

Effects of Oil Supply Disruptions on Oil Exporters, Importers

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Economies may face different challenges during oil supply disruptions depending on whether they primarily import or export oil. Comparing the effects of past disruptions in Canada, a large net oil exporter, and the euro area, a large oil importer, suggests that both experienced rising inflation and declining economic activity. This reflects that the energy sector accounts for a small share of GDP, while oil prices affect global demand and nonenergy sectors. Thus, benefits to the energy sector from higher oil prices were outweighed by the costs to the broader economy.

The worldwide rise in oil prices in the past six months has revived questions about their economic effects. Intuitively, with the rise in oil prices, countries that are net importers of oil generally face higher energy and production costs and decreasing consumer spending, which in turn could stem economic growth and push up inflation. On the other hand, countries that are net oil exporters might gain from higher revenue, which could ultimately benefit businesses and households. After a long history of being a net importer of oil, the United States became a net oil exporter in late 2018, raising the question of how recent oil supply disruptions are likely to affect the U.S. economy as a whole.

To help address this question, in this *Economic Letter* we examine the effects of unexpected oil supply changes, or shocks, from past decades in two different economies: Canada, one of the world's largest producers and exporters of oil, and the euro area, a large net oil importer. We find that past oil price increases due to supply disruptions have slowed economic growth and raised inflation in both Canada and the euro area. Our analysis of key Canadian industries suggests that the net negative effects on the oil supply dominate the positive effects on the oil industry. These patterns suggest that oil supply disruptions may not fully benefit the U.S. economy, even though it has become a net oil exporter.

Oil price changes from supply shocks

Oil price changes can come from both changes in supply, such as oil production disruptions, and changes in demand, such as an increase in global growth. The underlying reason for the change in oil prices can thus have different implications, depending on whether an economy is an exporter or importer of oil. An adverse oil supply shock raises energy prices and increases production costs globally, often leading to a contraction in economic activities alongside elevated inflation. In response, a central bank may tighten monetary policy and raise interest rates to lower inflation, which increases borrowing costs and further depresses aggregate demand. This negative feedback loop may be less severe for oil-exporting economies because rising oil

prices generate higher export revenue, which has a positive wealth effect that, in turn, can stimulate household consumption. On the other hand, if an increase in global demand is the source of rising oil prices, oil-importing economies can also see positive growth, as the demand for its exports may offset the increase in energy prices.

To assess the economic impact of changes in oil prices, it is important to distinguish the sources of oil price changes. We use an approach based on Känzig (2021) that identifies oil supply changes by observing the movement of oil futures prices in a tight window, a day, around the production announcements from the Organization of the Petroleum Exporting Countries (OPEC). Intuitively, financial market participants incorporate global demand news into oil futures prices before OPEC announcements, so changes in oil prices on the day of the OPEC announcement likely reflect only news about future oil supply. Following Känzig (2021), we extract oil supply news shocks as changes in oil prices on impact that affect oil production gradually. Importantly, these oil supply shocks are likely unrelated to economic conditions in Canada or the euro area at the time of the shock, which allows us to explore their impact on these economies.

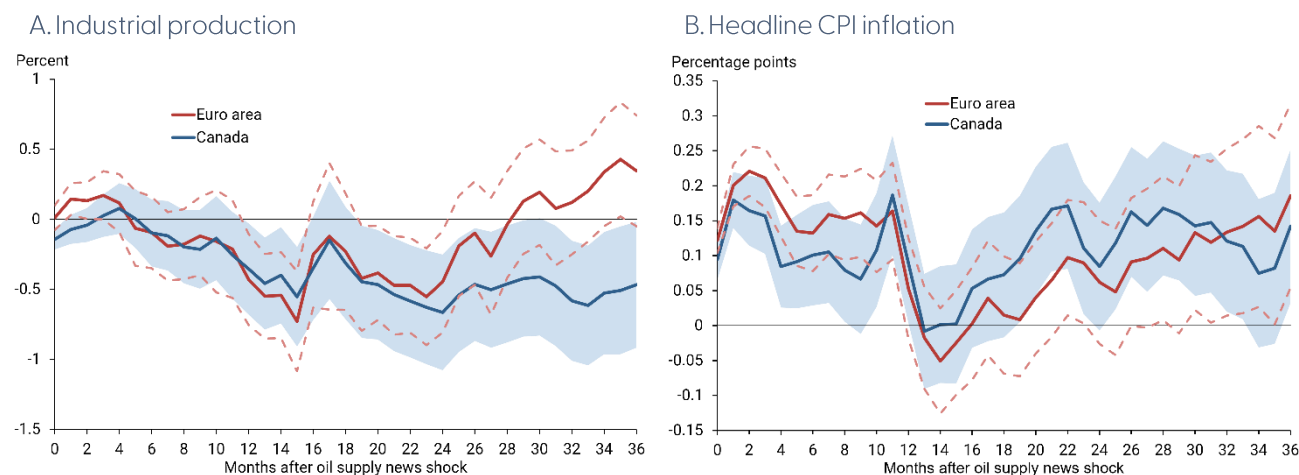
We estimate the responses of industrial production and headline inflation in Canada and the euro area. We implement a statistical procedure called local projections as in Jordà (2005). This approach allows us to study how an oil shock propagates through an economy over time. For example, we estimate changes in industrial production caused by an oil supply news shock, accounting for lagged effects.

