Why the US Might Lift a Decades Long Ban on Crude Oil Exports

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The End of an Era?

The year is 1973. The Yom Kippur war wages in the Middle East and the United States makes a controversial decision to supply arms to its ally, Israel. To punish the U.S. for its involvement, the Arab members of OPEC (OAPEC) declare an embargo on sales of crude to the United States and the price for a barrel of oil quadruples from $3 to $12 per barrel. Though the embargo was lifted by March of the next year, the ramifications of this oil crisis have dictated energy policy in the United States for the intervening forty years.

Chief among the relics from this dispute is the ban on U.S. crude oil exports established by the Ford administration in 1975, a part of the Energy Policy and Conservation Act.[1] While originally put in place to secure what politicians have termed "energy independence," and stabilize prices, crude oil export restrictions have become a stalwart fact of U.S. energy policy. With the renaissance in U.S. crude production through hydraulic fracturing of shale rock (see Figure 3), however, the logic of the export ban has been lately called into question.

Proponents of lifting the ban may soon have their chance. Senator Lisa Murkowski (R-AK), head of the Senate Energy and Natural Resources Committee, recently sponsored the Offshore Production and Energizing National Security Act of 2015 (OPENS Act) which would allow the unrestricted export of crude oil to nations not subject to U.S. economic sanctions.[2] The OPENS act was voted on and passed committee by a vote of 12-10 on July 30th, whether it continues through the legislative process to become law will have huge ramifications for American energy policy.[3]

A Haunting History

The original intent of the export ban was to reduce or eliminate imports from Persian Gulf producing nations and avoid another oil crisis such as that caused by the embargo of 1973. In the text of the law, the President is tasked

1. *Energy Policy and Conservation Act of 1975,* Public Law 94-163, (1975): 103b.1.

2. Offshore Production and Energizing National Security Act of 2015, (2015): 501.

3. Committee on Energy and Natural Resources. "Murkowski Advances Legislation Cricial to Alaska's Future." 2015. http://www.energy.senate.gov/public/index.cfm/2015/7/murkowski-advances-legislation-critical-to-alaska-s-future.

with restricting the export of "petroleum… natural gas, and petrochemical feedstock" with exemptions to be made for the national interest (currently, exemptions are typically made for export to Canada in exchange for a similar amount of crude from that country, as well as for Alaskan North Slope crude).[4] By ensuring domestic production was always consumed domestically, it was expected that the need for oil imports from the volatile Persian Gulf region would be limited. However, Americans' appetite for energy consumption has historically far outpaced its ability to produce (see Figure 1) and imports have continued through the years.

4. *Effects of Removing Restrictions on U.S. Crude Oil Exports*. Washington, D.C.: US Energy Information Administration, 2015. http://www.eia.gov/analysis/requests/crude-exports/?src=home-b1

