



The Impact of Global Trade Disruptions on World Oil Markets

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Instant Insight

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Introduction

After decades of relatively smooth trade liberalization, a wave of protectionist measures and a global trade war is now threatening world trade. On September 1, 2019, the United States (U.S.) imposed a new series of tariffs on Chinese imports worth more than \$100 billion.

While China has been the most visible target of President Trump's trade policies, all U.S. trading partners, including its allies, have been pressured to renegotiate their trade terms with the U.S. On March 23, 2018 the U.S. imposed steel and aluminum tariffs, with temporary exemptions granted for some of its security partners (the exemptions were later extended to June 1). South Korea, Argentina and Brazil are exempt from steel tariffs; Argentina is exempt from aluminum tariffs, and Australia is exempt from both permanently (Williams 2019). In June 2018, the U.S. imposed quotas on South Korean, Argentinian and Brazilian steel imports, and in July 2018, threatened to impose 25% tariffs on imports of cars and car parts. In April 2019, the U.S. proposed tariffs on European dairy and, in May 2019, terminated Turkey's preferential trade agreement (Kirby 2018; Pamuk and Beech 2019).

Scholars and policymakers agree that sustained trade disputes, based on a growing number of tariffs and other forms of protectionist measures, will lead to a considerable loss of global gross domestic product (GDP). The U.S.-China trade war is already starting to take its toll on the global economy, and experts warn of more serious and long-lasting damage to world trade if it becomes protracted.

In this KAPSARC Instant Insight, we forecast the response of world oil markets to a continuation of the global trade war.

Our model simulations suggest three critical insights:

1. Despite a significant fall in global GDP, the price of Brent crude will fall only slightly.
2. Almost all oil producing countries see a significant cut to their oil production relative to their baseline, while the U.S. sees an increase. Saudi Arabia emerges as the swing producer, absorbing a significant portion of this production cut.
3. The trade war will lead to backwardation in the price of Brent, which is expected to fall slightly in the year following a negative shock to global GDP due to global trade disruptions, falling further in the second year of the disruption (2020). In anticipation of this,
 - a. oil exporters will release a larger part of their inventories onto the market in early 2020, followed by a smaller amount in early 2021;
 - b. oil importers will increase their oil purchases in 2021, capitalizing on lower oil prices.

In sum, we are at a point where diplomacy is critical to resolving the current global trade disputes. The global community could benefit considerably if trade negotiations were to be concluded quickly and equitably. The main actors in these trade rows should be cognizant of the unintended consequences of their actions for the global economy.

Global trade wars, economic output and oil markets: A KAPSARC global oil market simulation

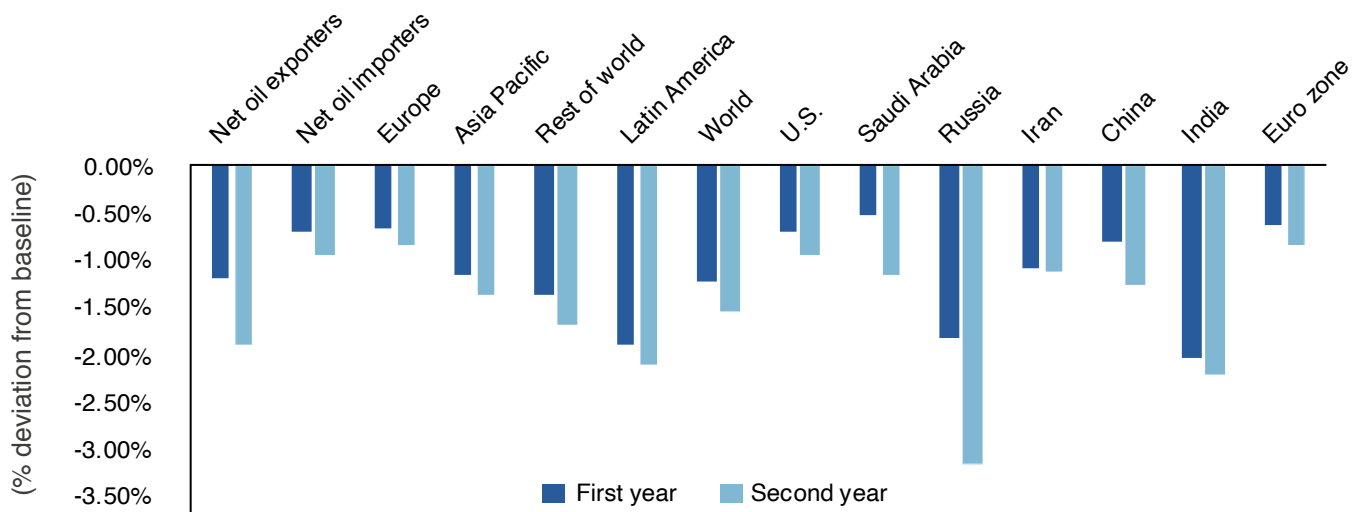
Various estimates point to a serious threat to world prosperity from an escalating global trade war. President Donald Trump's unique negotiating strategy may have far reaching implications for world oil markets, including unintended consequences for the U.S. and its allies. Given that the world economy is already showing signs of stress, it is critical that net oil exporters and importers understand how oil markets could react to a prolonged trade war and painful negotiations. We use KAPSARC's Global Vector Autoregression (GVAR) model, designed to analyze the potential implications of the global trade war and its associated economic shocks on world oil markets.

