

2Q 2016 Client Bulletin

The Wild and Woolly World of Crude Oil

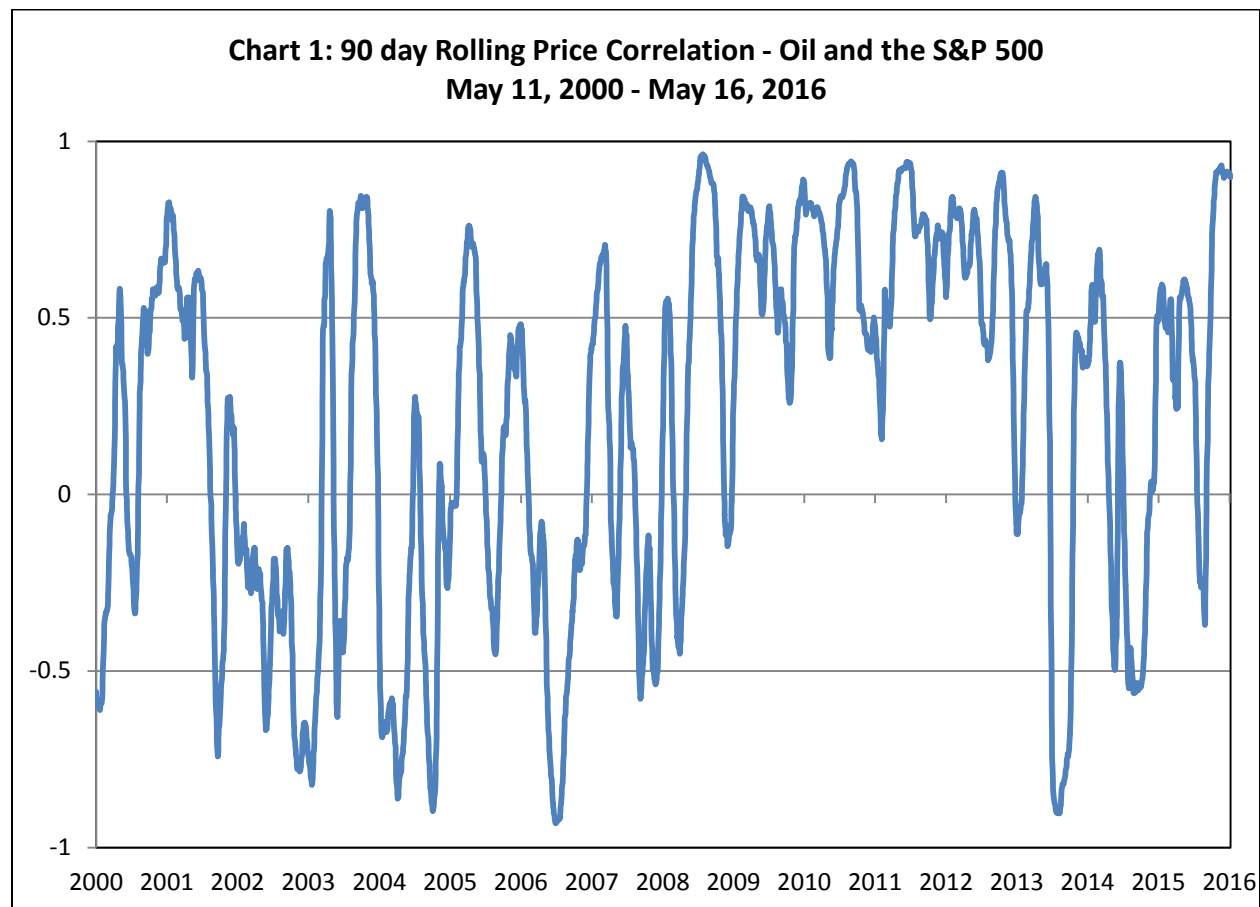
by Sheila Seiler Lagrand, PhD, Towneley Director of Communications

A Brief Compendium

In June 2014, Brent crude oil ([see Glossary](#)) sold for \$111.93/barrel. The week ending June 24, 2016, the commodity was hovering near \$50/barrel after dipping down to the \$30s during January. ([Click here for updated prices.](#)) The unexpected drop in oil prices over the past two years brings complex ramifications that are difficult to tease apart. In this bulletin, we will review some intriguing aspects of oil production and pricing.

