
<td>20.6</td>
<td>-5.1</td>
<td>34.4</td>
</tr>
<tr>
<td>Jan 29, 2021</td>
<td>16.3</td>
<td>22.1</td>
<td>-3.1</td>
<td>35.3</td>
</tr>
</tbody>
</table>

Cumulative Percentage Changes since October 2, 2020

Cumulative Weekly Decomposition, 2010-Present

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.

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**Authors**
Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week owing to increased demand.

- Over the past week, an increase in anticipated supply was offset by an increase in demand expectations, resulting in higher oil prices. In 2020:Q4, oil prices rose owing to increased demand and decreased supply.

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- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices.

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<td>20.7</td>
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</tr>
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<td>22.2</td>
<td>-3.1</td>
<td>35.3</td>
</tr>
<tr>
<td>Feb 05, 2021</td>
<td>21.5</td>
<td>21.4</td>
<td>-1.5</td>
<td>41.3</td>
</tr>
</tbody>
</table>

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.

Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
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<tr>
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<th>Demand</th>
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<th>Rest</th>
<th>Brent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 29, 2021</td>
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<td>22.2</td>
<td>-3.1</td>
<td>35.3</td>
</tr>
<tr>
<td>Feb 05, 2021</td>
<td>21.4</td>
<td>21.4</td>
<td>-1.6</td>
<td>41.3</td>
</tr>
<tr>
<td>Feb 12, 2021</td>
<td>23.4</td>
<td>22.5</td>
<td>0.5</td>
<td>46.4</td>
</tr>
</tbody>
</table>

Longer-Term View of Oil Price Movements

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**Authors**

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Oil prices increased over the past week owing to increased demand and decreased supply.

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- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices.

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<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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</thead>
<tbody>
<tr>
<td>Feb 05, 2021</td>
<td>21.4</td>
<td>21.4</td>
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<td>41.3</td>
</tr>
<tr>
<td>Feb 12, 2021</td>
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<td>22.4</td>
<td>0.5</td>
<td>46.4</td>
</tr>
<tr>
<td>Feb 19, 2021</td>
<td>23.8</td>
<td>26.8</td>
<td>-3.5</td>
<td>47.1</td>
</tr>
</tbody>
</table>

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
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   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week owing to decreased supply.

- Although demand expectations deteriorated over the past week, this was offset by a decrease in anticipated supply, resulting in higher oil prices. In 2020:Q4, oil prices rose owing to increased demand and decreased supply.

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**Cumulative Weekly Decomposition, Oct 02-Feb 26, 2021**

The chart at left depicts the cumulative oil price decomposition from October 2, 2020.

The table below presents the most recent cumulative values.

**Cumulative Percentage Changes since October 2, 2020**

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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<tbody>
<tr>
<td>Feb 12, 2021</td>
<td>23.4</td>
<td>22.4</td>
<td>0.5</td>
<td>46.4</td>
</tr>
<tr>
<td>Feb 19, 2021</td>
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<td>26.7</td>
<td>-3.5</td>
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<tr>
<td>Feb 26, 2021</td>
<td>22.5</td>
<td>33.0</td>
<td>-3.3</td>
<td>52.1</td>
</tr>
</tbody>
</table>

**Recent Decomposition Data**

- Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
- Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

**Cumulative Weekly Decomposition, 2010-Present**

This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.

The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.

**Longer-Term View of Oil Price Movements**

- Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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Oil Price Dynamics Report / March 1, 2021
Oil Price Decomposition Q&A

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**References**

**Authors**
Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past three weeks owing to increased supply.

- Over the past three weeks, an increase in demand expectations was offset by an increase in anticipated supply, resulting in lower oil prices. In 2020:Q4, oil prices rose owing to increased demand and decreased supply.