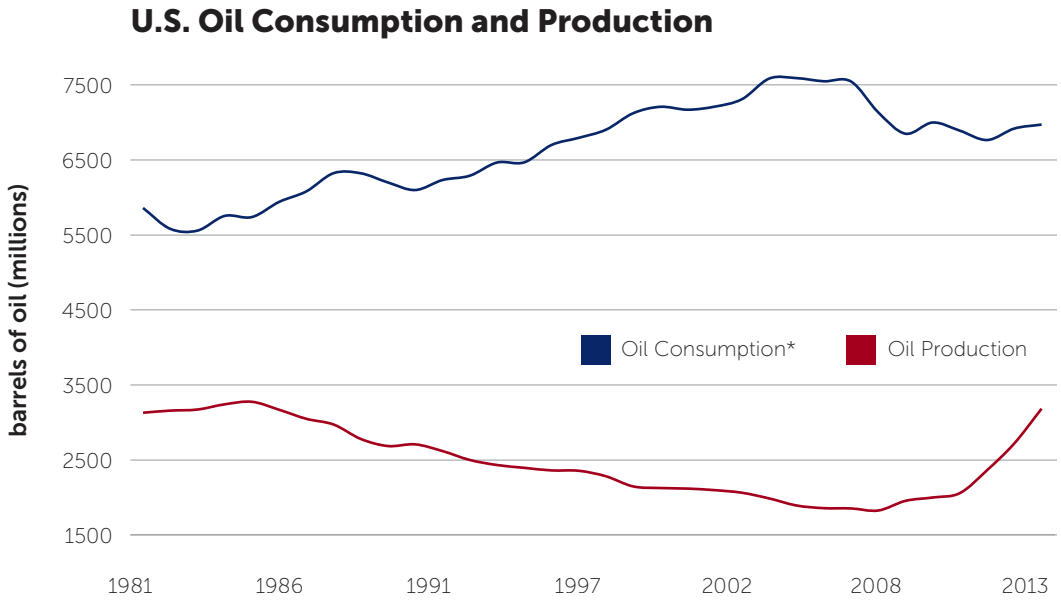

Figure 1: United States crude oil production (red) and consumption (blue) for the period of interest. Domestic consumption has typically far outpaced production, owing to the need for imports. *Oil Consumption is estimated using crude products supplied. Source: http://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbblpd_a.htm

At the time of the embargo the United States was still an oil superpower. In 1973, production stood at over 9 million barrels per day (bbl/d), accounting for over 15% of global production and 1 million bbl/d more than prolific Saudi Arabia. Despite being the top world producer, the United States' impressive consumption meant it still relied on other major producers for imports. Among these, OPEC was dominant. In 1973, OPEC nations produced approximately 30 million bbl/d—over half of world oil production.[5]

Thus, when OAPEC declared an embargo, the United States was immediately cut-off from a huge portion of the world oil supply. Though the top global producer, the U.S. was still importing 2 million bbl/d from OPEC and could not supply itself from domestic production alone.

5. *Monthly Energy Review/August 2015*. Washington, D.C.: U.S. Energy and Information Administration, 2015. http://www.eia.gov/totalenergy/data/monthly/

Despite the best efforts of politicians, imports continued to rise for several years, reaching a peak of over 6.6 million bbl/d (5.6 million bbl/d from OPEC) in 1976—a year after the export ban was put in place.[6] As a tool to eliminate OPEC oil imports, it can be fairly concluded the oil export ban failed to serve its key purpose.

6. *U.S. Imports from OPEC of Crude Oil.* Washington, D.C.: U.S. Energy Information Administration, 2015. http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=-PET&s=MTTIMXX1&f=M