What is the Story Behind Oil's Correlation with Stocks?

The financial press has made much of the increasing correlation between domestic equity prices and the cost of oil. It is true that since June 2015, the correlation of stocks and oil have been increasing and the 90-day rolling price correlation reached a high of 93% in late March 2016 ([see Chart 1](#)).

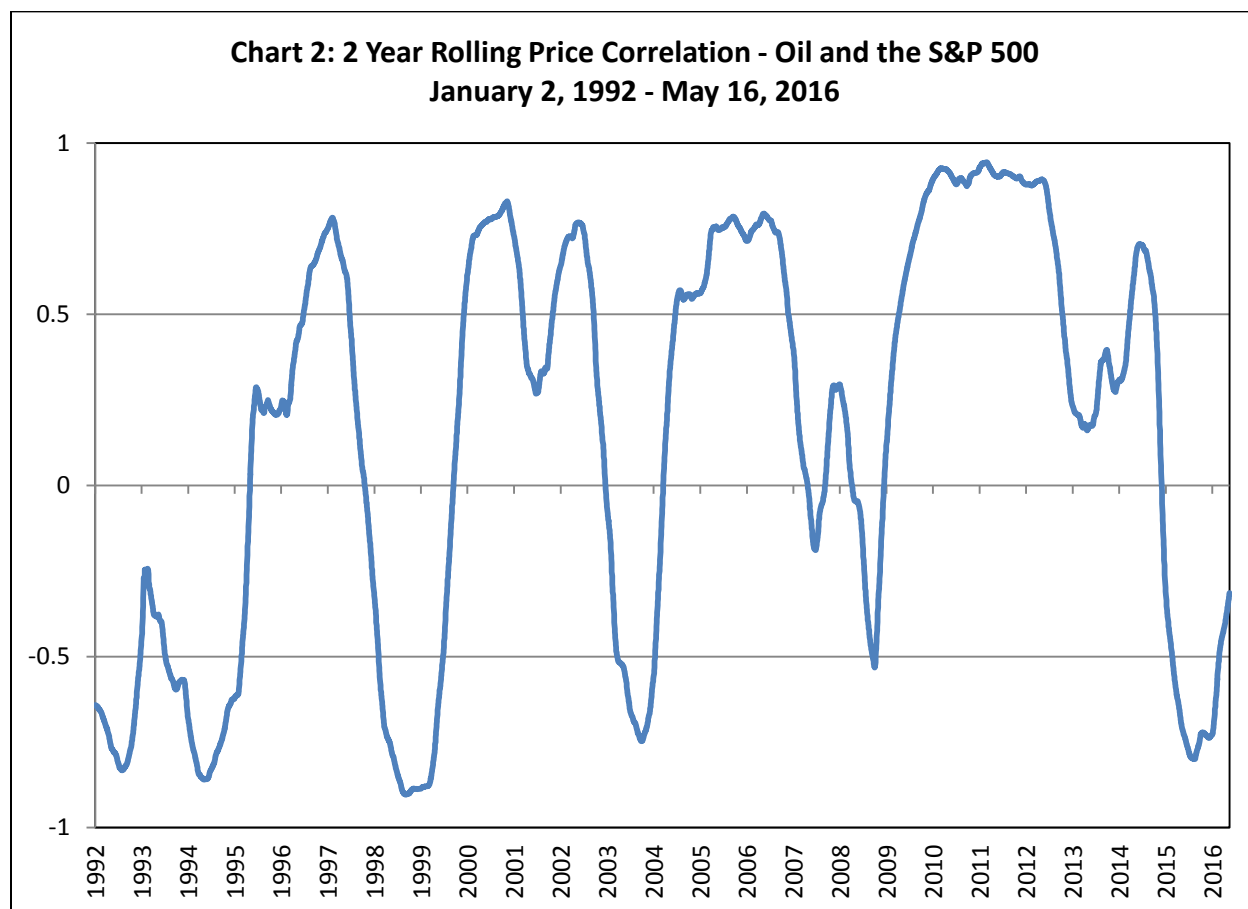


(Data from US Energy Information Administration and Yahoo Finance)

