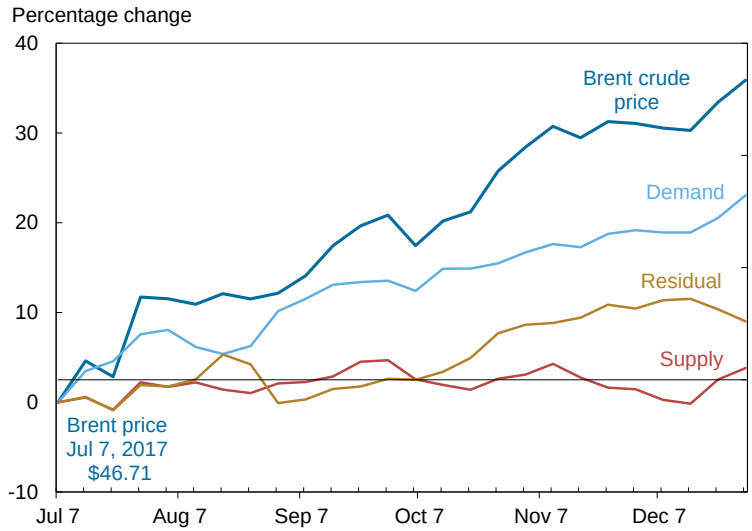
OIL PRICE DYNAMICS REPORT

Updated: January 2, 2018

Lower supply and higher demand again pushed up oil prices.

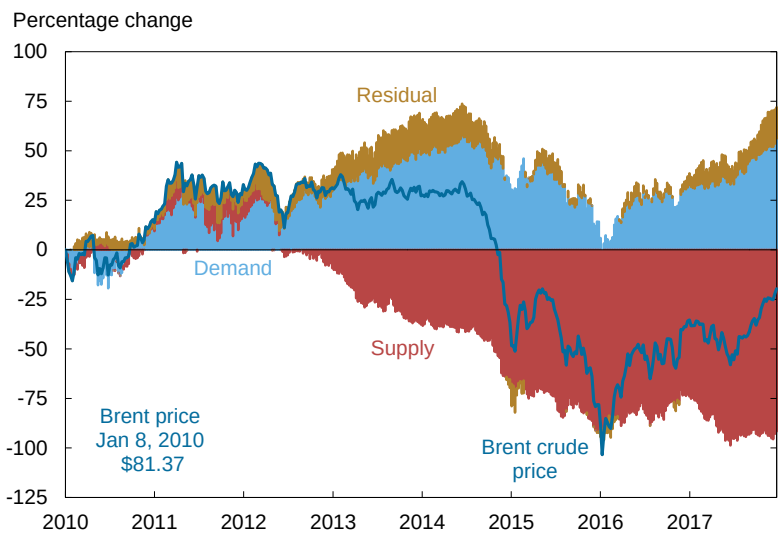
- As in the previous week, falling anticipated supply and rising global demand expectations caused oil prices to increase over the week. In 2017:Q3, robust global demand expectations exerted upward pressure on oil prices.
- The 2017:Q3 developments reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably in 2017:Q3.

Cumulative Weekly Decomposition, Jul 07-Dec 29, 2017



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



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

- The chart at left depicts the cumulative oil price decomposition from July 7, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since July 7, 2017

	Demand	Supply	Rest	Brent
Dec 15, 2017	18.9	-0.2	11.5	30.3
Dec 22, 2017	20.5	2.5	10.4	33.4
Dec 29, 2017	23.1	3.8	9.0	35.9

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.

   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

- *Groen, J., and P. Russo*. 2016. "Lower Oil Prices and U.S. Economic Activity." *Liberty Street Economics*, May 2.
- *Groen, J., and P. Russo*. 2015. "Is Cheaper Oil Good News or Bad News for the U.S. Economy?" *Liberty Street Economics*, June 8.
- *Groen, J., K. McNeil, and M. Middeldorp*. 2013. "A New Approach for Identifying Demand and Supply Shocks in the Oil Market." *Liberty Street Economics*, March 25.

Authors

Jan Groen and Max Sterman

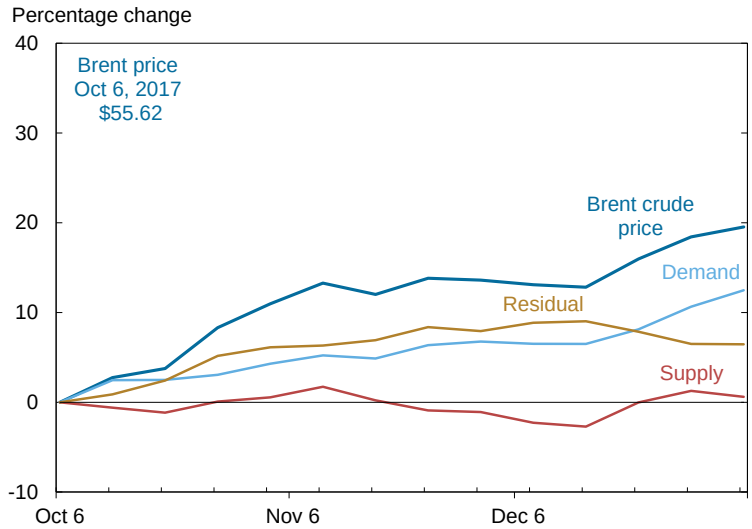
OIL PRICE DYNAMICS REPORT

Updated: January 8, 2018

Higher demand pushed up oil prices.

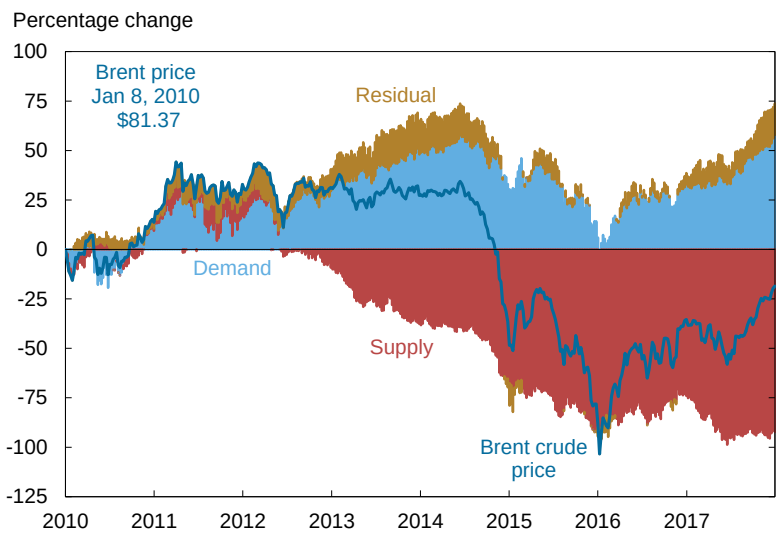
- Despite a small increase in anticipated supply, rising global demand expectations caused oil prices to increase over the week. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Jan 05, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Dec 22, 2017	8.1	-0.0	7.9	16.0
Dec 29, 2017	10.6	1.3	6.5	18.4
Jan 05, 2018	12.5	0.6	6.5	19.5

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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Authors

Jan Groen and Max Sterman

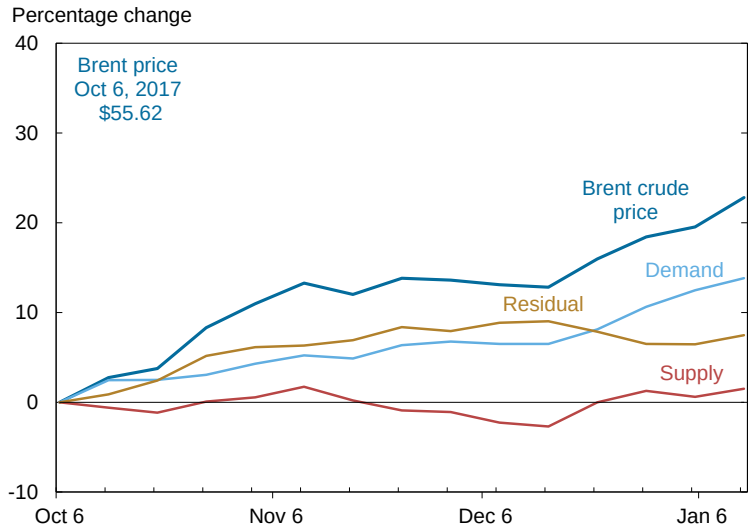
OIL PRICE DYNAMICS REPORT

Updated: January 16, 2018

Both lower supply and higher demand pushed up oil prices.

- A decrease in anticipated supply and rising global demand expectations caused oil prices to increase over the week. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Jan 12, 2018



Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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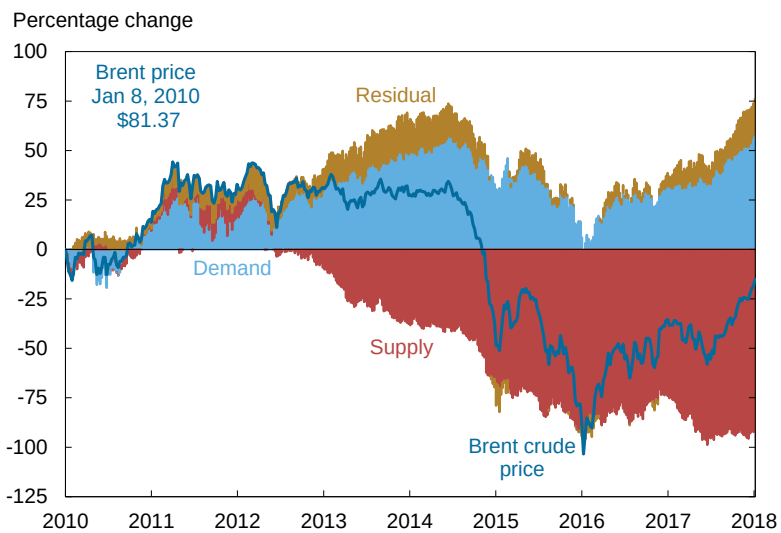
Cumulative Weekly Decomposition, 2010-Present



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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Dec 29, 2017	10.6	1.3	6.5	18.4
Jan 05, 2018	12.5	0.6	6.5	19.5
Jan 12, 2018	13.8	1.5	7.5	22.8

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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Authors

Jan Groen and Max Sterman

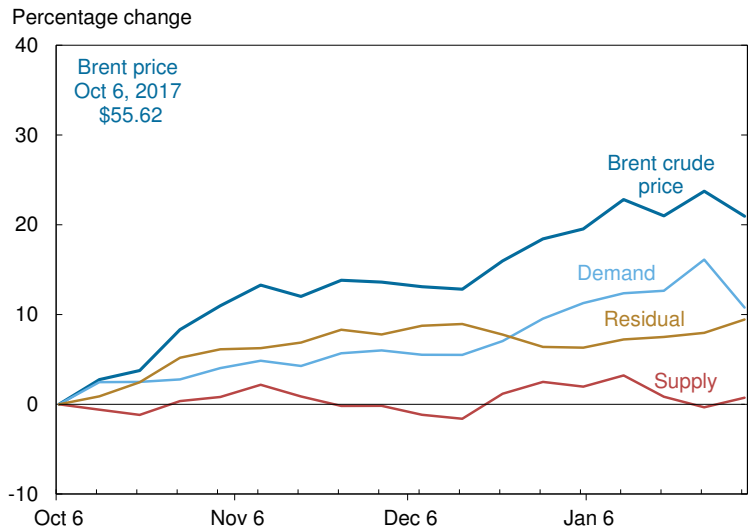
OIL PRICE DYNAMICS REPORT

Updated: February 5, 2018

Weaker demand expectations decreased oil prices.

- Despite a contraction in anticipated supply, a volatile downward trend in expected demand pushed oil prices down over the past three weeks. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Feb 02, 2018



Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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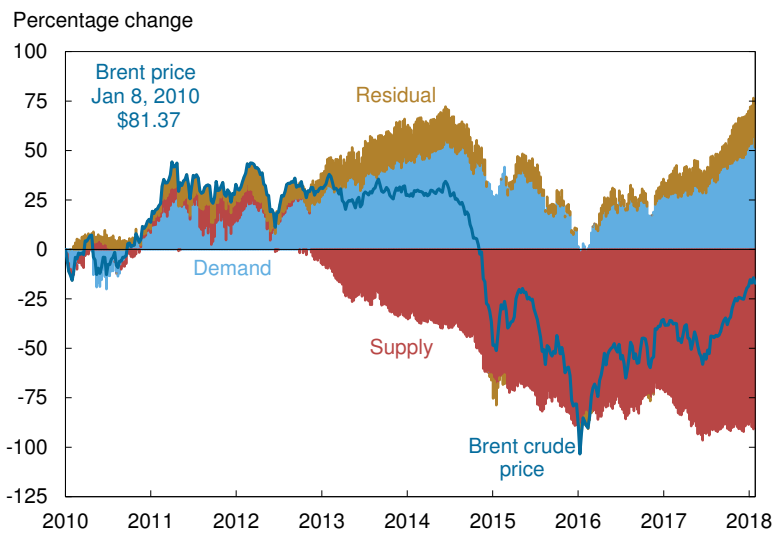
Cumulative Weekly Decomposition, 2010-Present



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.

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Jan 19, 2018	12.7	0.8	7.5	21.0
Jan 26, 2018	16.1	-0.3	8.0	23.7
Feb 02, 2018	10.8	0.7	9.4	20.9

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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Authors

Jan Groen and Max Sterman

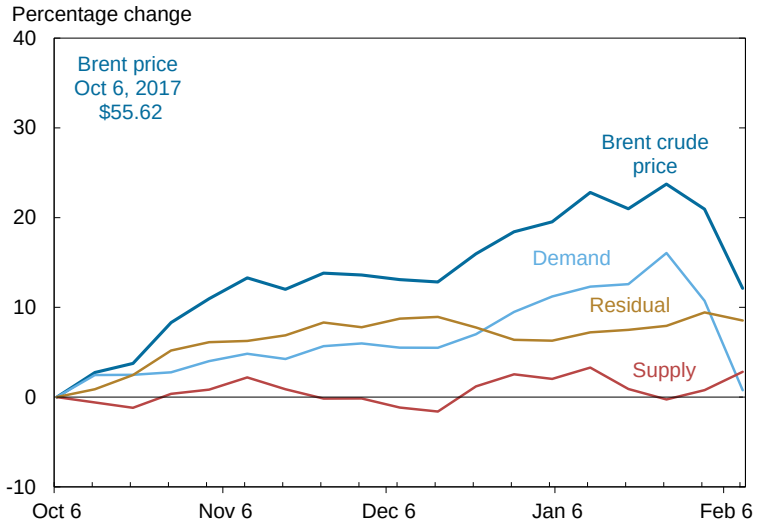
OIL PRICE DYNAMICS REPORT

Updated: February 12, 2018

A large drop in demand expectations decreased oil prices significantly.