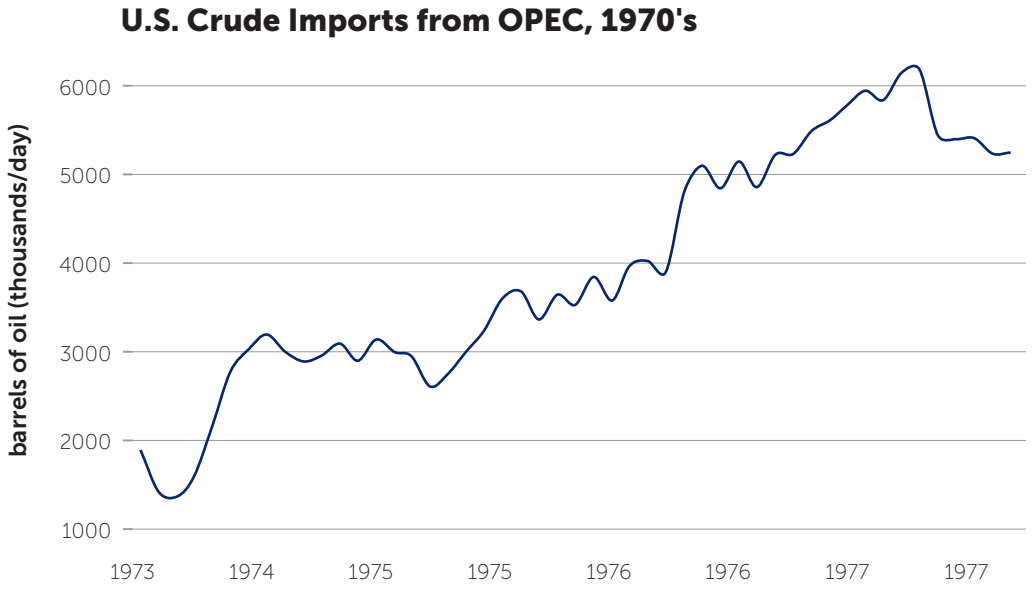

Figure 2: U.S. Crude Imports from OPEC countries during and after the Oil embargo and stretching through the implementation of the export ban. Source: http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=-pet&s=mcrimxx2&f=m

The Rebirth of American Crude

The dynamics of the oil industry have changed dramatically since 1975 however—as have the relevant political concerns. U.S. oil imports reached a peak in 2005 at nearly 60% of consumption, but have since fallen to around 30% of consumption, only a quarter of which is from the Persian Gulf region.[7] And while American's appetite for oil is legendary, demand has also dropped from 2005 highs of nearly 7.6 billion barrels to 6.9 billion barrels for 2013 and 2014.[8]

The reason for this drop in imports can be seen from Figure 3 below. Domestic crude production has increased markedly since 2009, increasing from 5.3 million bbl/d in 2009 to 8.7 million bbl/d in 2014. This crude production renaissance has been accompanied by a dramatic increase in U.S. natural gas production, a topic the Kleinman Center addressed from a local point of view in previous publications.

7. *Allowing Crude Exports could Reduce Consumer Fuel Prices, and the Size of the Strategic Petroleum Reserve should be Reexamined.* Washington, D.C.: U.S. Government Accountability Office, 2014. http://www.gao.gov/products/GAO-14-807

8. *U.S. Product Supplied of Crude Oil and Petroleum Products:* U.S. Energy Information Administration, 2015. http://www.eia.gov/dnav/pet/pet_cons_psup_dc_nus_mbbl_a.htm

Such dramatic production increases have created a climate which is far more open to the idea of crude oil exports, as evidenced by numerous senators and industry representatives speaking out in favor of removal of export restrictions. However, resistance still remains on a multitude of fronts.

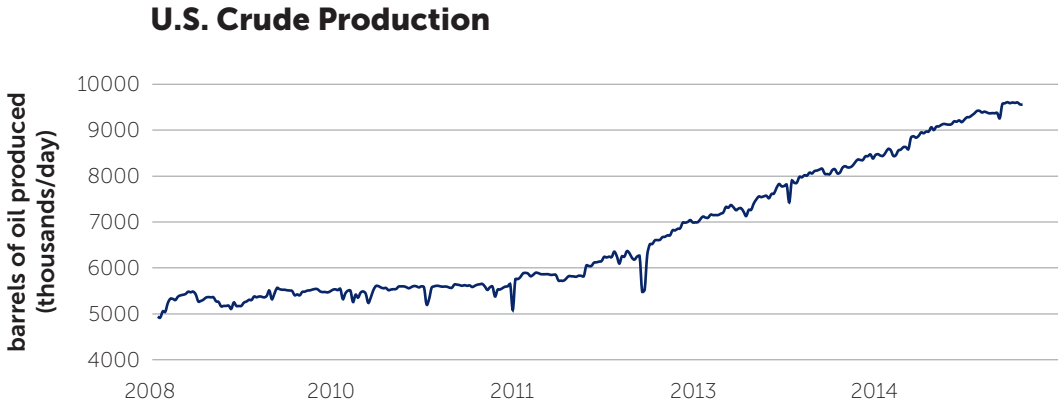

Figure 3: U.S. Crude production from 2008 to 2015 in thousands of barrels per day. Much of the increase is attributable to an increase in production from shale oil resources.