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<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 05, 2021</td>
<td>23.3</td>
<td>40.0</td>
<td>-6.4</td>
<td>56.9</td>
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<td>Mar 12, 2021</td>
<td>26.3</td>
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<td>-6.9</td>
<td>56.7</td>
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<tr>
<td>Mar 19, 2021</td>
<td>24.3</td>
<td>30.0</td>
<td>-4.7</td>
<td>49.7</td>
</tr>
</tbody>
</table>

**Cumulative Percentage Changes since October 2, 2020**

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Oil Price Decomposition Q&A

1. What is the goal of the oil price decomposition?
   Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

2. What is the modeling strategy?
   Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

   Sparse partial least squares regression allows us to construct linear combinations from the variables in our financial market data set—called factors—which have maximum explanatory content for oil price changes. We first use this procedure to generate factors that best capture the patterns in the data, and then examine the estimated factors to determine how they reflect demand or supply dynamics.

   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. How to interpret the results?
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   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices remained broadly the same over the past week.

- Over the past week, a decrease in demand expectations and essentially constant anticipated supply were offset by an increase in the residual, resulting in broadly unchanged oil prices. In 2020:Q4, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. In 2020:Q3, oil prices fell owing to increased supply. Oil prices rose in 2019 due to increasing demand expectations.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices.

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Cumulative Weekly Decomposition, Oct 02-Mar 26, 2021

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from October 2, 2020.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 2, 2020

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
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<th>Rest</th>
<th>Brent</th>
</tr>
</thead>
<tbody>
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<td>26.2</td>
<td>37.3</td>
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<td>56.7</td>
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<tr>
<td>Mar 19, 2021</td>
<td>24.2</td>
<td>30.4</td>
<td>-5.0</td>
<td>49.7</td>
</tr>
<tr>
<td>Mar 26, 2021</td>
<td>23.8</td>
<td>30.0</td>
<td>-4.1</td>
<td>49.7</td>
</tr>
</tbody>
</table>

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
Notes: Residual reflects price movements unexplained by supply and demand factors.
Supply, demand, and residual sum to Brent crude price.

Cumulative Weekly Decomposition, 2010-Present

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
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Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing to increased supply.

- Over the past week, an increase in demand expectations was offset by an increase in anticipated supply and a decrease in the residual, resulting in lower oil prices. In 2021:Q1, oil prices rose owing to increased demand and decreased supply.

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- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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**Recent Decomposition Data**

- The chart at left depicts the cumulative oil price decomposition from January 4, 2021.
- The table below presents the most recent cumulative values.

### Cumulative Percentage Changes since January 4, 2021

<table>
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<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 19, 2021</td>
<td>8.9</td>
<td>15.2</td>
<td>-1.4</td>
<td>22.7</td>
</tr>
<tr>
<td>Mar 26, 2021</td>
<td>8.5</td>
<td>14.9</td>
<td>-0.6</td>
<td>22.7</td>
</tr>
<tr>
<td>Apr 02, 2021</td>
<td>9.3</td>
<td>14.0</td>
<td>-1.4</td>
<td>21.9</td>
</tr>
</tbody>
</table>

**Longer-Term View of Oil Price Movements**

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**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing to increased supply.

- Over the past week, an increase in demand expectations was offset by an increase in anticipated supply, resulting in lower oil prices. In 2021:Q1, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

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<tr>
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<td>21.1</td>
</tr>
<tr>
<td>Apr 09, 2021</td>
<td>8.7</td>
<td>10.6</td>
<td>0.9</td>
<td>20.2</td>
</tr>
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---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past three weeks owing mostly to decreased supply.

- Over the past three weeks, a decrease in anticipated supply and, to a lesser extent, an increase in demand expectations resulted in higher oil prices. In 2021:Q1, oil prices rose owing to increased demand and decreased supply.