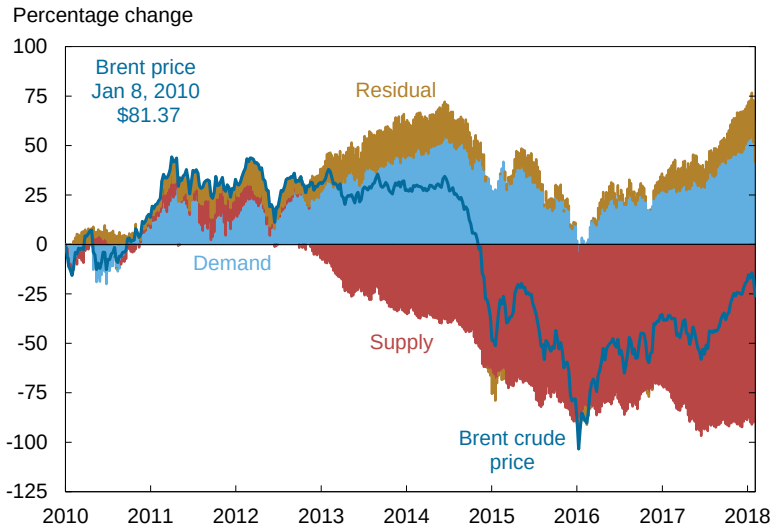
- Despite a small contraction in anticipated supply, a sharp decline in expected demand pushed oil prices down considerably over the past week. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Feb 09, 2018



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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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Jan 26, 2018	16.0	-0.3	7.9	23.7
Feb 02, 2018	10.7	0.8	9.4	20.9
Feb 09, 2018	0.8	2.8	8.5	12.1

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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Authors

Jan Groen and Max Sterman

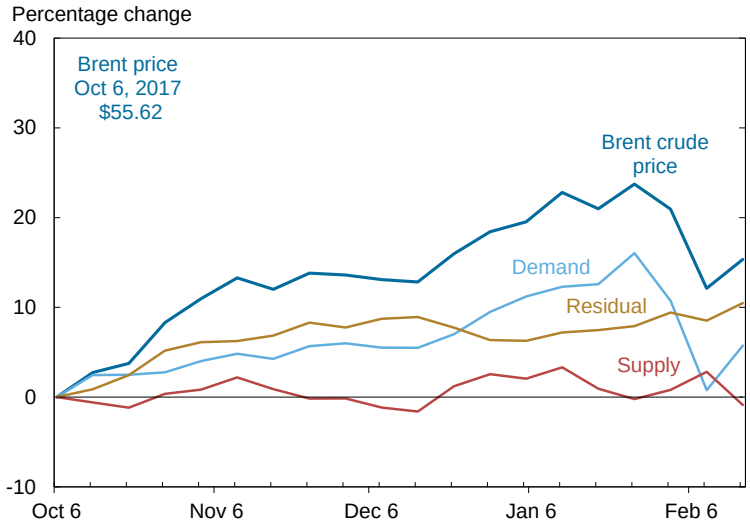
OIL PRICE DYNAMICS REPORT

Updated: February 20, 2018

A rebound in demand expectations led oil prices back up this week.

- Despite an expansion in anticipated supply, a substantial rise in expected demand pushed up oil prices noticeably over the past week after a sharp decline the previous week. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Feb 16, 2018



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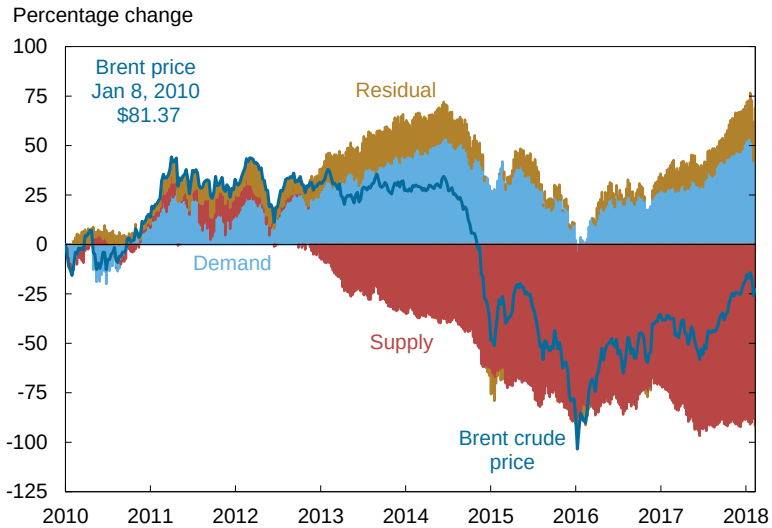
Cumulative Weekly Decomposition, 2010-Present



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

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
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Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Feb 02, 2018	10.7	0.8	9.4	20.9
Feb 09, 2018	0.8	2.8	8.5	12.1
Feb 16, 2018	5.7	-0.9	10.5	15.3

Longer-Term View of Oil Price Movements

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Authors

Jan Groen and Max Sterman

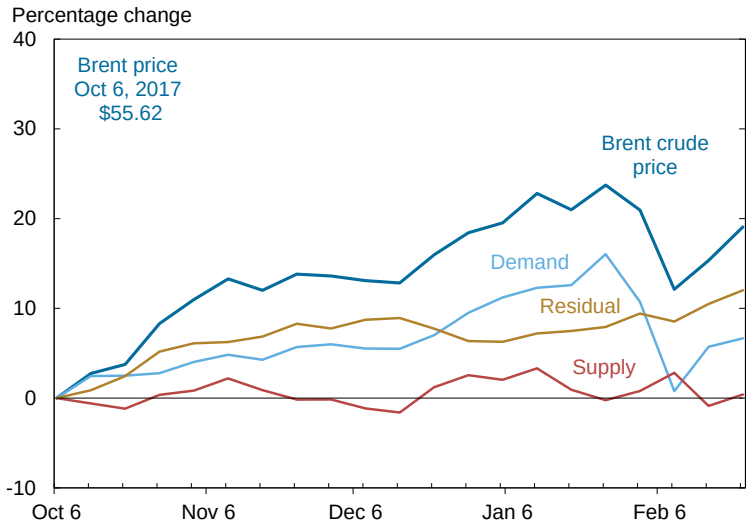
OIL PRICE DYNAMICS REPORT

Updated: February 26, 2018

A rise in demand and a decrease in supply led to an increase in oil prices this week.

- A decline in anticipated supply and an increase in expected demand pushed up oil prices noticeably over the past week. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Feb 23, 2018



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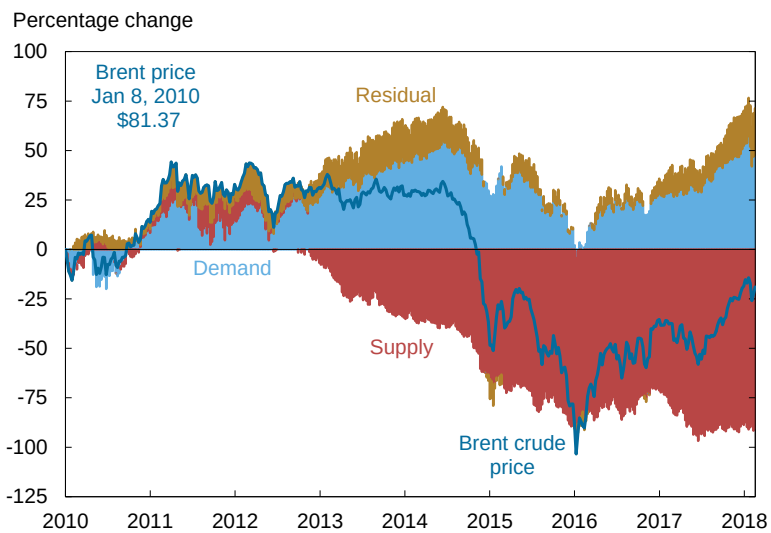
Cumulative Weekly Decomposition, 2010-Present



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Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Feb 09, 2018	0.8	2.8	8.5	12.1
Feb 16, 2018	5.7	-0.9	10.5	15.3
Feb 23, 2018	6.7	0.4	12.0	19.1

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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

- *Groen, J., and P. Russo*. 2016. "Lower Oil Prices and U.S. Economic Activity." *Liberty Street Economics*, May 2.
- *Groen, J., and P. Russo*. 2015. "Is Cheaper Oil Good News or Bad News for the U.S. Economy?" *Liberty Street Economics*, June 8.
- *Groen, J., K. McNeil, and M. Middeldorp*. 2013. "A New Approach for Identifying Demand and Supply Shocks in the Oil Market." *Liberty Street Economics*, March 25.

Authors

Jan Groen and Max Sterman

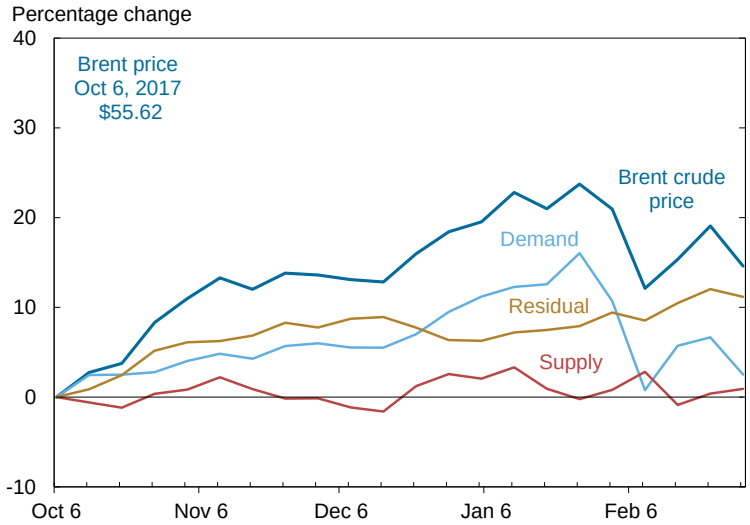
OIL PRICE DYNAMICS REPORT

Updated: March 5, 2018

A sharp drop in demand led to a decrease in oil prices this week.

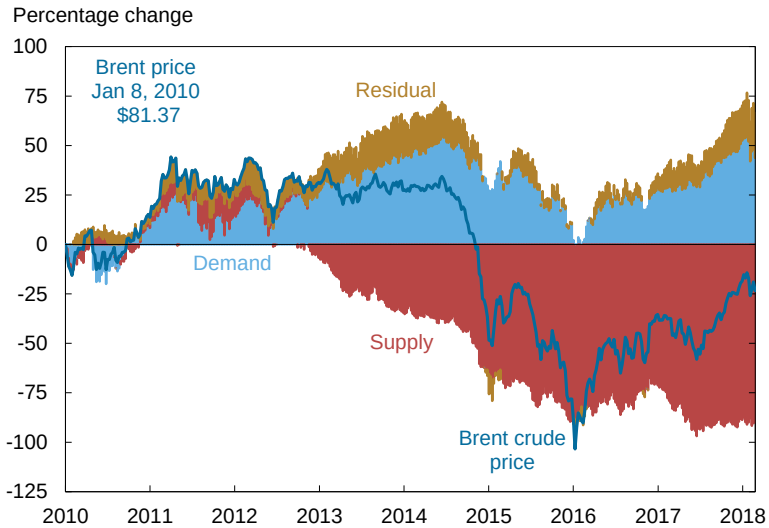
- Despite a small decline in anticipated supply, a considerable decrease in expected demand pushed down oil prices noticeably over the past week. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Mar 02, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Feb 16, 2018	5.7	-0.9	10.5	15.3
Feb 23, 2018	6.7	0.4	12.0	19.1
Mar 02, 2018	2.5	0.9	11.2	14.6

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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Authors

Jan Groen and Max Sterman

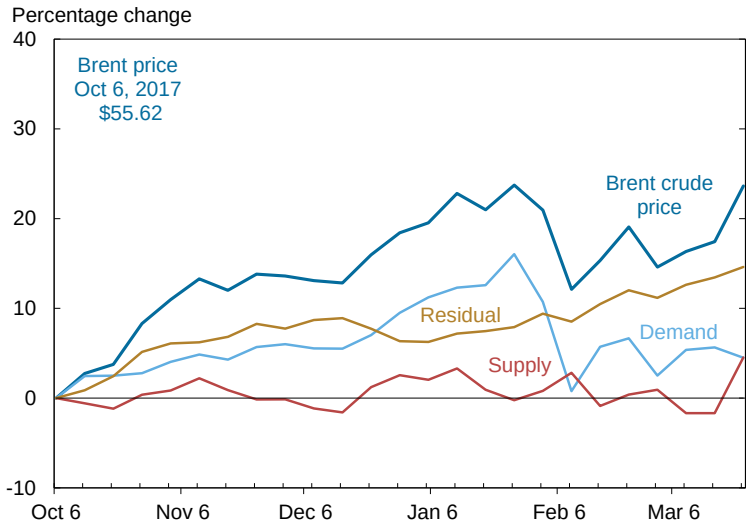
OIL PRICE DYNAMICS REPORT

Updated: March 26, 2018

Higher demand and a decline in supply led to higher oil prices over the past three weeks.

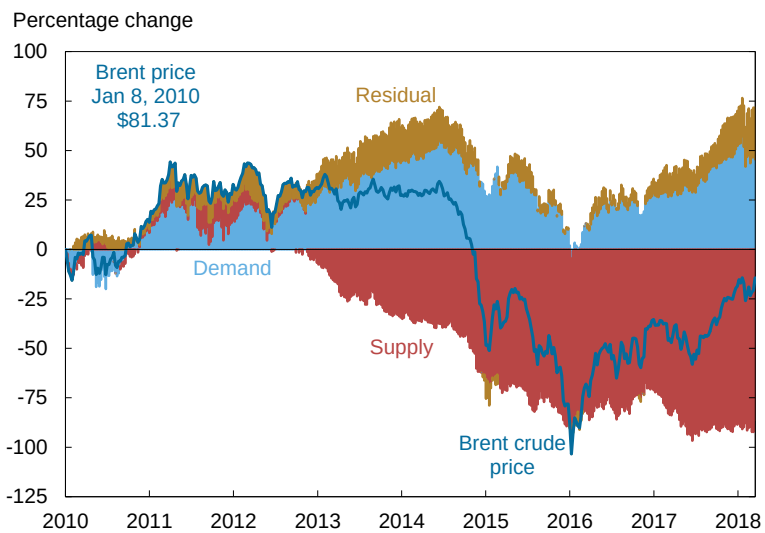
- Oil prices were up over the past three weeks, which initially was due to improving global demand expectations and over the last week because of a decline in anticipated supply. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Mar 23, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Mar 09, 2018	5.4	-1.7	12.6	16.3
Mar 16, 2018	5.6	-1.7	13.5	17.4
Mar 23, 2018	4.5	4.5	14.6	23.6

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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Authors

Jan Groen and Max Sterman

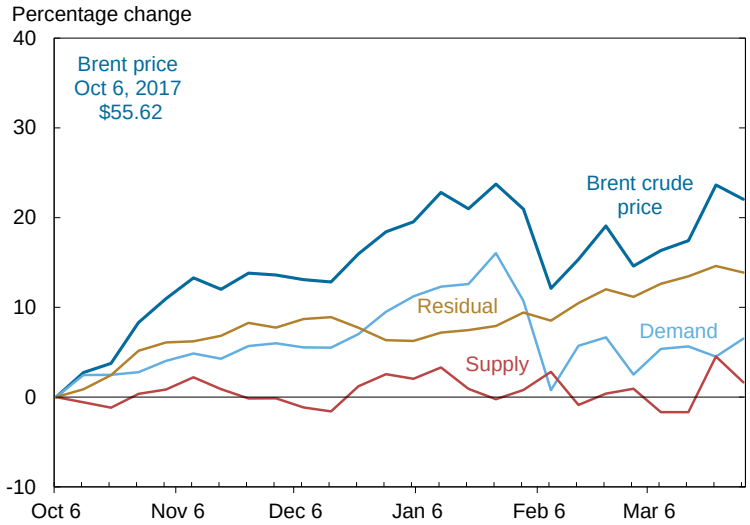
OIL PRICE DYNAMICS REPORT

Updated: April 2, 2018

Higher supply led to lower oil prices over the past week.