GVAR simulation results: GDP, oil price, production and inventories

Real GDP

After an initial simulated economic shock, equal to a reduction in real global GDP by 0.3%, to the world economy, global GDP continues to decline, deteriorating every year the trade sanctions remain in place. Real global GDP falls by 1.22% relative to the baseline in the first year (2019), and even more (-1.53%) in the second year of the trade war. Countries in the Group of Seven leading industrial nations (G7) are least affected by the sanctions. The trade war has almost twice the negative effect on the GDP of net oil exporting countries than it does on the GDP of net oil importing countries. Russia and India experience the steepest reductions in their real GDP relative to the baseline of 3% and 2%, respectively.

Figure 1. World trade war impact on real global GDP.

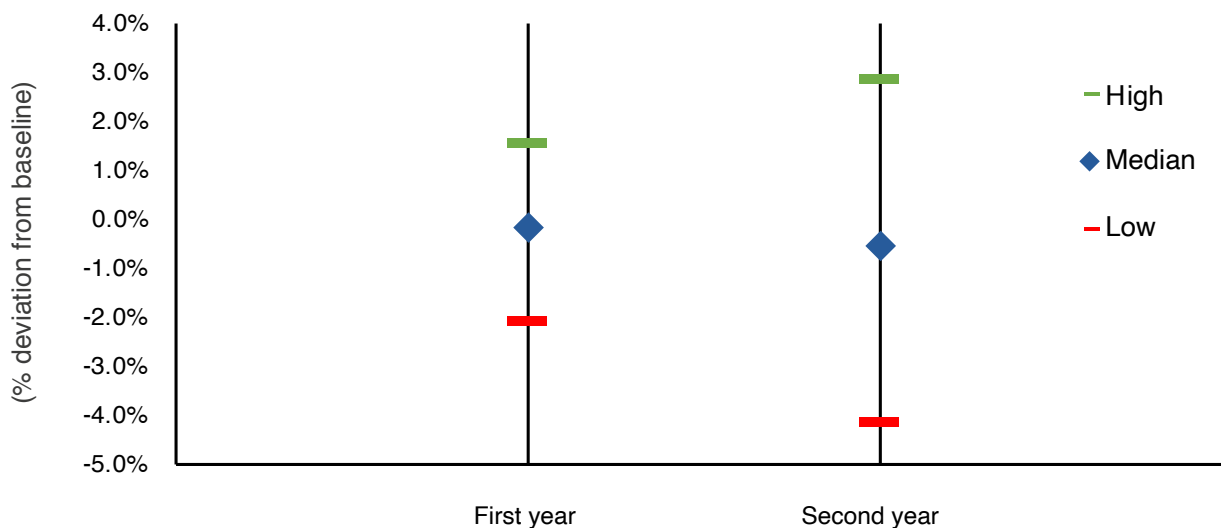


Source: KAPSARC global oil market simulation, September 2019.

Oil price

The real-world price of Brent crude experiences a slight decline in the first year of the trade war, falling by less than 1%. As the tariffs remain in place, global GDP and the price of crude oil continue to fall. The oil price enters a period of backwardation, where it is expected to continue to decline throughout the two-year forecast period.

Figure 2. World trade war impact on Brent crude price.