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Cumulative Weekly Decomposition, Jan 04-Apr 30, 2021

Log changes, percent

Recent Decomposition Data

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Cumulative Percentage Changes since January 4, 2021

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<th>Rest</th>
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<td>Apr 23, 2021</td>
<td>10.3</td>
<td>10.8</td>
<td>4.0</td>
<td>25.1</td>
</tr>
<tr>
<td>Apr 30, 2021</td>
<td>10.4</td>
<td>13.9</td>
<td>2.5</td>
<td>26.8</td>
</tr>
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</table>

Cumulative Weekly Decomposition, 2010-Present

Longer-Term View of Oil Price Movements

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---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week, again driven mainly by decreased supply.

- Oil prices rose over the past week, mainly driven by a decrease in anticipated supply and, to a lesser extent, by improving demand expectations. The same pattern was observed the previous week. In 2021:Q1, oil prices rose owing to increased demand and decreased supply.

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Cumulative Weekly Decomposition, Jan 04-May 07, 2021

The chart at left depicts the cumulative oil price decomposition from January 4, 2021.

The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 4, 2021

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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</thead>
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<td>Apr 23, 2021</td>
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<td>10.7</td>
<td>4.1</td>
<td>25.1</td>
</tr>
<tr>
<td>Apr 30, 2021</td>
<td>10.2</td>
<td>13.9</td>
<td>2.7</td>
<td>26.8</td>
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<tr>
<td>May 07, 2021</td>
<td>11.3</td>
<td>19.1</td>
<td>-2.1</td>
<td>28.3</td>
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</tbody>
</table>

Recent Decomposition Data

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<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
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<tr>
<td>Apr 23, 2021</td>
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<td>10.7</td>
<td>4.1</td>
<td>25.1</td>
</tr>
<tr>
<td>Apr 30, 2021</td>
<td>10.2</td>
<td>13.9</td>
<td>2.7</td>
<td>26.8</td>
</tr>
<tr>
<td>May 07, 2021</td>
<td>11.3</td>
<td>19.1</td>
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</tr>
</tbody>
</table>

Longer-Term View of Oil Price Movements

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References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
Once again decreased supply led to higher oil prices over the past week.

- Over the past week, a decrease in demand expectations was offset by a decrease in anticipated supply, resulting in somewhat higher oil prices. In 2021:Q1, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

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<tr>
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<tr>
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<tr>
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<td>19.1</td>
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<td>28.3</td>
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<tr>
<td>May 14, 2021</td>
<td>10.3</td>
<td>20.3</td>
<td>-1.7</td>
<td>28.9</td>
</tr>
</tbody>
</table>

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Oil prices decreased over the past week owing to increased supply.

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<td>13.1</td>
<td>15.5</td>
<td>1.7</td>
<td>30.3</td>
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Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
1. **What is the goal of the oil price decomposition?**

Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

2. **What is the modeling strategy?**

Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

Sparse partial least squares regression allows us to construct linear combinations from the variables in our financial market data set—called factors—which have maximum explanatory content for oil price changes. We first use this procedure to generate factors that best capture the patterns in the data, and then examine the estimated factors to determine how they reflect demand or supply dynamics.

The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. **How to interpret the results?**

The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past three weeks owing to increased demand and decreased supply.

- Over the past three weeks, an increase in demand expectations and a decrease in anticipated supply resulted in higher oil prices. During the most recent week, however, declining demand expectations were offset by the continued decrease in anticipated supply. In 2021:Q1, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

Our analysis of oil price movements does not necessarily represent the views of the Federal Reserve Bank of New York, the Federal Reserve System, or the Federal Open Market Committee.
Cumulative Weekly Decomposition, Jan 04-Jun 18, 2021

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 4, 2021.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 4, 2021

<table>
<thead>
<tr>
<th></th>
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<td>14.9</td>
<td>19.7</td>
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<td>Jun 18, 2021</td>
<td>14.0</td>
<td>18.1</td>
<td>3.6</td>
<td>35.7</td>
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</tbody>
</table>

Cumulative Weekly Decomposition, 2010-Present

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 4, 2021.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 4, 2021

<table>
<thead>
<tr>
<th></th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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<tr>
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</tr>
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<td>19.7</td>
<td>-0.0</td>
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<tr>
<td>Jun 18, 2021</td>
<td>14.0</td>
<td>18.1</td>
<td>3.6</td>
<td>35.7</td>
</tr>
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</table>

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.
1. **What is the goal of the oil price decomposition?**

   Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

2. **What is the modeling strategy?**

   Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

   Sparse partial least squares regression allows us to construct linear combinations from the variables in our financial market data set—called factors—which have maximum explanatory content for oil price changes. We first use this procedure to generate factors that best capture the patterns in the data, and then examine the estimated factors to determine how they reflect demand or supply dynamics.