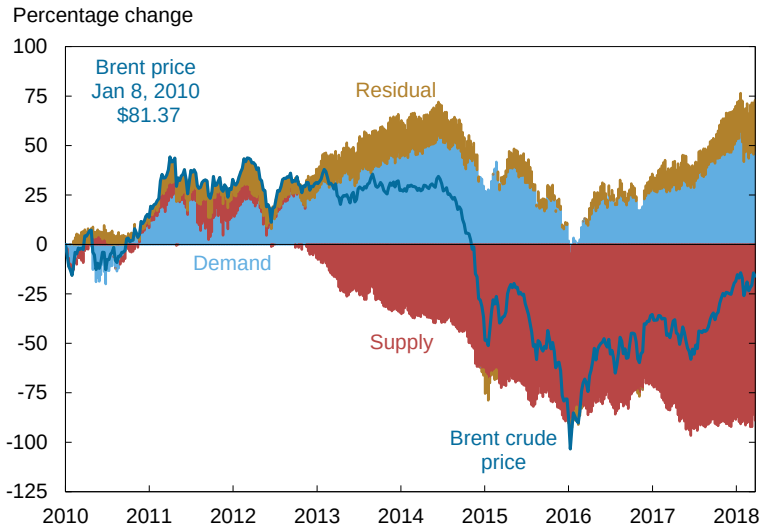
- Despite an increase in demand expectations, a rise in supply led to a drop in oil prices during this past week. In 2017:Q4, robust global demand expectations continued to exert upward pressure on oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Oct 06-Mar 30, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from October 6, 2017.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since October 6, 2017

	Demand	Supply	Rest	Brent
Mar 16, 2018	5.6	-1.7	13.5	17.4
Mar 23, 2018	4.5	4.5	14.6	23.6
Mar 30, 2018	6.5	1.6	13.9	22.0

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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Authors

Jan Groen and Max Sterman

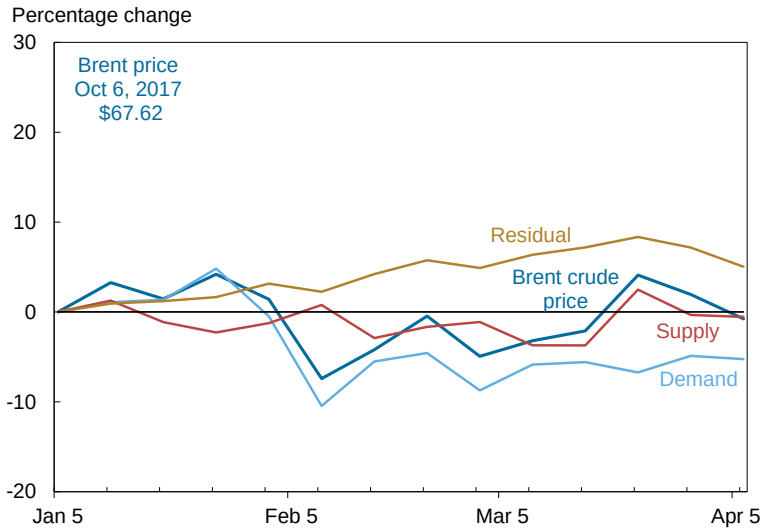
OIL PRICE DYNAMICS REPORT

Updated: April 9, 2018

A lower residual led to a decline in oil prices over the past week.

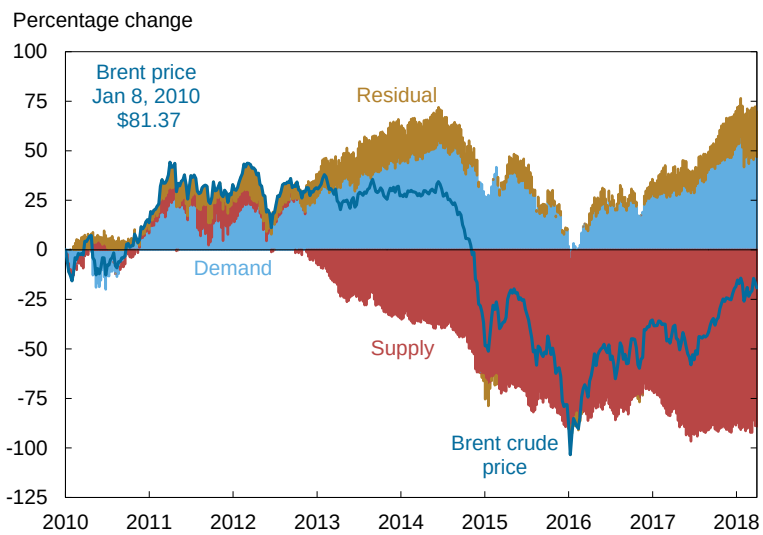
- Despite relatively unchanged anticipated supply and demand expectations, a decrease in the residual led to a drop in oil prices during this past week. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a relatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-Apr 06, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
Mar 23, 2018	-6.7	2.5	8.3	4.1
Mar 30, 2018	-4.9	-0.3	7.2	2.0
Apr 06, 2018	-5.2	-0.6	5.0	-0.8

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

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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).

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Authors

Jan Groen and Max Sterman

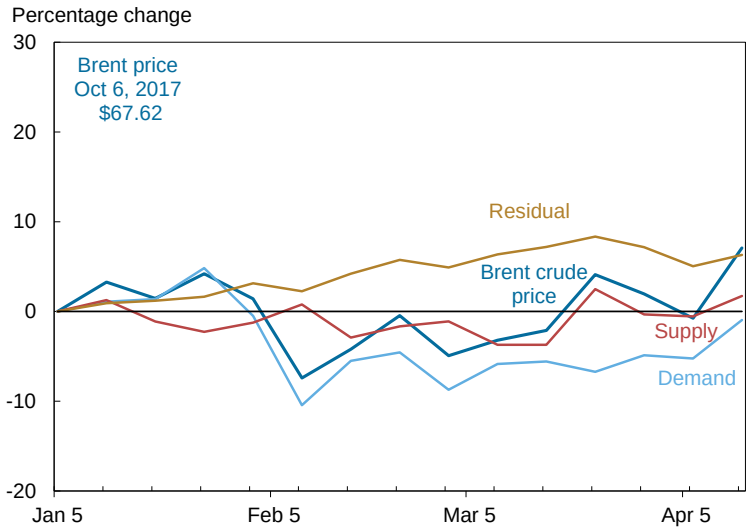
OIL PRICE DYNAMICS REPORT

Updated: April 16, 2018

Lower supply and higher demand led to an uptick in oil prices over the past week.

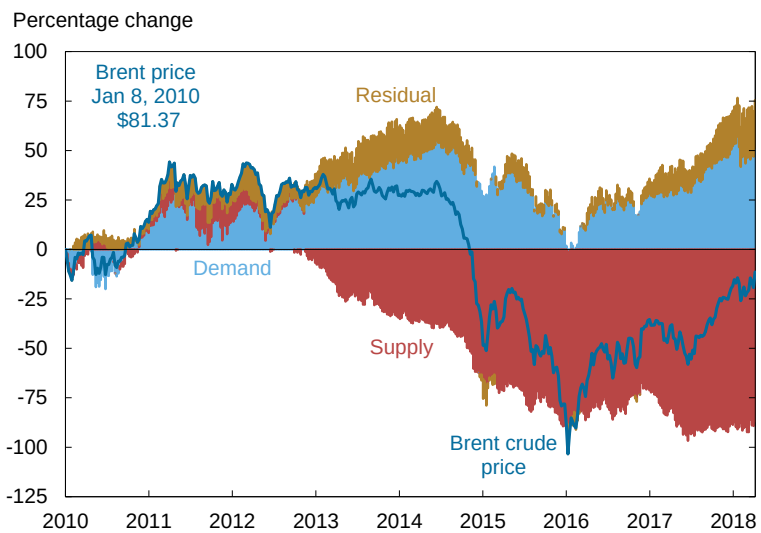
- A decrease in anticipated supply and an increase in demand expectations led to a rise in oil prices during this past week. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-Apr 13, 2018



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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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
Mar 30, 2018	-4.9	-0.3	7.2	2.0
Apr 06, 2018	-5.2	-0.6	5.0	-0.8
Apr 13, 2018	-0.9	1.7	6.3	7.1

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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Authors

Jan Groen and Max Sterman

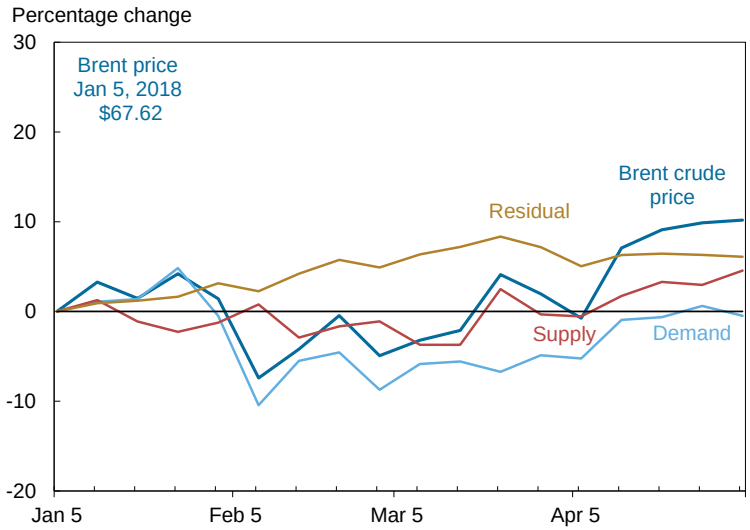
OIL PRICE DYNAMICS REPORT

Updated: May 7, 2018

A decrease in supply has led an increase in oil prices over the past three weeks.

- A decrease in an anticipated supply, coupled with broadly unchanged demand expectations, led to an increase in oil prices over the past three weeks. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-May 04, 2018



Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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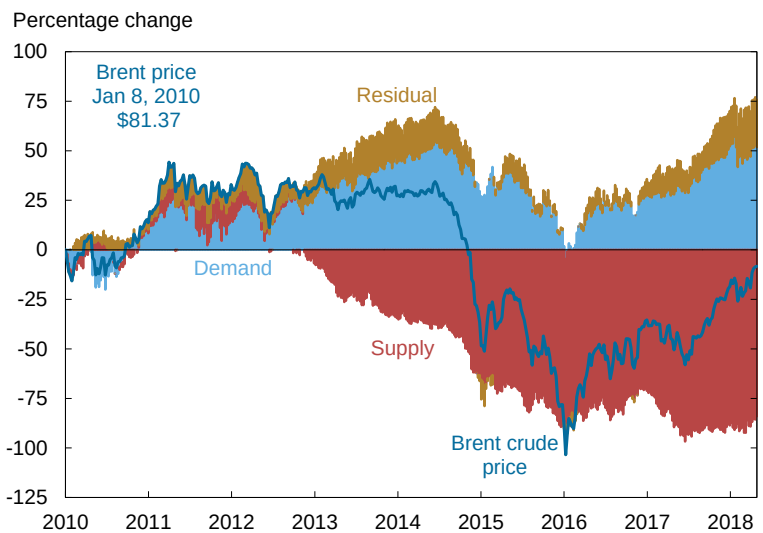
Cumulative Weekly Decomposition, 2010-Present



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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
Apr 20, 2018	-0.6	3.3	6.4	9.1
Apr 27, 2018	0.6	3.0	6.3	9.9
May 04, 2018	-0.5	4.6	6.1	10.2

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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Authors

Jan Groen and Max Sterman

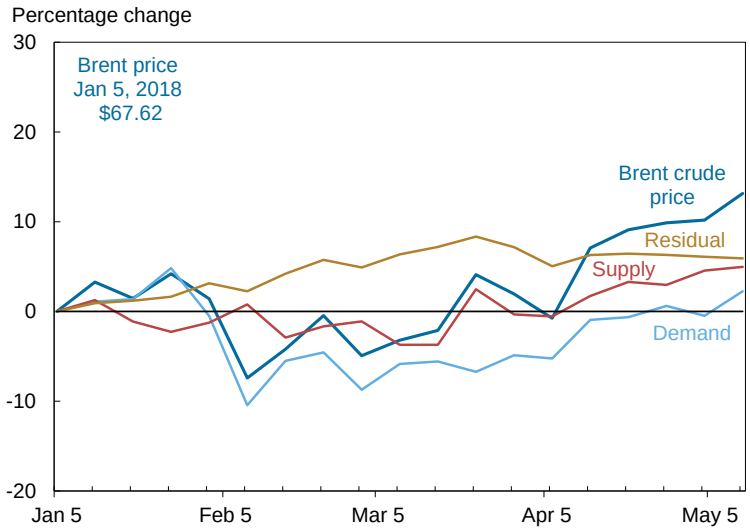
OIL PRICE DYNAMICS REPORT

Updated: May 14, 2018

An increase in demand led to a surge in oil prices over the past week.

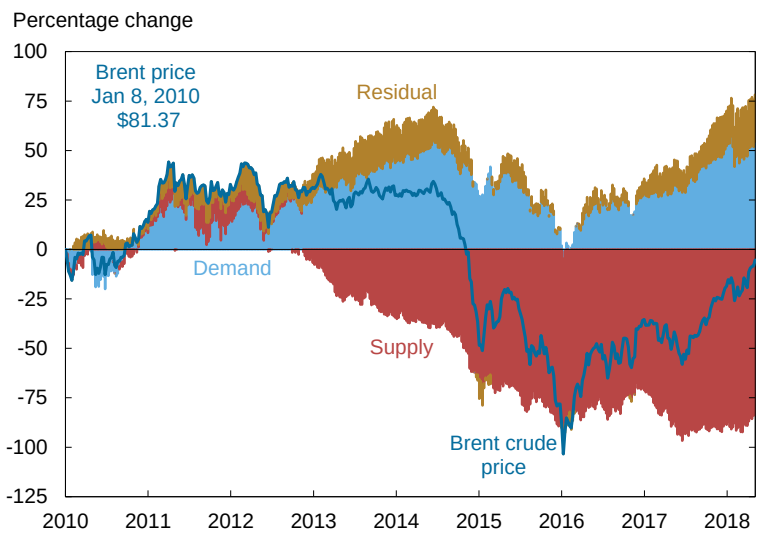
- A rise in demand expectations, coupled with a slight decline in anticipated supply, led to an escalation in oil prices over the past week. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-May 11, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
Apr 27, 2018	0.6	3.0	6.3	9.9
May 04, 2018	-0.5	4.6	6.1	10.2
May 11, 2018	2.3	5.0	5.9	13.1

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.

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

- *Groen, J., and P. Russo*. 2016. "Lower Oil Prices and U.S. Economic Activity." *Liberty Street Economics*, May 2.
- *Groen, J., and P. Russo*. 2015. "Is Cheaper Oil Good News or Bad News for the U.S. Economy?" *Liberty Street Economics*, June 8.
- *Groen, J., K. McNeil, and M. Middeldorp*. 2013. "A New Approach for Identifying Demand and Supply Shocks in the Oil Market." *Liberty Street Economics*, March 25.