Oil and the Environment

Thanks to the bump in domestic production, fear of a domestic oil shortage is no longer a valid critique of lifting the ban. However, politicians and the public have voiced concerns over the potential environmental impact of removing the export restrictions. Due to the expected increase in domestic drilling, concerns regarding climate change, the safety of offshore drilling, and the safety of hydraulic fracturing have all been raised in opposition.[9]

Such environmental concerns are likely to be a major partisan sticking point when considering the rest of the OPENS Act legislation; which also seeks to expand off-shore oil and gas exploration in currently protected areas off the shores of Alaska. Off-shore drilling would also be expanded on the Outer Continental Shelf in the Gulf of Mexico. To counter-balance the potential environmental damage, some senators have indicated they would be willing to support the legislation if it were to also include provisions to continue or expand funding of renewable, non-carbon energy sources.[9]

Crude by Another Name, Not Quite as Sweet

On a more technical level, there are problems with the idea that all oil produced in the United States can be readily made in to finished products.

9. Cama, Timothy. "Senate Panel Votes to Lift Oil Export Ban." *The Hill*, July 30, 2015. http://thehill.com/policy/energy-environment/249804-senators-vote-to-lift-oil-export-ban

The largest and third largest sources of U.S. oil imports are Canada and Venezuela respectively, and much of the domestic refinery capacity was built around the assumption that imports would continue from these countries for many years to come. What is crucial, however, is the type of oil these two countries produce. Both Canadian oil (some of it of the notorious "tar sands" variety) and Venezuelan crude are what is termed "heavy oil." This is much like it sounds, a more viscous product characterized by longer hydrocarbon chains with low hydrogen content relative to "lighter" crude. These heavy oils require a different refinery process compared to lighter crude oils, and also yield a different product range.[6] Much of the refining capacity within the United States, as well as the rest of the market infrastructure, is built to handle heavy oil.

Unfortunately for U.S. producers and refiners, the oil extracted from shale—responsible for much of the dramatic increase in domestic production—is of the "light" variety. Whether oil is considered "heavy" or "light" is usually determined by its API Specific Gravity, a measure of oil density relative to water. Heavier oils have low API specific gravity and lighter oils have higher numbers. As seen from Figure 4 below, U.S. imports of light crude (high API) have fallen to historic lows, making up just 8% of crude oil imports in 2014.[9] Notably, the decline began in 2007, when domestic production from hydraulic fracturing began to accelerate. The reason for the decline in light

6. *U.S. Imports from OPEC of Crude Oil.* Washington, D.C.: U.S. Energy Information Administration, 2015. http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=-PET&s=MTTIMXX1&f=M

9. Cama, Timothy. "Senate Panel Votes to Lift Oil Export Ban." *The Hill*, July 30, 2015. http://thehill.com/policy/energy-environment/249804-senators-vote-to-lift-oil-export-ban