We use monthly industrial production as a measure of economic activity in Canada and the euro area, as opposed to GDP, which is generally available quarterly. Moreover, the correlation between industrial production and GDP is high: Industrial production is highly cyclical, and services sectors are relatively stable, so GDP variations over time are heavily driven by the changes in goods-producing industries, captured by industrial production.

The data for Canada span from January 1975 to December 2019. Data for the euro area (19 member countries, which include Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain) are available from January 1991 to December 2019. As the euro area was created in 1999, we use aggregated data for the years before 1999 for the same 19 member countries. We note that all results for Canada remain similar if we restrict our sample data to start in 1991. As noted in Känzig (2021) and Miyamoto, Nguyen, and Sergeyev (2026), oil prices increase significantly after an oil supply news shock, and the increase persists for more than 24 months.

Panel A of Figure 1 displays the responses of industrial production up to 36 months following an oil supply news shock associated with a 10% increase in the inflation-adjusted price of oil. The blue line plots the responses of Canada and the red line plots those of the euro area. The dashed lines and shading surrounding each solid line are the 68% confidence bands around each estimate; assuming our model is correct, these areas contain the true response roughly two-thirds of the time.

Figure 1
Industrial production and inflation responses to oil supply news shock in Canada and euro area



Note: Responses to an oil supply news shock associated with a 10% increase in the inflation-adjusted oil price. Dashed lines and shading indicate 68% confidence bands around respective estimates.

Source: Federal Reserve Economic Data (FRED) and authors' calculations.

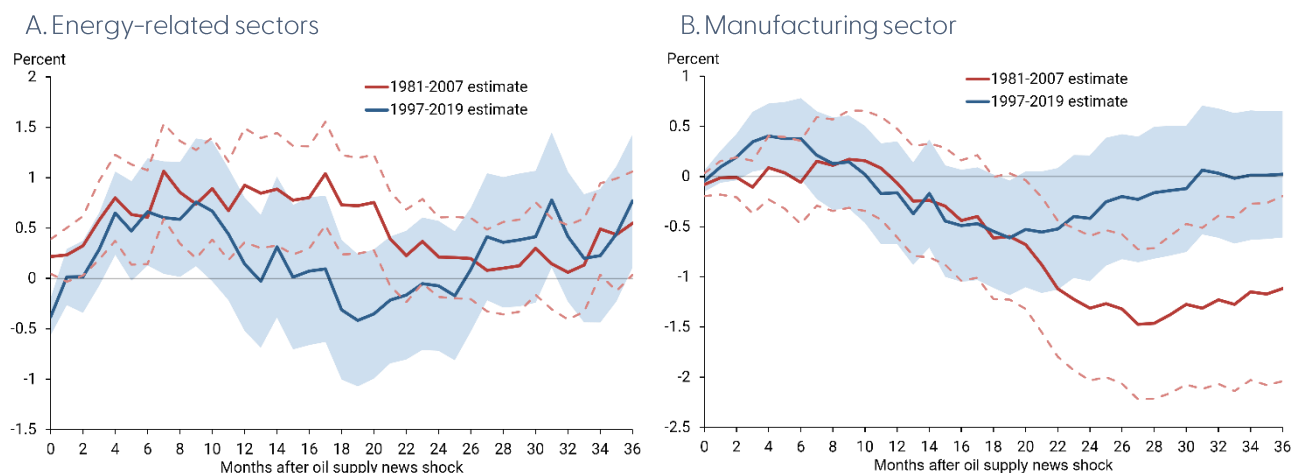
Industrial production falls in both economies after an adverse oil supply news shock. In Canada, the response of industrial production is close to zero in the first year after the shock and falls by up to 0.5% at longer horizons. The contraction is large and persistent in the euro area: Industrial production declines steadily over the first year by up to 1% in response to a 10% increase in oil prices driven by an oil supply news shock and remains below zero at longer horizons. While the decline in industrial production is more pronounced in the euro area than in Canada, the effects are estimated with uncertainty, so we are unable to conclude that they are statistically different. We also estimated the responses of the unemployment rate in both Canada and the euro area. We find a broadly similar picture in that oil supply news shocks lead to an increase in the unemployment rate after the first six months in both Canada and the euro area.