Authors

Jan Groen and Max Sterman

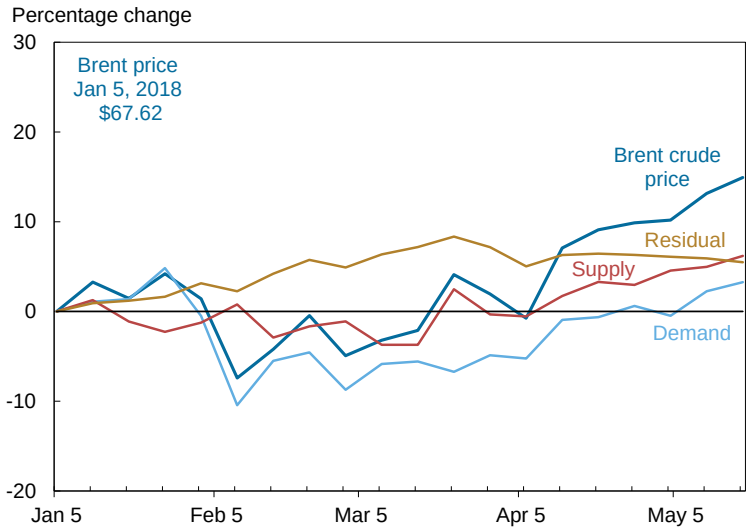
OIL PRICE DYNAMICS REPORT

Updated: May 21, 2018

Decreased supply and higher demand led to an uptick in oil prices over the past week.

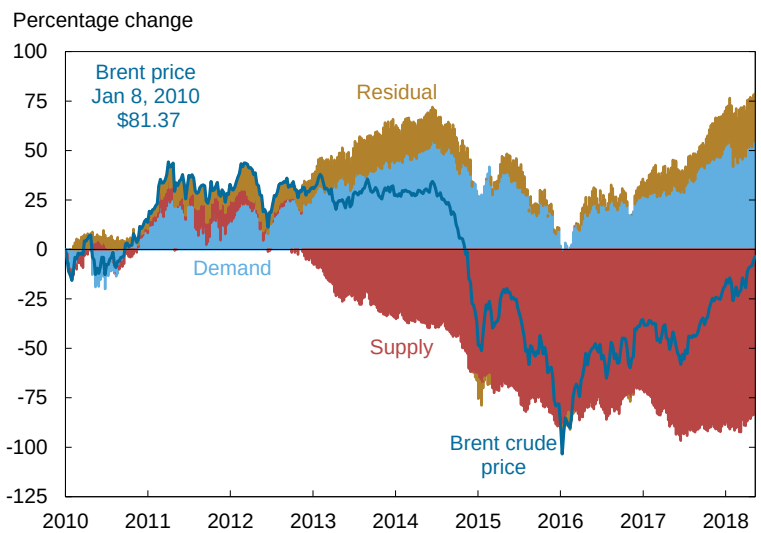
- A decline in anticipated supply and a rise in demand expectations led to higher oil prices over the past week. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-May 18, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
May 04, 2018	-0.5	4.6	6.1	10.2
May 11, 2018	2.3	5.0	5.9	13.1
May 18, 2018	3.3	6.2	5.5	14.9

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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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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Authors

Jan Groen and Max Sterman

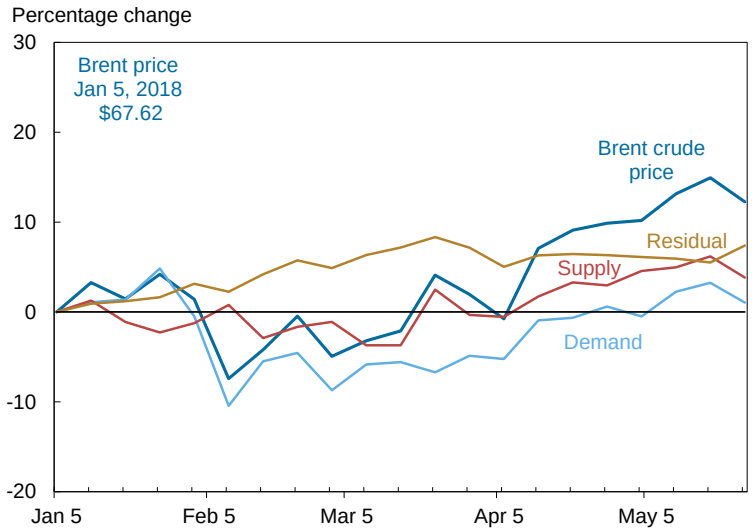
OIL PRICE DYNAMICS REPORT

Updated: May 29, 2018

Increased supply and lower demand led to an oil price drop over the past week.

- A rise in anticipated supply and a fall in demand expectations led to lower oil prices over the past week. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-May 25, 2018



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.

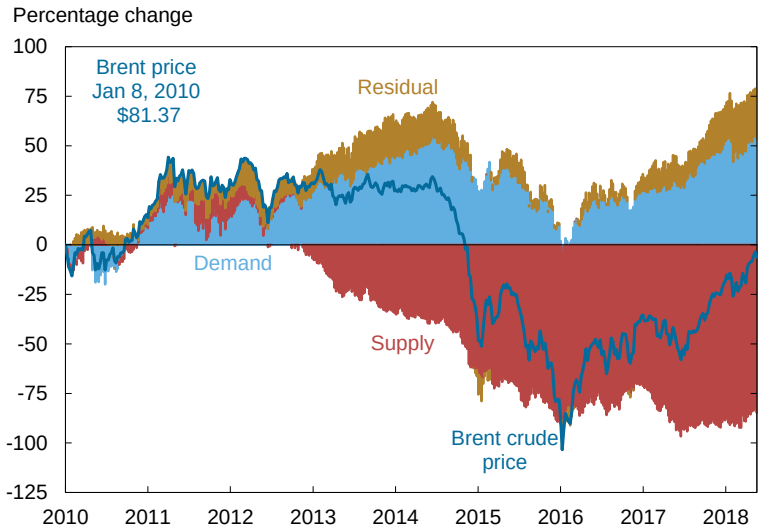
Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
May 11, 2018	2.2	5.0	5.9	13.1
May 18, 2018	3.2	6.2	5.5	14.9
May 25, 2018	1.0	3.8	7.4	12.3

Cumulative Weekly Decomposition, 2010-Present



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

Jan Groen and Max Sterman

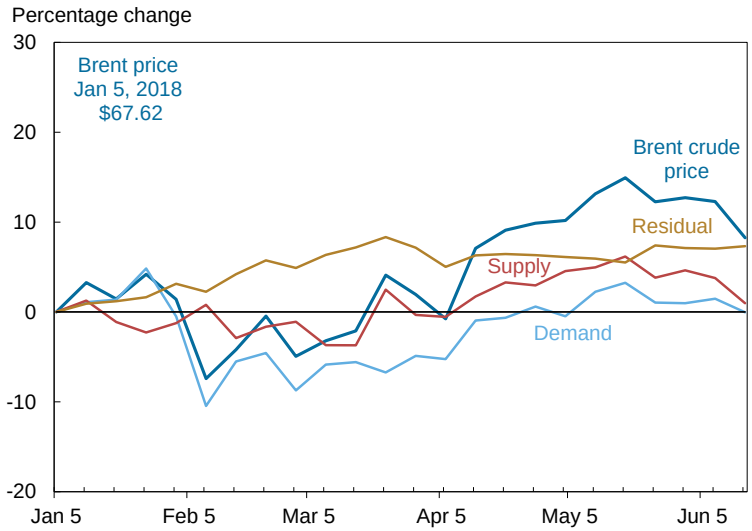
OIL PRICE DYNAMICS REPORT

Updated: June 18, 2018

A supply increase and falling demand led to a decline in oil prices over the past three weeks.

- Growth in anticipated supply and a drop in demand expectations led to a substantial drop in oil prices over the past three weeks. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-Jun 15, 2018



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.

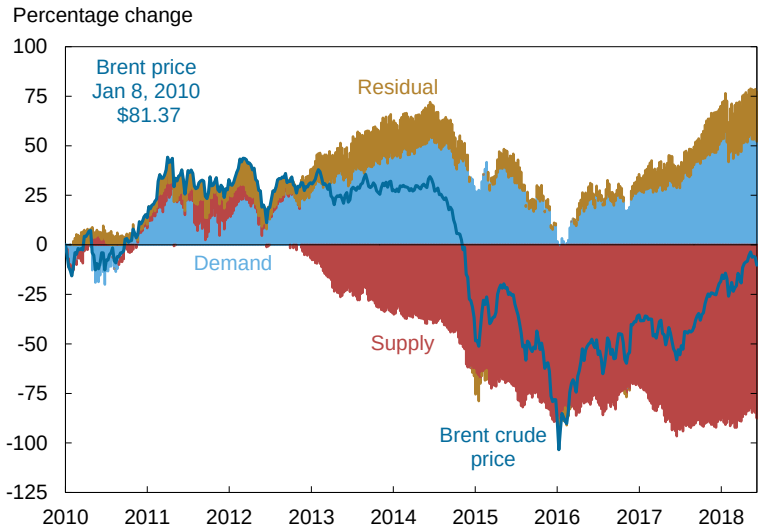
Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
Jun 01, 2018	1.0	4.6	7.1	12.7
Jun 08, 2018	1.5	3.8	7.0	12.3
Jun 15, 2018	-0.0	1.0	7.3	8.3

Cumulative Weekly Decomposition, 2010-Present



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

Oil Price Decomposition Q&A

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Authors

Jan Groen and Max Sterman

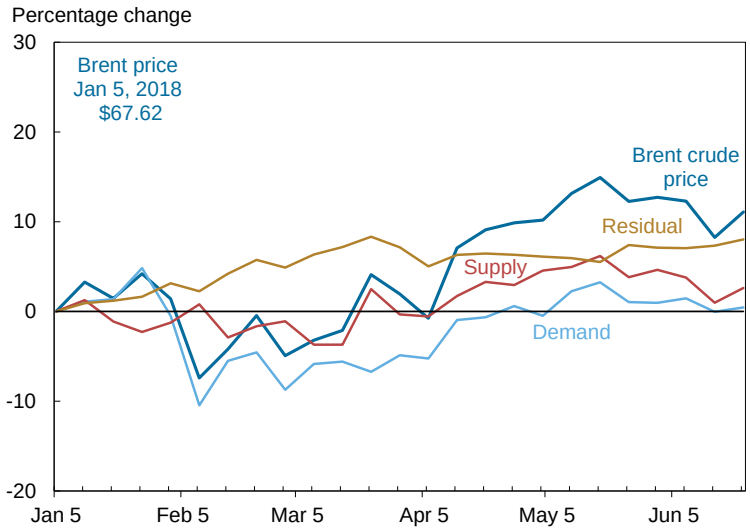
OIL PRICE DYNAMICS REPORT

Updated: June 25, 2018

A supply decrease led to an uptick in oil prices from Friday, June 15, to Friday, June 22.

- A fall in anticipated supply, coupled with broadly unchanged demand expectations, led to a rise in oil prices from June 15 to June 22. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-Jun 22, 2018



Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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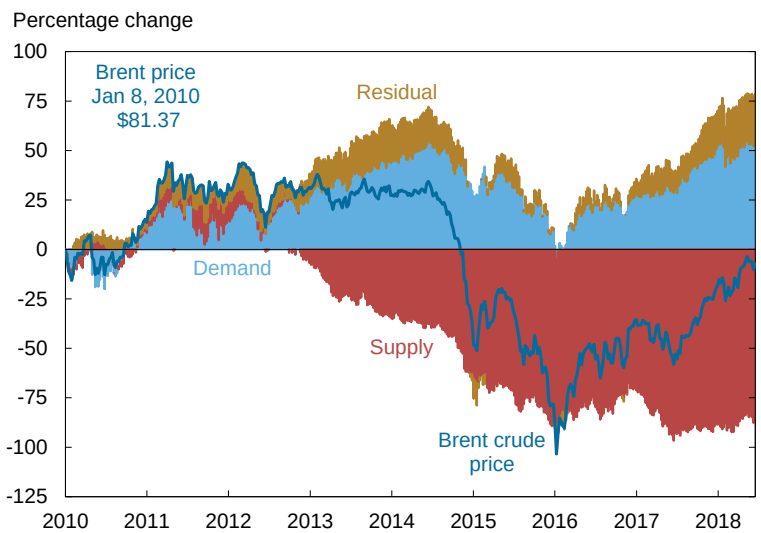
Cumulative Weekly Decomposition, 2010-Present



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

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
Jun 08, 2018	1.5	3.8	7.0	12.3
Jun 15, 2018	-0.0	1.0	7.3	8.3
Jun 22, 2018	0.5	2.6	8.0	11.1

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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Authors

Jan Groen and Max Sterman

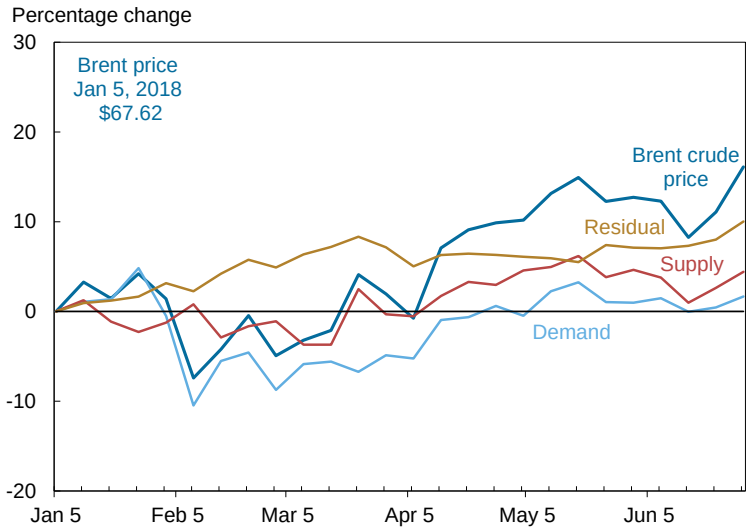
OIL PRICE DYNAMICS REPORT

Updated: July 2, 2018

A supply decrease and a demand increase led to a surge in oil prices over the past week.

- A fall in anticipated supply and a rise in demand expectations led to growth in oil prices over the past week. In 2018:Q1, offsetting impacts of declining demand expectations and an increasing residual combined with a comparatively stable expected supply led to relatively flat prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jan 05-Jun 29, 2018



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.