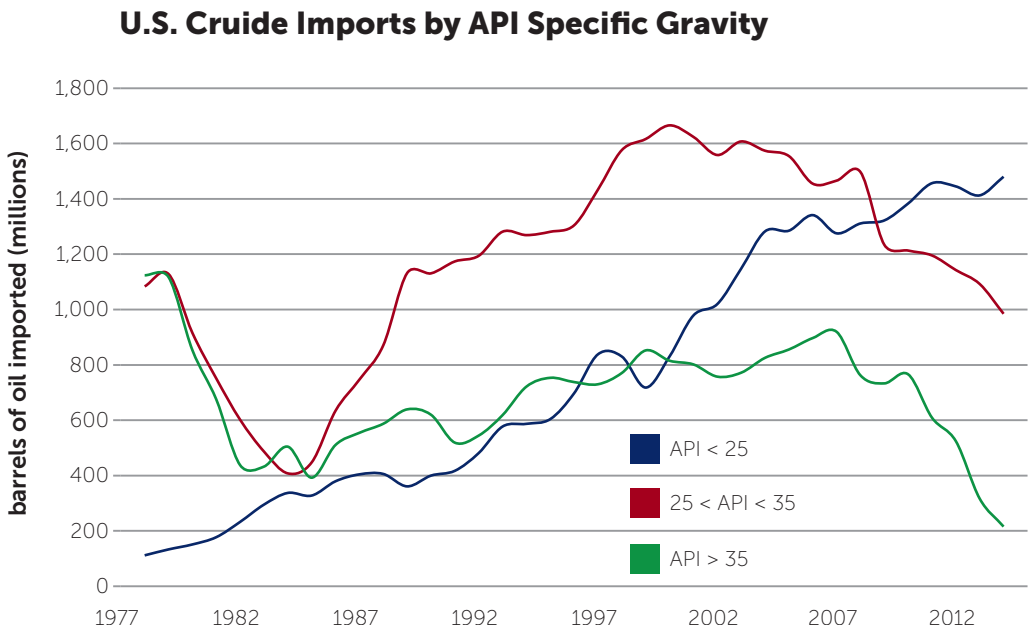

Figure 4: The distribution of U.S. imports according to their API Specific Gravity. "Light" oil has a higher API SG while "heavy" oil has a lower API SG. Imports of heavy oil come predominantly from Canada, Venezuela, and Mexico, while domestic production tends toward lighter crude. Source: http://www.eia.gov/dnav/pet/pet_move_ipct_k_a.htm

imports is clear—there is already more light crude available in the United States than can be handled by refining capacity.

Refiners have been desperately seeking to expand capacity or retrofit refineries meant to handle heavy oil, but such infrastructure cannot be built up overnight. The EIA prepared a technical report analyzing the options available to refiners and found that nearly all low-cost options had already been utilized, and further capacity expansion would require significant discounts on the crude price to make projects economica.[11] Such projects also have multiple-year timelines, while the need for capacity is now. Furthermore, the current, persistent, low oil prices make investment in new refining capacity an unlikely choice for refiners. Thus, producers are pushing to sell their oil overseas where there is more refining capacity available and where they can receive the full, global market price.

There is little doubt that there is room for light crude to be shipped overseas from the U.S. today. Future contracts for domestically produced crude are sold as West Texas Intermediate (WTI) crude for delivery to Cushing, Oklahoma. Oil traded as WTI is typically considered to be of a higher average quality than that sold on other markets. However, WTI contracts have been trading at a significant discount to Brent crude, the global benchmark market from the North Sea.[12] This discount can be seen below in Figure 5. The EIA predicts this discount could rise to and maintain levels as high as $10/bbl if export restrictions remain.[4] This is unfortunate, as the reverse had often been true. As a higher quality product, WTI typically fetched a slight premium or traded at an equivalent price compared to Brent. The cause of the current discount has been in part attributed to the glut in

11. *Technical Options for Processing Additional Light Tight Oil Volumes within the United States*. Washington, D.C.: US Energy Information Administration, 2015. http://www.eia.gov/analysis/studies/petroleum/lto/

12. "Price Difference between Brent and WTI Crude Oil Narrowing." *Today in Energy, US Energy Information Administration* (June 28, 2013). http://www.eia.gov/todayinenergy/detail.cfm?id=11891.

4. *Effects of Removing Restrictions on U.S. Crude Oil Exports*. Washington, D.C.: US Energy Information Administration, 2015. http://www.eia.gov/analysis/requests/crude-exports/?src=home-b1

