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US Crude Oil Export Decision

Assessing the impact of the export ban and free trade on the US economy






Executive summary report

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Executive Summary

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Study Purpose

Rapidly increasing crude oil production and limited refining capacity for these types of crudes are raising questions about the current US policy of banning crude oil exports. This report assesses the impact of a change in export policy—to free trade—and compares it to the impact of maintaining the current restrictive trade policy. The analysis also examines the historical context in which current export policy was developed in the 1970s and identifies how the world oil market—and the US position in it—has changed significantly since that time.

This report draws on the multidisciplinary expertise of IHS—including upstream, downstream and macroeconomic teams across IHS Energy Insight and IHS Economics. The study has been supported by a group of sponsors. The analysis and conclusions contained in this report are entirely those of IHS Inc., which is solely responsible for the contents herein.

Since the onset of the "Great Revival" in US natural gas and crude oil production, IHS has provided continuing analysis of this development, its prospects both in North American and around the world, and its impact on the US economy and its competitiveness in the world economy. Some of the current studies include:

AMERICA'S NEW ENERGY FUTURE

America's New Energy Future: The Unconventional Oil and Gas Revolution and the U.S. Economy is a three-volume series based on IHS analyses of each shale gas and tight oil play. It calculates the investment of capital, labor and other inputs required to produce these hydrocarbons. The economic contributions of these investments are then calculated using the proprietary IHS economic contribution assessment and macroeconomic models to generate the contributions to employment, GDP growth, labor income and tax revenues that will result from the higher level of unconventional oil and natural gas development. Volume 3 in the study includes state-by-state analysis of the economic impacts and projections of additional investment in manufacturing as a result of these supplies.

See more at: http://press.ihs.com/press-release/economics/us-unconventional-oil-and-gas-revolution-increase-disposable-income-more-270#

GOING GLOBAL: PREDICTING THE NEXT TIGHT OIL REVOLUTION

Going Global: Predicting the Next Tight Oil Revolution examines the widespread geological potential of tight oil globally. The study identifies the 23 highest-potential plays throughout the world and found that the potential technically recoverable resources of just those plays is likely to be 175 billion barrels—out of almost 300 billion for all 148 play areas analyzed for the study. While it is too early to assess the proportion of this that could be commercially recovered, the potential is significant compared to the commercially recoverable resources of tight oil (43 billion barrels) the IHS estimated for North America.

Going Global provides a comprehensive assessment of the potential of tight oil plays outside of North America, where well-level data does not currently exist. (IHS CERA Multi-Client Study)

See more at: http://press.ihs.com/press-release/energy-power/ihs-study-north-americas-tight-oil-phenomena-poised-go-global#

For more information on these and related studies, contact Jamey.Rosenfield@ihs.com

***US Crude Oil Export Decision* Study Sponsors**

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Baker Hughes, Chesapeake Energy, Chevron U.S.A., Concho Resources, ConocoPhillips, Continental Resources, Devon Energy, ExxonMobil, Halliburton, Helmerich & Payne, Kodiak Oil & Gas, Nabors Corporate Services, Newfield Exploration, Noble Energy, Oasis Petroleum North America, Pioneer Natural Resources, QEP Resources, Rosetta Resources, Weatherford, Whiting Petroleum.

KEY FINDINGS

- The 1970s-era policy banning oil exports—a remnant of a price controls system that ended in 1981—is creating growing market distortions and needs to be revisited in light of rising US oil production and the expanded domestic resource potential.

- The US oil system is nearing "Gridlock" with the mismatch between the rapid growth of light tight oil and the inability of the US refining system to economically process these growing volumes. The result is a widening discount, which will reduce drilling investment, jeopardizing oil production growth, reducing jobs, and hurting the US economy.

- Lifting the export ban and allowing free trade will, in our base case, increase US production—from 8.2 million B/D currently to 11.2 million B/D—and add investment of nearly $750 billion. The "unconventional" revolution in oil and gas has also been one of the major contributors to the US economic recovery, estimated by IHS to have added nearly 1% to our GDP in each of the past two years.