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However, a review of the relationship between the Standard & Poor's 500 and oil prices over longer rolling periods shows wide swings between positive and negative correlations ([see Chart 2](#)). Further, we cannot single out any one factor that applies to all the significant swings we've seen over the past 24 years. So while it is accurate to report that the correlation was quite high earlier this year, it is also accurate to note that these big changes in correlation are typical.



(Data from US Energy Information Administration and Yahoo Finance)

Jeff Krohnfeldt, writing for *Investopedia* ([“Why are stocks and oil so correlated right now?” March 8, 2016](#)), points out that oil prices fell in the face of rising demand. How can this be? Major oil producers, he argues, are continuing production for a variety of complex reasons, including extraction costs of \$10-\$11/barrel (Kuwait, Saudi Arabia, Iraq), which provides for profitability even when prices for oil drop down to the \$30s. This increased production squeezes new and/or highly-indebted shale oil producers in North America, who must continue

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to pump and sell to service their debt. High start-up and shut-down costs of shale oil operations make it cheaper to continue pumping at a loss than to shut down at a bigger cost, he states. [But read on for evidence that the wells are *not* pumping at a loss.]

The conclusion drawn by many observers, including Krohnfeldt, is that the OPEC cartel hopes to run the North American enterprise out of the market, while the North Americans are compelled to keep pumping to keep their heads above the financial waters.

We believe that many other factors are also in play. Consider, for example, regulation. Some nations, like Saudi Arabia, Russia, China, and Venezuela, have nationalized oil production. Multinational companies such as Royal Dutch Shell, ExxonMobil, BP, and Chevron are publically-traded corporations. A nationalized operation is constrained by rules set by the government, which also happens to be its owner, insofar as domestic operations are concerned; multinational corporations must operate within the various regulations set by the countries in which they operate. Also, oil producers' goals and motivations may differ from those announced at press conferences and annual meetings. Add in the effects of lobbying, subsidies, taxation, and all the other nuances of doing business in the 21st century, and the relationship between causes and effects becomes complicated indeed. And any of these factors may change over time. We believe a comprehensive, accurate understanding of factors influencing the worldwide oil markets is difficult to develop.

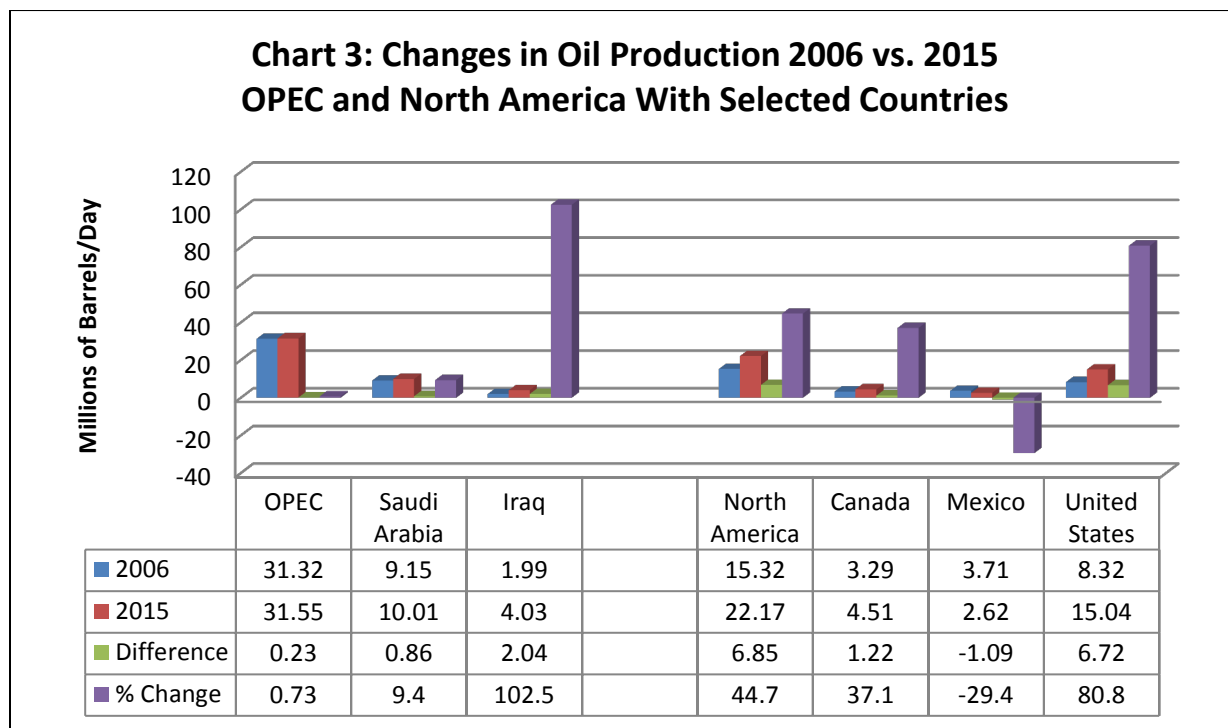
What Is the Source of The Increase in Oil Production?