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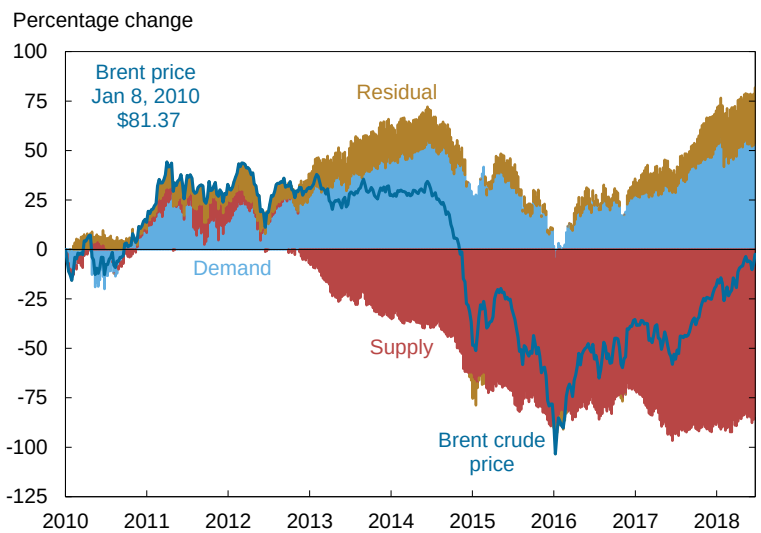

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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from January 5, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since January 5, 2018

	Demand	Supply	Rest	Brent
Jun 15, 2018	-0.0	1.0	7.3	8.3
Jun 22, 2018	0.5	2.6	8.0	11.1
Jun 29, 2018	1.7	4.4	10.0	16.1

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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Authors

Jan Groen and Max Sterman

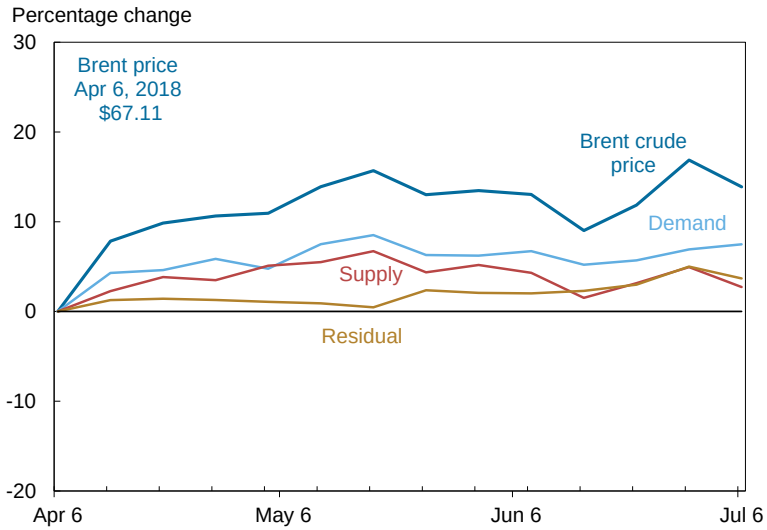
OIL PRICE DYNAMICS REPORT

Updated: July 9, 2018

A supply increase led to a decrease in oil prices over the past week.

- Despite a slight rise in demand expectations, an escalation in anticipated supply resulted in a drop in oil prices over the past week. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Jul 06, 2018



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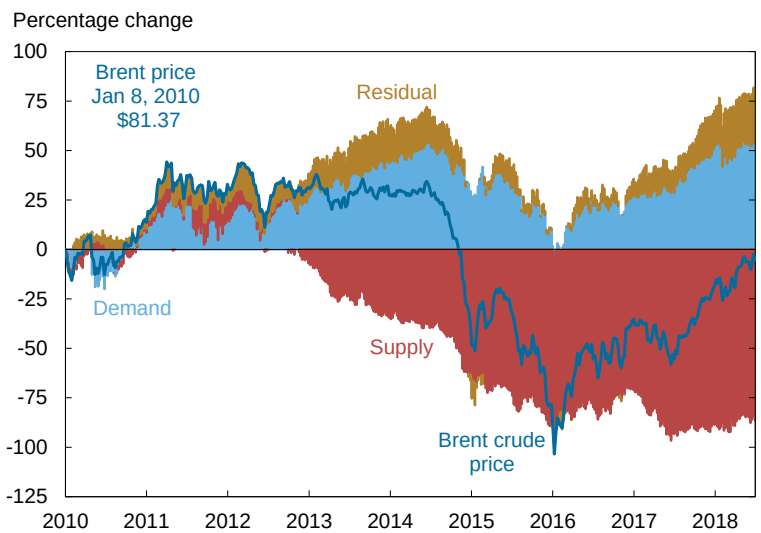

Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
Notes: Residual reflects price movements unexplained by supply and demand factors. Supply, demand, and residual sum to Brent crude price.

Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Jun 22, 2018	5.7	3.2	3.0	11.8
Jun 29, 2018	6.9	5.0	5.0	16.9
Jul 06, 2018	7.5	2.7	3.7	13.9

Longer-Term View of Oil Price Movements

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References

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- *Groen, J., and P. Russo*. 2015. "Is Cheaper Oil Good News or Bad News for the U.S. Economy?" *Liberty Street Economics*, June 8.
- *Groen, J., K. McNeil, and M. Middeldorp*. 2013. "A New Approach for Identifying Demand and Supply Shocks in the Oil Market." *Liberty Street Economics*, March 25.

Authors

Jan Groen and Max Sterman

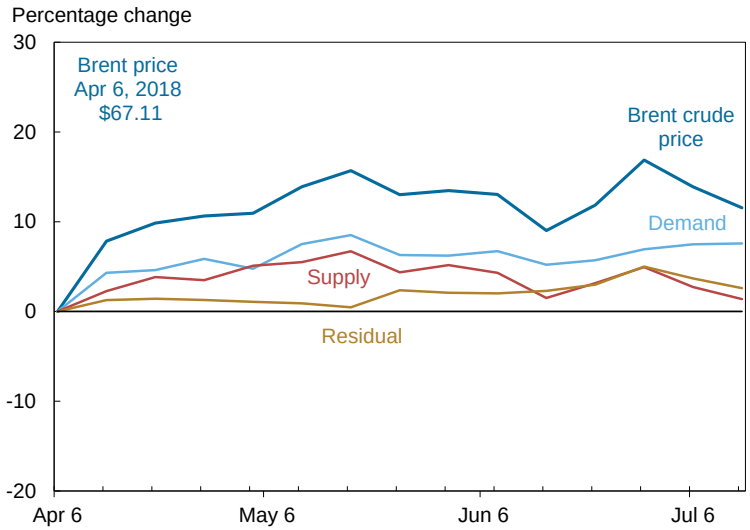
OIL PRICE DYNAMICS REPORT

Updated: July 16, 2018

A supply increase led to a decrease in oil prices for the second consecutive week.

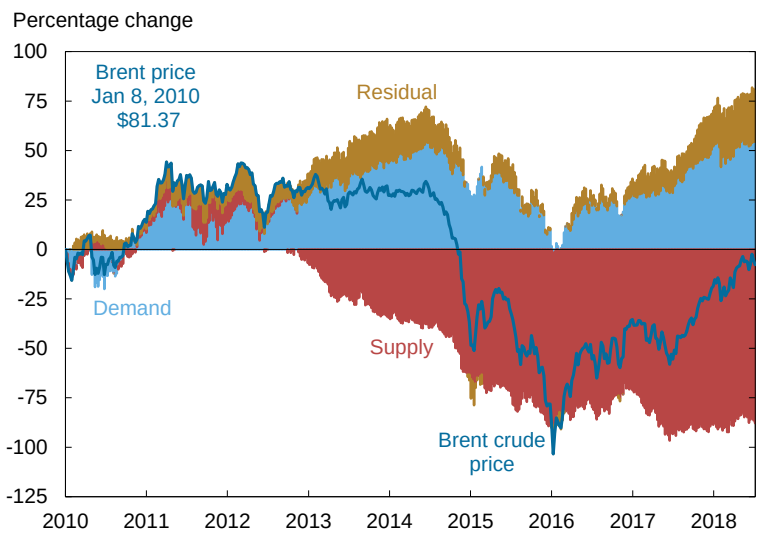
- Despite broadly unchanged demand expectations, an escalation in anticipated supply resulted in a decline in oil prices over the past week, similarly to the previous week. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Jul 13, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Jun 29, 2018	6.9	4.9	5.0	16.9
Jul 06, 2018	7.5	2.7	3.7	13.9
Jul 13, 2018	7.6	1.4	2.6	11.6

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.

   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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Authors

Jan Groen and Max Sterman

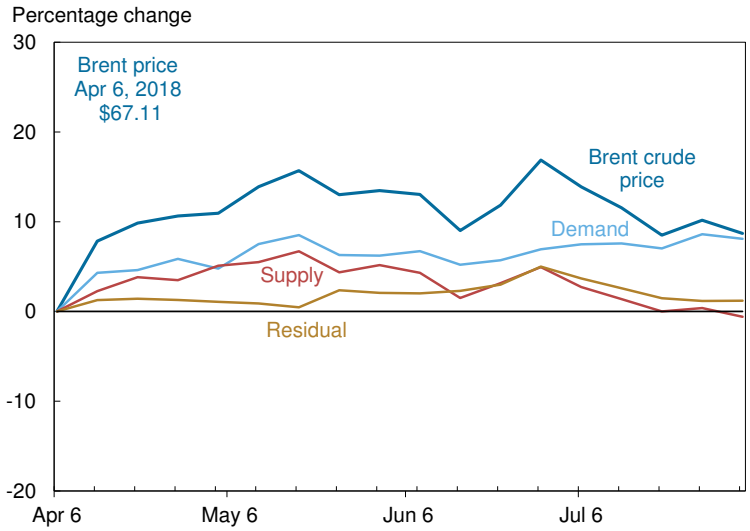
OIL PRICE DYNAMICS REPORT

Updated: August 6, 2018

Increased supply pushed oil prices down over the past three weeks.

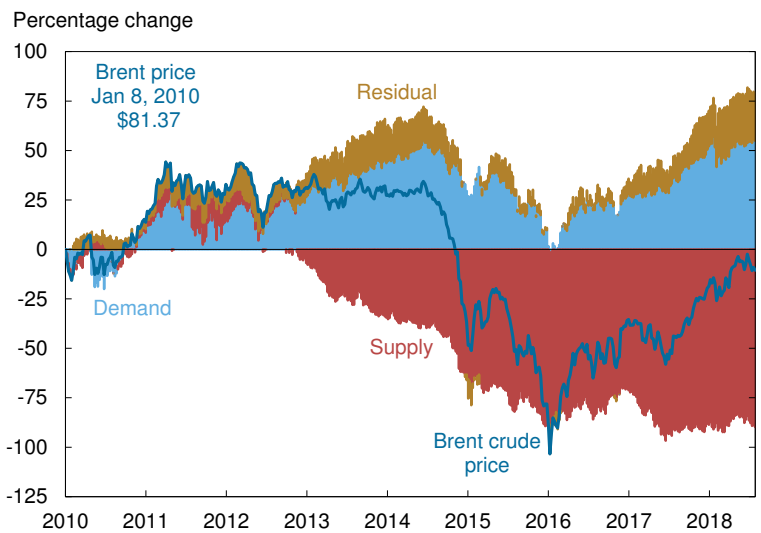
- Despite somewhat stronger global demand expectations, a perceived loosening in supply led to a fall in oil prices over the past three weeks. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Aug 03, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Jul 20, 2018	7.0	0.0	1.5	8.5
Jul 27, 2018	8.6	0.4	1.2	10.2
Aug 03, 2018	8.1	-0.6	1.2	8.7

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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Authors

Jan Groen and Max Sterman

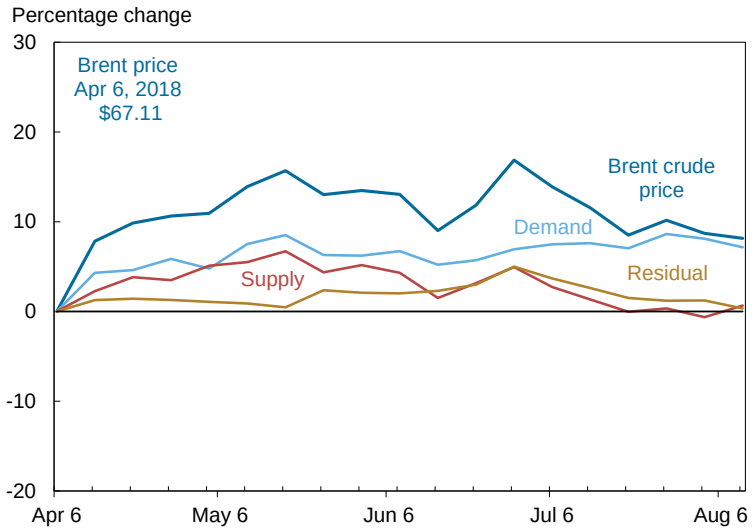
OIL PRICE DYNAMICS REPORT

Updated: August 13, 2018

A decrease in demand slightly pushed oil prices down over the past week.

- Despite an anticipated tightening in supply, a fall in demand expectations led to a minor slip in oil prices over the past week. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Aug 10, 2018



Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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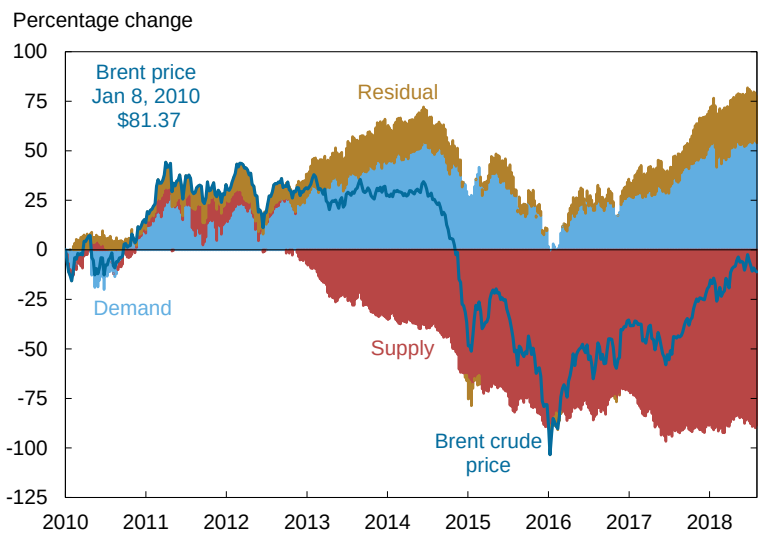
Cumulative Weekly Decomposition, 2010-Present



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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Jul 27, 2018	8.6	0.3	1.2	10.2
Aug 03, 2018	8.1	-0.6	1.2	8.7
Aug 10, 2018	7.1	0.7	0.3	8.2

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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Authors

Jan Groen and Max Sterman

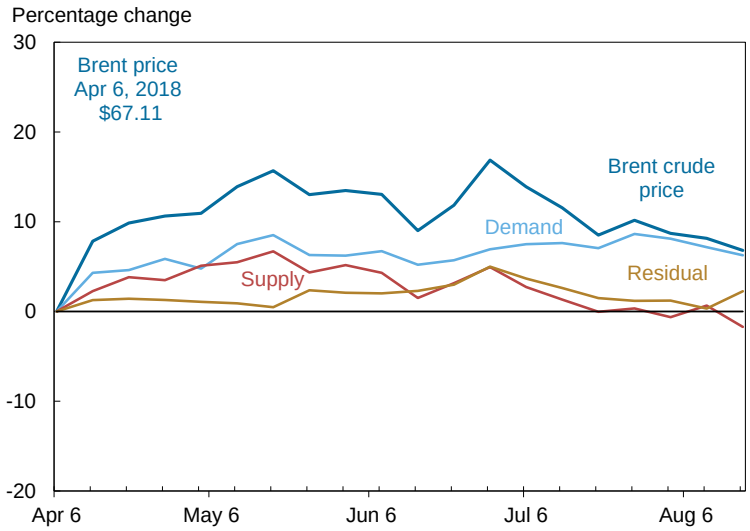
OIL PRICE DYNAMICS REPORT

Updated: August 20, 2018

A decrease in demand and an increase in supply pushed oil prices down over the past week.