- By boosting global supplies, the elimination of the ban will result in lower global oil prices. Since US gasoline is priced off global gasoline prices, not domestic crude prices, the reduction will flow back into lower prices at the pump—reducing the gasoline price 8 cents a gallon. The savings for motorists is $265 billion over the 2016-2030 period.

- The higher US oil production resulting from a lifting of the ban will create at its peak 1 million jobs, increase GDP by $135 billion, and increase per household income by $391. The nation's oil import bill is reduced by $67 billion per year, a 30% reduction from the 2013 level.

- Lifting the ban supports economic activity across all states. A quarter of the additional jobs are in states that essentially produce no crude oil.

Industry and economic results provided in the table below and on the previous page compare the free trade impact—versus the current restricted crude oil trade policy—using the base case production outlook. Presented in the study is also a potential case for US production that results in greater impact from free trade.

Impact of Free Trade (vs. Current Restricted Trade Policy)	
	Base Production Case
Crude Oil Production, average, 2016-2030 (million B/D)	1.2
US Gasoline Price, average, 2016-2030 (cents per gallon, real)	-8
Fuel Cost Savings, cumulative, 2016-2030 ($ billion)	265
Investment	
Peak Annual Investment ($ billion)	66 in 2017
Cumulative Investment, 2016-2030 ($ billion)	746
Gross Domestic Product	
Peak Growth (percent)	0.7 in 2018
Peak ($ billion, real)	135
Average, 2016-2030 ($ billion, real)	86
Net Petroleum Trade, average, 2016-2030 ($ billion, real)	67
Employment	
Average, 2016-2030 (thousand)	394
Peak (thousand)	964 in 2018
Disposable Income per Household	
Average, 2016-2030 ($, real)	238
Peak ($, real)	391 in 2018
Cumulative Government Revenue (2016-2030) ($ billion)	1,311

Source: IHS Energy Insight and IHS Economics

EXECUTIVE SUMMARY

This report assesses the impact of a change in crude oil export policy to free trade and compares it to maintaining the current policy, which generally bans crude exports. The analysis also examines the historical context in which current export policy was developed during the 1970s. It identifies how dramatically the world oil market—and the US position in it—has changed since that time and how the rationales from the 1970s have faded away.

IMPORTANCE OF CRUDE OIL EXPORT POLICY

A secure supply of oil—and keeping a lid on gasoline prices—is a fundamental US interest. It is supported across the political spectrum because of its importance to the economy, the daily livelihood of Americans, and energy security. Policy regarding crude oil exports will play a key role in shaping how successfully the US accomplishes these objectives in the years ahead.

Since the 1970s, the United States has effectively banned the export of crude oil. The ban was a reaction to the tumult and crises in the world oil market—the 1973 oil embargo against the United States, the nationalization of oil-producing assets held by Western companies, and the 1978 Iranian Revolution. It was also a response to the conviction that the United States was "running out of oil".

But closer examination finds that the ban was even more specific to the 1970s and the debates of those years. One purpose was to ensure that new North Slope oil coming through the Alaska pipeline was not shipped to Asia. The other was an essential part of the abstruse system of the 1970s oil price controls—to prevent cheaper "old oil" from earning a higher price on the world market. The oil price control system was completely eliminated in 1981. But the ban on exports, a key element of that system, remains in place 33 years later as the last vestige of a price control system long gone.

The export ban was aimed at ensuring US-produced crude oil would stay in the United States. However, this ban, until recently, was of little practical relevance. US crude oil production was in a long period of decline, falling by half between 1970 and 2008. Shrinking domestic output was readily accommodated by a refining system that was increasingly dependent on oil imported from far-flung sources. But the oil market that prevailed in the 1970s—and even as recently as the early 2000s—no longer exists.