The OPEC nations ([see Box 1](#)) produced 31.32 million barrels of oil per day in 2006. By 2015, that output had increased to 31.55 million barrels a day, a paltry 0.73% increase. Iraq and Saudi Arabia increased production during that decade, while the other member countries pumped a little more or a little less. Meanwhile, over in North America, production has increased from 15.32 million barrels/day to 22.17 million barrels/day in that same decade. Canada's increase in production (from 3.29 million to 4.51 million barrels/day) was offset by Mexico's decline (from 3.71 million to 2.62 million). The big change came from the United States. In 2006, production was 8.32 million barrels/day; in 2015, that number had risen to 15.04 million barrels each day, an increase of nearly 81% ([see Chart 3](#)).



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(Data from [US Energy Information Administration, Short-Term Energy Outlook \[EIA STEO\] 5/9/2016](#))

While production in the United States has increased, the number of oil rigs in action in the US is tumbling. The week of September 19, 2014, 1,601 oil rigs were active in the US. The week of May 20, 2016, 318 rigs were in action ([Baker Hughes North American Rig Count](#)). Will Speer, writing for [GasBuddy.com](#), attributes the decline to OPEC's announcement in November 2014 that its member states would not cut production. He also notes, with optimism, that an eight-week decline in the number of rigs has tapered off, and speculates that producers will be ready to bring more rigs online as soon as prices firm up.

In October 2014, with the record number of rigs online, US oil production was 9.15 million barrels/day. In April 2016, with an average of 348 rigs online (the number has been declining), US oil production was 8.98 million barrels/day, according to the [EIA STEO for May 2016](#). This counterintuitive circumstance results from county-by-county changes in the rig count depending on the break-even point for oil in a particular field. According to a Bloomberg Intelligence model [cited on OilPrice.com \(February 4, 2016\)](#):

Tapping drilled but uncompleted (DUC) horizontal oil wells drops break-even WTI oil prices to less than \$20 a barrel in eight county-play combinations in the Permian and Eagle Ford [oil fields].

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This outcome requires treating the initial drilling as a sunk cost; however, the break-even point is still lower than had previously been expected. These results help us understand why production continues to increase in the US.

Normally, we expect the price of a commodity to rise when consumption exceeds production, as it has since 2000 in oil's case ([see Chart 4](#)). Global consumption has grown from 76.6 million barrels/day in 2000 to 91.0 million barrels/day in 2013, an increase of 18.7%. The price collapsed in the face of continued demand growth; since 2013, demand has grown 2.7% ([EIA STEO for May 2016](#)).

Box 1: What is OPEC, Anyway?