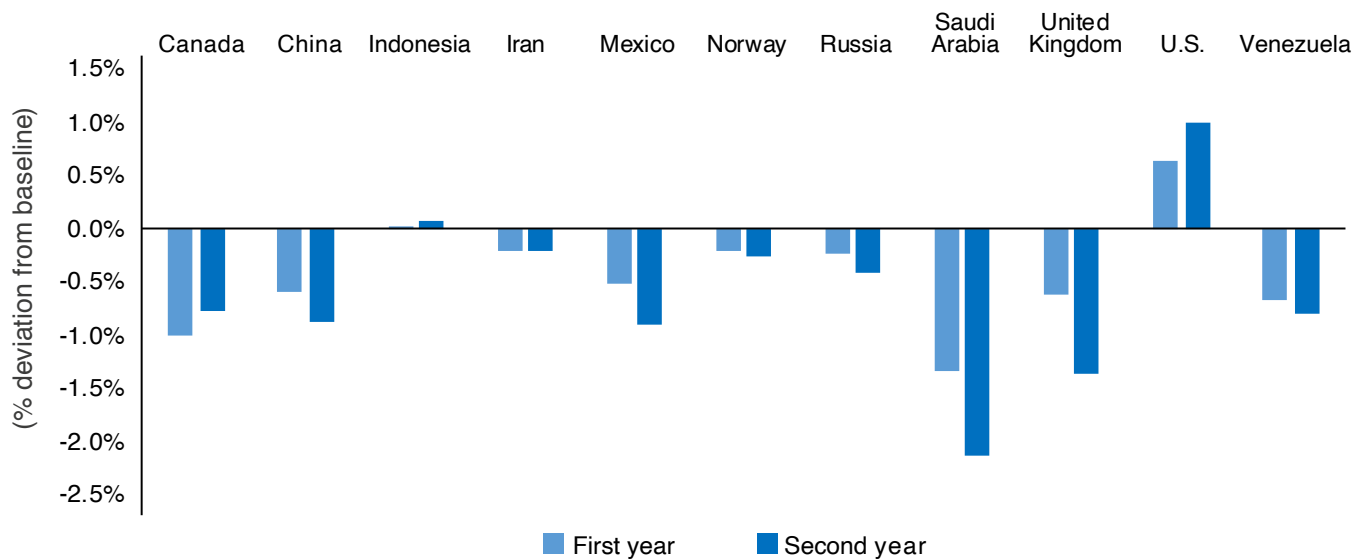
Source: KAPSARC global oil market simulation, September 2019.

Note: The high and low cases represent the upper and lower borders of the 90% confidence interval. The median represents the median point estimate of the simulation.

Crude oil production

Saudi Arabia maintains its role of swing producer, with its crude oil production falling by 1.5% below the baseline in the first year of the trade war to -2% in the second year of the trade war. The production of other producers (OPEC and non-OPEC) also falls, albeit at lower levels. Interestingly, the U.S. is an exception: its crude oil production continues to increase slightly throughout the forecast period. This increase is likely due to the effects of U.S. monetary policy and an expected decline in long-term U.S. interest rates throughout the forecast period. Given the tenuous situation that a global economic downturn would present, an unintended consequence of the U.S. escalating the global trade war could be the strain this would put on its partners in the Gulf, and the increased uncertainty this would give to international oil markets.

Figure 3. World trade war impact on crude oil production.

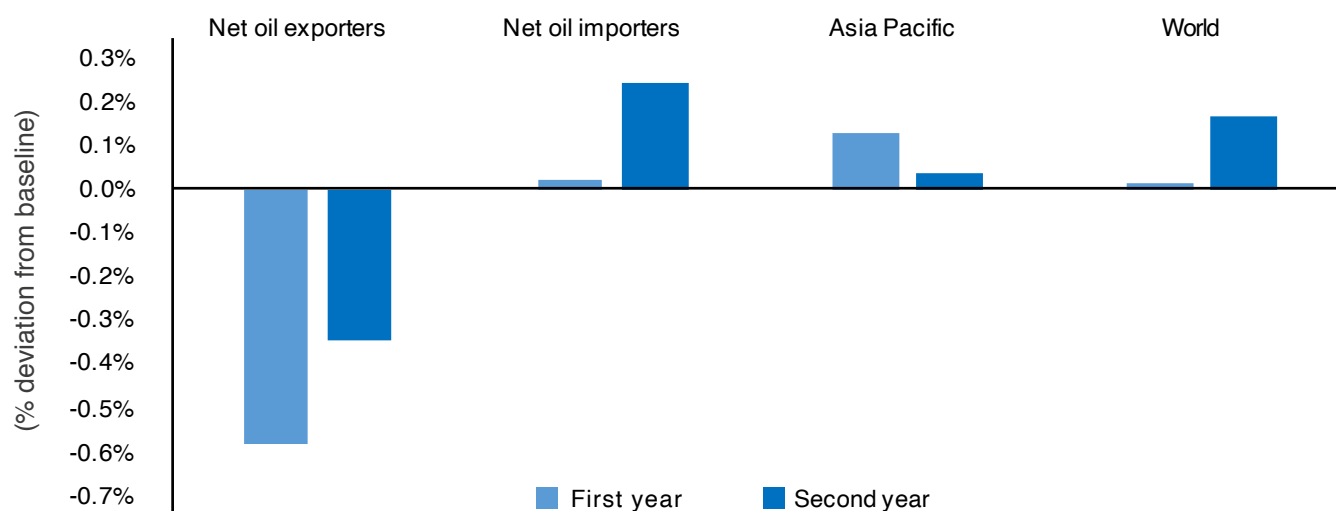


Source: KAPSARC global oil market simulation, September 2019.