THE GREAT REVIVAL IN US PRODUCTION

The United States currently is at the center of one of the most profound changes in the global oil industry since the 1970s. The decades-long decline in US production has been reversed—and in dramatic fashion. A Great Revival in US production is well under way. US crude oil output increased 64%—3.2 million barrels per day (B/D)—from 2008 through March 2014 and helped reduce global oil prices, even as other global crude supplies have faltered. This increase in US output is the fastest in the nation's history and has exceeded the combined production gains from the rest of the world.

US domestic production growth has led to a decline in import dependence that not long ago would have seemed unimaginable. Net US dependence on imported oil shrunk from 60% of demand in 2005 to less than 30% in early 2014.

This "unconventional" revolution in oil and shale gas has also been one of the major contributors to the US economic recovery; it is estimated by IHS to have added nearly 1% to our GDP in each of the past two years. Will the growth in US domestic crude oil production continue? Geology and technology point toward further gains—and very large ones. According to the International Energy Agency (IEA), the United States is on the path to regain its prior status as the world's largest crude oil producer within this decade.[1] The United States could continue to move towards

[1] International Energy Agency, World Energy Outlook 2013.

a further significant reduction in net imports. But none of this is guaranteed. The price of oil on the global market will have a big influence on production trends. So will US crude oil export policy, which is the subject of our study.

- In our Base Case, with the ban on US exports lifted, production will increase from its current level of 8.2 million B/D to 11.2 million B/D in 2022.
- But if the ban is not lifted, output will be 1.2 million B/D lower. The reason is that, if the ban remains in place, domestic oil will sell at an increasing discount, reducing the amount of investment in new production. The discount results from the nature of the US refining system, particularly along the Gulf Coast, where just over half of the nation's total refining capacity is located. Over $85 billion has been spent in the past quarter century to reconfigure these refineries to process heavy oil imported from countries like Venezuela, Mexico and Canada. As a result, there are limits to how much of the new, domestically produced light tight oil (LTO) the refining system can efficiently and effectively process.
- Allowing the export of crude oil would allow LTO to obtain world prices, which in turn would lead to higher investment—nearly $750 billion more investment—and to higher output.
- The economic benefits from the consequences of free trade in exports would flow through to the economy—and to every state—measured in additional GDP ($86 billion annually, on average) and nearly 1 million additional peak annual jobs.

WHY DOES US CRUDE OIL EXPORT POLICY MATTER?

US crude oil export policy will have a major impact in determining whether the United States regains its position as the largest crude oil producer in the world and acts as a force for lower gasoline prices. Today, the United States is the third largest crude oil producer, behind Russia and Saudi Arabia. Oil is also our largest energy source, providing 36% of our daily energy needs.

The existing restrictive trade policy has reduced the price that US producers receive for their crude oil relative to the global market. This is because they cannot sell their output outside the United States except under very limited circumstances.

At first glance, this may seem to be a positive for American consumers. If a US refiner purchases lower-cost domestic crude, wouldn't that translate into lower gasoline prices? This notion may be appealing, but it does not reflect market reality.

Gasoline connects US gasoline prices to the global market—and not to the price of domestically produced US crude oil. This creates a market distortion that disadvantages crude production in the United States relative to global production. Permitting US exports of crude oil would put additional supply onto the world market, lowering international crude prices and international gasoline prices. Lower international gasoline prices flow back into the US gasoline market, resulting in 8 cents per gallon lower prices at the pump for motorists. This creates a savings for consumers of $265 billion between 2016 and 2030.[2]

A big risk of the current restrictive export policy is that it will lead to even lower prices for US-produced crude oil, while gasoline prices will remain high. Discounted prices for US domestic crude oil—at a level and duration that would throttle back output gains—would occur because the US refining system cannot absorb all the potential growth in production. If low prices for US domestic crude endure—and that risk is growing—investment in crude oil production will slow or even decline. Export markets are needed to sustain US crude oil production gains that cannot be absorbed by our refineries without significant and costly changes to the US refining system.