No discussion of oil is complete without mention of OPEC, the Organization of Petroleum Exporting Countries. The group was founded in 1960 with five original members (Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela) who are now "Founder Members" of the organization. Since then, other countries have joined, departed, suspended, and reactivated membership so that today, the group consists of thirteen members: the five founding members and "Full Members" Algeria, Angola, Ecuador, Indonesia, Libya, Nigeria, Qatar, and the United Arab Emirates.

Membership qualifications are as follows: "any country with a substantial net export of crude petroleum, which has fundamentally similar interests to those of Member Countries, may become a Full Member of the Organization, if accepted by a majority of three-fourths of Full Members, including the concurring votes of all Founder Members." ([OPEC website](#))

OPEC's mission is "to coordinate and unify the petroleum policies of its Member Countries and ensure the stabilization of oil markets in order to secure an efficient, economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital for those investing in the petroleum industry." ([OPEC website](#)) In 2015, member countries produced nearly 40% of the world's oil, 38.2 million barrels/day (mb/d) of a total of 95.8 mb/d (J.P. Morgan Asset Management).

For the data and statistics enthusiast, OPEC produces comprehensive monthly reports covering the oil industry and economies of exporting and importing nations, along with other reports, bulletins, graphs, and data sets. All are freely available at the organization's website, <http://www.opec.org>.

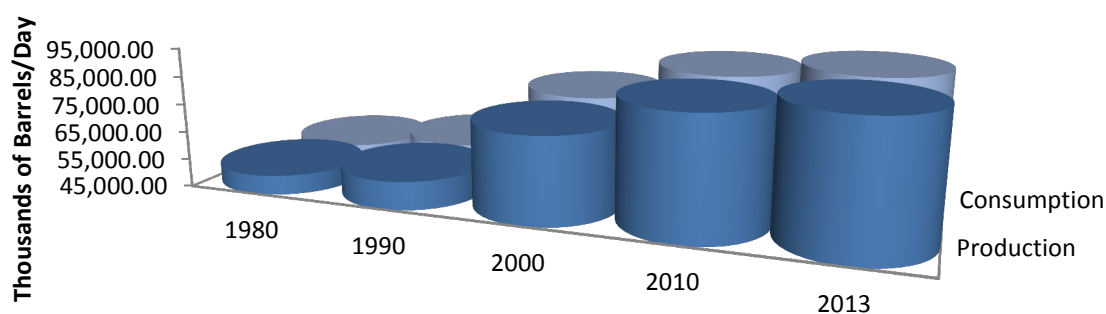
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What Causes This Disconnect Between Demand And Price?

In the case of oil, one major factor is OPEC. The cartel produces about 40% of the world's oil supply. As we saw in November 2014, its announcement that production would continue at the same level despite increases in supply from non-OPEC countries (and despite falling prices) effectively greased the price's slide. Saudi Arabia is the only OPEC member among the world's top five oil producers, a factor that moderates the organization's power (the other four top producers are the US, Russia, China, and Canada—[see Table 3](#)).

**Chart 4: Oil Production vs. Consumption
By Decade 1980-2010 and 2013**



	1980	1990	2000	2010	2013
Production	51,783.81	54,908.56	75,221.01	86,709.70	89,981.02
Consumption	50,054.74	54,658.05	76,624.15	87,840.47	90,956.58

(Data from the US Energy Information Administration, accessed at theglobaleconomy.com)

Who Gets Hurt When Oil Prices Decline?

Answers to that question come from several angles. Shell Oil recently announced 10,000 layoffs. A second consecutive year of decreased investments means fewer jobs for industries that support oil ([Reuters, January 3, 2016](#)). Some job classes, however, depend on production, rather than investment—shipping comes to mind. Those interests should not suffer a decline in business, though pricing is likely to be affected.

And then there are the nations that depend on oil as a significant source of GDP. [Table 1](#) lists the 15 countries with the highest percentage of GDP from oil revenue, along with their per-capita GDP (in constant 2005 USD).