   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. **How to interpret the results?**

   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week owing to increased demand and decreased supply.

- Over the past week, an increase in demand expectations and a decrease in anticipated supply resulted in higher oil prices. In 2021:Q1, oil prices rose owing to increased demand and decreased supply.

- In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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- The chart at left depicts the cumulative oil price decomposition from January 4, 2021.
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<thead>
<tr>
<th>Date</th>
<th>Demand</th>
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</thead>
<tbody>
<tr>
<td>Jun 11, 2021</td>
<td>14.9</td>
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<td>-0.0</td>
<td>34.6</td>
</tr>
<tr>
<td>Jun 18, 2021</td>
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<td>3.6</td>
<td>35.7</td>
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<tr>
<td>Jun 25, 2021</td>
<td>16.8</td>
<td>19.3</td>
<td>3.2</td>
<td>39.3</td>
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</table>

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
Oil Price Decomposition Q&A

1. What is the goal of the oil price decomposition?
   Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

2. What is the modeling strategy?
   Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

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   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. How to interpret the results?
   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
**Oil prices remained broadly the same over the past week.**

- Over the past week, an increase in demand expectations was offset by an increase in anticipated supply, resulting in broadly unchanged oil prices. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Cumulative Weekly Decomposition, Apr 02–Jul 02, 2021

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 2, 2021.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 2, 2021

<table>
<thead>
<tr>
<th>Date</th>
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<td>4.8</td>
<td>3.7</td>
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<tr>
<td>Jul 02, 2021</td>
<td>10.2</td>
<td>4.2</td>
<td>3.8</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Cumulative Weekly Decomposition, 2010–Present

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
1. **What is the goal of the oil price decomposition?**
   
   Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

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   Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.
   
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   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. **How to interpret the results?**
   
   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).
   
   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing mostly to increased supply.

- Over the past week, a slight decrease in demand expectations and, more significantly, an increase in anticipated supply resulted in lower oil prices. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 2, 2021.
- The table below presents the most recent cumulative values.

### Cumulative Percentage Changes since April 2, 2021

<table>
<thead>
<tr>
<th>Date</th>
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<td>2.2</td>
<td>5.3</td>
<td>17.4</td>
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Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.

Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
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**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past three weeks owing to increased demand.

- Over the past three weeks, an increase in anticipated supply was offset by an increase in demand expectations, resulting in higher oil prices. During the most recent week, however, stable demand expectations and a decrease in anticipated supply drove the price increases. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Cumulative Weekly Decomposition, Apr 02-Jul 30, 2021

The chart at left depicts the cumulative oil price decomposition from April 2, 2021. The table below presents the most recent cumulative values.

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 2, 2021.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 2, 2021

<table>
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<td>Jul 30, 2021</td>
<td>10.0</td>
<td>0.6</td>
<td>7.8</td>
<td>18.4</td>
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Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
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**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing to increased supply.

- Over the past week, an increase in anticipated supply resulted in lower oil prices. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

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Cumulative Weekly Decomposition, Apr 02-Aug 06, 2021

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- The table below presents the most recent cumulative values.

**Recent Decomposition Data**

**Cumulative Percentage Changes since April 2, 2021**

<table>
<thead>
<tr>
<th>Date</th>
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<th>Supply</th>
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<tr>
<td>Jul 23, 2021</td>
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<td>15.4</td>
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<td>Aug 06, 2021</td>
<td>9.9</td>
<td>-2.3</td>
<td>3.1</td>
<td>10.7</td>
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</table>

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.

Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Cumulative Weekly Decomposition, 2010-Present

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References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased slightly over the past week owing to increased supply.

- Over the past week, higher demand expectations were offset by an increase in anticipated supply, resulting in lower oil prices. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

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Cumulative Weekly Decomposition, Apr 02-Aug 13, 2021

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<table>
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Cumulative Percentage Changes since April 2, 2021

Cumulative Weekly Decomposition, 2010-Present

Longer-Term View of Oil Price Movements

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   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

3. **How to interpret the results?**

   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing to decreased demand and increased supply.

- Over the past week, a decrease in demand expectations and an increase in anticipated supply resulted in lower oil prices. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 2, 2021.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 2, 2021

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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<tr>
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<td>Aug 13, 2021</td>
<td>10.6</td>
<td>-4.3</td>
<td>4.2</td>
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</tr>
<tr>
<td>Aug 20, 2021</td>
<td>7.3</td>
<td>-10.2</td>
<td>5.4</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
1. What is the goal of the oil price decomposition?

Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

2. What is the modeling strategy?

Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

Sparse partial least squares regression allows us to construct linear combinations from the variables in our financial market data set—called factors—which have maximum explanatory content for oil price changes. We first use this procedure to generate factors that best capture the patterns in the data, and then examine the estimated factors to determine how they reflect demand or supply dynamics.

The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

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The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week owing to increased demand and decreased supply.

- Over the past week, an increase in demand expectations and a decrease in anticipated supply resulted in higher oil prices. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Cumulative Weekly Decomposition, Apr 02-Aug 27, 2021

The chart at left depicts the cumulative oil price decomposition from April 2, 2021. The table below presents the most recent cumulative values.

### Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 2, 2021.
- The table below presents the most recent cumulative values.

#### Cumulative Percentage Changes since April 2, 2021

<table>
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<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 13, 2021</td>
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<td>4.3</td>
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<td>Aug 20, 2021</td>
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<tr>
<td>Aug 27, 2021</td>
<td>10.5</td>
<td>-3.7</td>
<td>6.8</td>
<td>13.5</td>
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Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.

Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

### Cumulative Weekly Decomposition, 2010-Present

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
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   Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

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   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

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**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices remained relatively unchanged over the past week.

- Over the past week, an increase in demand expectations was offset by a decrease in the residual, resulting in relatively unchanged oil prices. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Cumulative Weekly Decomposition, Apr 02-Sep 03, 2021

The chart at left depicts the cumulative oil price decomposition from April 2, 2021.

The table below presents the most recent cumulative values.

### Cumulative Percentage Changes since April 2, 2021

<table>
<thead>
<tr>
<th></th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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<tbody>
<tr>
<td>Aug 20, 2021</td>
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<td>Aug 27, 2021</td>
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<td>Sep 03, 2021</td>
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<td>5.6</td>
<td>13.4</td>
</tr>
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</table>

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.

Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Recent Decomposition Data

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Cumulative Percentage Changes since April 2, 2021

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<th>Supply</th>
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<th>Brent</th>
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<tbody>
<tr>
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<td>-3.7</td>
<td>5.6</td>
<td>13.4</td>
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</table>

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.

Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Cumulative Weekly Decomposition, 2010-Present

This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.

The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
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   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

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**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past three weeks, owing to decreased supply.

- Over the past three weeks, a decrease in anticipated supply resulted in higher oil prices. For the most recent week, oil prices moved up again owing to lower anticipated supply and, to a lesser extent, higher expected demand. In 2021:Q2, oil prices rose owing to increased demand and decreased supply.