Crude oil inventories

Net oil exporting countries drawdown inventories relative to their baseline behavior as they anticipate a backwardated market and continued declines in crude oil prices. The effects of this are estimated to be most pronounced in the first year of the trade war when prices are expected to peak. However, net oil importers would take advantage of lower oil prices in the second year by increasing their strategic and commercial inventories.

Figure 4. World trade war impact on oil inventories.



Source: KAPSARC global oil market simulation, September 2019.

A recap and alternative futures

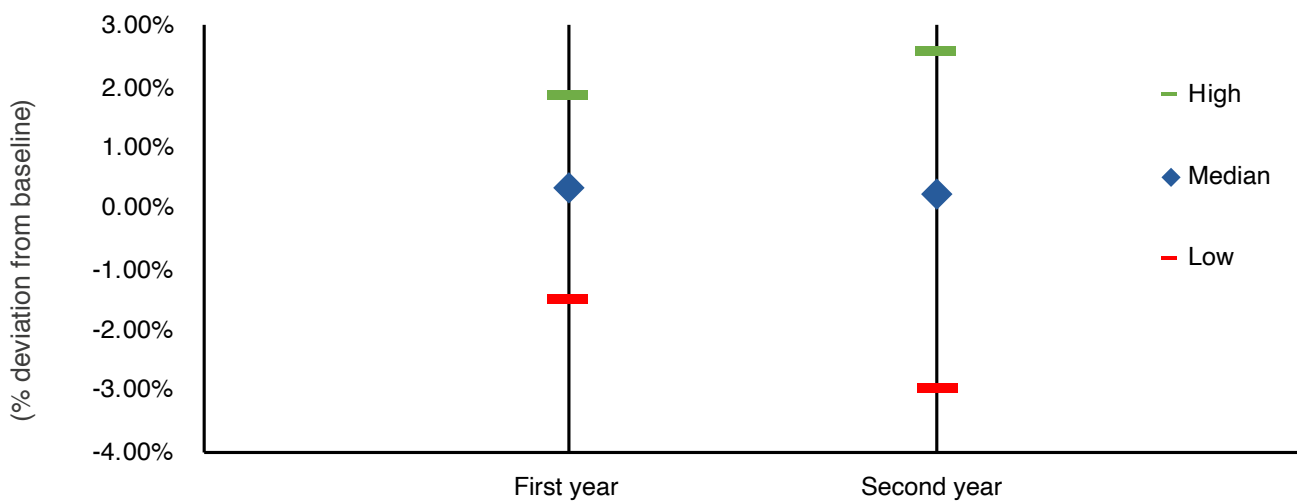
The main prediction of the model is that, if the current trade disputes continue, global GDP and oil price falls will be self-perpetuating, further deteriorating the longer the trade war lasts. The long-term implications for producers and consumers alike will worsen the longer trade tariffs remain in place.

However, it may not be too late to reverse the damage. A speedy, fair and equitable renegotiation of existing trade deals could increase global GDP, creating a fairer and more efficient global economy. KAPSARC's simulations suggest that a successful end to the global trade war has the potential to add over 1% per annum to global GDP, with the developing world and Latin America realizing gains in excess of 1.5% over the baseline growth rates.

The potential implications of the end of the global trade war are encouraging for global equity markets and pension funds. A former Economic Advisor to President Ronald Reagan, Arthur Laffer, estimates that the Dow Jones Industrial Average could gain as many as 10,000 points on the news of a new trade deal between the U.S. and China. The KAPSARC GVAR simulation suggests that U.S. equity prices will increase by approximately 2.7% over baseline levels, and in a best-case scenario they could rise by 6.3% in the year following a hypothetical successful trade deal between the U.S. and China. The successfully renegotiated North American Free Trade Agreement (NAFTA), renamed the United States-Mexico-Canada Agreement (USMCA), concluded in November 2018, supports the expectation of a successful trade deal between the U.S. and China. Canadian GDP rebounded to record levels following the final USMCA negotiations and the subsequent lifting of additional tariffs in May 2019 (Kirby 2018). The full impact of this agreement on the economies of Canada and Mexico remains to be seen.