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Table 1
Top 15 Countries: Oil as Percent of GDP, 2013

Rank	Country	Oil as Percent of GDP 2013*	Per Capita GDP 2013†
1	Kuwait	57.47%	\$28,258.45
2	Republic of the Congo	56.83%	\$1,984.36
3	Equatorial Guinea	53.25%	\$11,661.98
4	Libya	44.19%	\$6,136.02
5	Saudi Arabia	43.60%	\$16,748.21
6	Iraq	42.88%	\$2,644.70
7	Gabon	42.36%	\$7,153.85
8	Angola	34.59%	\$2,507.09
9	Oman	34.55%	\$11,595.80
10	Azerbaijan	33.95%	\$3,252.76
11	Kazakhstan	23.76%	\$5,425.34
12	Venezuela	23.62%	\$6,429.20
13	Brunei	23.56%	\$24,554.09
14	Qatar	23.39%	\$61,814.09
15	Chad	23.25%	\$738.22

*Revenue less production cost. † In constant 2005 USD.
GDP data for 185 of 201 nations

(Data from the World Bank, accessed at TheGlobalEconomy.com)

A nation needn't make the Top 15 list to feel the pinch, however. In 2013, Russia's oil business contributed 13.74% to her per-capita GDP of \$6,922.79. By comparison, here in the US, oil comprised a paltry 0.93% of GDP in 2013, a year in which the per-capita GDP was \$45,660.73. As 2016 dawned, Bloomberg reported that Russia's economy contracted 3.7% in 2015 and another year of contraction is expected in 2016. Oil prices and sanctions were the primary factors. Inflation, reduced wages, a weaker ruble and reduced fixed capital investment are also in the mix ("Russian Economy Shrinks Most Since 2009 as Oil Prices Sink," Bloomberg.com 01/25/16). Meanwhile, Venezuela's situation is a full-blown crisis; [see Box 2](#)).

Box 2: Venezuela: A Petrostate in Crisis

"The Venezuelan economy is currently undergoing the worst crisis in the country's 200 years of history. In 2015, oil prices, the only source of foreign currency, crashed by 50 percent and are running down into the low thirties per barrel. GDP loss is estimated on the proximity of 10 percent, inflation seems to have surpassed the 200 percent mark, and scarcity of basic staples is rampant. The government is running a fiscal deficit of 20 percent of GDP, financed mainly through printing money and financial repression taxes on domestic bondholders."

--Dany Bahar and Miguel Angel Santos, Brookings.edu 01/04/2016

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Oil's Changing Global Landscape

We looked at the top 15 oil producers in 1980, and then compared them to the top 15 in 2013. [Table 2](#) shows the 1980 figures, along with per-capita GDP. [Table 3](#) presents the same data for 2013. [Table 4](#) summarizes the differences in production and GDP per capita between 1980 and 2013.

Table 2
Top 15 Oil Producers, 1980

Rank	Country	Production*	Percent	GDP per Capita‡	GDP Rank
1	USA	10,809.00	20.8733%	\$26,113.12	14
2	Saudi Arabia	10,285.00	19.8614%	\$21,320.80	23
3	Iraq	2,526.00	4.8780%	\$1,604.30	83
4	Venezuela	2,246.00	4.3373%	\$6,268.05	46
5	Mexico	2,129.00	4.1113%	\$6,773.80	45
6	China	2,114.00	4.0824%	\$220.68	135
7	Nigeria	2,060.00	3.9781%	\$840.54	101
8	Libya	1,827.00	3.5281%	No Data	n/a
9	Canada	1,816.23	3.5073%	\$24,248.55	16
10	Kuwait	1,760.00	3.3987%	No Data	n/a
11	United Arab Emirates	1,747.00	3.3736%	\$81,788.95	2
12	Iran	1,683.00	3.2501%	\$2,139.66	73
13	United Kingdom	1,674.25	3.2332%	\$22,038.65	22
14	Indonesia	1,659.00	3.2037%	\$548.40	110
15	Algeria	1,143.00	2.2073%	\$2,627.90	64
Top 15 Total		45,478.48	87.8237%		
Other Nations Total (x Top 15)		6,305.33	12.1763%		
World Total		51,783.81			
*Thousands of barrels per day ‡ In constant 2005 USD					
Production data for 164 of 201 nations			GDP data for 138 of 201 nations		

(Data from the World Bank, accessed at TheGlobalEconomy.com)