- Increased demand and decreased supply were also responsible for higher oil prices in 2021:Q1. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply, which has been the dominant oil price driver pattern since then.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Recent Decomposition Data

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### Cumulative Percentage Changes since April 2, 2021

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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<td>Sep 24, 2021</td>
<td>11.6</td>
<td>3.7</td>
<td>5.3</td>
<td>20.7</td>
</tr>
</tbody>
</table>

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
1. What is the goal of the oil price decomposition?
   Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

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References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week, owing to decreased supply.

- Over the past week, a decrease in expected demand was offset by a decrease in anticipated supply, resulting in higher oil prices. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

- Rising demand expectations were the main cause of higher oil prices in 2021:Q1 and 2021:Q2. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

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Recent Decomposition Data

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Cumulative Percentage Changes since July 2, 2021

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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<tr>
<td>Oct 01, 2021</td>
<td>0.1</td>
<td>7.9</td>
<td>-4.1</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
Oil Price Decomposition Q&A

1. What is the goal of the oil price decomposition?
   Our aim is to determine how much of the observed oil price change has been driven by demand and supply factors.

2. What is the modeling strategy?
   Using a statistical model and a large number of financial variables, we decompose weekly oil price changes into demand effects, supply effects, and an unexplained residual.

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References

Authors
Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week, owing to decreased supply.

- Over the past week a decrease in anticipated supply resulted in higher oil prices. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

- Rising demand expectations were the main cause of higher oil prices in 2021:Q1 and 2021:Q2. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Cumulative Weekly Decomposition, Jul 02-Oct 08, 2021

The chart at left depicts the cumulative oil price decomposition from July 2, 2021.

The table below presents the most recent cumulative values.

### Cumulative Percentage Changes since July 2, 2021

<table>
<thead>
<tr>
<th>Date</th>
<th>Demand</th>
<th>Supply</th>
<th>Rest</th>
<th>Brent</th>
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<tbody>
<tr>
<td>Sep 24, 2021</td>
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<tr>
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<td>Oct 08, 2021</td>
<td>0.1</td>
<td>12.8</td>
<td>-5.0</td>
<td>7.8</td>
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<th>Rest</th>
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Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
1. **What is the goal of the oil price decomposition?**
   
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2. **What is the modeling strategy?**
   
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   The model is re-estimated every week using weekly data from January 1986 through the close of business on Friday of the most recent week. Over this sample, the model can explain about two-thirds of the weekly oil price dynamics.

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   The output of the model is used to decompose weekly changes in an accounting sense. More specifically, the weekly Brent crude price change always equals the change explained by demand factors plus the change explained by supply factors plus a residual (the weekly change unexplained by the sum of the estimated demand and supply factors).

   Given the noise in weekly price changes, we choose to show the results as a cumulation from a certain starting point (usually the start of the previous quarter).

---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased over the past week, mostly owing to higher demand.

- Over the past week, demand expectations increased substantially and anticipated supply declined moderately, both resulting in higher oil prices. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

- Rising demand expectations were the main cause of higher oil prices in 2021:Q1 and 2021:Q2. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

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Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past three weeks owing to higher supply.

- Over the past three weeks, an increase in demand expectations was offset by an increase in anticipated supply, resulting in lower oil prices. The bulk of the rise in demand expectations occurred over the most recent week. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

- Rising demand expectations were the main cause of higher oil prices in 2021:Q1 and 2021:Q2. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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- The chart at left depicts the cumulative oil price decomposition from July 2, 2021.
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Cumulative Percentage Changes since July 2, 2021

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<tr>
<th></th>
<th>Demand</th>
<th>Supply</th>
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<tr>
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<td>2.7</td>
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<tr>
<td>Oct 29, 2021</td>
<td>2.8</td>
<td>10.2</td>
<td>-2.8</td>
<td>10.2</td>
</tr>
<tr>
<td>Nov 05, 2021</td>
<td>4.3</td>
<td>7.0</td>
<td>-3.0</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Longer-Term View of Oil Price Movements
- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
- The analysis shows that excess supply became a significant driver of oil prices in mid-2012 and generally dominated price dynamics after mid-2014.
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1. **What is the goal of the oil price decomposition?**
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**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing to higher supply.