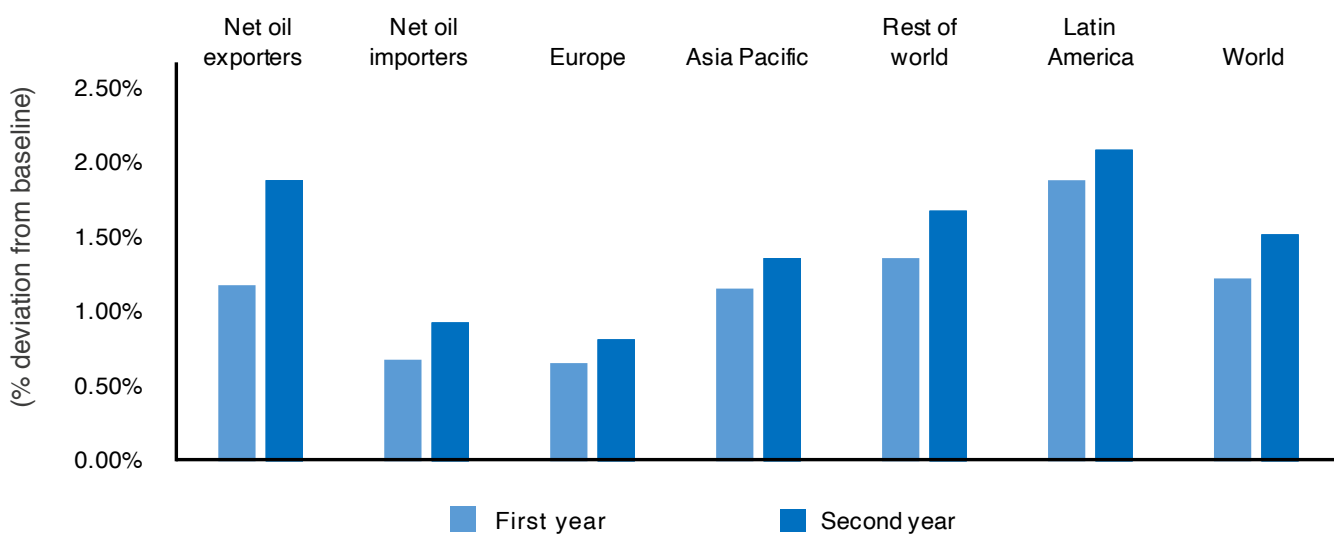
On September 9, 2019, the Saudi Energy Minister, HRH Prince Abdulaziz bin Salman, noted at the World Energy Congress in Abu Dhabi that those involved in the current trade disputes do have the “wisdom and sensibility to try to overcome these [trade] issues without having to impact the economy in the most drastic way” (Nehme et al. 2019). Diplomacy, in this respect, remains a critical tool for settling existing differences over trade policy and continues to play an important role in shaping the future of the world economy and oil markets.

Figure 5. Successful renegotiation: Impact on the Brent crude price.



Source: KAPSARC global oil market simulation, September 2019.

Figure 6. Successful renegotiation: Impact on real GDP.



Source: KAPSARC global oil market simulation, September 2019.

Note: The high and low cases represent the upper and lower borders of the 90% confidence interval. Median represents the median point estimate of the simulation.

Global trade and American politics

Economists have firmly established that free trade significantly increases the overall welfare of societies. Still, trade liberalization often runs into resistance from domestic politics. The benefits from free trade are usually dispersed across very large segments of society (e.g., car prices throughout North America would be reduced by a couple of hundred dollars without tariffs). Losses, on the other hand, are concentrated on a small part of the populace (e.g., half of the working population of a small town losing their jobs due to a steel factory closure and these jobs moving overseas). While such losses can mobilize those they affect to take political action, the benefits from trade liberalization are usually too small to convince each beneficiary to politically mobilize in a similar manner (Frye and Mansfield 2004).

President Trump's 2020 electoral strategy, like in 2016, might mobilize the concentrated group of voters who have lost their jobs or otherwise witnessed a decrease in their welfare due to globalization and free trade. His 'America First' campaign rests on the promise of bringing 'good, well-paying' jobs back to the U.S. The renegotiation of existing trade deals to make them 'fairer' and 'more equitable' would address concerns such as state-sponsored dumping (i.e., selling at a price lower than the marginal cost of production) and intellectual property rights infringement. This renegotiation constitutes a critical part of President Trump's campaign (The White House 2019). The renegotiation of NAFTA (now the USMCA) has been one of President Trump's most significant acts during his term in office, in line with his election promise.

However, trade disruptions continue to escalate. Currently, U.S. tariffs on goods produced in China total \$550 billion, while Chinese tariffs applied to goods produced in the U.S. total \$185 billion. On September 2, 2019, China lodged an official World Trade Organization (WTO) tariff case against the U.S., further aggravating already strained relations between the two countries (Wong and Koty 2019).

The impact of U.S. tariffs on other countries renegotiating their trade deals with the U.S. has been overwhelmingly negative. A recent study by the New York Federal Reserve, Princeton University and New York University argued that the protectionist policies of the current U.S. administration have led to a welfare loss to the U.S. of \$1.4 billion per month since 2018 (Amiti, Redding, and Weinstein 2019).