[2] Allowing free trade is estimated to reduce the US real dollar gasoline price by 8 cents per gallon on average for the 2016-2030 period under the Base Production Case.

- The US refining system is the most flexible in the world, but even so is unable to efficiently absorb the quality and quantity of LTO being produced. Specifically, these refiners have too little capacity to process the light part of LTO and too much capacity for the heavy remaining portion of the barrel. As a result, a significant LTO price discount is needed to account for the suboptimal refining of LTO in these heavy crude refineries.
- US refiners' competitive advantage will be maintained under a policy change expanding US crude oil exports. The export of LTO from US shores would provide a competitively priced LTO feedstock (based on offshore market price minus freight cost) that would allow US refiners to economically supply both the domestic and export product markets. While the LTO price under free trade is not severely discounted as in restricted trade, the free trade price provides a competitive advantage relative to imported international crude. In fact, the relative price of LTO under free trade is similar to the price differential that existed from 2011-2013 for US Gulf Coast refiners, a period in which the United States became the largest refined products exporter in the world.
- There is discussion about a policy change that allows the export of condensate—a very light form of oil often derived from natural gas production—instead of a broader crude oil export policy. This would be an important interim step towards relieving the Gridlock and moving towards free trade. However, further changes would be needed to achieve the estimated free trade impacts presented. Moreover, a policy that permanently limits export trade to one type petroleum stream—no matter how carefully defined—could create another market distortion.
- Although not widely recognized, the United States is already a major exporter of refined products, including diesel, gasoline and jet fuel. At almost 4 million B/D, the United States has become the world's largest exporter of products. This is double the level of five years ago. Lifting the ban on exports of crude oil would be consistent with the new realities of US and world oil and would remove one of the last vestiges of the panic-induced policies of the 1970s.

A move to free trade in crude oil would help the United States realize its growth potential for crude oil production. By doing so, US domestic crude oil prices would become linked to the global market and would be a force for lower—not higher—gasoline prices. US crude exports would find ready markets for LTO exports in Europe and Asia. In Europe, it would back out competing crudes from Africa and potentially Russia, which would be reoriented to Asia.

IMPACT OF FREE TRADE VERSUS RESTRICTIVE TRADE

IHS has evaluated the crude export policy decision using two outlooks for US crude oil production. To this point, the impact of lifting the trade policy in the Base Case has been presented above. A more optimistic—but certainly realistic—Potential Case is provided below and throughout our report.

For each of the two production cases—the Base and Potential Cases—two policies were analyzed: free trade, which illustrates the impact of a move to allow exports of US-produced crude oil, and restricted trade, which assumes that the current ban is maintained. The forecast period for this analysis is 2016-2030.

IHS PRODUCTION FORECASTS

The IHS production outlooks integrate our geological and upstream exploration and production databases, the largest in the world, our extensive refining and oil market databases, our deep economic modeling and regional economics capabilities, and our in-depth experience and understanding of oil market dynamics and trends.

- The Base Case is predicated on the IHS central business planning forecast that provides a conservative view based on known defined plays and assumes limited technical improvements from current performance.
- The Potential Case includes additional known but less well defined areas of existing plays and moderate drilling performance & technology improvements in the future.

Free trade is projected to have positive impacts on job growth, trade, government revenues and economic output as shown below.