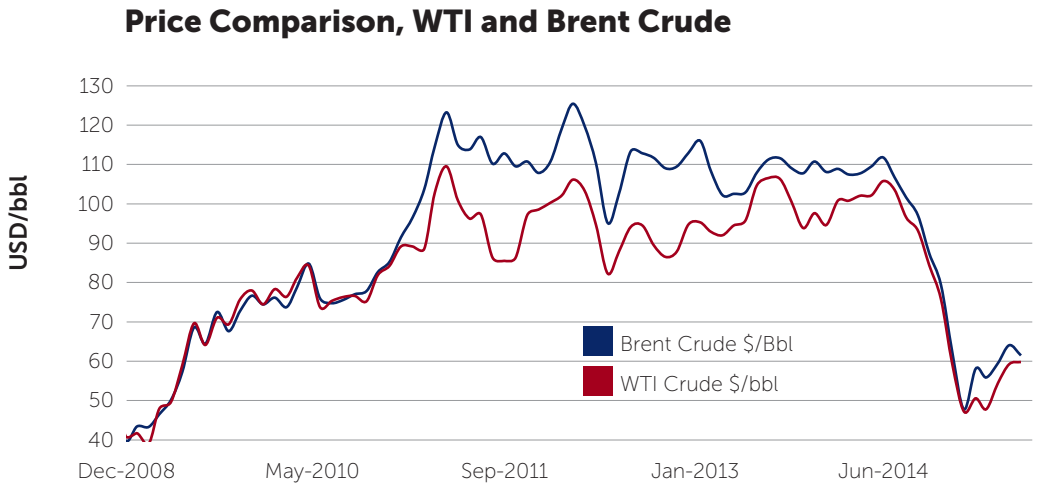

Figure 5: Brent and WTI crude prices in US Dollars. The discount for WTI is attributable in part to increased US production having limited market options with the current export ban.

the U.S. market for light crude, according to the EIA.[12] The lifting of the crude oil export ban would, in theory, free suppliers of WTI to ship more globally and bring the WTI and Brent benchmarks closer, meaning producers in the U.S. would no longer be forced to sell their crude at a discount to the global market price.

12. "Price Difference between Brent and WTI Crude Oil Narrowing." *Today in Energy, US Energy Information Administration* (June 28, 2013). http://www.eia.gov/todayinenergy/detail.cfm?id=11891.

The Geopolitical Oilfield

The decision to put the oil export ban in place was originally a geopolitical one, aimed at curbing the influence and power of Persian Gulf producers. Today, the decision to remove the ban could also be seen in a geopolitical context. Due to recent excursions in Ukraine and the annexation of the Crimean region, the United States has sought to punish Russia with economic sanctions. European allies have had difficulty getting on board as businesses have lobbied against the sanctions. One can hardly blame them: Russia supplies Western Europe with much of its energy resources—including oil and natural gas—and is a major trading partner for most European countries. From this perspective, U.S. exports could in part replace Russian oil, putting pressure on the Russian economy without directly expanding sanctions or further enflaming tensions.

Furthermore, the recent diplomatic agreement with Iran has raised questions as to whether that state will have undue influence in the oil market if sanctions are lifted. Iran's potential contribution to the world oil market is estimated to increase with the removal of sanctions.[13] Again, U.S. oil in the global market would serve to reduce the leverage and market power of other producers, even Iran. In this too, it seems, lifting the oil export ban would serve U.S. interests.

13. Villar, Leija. "Nuclear Accord Creates Potential for Additional Crude Oil Production from Iran." *Today in Energy, US Energy Information Administration* (August 13, 2015). http://www.eia.gov/todayinenergy/detail.cfm?id=22492

It's the Economy!

When it comes down to it, however, the strength of the American economy is often the dominating factor in decision-making regarding oil export policy. As previously mentioned, fears of scarcity and price hikes at the pump had previously stayed lawmakers' hands from allowing crude to flow abroad. Recent research, however, may show that lifting the ban could be a boon to the domestic economy.

A 2014 study by the non-partisan Aspen Institute predicted numerous economic gains from lifting ban. Among them were a near 1% rise in GDP, 630,000 added jobs by 2019, and an average rise in household income of up to $3,000 by 2025. With gas prices low, it certainly seems the costs of a

minor price increase may be more than offset by the strong growth in the U.S. economy.[14]

Furthermore, fears of a gas price hike appear unfounded: a study by the EIA predicted unrestricted free export of crude oil would result in no increase—and potentially a decrease—in domestic gas prices. The study explained that with U.S. crude on the global market global price benchmarks such as Brent Crude would fall, bringing domestic gas prices down with them.[4] The Aspen Institute study concluded similar results.