Various other estimates point to a serious threat to world prosperity resulting from the ongoing trade war. Mesquita (2019) estimates a full-blown U.S.-China trade war would reduce global GDP by 0.7% in 2019. Both the International Monetary Fund (IMF) and the World Bank have already revised their global growth forecasts for 2019 down by 0.3%, from 3.5% to 3.2% and 2.9% to 2.6%, respectively. KPMG estimates a moderate to severe global trade war would result in a reduction in global GDP of between 1.3% to 3.3% in the following years (Rynne 2018).

Trade tariffs aside, the uncertainty caused by the ongoing trade renegotiations is impacting the global economy. Bloomberg Economics estimates the cost to be around 0.6%, double the impact of the trade tariffs on global GDP (Business Today 2019).

Given that major economies including China, the United Kingdom, Germany, Italy, South Korea, Russia, Argentina and Brazil are either already in or on the verge of an economic recession, an adverse trade shock risks impacting the real economy, beyond the commodities markets (Long 2019). The IMF and World Bank warned that Latin America and the Euro area were also at considerable risk of an adverse trade shock. The Eurozone's exports, for example, account for more than 40% of its GDP (World Bank 2019; IMF 2019).

The KAPSARC Global Oil Model: A primer to GVAR

We use KAPSARC's GVAR model, designed to analyze the implications of economic shocks on world oil markets, to gauge the effect of the current trade disputes on crude oil prices, production and inventories. Two characteristics of the model make it particularly suited to this analysis. The first is that the GVAR framework is specifically designed to account for the interaction between many countries, each with their own political and legislative systems. This is important because the effects of severe shocks and global imbalances, such as a global trade war, are contagious and cannot be contained to one country or region. The second is that world oil prices, supplies and inventories are modeled jointly with key macroeconomic variables, including short- and long-term interest rates, inflation, equity prices and real GDP. This enables the model to capture the nuances of complex economic interrelationships.

To project the effects of the current trade disputes, we first established a baseline simulation, taking the end of September 2018 as a reference point. This timing coincides with the imposition of trade sanctions by the U.S. and China on each other, and an escalation of the U.S. threats to withdraw from the WTO. We simulated the subsequent year-long global trade war in our model by shocking real global GDP by one standard error, which amounts to a 0.29% reduction in GDP. The size of this shock is roughly in line with the estimates of various industry analysts, including those from the IMF, KPMG, and Bloomberg (Holl and Sam 2019). Box 1 gives an overview of this baseline.

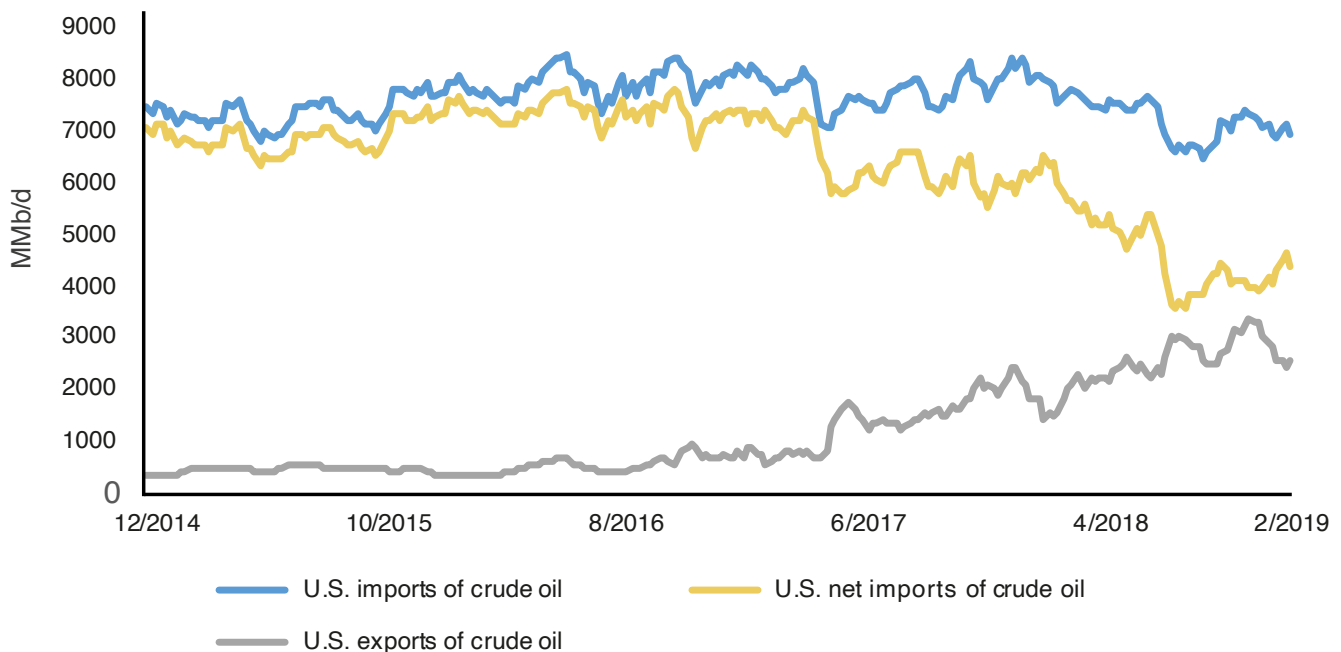
Box 1: A snapshot of the oil market in September 2018