TABLE ES.1
Impact of Free Trade (vs. Current Restricted Trade Policy)

	Base Production Case	Potential Production Case
Crude Oil Production, average, 2016-2030 (million B/D)	1.2	2.3
US Gasoline Price, average, 2016-2030 (cents per gallon, real)	-8	-12
Fuel Cost Savings, cumulative, 2016-2030 ($ billion)	265	418
Investment		
Peak Annual Investment ($ billion)	66 in 2017	82 in 2017
Cumulative Oil Production-related, 2016-2030, ($ billion)	751	995
Cumulative Refining-related, 2016-2030, ($ billion)	-5	-21
Cumulative Investment, 2016-2030, ($ billion)	746	974
Gross Domestic Product		
Peak Growth (percent)	0.7 in 2018	1.2 in 2018
Peak ($ billion, real)	135	221
Average, 2016-2030 ($ billion, real)	86	170
Net Petroleum Trade, average, 2016-2030 ($ billion, real)	67	93
Employment		
Average, 2016-2030 (thousand)	394	859
Peak (thousand)	964 in 2018	1,537 in 2018
Disposable Income per Household		
Average, 2016-2030 ($, real)	238	466
Peak ($, real)	391 in 2018	733 in 2021
Cumulative Government Revenue (2016-2030) ($ billion)	1,311	2,804

Source: IHS Energy Insight and IHS Economics

Industry and economy benefits from free trade of crude oil include:

- The impact for the US economy of a free trade policy on crude exports is significant. The key driver is the difference between free and restricted trade for US oil production and investment, which increases 1.2 million B/D and $66 billion (peak) in the Base Production Case and 2.3 million B/D and $82 billion (peak) in the Potential Production Case.
- Gross domestic product (GDP) in the Base Production Case with free trade will peak in 2018 at $135 billion, or 0.7%, higher than with the current, restricted trade policy. The peak impact is greater in the Potential Production Case when GDP under free trade will be $221 billion, or 1.2%, higher.
- The impact of free trade and associated higher crude oil production on US petroleum trade is considerable.[3] The 2013 US bill for imported petroleum is calculated at $218 billion. Free trade reduces this bill by $67 billion (Base Production) and $93 billion (Potential Production) over restricted trade per year on average from 2016 through 2030. In overall terms, the oil bill will decline from its 2013 level of $218 billion to $48 billion by 2022 – equivalent to 78 percent of 2013 oil trade deficit.
- Increased economic activity will lead to greater job creation and a lower unemployment rate. Total US jobs increase due to free trade will be, on average, 394,000 in the Base Case and 859,000 in the Potential Case. Peak job creation in 2018 is nearly 1 million in the Base Case and over 1.5 million in the Potential Case. A stronger labor market with free trade relative to restricted trade will increase the average annual household's disposable income by $239 and $465 during 2016-2030 in the Base and Potential Production Cases, respectively.
- Government revenues from corporate, personal and energy-related taxes and royalties are expected to increase under free trade policy. The cumulative addition to revenue is $1.3 trillion from 2016 through 2030 in the Base Production Case and more than double—$2.8 trillion—in the Potential Production Case.
- Benefits from free trade of crude oil are distributed throughout the US. Jobs growth and economic benefits are continent-wide and not just in large oil producing states due to substantial supply chains supporting the field production, capital spending, transportation and refining of crude oil. For example, 24% of the future jobs supporting the oil industry are located in states that essentially produce no crude oil.

OIL MARKET CHANGES POINT TO POLICY CHANGE

Global trade in oil and gas has benefitted the global economy, including the United States. So why is the ban on US crude oil exports, which was a reaction to upheavals during the 1970s in the world oil market, still in place? This oil export ban is indeed one of the last vestiges of an antiquated system in which the federal government once set the price for oil, provided subsidies to refiners that imported crude, and allocated supplies around the country.

But the world and US oil industry have changed dramatically in the past four decades, and the US economy and consumers would benefit from an updated policy that responds to these changes by allowing exports of some of the nation's rising crude oil production. Removing the export ban would enhance energy security by strengthening the energy position of the United States, which would regain its stature as the world's largest producer of crude oil. Further, lifting the export ban would stimulate the economy, create new jobs, and reduce the prices that US consumers pay at the pump for their gasoline.

[3] Petroleum trade defined as the net imports (imports minus exports) of crude oil, refined products and NGLs.

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