- Over the past week, broadly stable demand expectations and an increase in anticipated supply resulted in lower oil prices. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

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<tr>
<td>Nov 05, 2021</td>
<td>4.3</td>
<td>7.0</td>
<td>-3.0</td>
<td>8.3</td>
</tr>
<tr>
<td>Nov 12, 2021</td>
<td>4.1</td>
<td>6.0</td>
<td>-2.5</td>
<td>7.6</td>
</tr>
</tbody>
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References


Authors

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing to lower demand and higher supply.

- Over the past week, a decrease in demand expectations and, especially, an increase in anticipated supply resulted in lower oil prices. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

- Rising demand expectations were the main cause of higher oil prices in 2021:Q1 and 2021:Q2. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

- Overall, between 2014 and 2017, both lower global demand expectations and higher anticipated supply held oil prices down. Since mid-2017, this trend reversed as stronger demand expectations and stabilizing anticipated supply drove oil prices higher. This lasted until 2018:Q4, when weaker demand lowered prices. Oil prices rose in 2019 due to increasing demand expectations.

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Cumulative Weekly Decomposition, Jul 02-Nov 19, 2021

Log changes, percent

Cumulative Weekly Decomposition, 2010-Present

Log changes, percent

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from July 2, 2021.
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Cumulative Percentage Changes since July 2, 2021

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<thead>
<tr>
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<th>Demand</th>
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<th>Rest</th>
<th>Brent</th>
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</thead>
<tbody>
<tr>
<td>Nov 05, 2021</td>
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<td>7.0</td>
<td>-3.0</td>
<td>8.3</td>
</tr>
<tr>
<td>Nov 12, 2021</td>
<td>4.1</td>
<td>5.9</td>
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<td>7.6</td>
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<tr>
<td>Nov 19, 2021</td>
<td>3.2</td>
<td>1.7</td>
<td>-1.4</td>
<td>3.5</td>
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</tbody>
</table>

Sources: Authors’ calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Cumulative Weekly Decomposition, 2010-Present

Log changes, percent

Longer-Term View of Oil Price Movements

- This final chart provides a somewhat longer-term perspective by means of a cumulative decomposition from 2010 onward.
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**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices decreased over the past week owing mostly to lower demand.

- Over the past week oil prices fell, as anticipated supply continued to ease and, more significantly, demand expectations declined. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

- Rising demand expectations were the main cause of higher oil prices in 2021:Q1 and 2021:Q2. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

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<tbody>
<tr>
<td>Nov 12, 2021</td>
<td>4.1</td>
<td>5.9</td>
<td>-2.5</td>
<td>7.6</td>
</tr>
<tr>
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---

**References**


**Authors**

Jan Groen, Lawrence Lin, and Adam Noble
Oil prices increased slightly over the past three weeks owing to higher demand and lower supply.

- Over the past three weeks, an increase in demand expectations and a decrease in anticipated supply resulted in somewhat higher oil prices. During the most recent week, however, a decrease in demand expectations and an increase in anticipated supply drove oil prices lower. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

- Rising demand expectations were the main cause of higher oil prices in 2021:Q1 and 2021:Q2. In 2020:Q1, oil prices plummeted owing to decreased demand and increased supply, whereas in 2020:Q2, oil prices rose owing to increased demand. Increased supply led to falling oil prices in 2020:Q3, and this reversed in 2020:Q4, as oil prices rose owing to increased demand and decreased supply.

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<td>Dec 10, 2021</td>
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<td>Dec 17, 2021</td>
<td>-1.4</td>
<td>2.9</td>
<td>-5.0</td>
<td>-3.5</td>
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Jan Groen, Lawrence Lin, and Adam Noble
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- Over the past week, an increase in demand expectations and a decrease in anticipated supply resulted in higher oil prices. In 2021:Q3, oil prices rose owing to increased demand and decreased supply.

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<td>-5.6</td>
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