Aside from the potential hit to crude refiners' margins and the aforementioned environmental concerns related to expanded domestic production, there seems to be little reason to maintain the crude oil export restrictions. The ban is costly to the domestic industry, potentially gives more power to the United States' geopolitical foes, and could even be artificially holding up the price of domestic gasoline. While the prospect of a second oil embargo was real and frightening in the aftermath of the 1973 crisis, the integration and globalization of the world economy make exporting excess U.S. production an easy choice for lawmakers.

14. Duesterberg, Thomas, Donald Norman, and Jeffrey Werling. *Lifting the Crude Oil Export Ban: The Impact on U.S. Manufacturing.* Washington, D.C.: The Aspen Institute, 2014. http://www.aspeninstitute.org/news/2014/10/14/lifting-crude-oil-export-ban-impact-us-manufacturing

4. *Effects of Removing Restrictions on U.S. Crude Oil Exports.* Washington, D.C.: US Energy Information Administration, 2015. http://www.eia.gov/analysis/requests/crude-exports/?src=home-b1

References

[1] *Energy Policy and Conservation Act of 1975*, Public Law 94-163, (1975): 103b.1.

[2] *Offshore Production and Energizing National Security Act of 2015*, (2015): 501.

[3] Committee on Energy and Natural Resources. "Murkowski Advances Legislation Cricial to Alaska's Future." 2015. http://www.energy.senate.gov/public/index.cfm/2015/7/murkowski-advances-legislation-critical-to-alaska-s-future.

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[5] *Monthly Energy Review/August 2015.* Washington, D.C.: U.S. Energy and Information Administration, 2015. http://www.eia.gov/totalenergy/data/monthly/

[6] *U.S. Imports from OPEC of Crude Oil.* Washington, D.C.: U.S. Energy Information Administration, 2015. http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MTTIMXX1&f=M

[7] *Allowing Crude Exports could Reduce Consumer Fuel Prices, and the Size of the Strategic Petroleum Reserve should be Reexamined.* Washington, D.C.: U.S. Government Accountability Office, 2014. http://www.gao.gov/products/GAO-14-807

[8] *U.S. Product Supplied of Crude Oil and Petroleum Products:* U.S. Energy Information Administration, 2015. http://www.eia.gov/dnav/pet/pet_cons_psup_dc_nus_mbbl_a.htm

[9] Cama, Timothy. "Senate Panel Votes to Lift Oil Export Ban." *The Hill*, July 30, 2015. http://thehill.com/policy/energy-environment/249804-senators-vote-to-lift-oil-export-ban

[10] *Percentages of Total Imported Crude Oil by API Gravity.* Washington, D.C.: US Energy Information Administration, 2015. http://www.eia.gov/dnav/pet/pet_move_ipct_k_m.htm

[11] *Technical Options for Processing Additional Light Tight Oil Volumes within the United States.* Washington, D.C.: US Energy Information Administration, 2015. http://www.eia.gov/analysis/studies/petroleum/lto/

[12] "Price Difference between Brent and WTI Crude Oil Narrowing." *Today in Energy, US Energy Information Administration* (June 28, 2013). http://www.eia.gov/todayinenergy/detail.cfm?id=11891.

[13] Villar, Leija. "Nuclear Accord Creates Potential for Additional Crude Oil Production from Iran." *Today in Energy, US Energy Information Administration* (August 13, 2015). http://www.eia.gov/todayinenergy/detail.cfm?id=22492

[14] Duesterberg, Thomas, Donald Norman, and Jeffrey Werling. *Lifting the Crude Oil Export Ban: The Impact on U.S. Manufacturing.* Washington, D.C.: The Aspen Institute, 2014. http://www.aspeninstitute.org/news/2014/10/14/lifting-crude-oil-export-ban-impact-us-manufacturing