- An anticipated loosening in supply and a fall in demand expectations led to a slip in oil prices over the past week. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Aug 17, 2018



Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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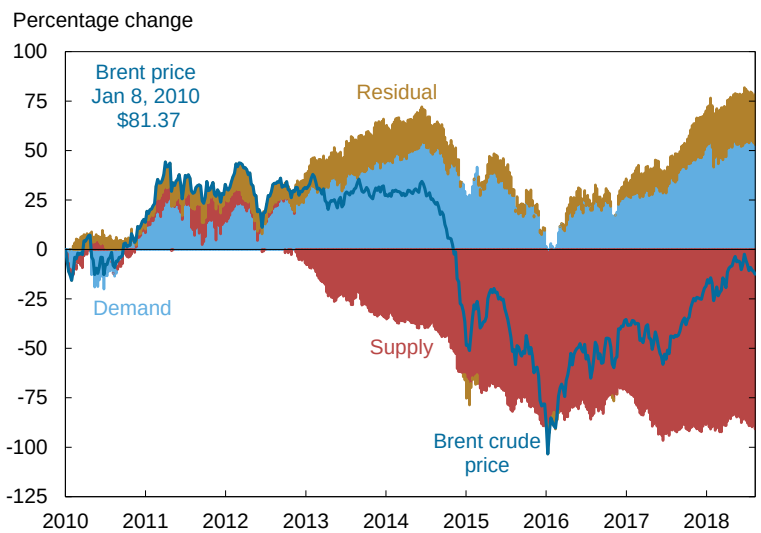
Cumulative Weekly Decomposition, 2010-Present



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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Aug 03, 2018	8.1	-0.6	1.2	8.7
Aug 10, 2018	7.2	0.7	0.3	8.2
Aug 17, 2018	6.3	-1.7	2.3	6.8

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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Authors

Jan Groen and Max Sterman

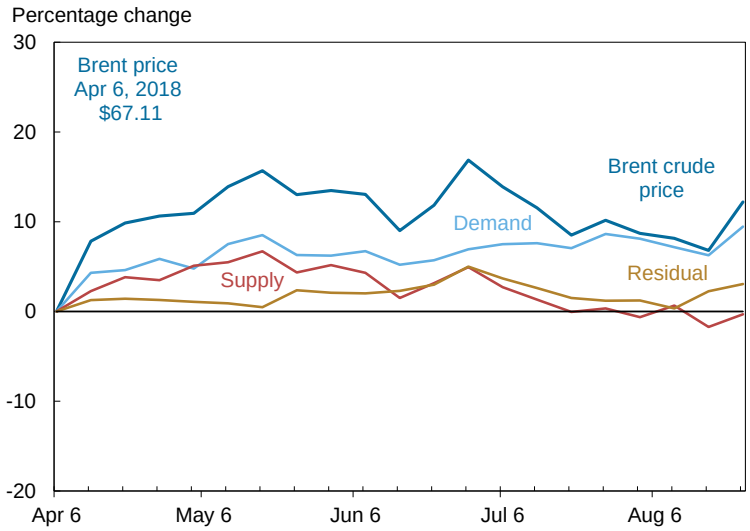
OIL PRICE DYNAMICS REPORT

Updated: August 27, 2018

Increased demand and lower supply caused a sharp rise in oil prices over the past week.

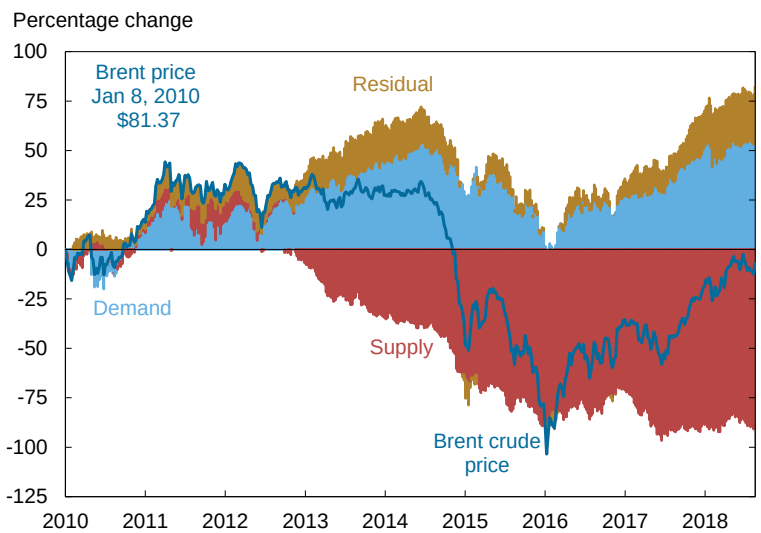
- An anticipated tightening in supply and a rise in demand expectations drove oil prices up significantly over the past week. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Aug 24, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Aug 10, 2018	7.2	0.7	0.3	8.2
Aug 17, 2018	6.3	-1.7	2.3	6.8
Aug 24, 2018	9.5	-0.3	3.1	12.2

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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Authors

Jan Groen and Max Sterman

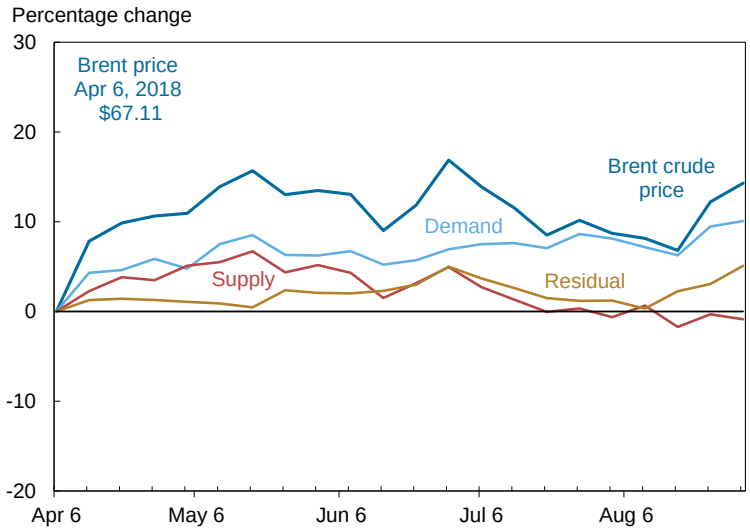
OIL PRICE DYNAMICS REPORT

Updated: September 4, 2018

The increase in residual caused a rise in oil prices over the past week.

- While a slight loosening in supply offset higher demand, the increase in residual ultimately caused oil prices to go up this past week. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Aug 31, 2018



Sources: Authors' calculations; Haver Analytics; Thomson Reuters; Bloomberg L.P.
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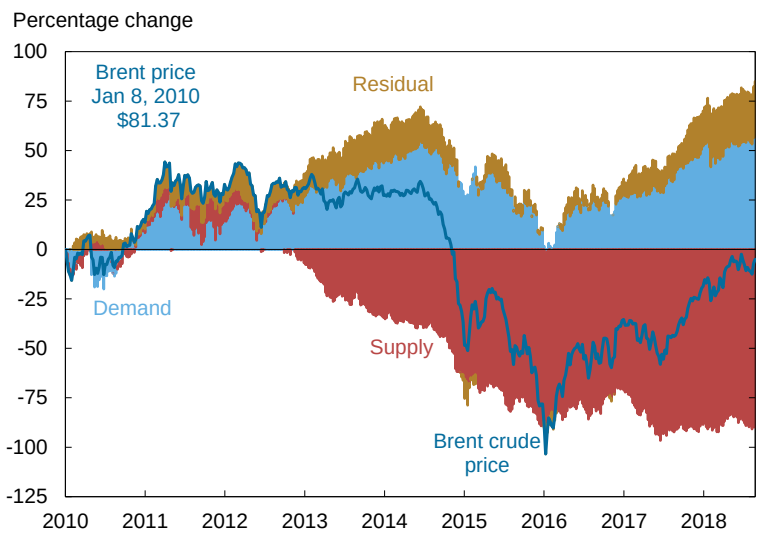
Cumulative Weekly Decomposition, 2010-Present



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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
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Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Aug 17, 2018	6.3	-1.7	2.3	6.8
Aug 24, 2018	9.5	-0.3	3.1	12.2
Aug 31, 2018	10.1	-0.9	5.1	14.3

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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Authors

Jan Groen, Casey McQuillan and Max Sterman

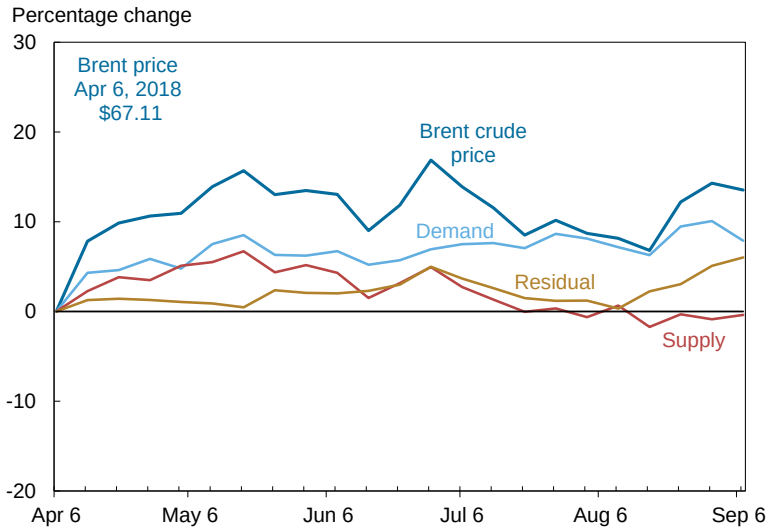
OIL PRICE DYNAMICS REPORT

Updated: September 10, 2018

Oil prices declined slightly this past week due to lower demand.

- Oil prices fell marginally this week, as a drop in demand expectations was partially offset by increases in anticipated supply and the residual. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil pricesl. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Sep 07, 2018



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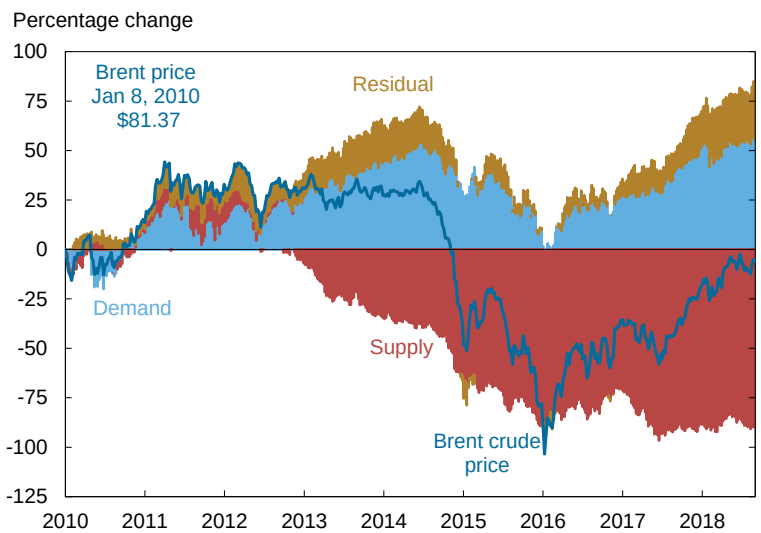

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	Demand	Supply	Rest	Brent
Aug 24, 2018	9.5	-0.3	3.0	12.2
Aug 31, 2018	10.1	-0.9	5.1	14.3
Sep 07, 2018	7.9	-0.4	6.0	13.5

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.

   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

- *Groen, J., and P. Russo*. 2016. "Lower Oil Prices and U.S. Economic Activity." *Liberty Street Economics*, May 2.
- *Groen, J., and P. Russo*. 2015. "Is Cheaper Oil Good News or Bad News for the U.S. Economy?" *Liberty Street Economics*, June 8.
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Authors

Jan Groen, Casey McQuillan, and Max Sterman

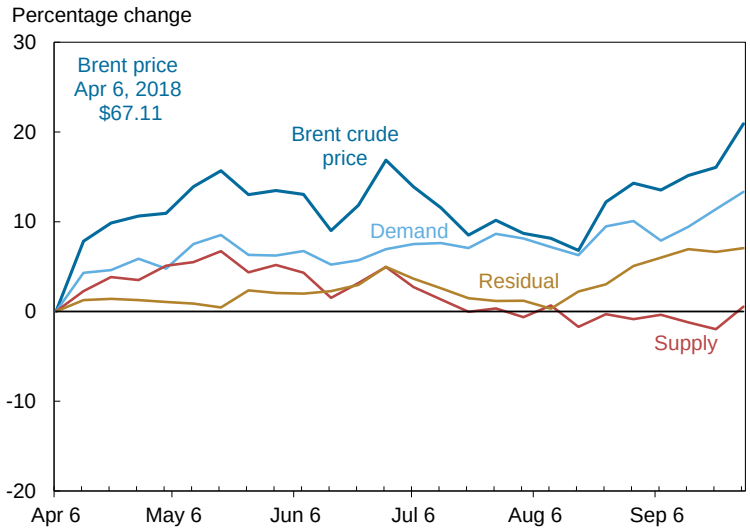
OIL PRICE DYNAMICS REPORT

Updated: October 1, 2018

Oil prices rose sharply this past week owing to greater demand and decreased supply.

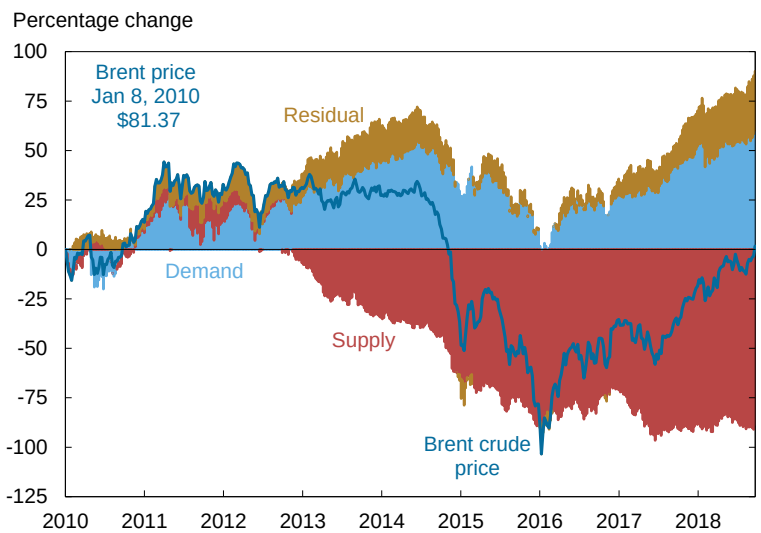
- The combination of stronger expected demand and a perceived tightening in supply led to a significant increase in oil prices last week. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Sep 28, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Sep 14, 2018	9.4	-1.2	6.9	15.2
Sep 21, 2018	11.4	-2.0	6.6	16.1
Sep 28, 2018	13.3	0.5	7.1	20.9

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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Authors

Jan Groen, Casey McQuillan, and Max Sterman

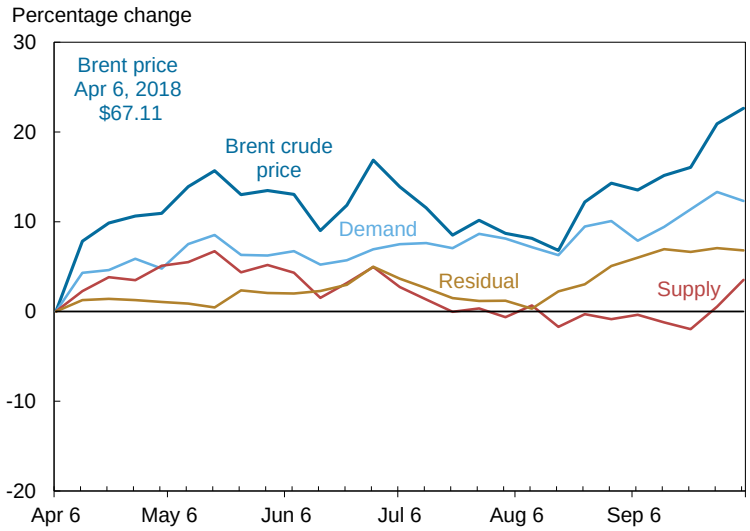
OIL PRICE DYNAMICS REPORT

Updated: October 9, 2018

Oil prices rose this past week as a result of decreased supply.