- China and the U.S. are the two largest oil importers of crude oil globally. Friction in their trading relations can be expected to reduce the global demand for oil.
- U.S. crude oil inventories levels have declined by almost 60 million barrels in the past three months and are expected to continue to fall (EIA 2019).
- The U.S. rig count and well completion in shale plays is expected to increase over the next few months, resulting in more oil production, especially from larger companies.

- Crude oil exports to the U.S. from Iraq have decreased from 13.3 million barrels in January 2018 to 11.3 million barrels in May 2018. Exports to the U.S. from Saudi Arabia have decreased from 22.0 million barrels to 14.0 million barrels during the same period.
- OECD commercial inventories of crude and liquids was 60.4 days of supply in August 2019, 1.5 days below its five-year moving average.
- China's crude stocks continue to rise, reaching 200 million barrels in July. They rose almost 300% from July 2018 to July 2019.
- U.S. crude oil exports have increased significantly over the past three years. However, the U.S. is still a net oil importer (see Figure 1).

Sources: KAPSARC; EIA; OECD 2019.

Figure 7. U.S. crude oil imports and exports.



Source: EIA.

Note: MMb/d = million barrels of oil per day.

Bibliography

- Amiti, Mary, Stephen Redding, and David Weinstein. 2019. "The Impact of the 2018 Trade War on U.S. Prices and Welfare." Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.3386/w25672>.
- Bown, Chad P. 2019. "Trump's Trade War Timeline: An Up-to-Date Guide." PIIE, April 17.
- Business Today. 2019. "US-China Trade War Uncertainty Could Cost Global Economy \$585 Billion by 2021." August 20, 2019. <https://www.businesstoday.in/current/world/us-china-trade-war-uncertainty-could-cost-global-economy-usd-585-bn/story/373857.html>.
- Global Affairs Canada. 2019. "Canada-United States-Mexico Agreement (CUSMA)." August 15. <https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/cusma-aceum/index.aspx?lang=eng>.
- Davies, Gavyn. 2019. "Global Policy Adjusts to the Surprising Effects of Trade Wars." Financial Times, July 28. <https://www.ft.com/content/ab213fb0-a891-11e9-984c-fac8325aaa04>.
- U.S. Energy Information Administration (EIA). 2019a. "U.S. Crude Oil Imports." August 30. https://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_epc0_im0_mbb1_m.html.
- . 2019b. "Weekly Petroleum Status Report." August 30. <https://www.eia.gov/petroleum/supply/weekly/>.
- Felsenthal, Mark, and Huma Imtiaz. 2019. "Global Growth to Weaken to 2.6% in 2019, Substantial Risks Seen." World Bank, June 4. <https://www.worldbank.org/en/news/press-release/2019/06/04/global-growth-to-weaken-to-26-in-2019-substantial-risks-seen>.
- Frye, Timothy, and Edward Mansfield. 2004. "Timing Is Everything: Elections and Trade Liberalization in the Postcommunist World." *Comparative Political Studies* 37 (4): 371–98. <https://doi.org/10.1177/0010414003262907>.
- Gross, Marco. 2019. "Estimating GVAR Weight Matrices." *Spatial Economic Analysis* 14 (2): 219–40. <https://doi.org/10.1080/17421772.2019.1556800>.
- Hains, Tim. 2019. "Art Laffer: China Trade Deal Could Boost Dow 10,000 Points." Real Clear Politics, September 5. https://www.realclearpolitics.com/video/2019/09/05/art_laffer_china_trade_deal_could_boost_dow_10000_points.html.

Holl, Ben, and Cedric Sam. 2019. "A \$600 Billion Bill: Counting the Global Cost of the U.S.-China Trade War." Bloomberg, May 28. <https://www.bloomberg.com/graphics/2019-us-china-trade-war-economic-fallout/>.

International Energy Agency (IEA). 2018. "Market Report Series: Oil 2018." n.d. Accessed September 8, 2019. <https://webstore.iea.org/market-report-series-oil-2018>.

International Monetary Fund (IMF). 2019. "World Economic Outlook Update, July 2019: Still Sluggish Global Growth." July 2019. <https://www.imf.org/en/Publications/WEO/Issues/2019/07/18/WEUpdateJuly2019>.