We next turn to the responses of headline inflation. As plotted in the right panel of Figure 1, inflation rises in Canada and the euro area following the oil supply news shock, with peak responses occurring within the first 12 months: An oil supply disruption that causes oil prices to increase by 10% on impact is associated with a 0.18 percentage point increase in headline inflation in Canada and a 0.25 percentage point increase in the euro area. The overall effects on headline inflation are similar for both of these economies. These results are also in line with what we found earlier for the United States (see Miyamoto, Nguyen, and Sergeyev 2022). In particular, headline CPI inflation in the United States increases by about 0.3 percentage points within the first 12 months after the oil supply news shock.

Drilling down into the results for Canada

Higher oil prices caused by an adverse oil supply shock can benefit an oil exporter. However, Figure 1 suggests that other economic activities in Canada suffer from oil supply disruptions. To further understand this result, we estimate the responses of the energy-related sectors and the manufacturing sector in Canada to oil supply news shocks, shown in Figure 2. Since data availability for sectoral output in Canada between

Figure 2
Economic sectoral responses in Canada to oil news supply shock



Note: Responses to an oil supply news shock associated with a 10% increase in the inflation-adjusted oil price. Dashed lines and shading indicate 68% confidence bands around respective estimates for different time period samples.
 Source: Statistics Canada and authors' calculations.

1981 and 2019 is limited, we examine energy-related sectors in the historical classification between 1981 and 2007, and the newer classification between 1997 and 2019.

We find that the energy-related sectors (mining and oil and gas extraction) increase up to 1% after an oil supply news shock in the 1981–2007 sample and about 0.5% in the 1997–2019 sample. At the same time, the manufacturing sector (not including mining/oil and gas extraction) declines, especially in the earlier sample. Since the oil and gas industry accounts for a small fraction of Canadian GDP, the positive impact in the energy-related sectors cannot offset the negative shock to the rest of the economy.

Canada is tightly integrated with the United States, and the effects of an oil shock in the U.S. economy can spill over and further depress aggregate demand in Canada. In line with this conjecture, Känzig (2021) finds that U.S. output declines significantly following an adverse oil supply news shock. Gains from higher oil prices often accrue to foreign shareholders and might be saved, blunting the wealth effects. These findings could explain why higher oil prices may have net negative effects on the Canadian economy.

We note that our estimates for the effects of oil supply disruptions to manufacturing, electricity supply, and mining and quarrying sectors in the euro area show that, unlike Canada, production drops in all three sectors in response to a negative oil supply news shock.

Conclusion

To help understand the impact of the recent rise in oil prices on the economy, this *Letter* compares the effects of past oil shocks in Canada, a net oil exporter, and the euro area, a net oil importer. Our results for Canada and the euro area suggest that the economic effects of past oil supply disruptions are not significantly different across the two economies. Although Canada gets some positive wealth effects that help offset the economic costs of higher oil prices, the oil extraction industry in Canada only represents

about 5% of its GDP, and therefore, it is not large enough to offset the negative effects of higher oil prices on the rest of the economy.

The United States became a net oil exporter in late 2018. But, as in Canada, the combined U.S. oil and gas extraction sector represents a relatively small share of total output, only around 1% of GDP. This suggests the positive effect on this sector may not offset the negative effects of higher oil prices on the broader economy.

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Data

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