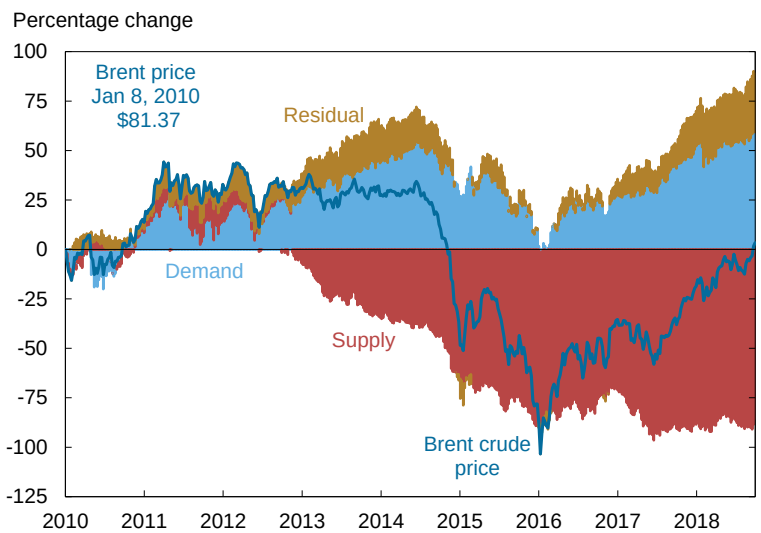
- The continued tightening of anticipated supply drove oil prices up over the past week despite a slight deterioration of demand expectations. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Oct 05, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Sep 21, 2018	11.4	-2.0	6.6	16.1
Sep 28, 2018	13.3	0.5	7.1	20.9
Oct 05, 2018	12.3	3.5	6.8	22.6

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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Authors

Jan Groen and Casey McQuillan

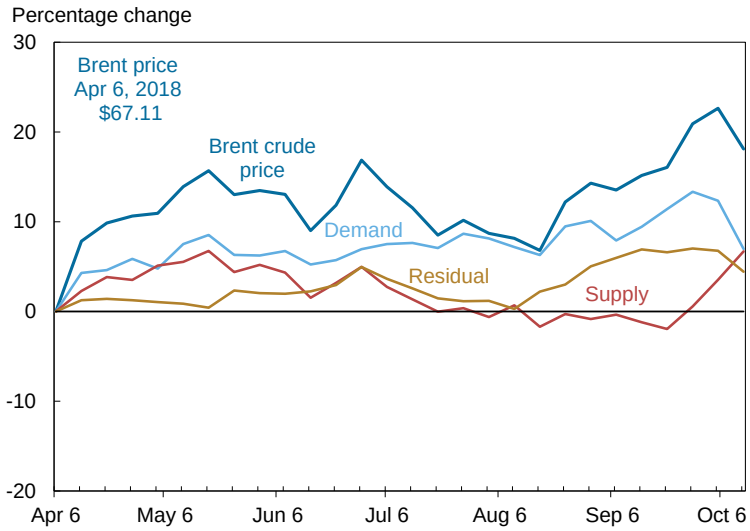
OIL PRICE DYNAMICS REPORT

Updated: October 15, 2018

Oil prices fell owing to a decrease in demand.

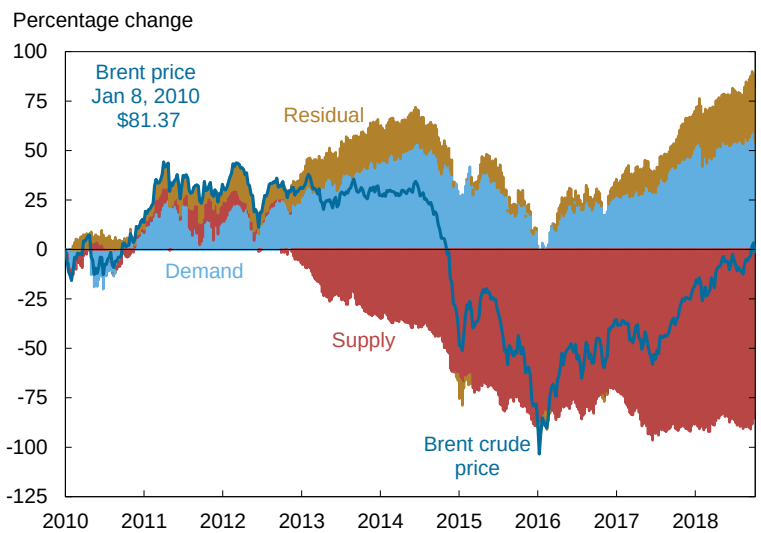
- A drop in global demand expectations drove the decline in oil prices this past week despite the continued tightening of anticipated supply. In 2018:Q2, increasing demand expectations and decreasing anticipated supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Apr 06-Oct 12, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from April 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since April 6, 2018

	Demand	Supply	Rest	Brent
Sep 28, 2018	13.3	0.6	7.0	20.9
Oct 05, 2018	12.3	3.5	6.8	22.6
Oct 12, 2018	7.0	6.7	4.4	18.1

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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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).

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Authors

Jan Groen and Casey McQuillan

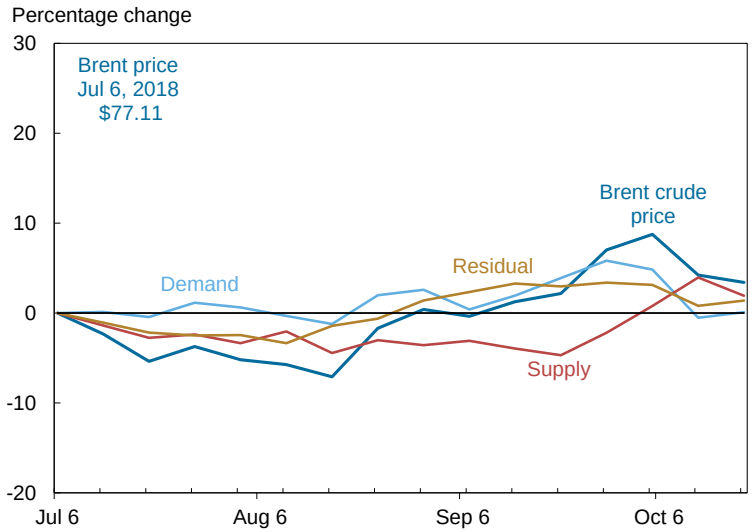
OIL PRICE DYNAMICS REPORT

Updated: October 22, 2018

Oil prices fell slightly due to an increase in anticipated supply.

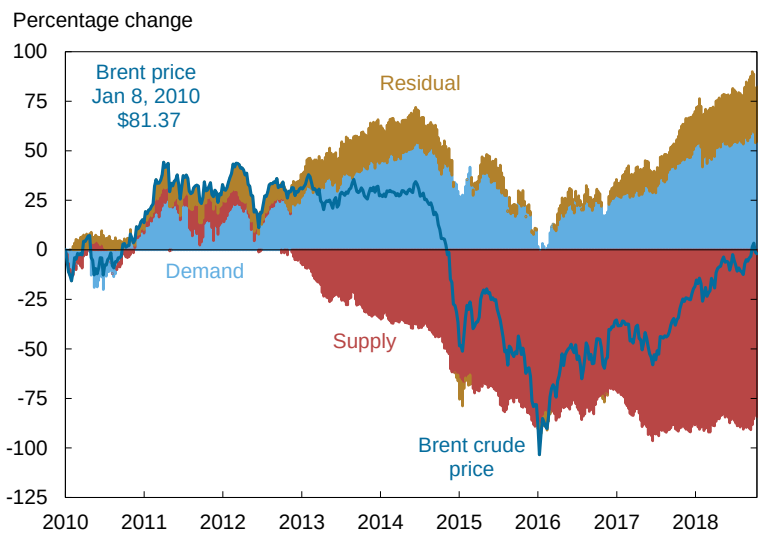
- The perceived loosening in supply more than offset the improvement in global demand expectations, causing oil prices to decline this past week. In 2018:Q3, increasing demand expectations and broadly unchanged supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jul 06-Oct 19, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from July 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since July 6, 2018

	Demand	Supply	Rest	Brent
Oct 05, 2018	4.8	0.8	3.1	8.7
Oct 12, 2018	-0.5	4.0	0.8	4.2
Oct 19, 2018	0.1	1.9	1.4	3.4

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

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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).

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Authors

Jan Groen and Casey McQuillan

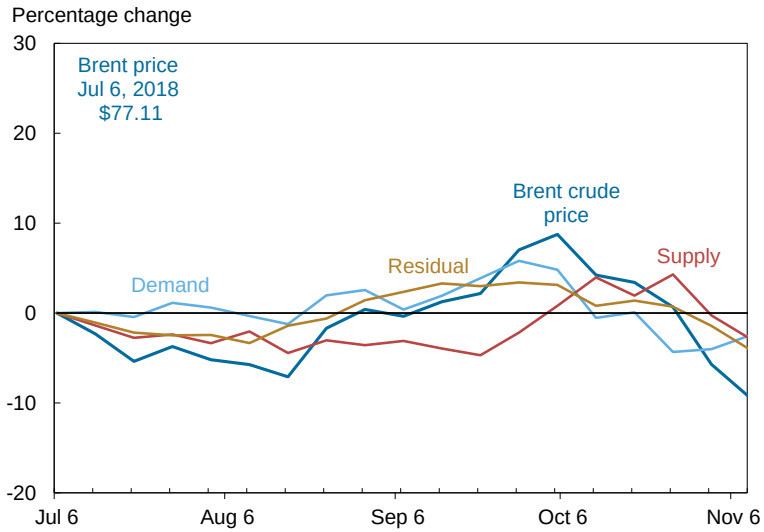
OIL PRICE DYNAMICS REPORT

Updated: November 13, 2018

Oil prices fell over the past three weeks due to increased supply.

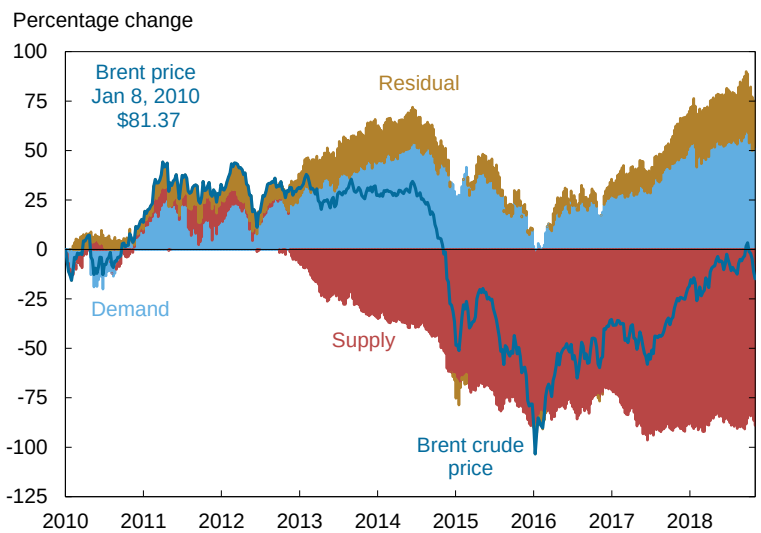
- A loosening in anticipated supply over the past three weeks more than offset the recent strengthening in global demand expectations, driving oil prices down over the period. In 2018:Q3, increasing demand expectations and broadly unchanged supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jul 06-Nov 09, 2018



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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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from July 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since July 6, 2018

	Demand	Supply	Rest	Brent
Oct 26, 2018	-4.3	4.3	0.7	0.7
Nov 02, 2018	-4.0	-0.3	-1.4	-5.7
Nov 09, 2018	-2.5	-2.9	-4.1	-9.4

Longer-Term View of Oil Price Movements

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Authors

Jan Groen and Casey McQuillan

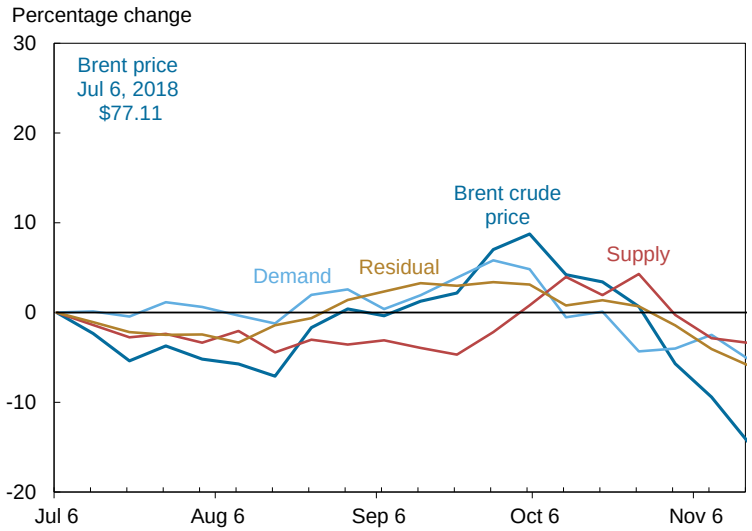
OIL PRICE DYNAMICS REPORT

Updated: November 19, 2018

Oil prices dropped owing to a decrease in demand and slight increase in supply.