Inoue, Tomoo, Demet Kaya, and Hitoshi Ohshige. 2015. "The Impact of China's Slowdown on the Asia Pacific Region: An Application of the GVAR Model." Policy Research Working Papers, The World Bank. <https://doi.org/10.1596/1813-9450-7442>.

Kempa, Bernd, and Nazmus Sadat Khan. 2019. "Global Macroeconomic Repercussions of US Trade Restrictions: Evidence from a GVAR Model." International Economic Journal, August, 1–13. <https://doi.org/10.1080/10168737.2019.1657476>.

Kirby, Jen. 2018. "USMCA: The US, Canada, and Mexico Have a New NAFTA Deal." Vox, October 1. <https://www.vox.com/2018/10/1/17921966/usmca-nafta-agreement-trump-canada>.

KPMG. 2018. "Trade Wars: There Are No Winners." KPMG International Cooperative [NL]. <https://assets.kpmg/content/dam/kpmg/au/pdf/2018/trade-wars-no-winners.pdf>.

Lighthizer, Robert. 2019. "2019 Trade Policy Agenda and 2018 Annual Report." Executive Office of the President of the United States.

Long, Heather. 2019. "9 Key Countries Are on the Verge of Recession, Driving Fears the U.S. Could Follow - The Washington Post." Washington Post, August 15. <https://www.washingtonpost.com/business/2019/08/15/key-countries-are-verge-recession-driving-fears-us-could-follow/?noredirect=on>

Mesquita, Mario. 2019. "How a Trade War Would Impact Global Growth." World Economic Forum, January 18. <https://www.weforum.org/agenda/2019/01/how-trade-war-would-impact-global-growth-tariff/>.

Nehme, Dahlia, Maha El Dahan and Stanley Carvalho. 2019. "New Saudi Energy Minister Says OPEC+ Alliance Staying for Long Term." Reuters Business News, September 9. Accessed September 10, 2019.

Ostry, Jonathan. 2019. "Why Protectionism Spells Trouble for Global Economic Growth." World Economic Forum, March 13. <https://www.weforum.org/agenda/2019/03/why-tariffs-spell-trouble-for-economic-growth/>.

Oxford Economics. 2019. "Here's How Hard the Tariff Fight Could Hit the Economy." MarketWatch. <https://www.marketwatch.com/story/heres-the-hit-us-chinese-and-global-economies-could-face-as-trade-battle-heats-up-2019-05-09>.

Pamuk, Humeyra, and Eric Beech. 2019. "U.S. Terminates Turkey's Preferential Trade Agreement, Reduces Tariffs on Steel." Reuters, May 17. <https://www.reuters.com/article/us-usa-trade-turkey/us-terminates-turkeys-preferential-trade-agreement-reduces-tariffs-on-steel-idUSKCN1SN01Z>.

Rapier, Robert. 2018. "No, The U.S. Is Not A Net Exporter Of Crude Oil." Forbes, December 9. <https://www.forbes.com/sites/rrapier/2018/12/09/no-the-u-s-is-not-a-net-exporter-of-crude-oil/#62cf556b4ac1>.

Robertson, Lori, and Eugene Kiely. 2019. "Trump's Steel Industry Claims." FactCheck.org (blog). August 29. <https://www.factcheck.org/2019/08/trumps-steel-industry-claims/>.

Rynne, Brendan J. 2018. "The Re-Emergence of Protectionism." KPMG Australia, April 3. <https://home.kpmg/au/en/home/insights/2018/04/protectionism-consequences-for-australian-economy.html>

Spence, Eddie. 2019. "The Price Tag for Global Trade-War Uncertainty Is \$585 Billion." Bloomberg, August 19. <https://www.bloomberg.com/news/articles/2019-08-19/-585-billion-the-price-tag-for-global-trade-war-uncertainty>.

The Straits Times. 2019. "Trump Threatens to Pull US from WTO 'If We Have To.'" The Straits Times, August 14. <https://www.straitstimes.com/world/united-states/trump-threatens-to-pull-us-from-wto-if-we-have-to>.

Vieira, Paul. 2019. "Canada GDP Surged 3.7% in Second Quarter on Export Strength." Wall Street Journal, August 30. <https://www.wsj.com/articles/canada-gdp-surged-3-7-in-second-quarter-on-export-strength-11567170317>.

Williams, Brock. 2019. "Escalating U.S. Tariffs: Timeline." Congressional Research Service, August. <https://fas.org/sgp/crs/row/IN10943.pdf>.

Wong, Doras, and Chipman Koty. 2019. "The US-China Trade War: A Timeline." China Briefing, September 2. <https://www.china-briefing.com/news/the-us-china-trade-war-a-timeline/>.

World Bank. 2019. "Exports of Goods and Services (% of GDP) | Data." August. <https://data.worldbank.org/indicator/ne.exp.gnfs.zs>.



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