- Oil prices fell sharply as a result of weaker demand expectations and a slight loosening in anticipated supply. In 2018:Q3, increasing demand expectations and broadly unchanged supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jul 06-Nov 16, 2018



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Recent Decomposition Data

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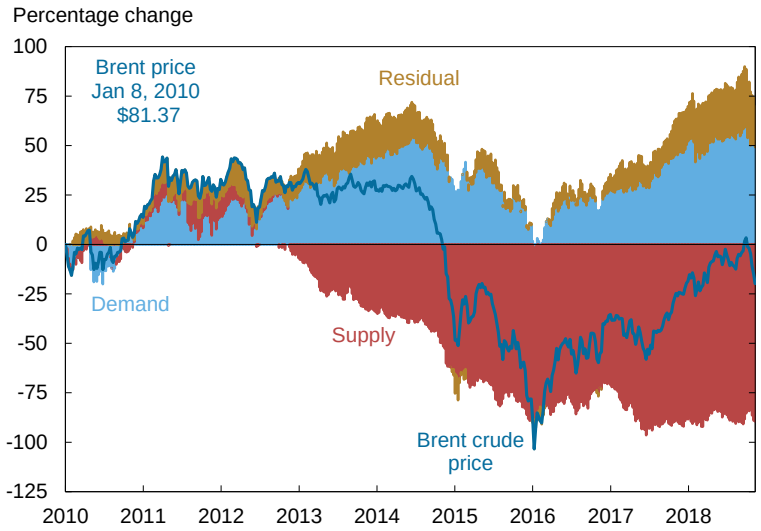
Cumulative Percentage Changes since July 6, 2018

	Demand	Supply	Rest	Brent
Nov 02, 2018	-4.0	-0.3	-1.4	-5.7
Nov 09, 2018	-2.5	-2.9	-4.1	-9.4
Nov 16, 2018	-5.2	-3.4	-5.9	-14.4

Cumulative Weekly Decomposition, 2010-Present



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Authors

Jan Groen and Casey McQuillan

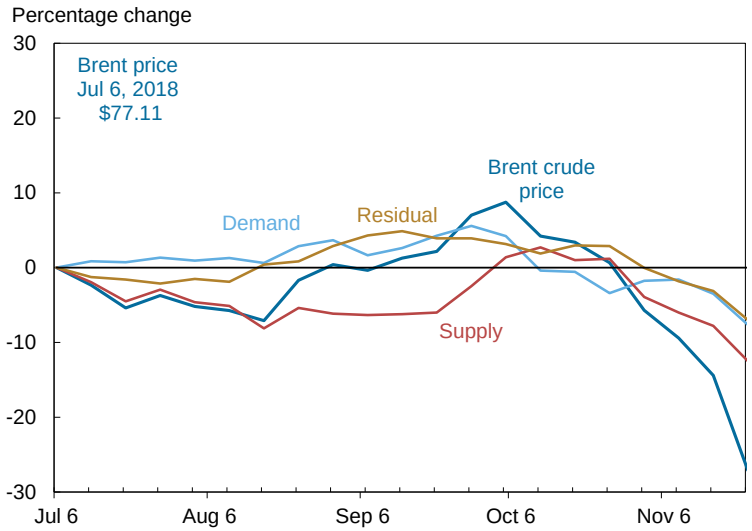
OIL PRICE DYNAMICS REPORT

Updated: November 26, 2018

Oil prices dropped sharply owing to both lower demand and increased supply.

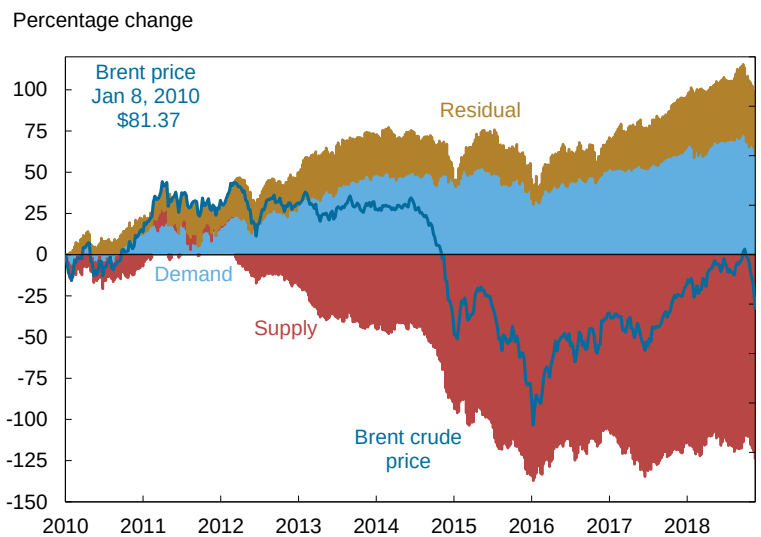
- Oil prices fell significantly as a result of weaker global demand expectations and a loosening in anticipated supply. In 2018:Q3, increasing demand expectations and broadly unchanged supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jul 06-Nov 23, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from July 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since July 6, 2018

	Demand	Supply	Rest	Brent
Nov 09, 2018	-1.6	-6.0	-1.8	-9.4
Nov 16, 2018	-3.5	-7.8	-3.1	-14.4
Nov 23, 2018	-7.6	-12.5	-7.0	-27.1

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.

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

- *Groen, J., and P. Russo*. 2016. "Lower Oil Prices and U.S. Economic Activity." *Liberty Street Economics*, May 2.
- *Groen, J., and P. Russo*. 2015. "Is Cheaper Oil Good News or Bad News for the U.S. Economy?" *Liberty Street Economics*, June 8.
- *Groen, J., K. McNeil, and M. Middeldorp*. 2013. "A New Approach for Identifying Demand and Supply Shocks in the Oil Market." *Liberty Street Economics*, March 25.

Authors

Jan Groen and Casey McQuillan

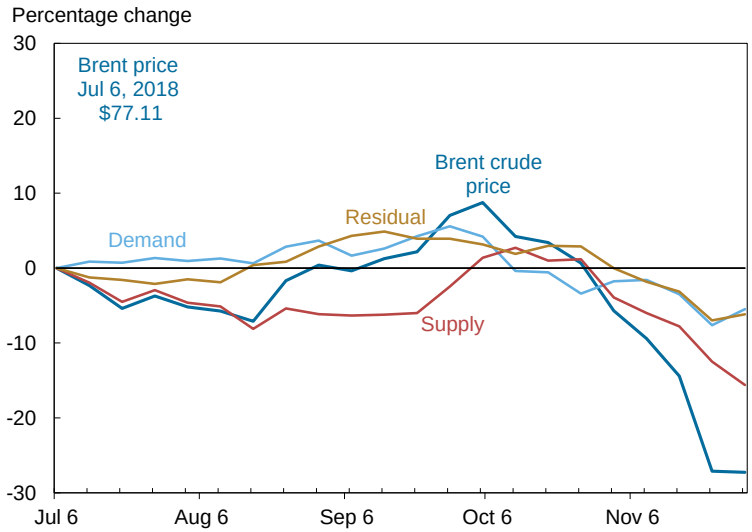
OIL PRICE DYNAMICS REPORT

Updated: December 3, 2018

Oil prices were broadly unchanged this past week.

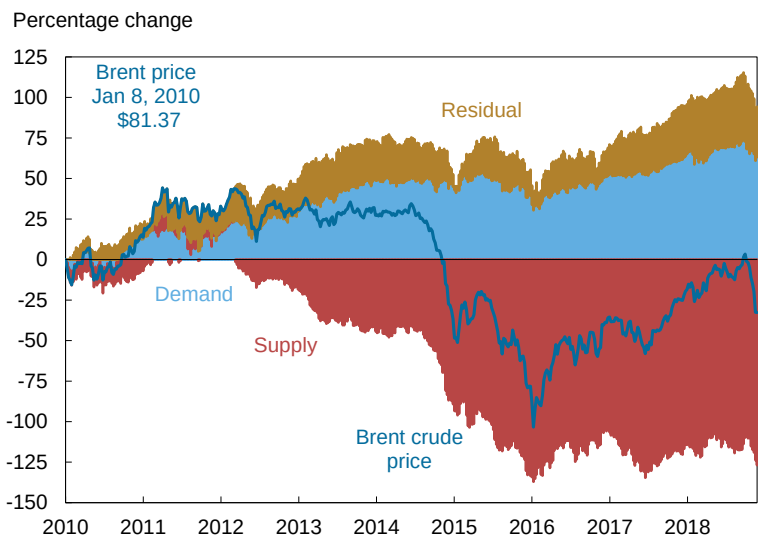
- Strengthening demand expectations offset a perceived loosening in anticipated supply, leaving oil prices relatively unaffected over this past week. In 2018:Q3, increasing demand expectations and broadly unchanged supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jul 06-Nov 30, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from July 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since July 6, 2018

	Demand	Supply	Rest	Brent
Nov 16, 2018	-3.5	-7.8	-3.1	-14.4
Nov 23, 2018	-7.6	-12.5	-7.0	-27.1
Nov 30, 2018	-5.5	-15.6	-6.2	-27.3

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

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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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Authors

Jan Groen and Casey McQuillan

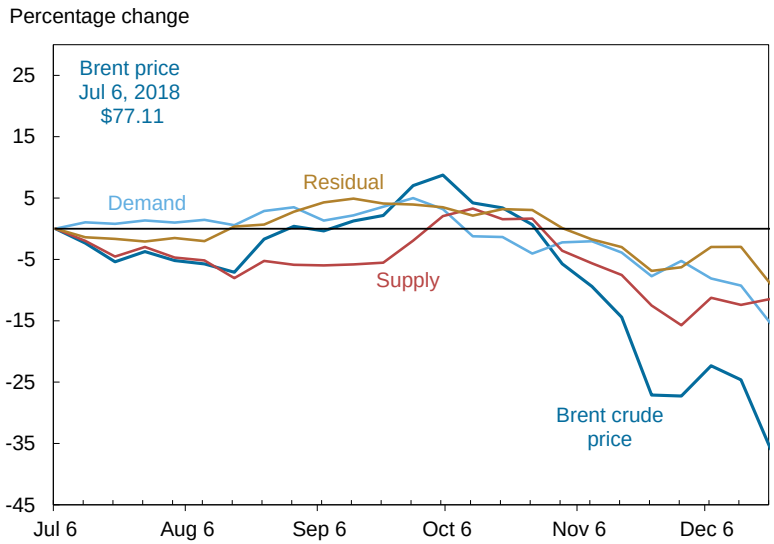
OIL PRICE DYNAMICS REPORT

Updated: December 27, 2018

In recent weeks, oil prices have fallen due to decreasing demand.

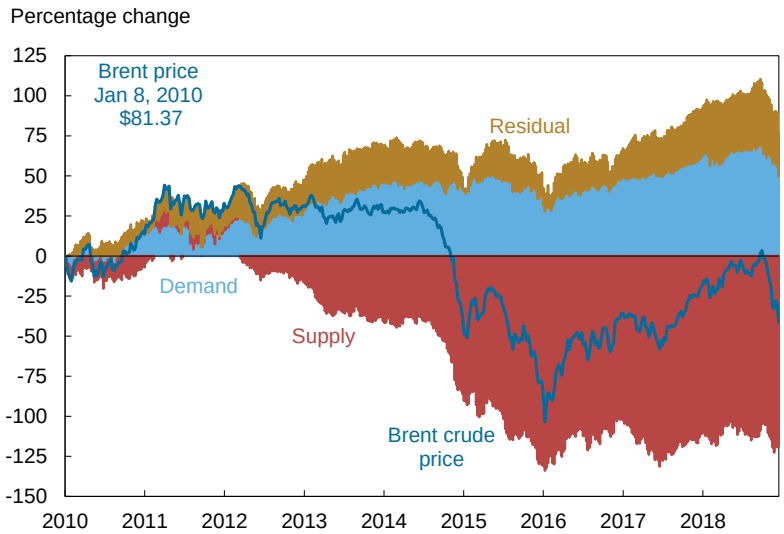
- Over the past two weeks, oil prices continued to decline owing to weakening demand expectations despite a slight tightening in anticipated supply. In 2018:Q3, increasing demand and broadly unchanged supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jul 06-Dec 21, 2018



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



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

- The chart at left depicts the cumulative oil price decomposition from July 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since July 6, 2018

	Demand	Supply	Rest	Brent
Dec 07, 2018	-8.1	-11.3	-3.0	-22.3
Dec 14, 2018	-9.3	-12.4	-2.9	-24.6
Dec 21, 2018	-15.5	-11.4	-9.0	-36.0

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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Authors

Jan Groen and Casey McQuillan

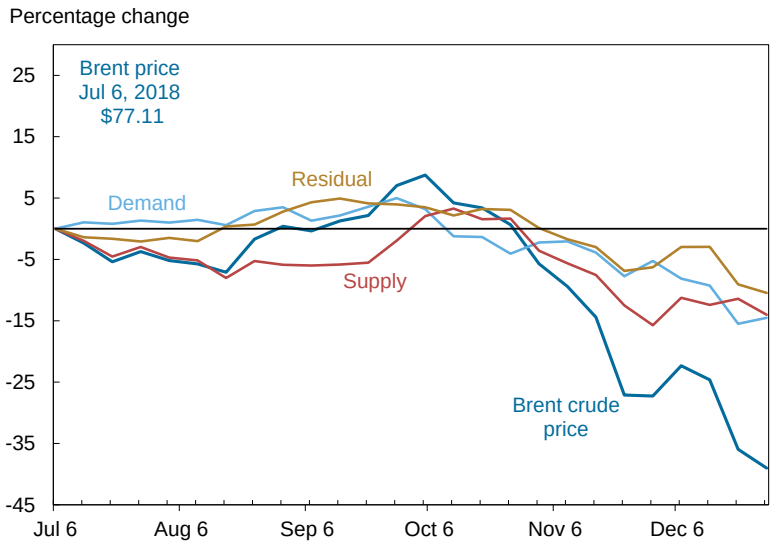
OIL PRICE DYNAMICS REPORT

Updated: December 31, 2018

Oil prices fell again this week due to an increase in supply.

- The loosening in anticipated supply drove oil prices down this week despite a strengthening of demand expectations. In 2018:Q3, increasing demand and broadly unchanged supply led to rising oil prices.
- Developments in global demand expectations since 2017:Q3 have reversed the largely supply-induced weakness in oil prices throughout the first half of 2017.
- Overall, since the end of 2014:Q2, both lower global demand expectations and looser supply have held oil prices down, though this trend seems to have reversed in 2016:Q2 and 2016:Q4, and notably since 2017:Q3.

Cumulative Weekly Decomposition, Jul 06-Dec 28, 2018



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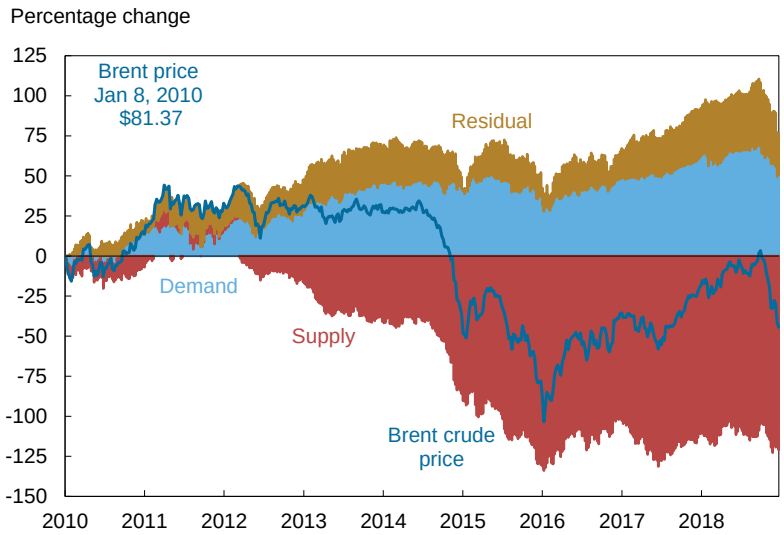
Cumulative Weekly Decomposition, 2010-Present



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Recent Decomposition Data

- The chart at left depicts the cumulative oil price decomposition from July 6, 2018.
- The table below presents the most recent cumulative values.

Cumulative Percentage Changes since July 6, 2018

	Demand	Supply	Rest	Brent
Dec 14, 2018	-9.3	-12.4	-2.9	-24.6
Dec 21, 2018	-15.5	-11.4	-9.1	-36.0
Dec 28, 2018	-14.5	-14.0	-10.5	-39.0

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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