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Table 3
Top 15 Oil Producers, 2013

Rank	Country	Production*	Percent	GDP per Capita‡	GDP Rank
1	USA	12,342.77	13.7171%	\$45,660.73	10
2	Saudi Arabia	11,701.51	13.0044%	\$16,748.21	41
3	Russia•	10,763.74	11.9622%	\$6,922.79	67
4	China	4,501.41	5.0026%	\$3,619.44	97
5	Canada	4,073.07	4.5266%	\$37,753.63	17
6	United Arab Emirates	3,440.59	3.8237%	\$25,992.18	28
7	Iran	3,192.37	3.5478%	\$2,956.54	104
8	Iraq	3,057.69	3.3981%	\$2,644.70	109
9	Mexico	2,915.07	3.2396%	\$8,450.76	59
10	Kuwait	2,811.84	3.1249%	\$28,258.45	27
11	Brazil	2,693.87	2.9938%	\$5,896.10	76
12	Venezuela	2,689.24	2.9887%	\$6,429.20	69
13	Nigeria	2,371.51	2.6356%	\$1,060.72	139
14	Qatar	2,067.30	2.2975%	\$61,814.09	4
15	Norway	1,845.05	2.0505%	\$66,511.86	3
Top 15 Total		70,467.03	78.3132%		
Other Total (x Top 15)		19,513.99	21.6868%		
World Total		89,981.02			

*Thousands of barrels per day. ‡ In constant 2005 USD.

• Russia was part of the Former Soviet Union in 1980; individual country production figures begin in 1992. The 1992 figure is used here.

Production data for 192 of 201 nations GDP Data for 185 of 201 nations

(Data from the World Bank, accessed at TheGlobalEconomy.com)



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Table 4
Changes in Oil Production and GDP per Capita, 1980-2013

2013 Rank	Country	Δ in Oil Production*			Δ in GDP per Capita‡		
		1980 Rank/Change	2013-1980	Percent	1980 Rank/Change	2013-1980	Percent
1	USA	1/No change	1,533.77	14.19%	14/+4	\$19,547.61	74.86%
2	Saudi Arabia	2/No change	1,416.51	13.77%	23/-18	-\$4,572.59	-21.45%
3	Russia•	No Data•	3,131.81	n/a	59/-8	\$2,321.30	50.45%
4	China	6/+2	2,387.41	112.93%	135/+38	\$3,398.76	1540.13%
5	Canada	9/5+4	2,256.84	124.26%	16/-1	\$13,505.08	55.69%
6	United Arab Emirates	11/+5	1,693.59	96.94%	2/-26	\$55,796.77	-68.22%
7	Iran	12/+5	1,509.37	89.68%	73/-31	\$816.88	38.18%
8	Iraq	3/-5	531.69	21.05%	83/-26	\$1,040.40	64.85%
9	Mexico	5/-4	786.07	36.92%	45/-14	\$1,676.96	24.76%
10	Kuwait	10/No change	1,051.84	59.76%	No Data	n/a	n/a
11	Brazil	25/+14	2,449.37	1001.79%	51/-25	\$1,744.91	42.03%
12	Venezuela	4/-8	443.24	19.73%	46/-23	n/a	n/a
13	Nigeria	7/-6	311.51	15.12%	101/-38	\$220.18	26.20%
14	Qatar	19/+5	1,584.30	328.01%	No Data	n/a	n/a
15	Norway	17/+2	1,316.31	248.95%	7/+4	\$29,886.25	81.60%

* Thousands of barrels per day ‡ In constant 2005 USD

• Russia was part of the Former Soviet Union in 1980; individual country production figures begin in 1992. The 1992 figure is used here.

These data illuminate some interesting changes in the economic landscape over the past 33 years. Comparing the change in oil production with the change in GDP per capita, for example, hints at the complexity of the global economy. Brazil increased her oil production by just over 1,000% during that time period, and increased per-capita GDP by just over 42%, but still dropped from 51st to 76th place in global rankings of GDP per capita. These changes suggest that the global economy is expanding, but Brazil didn't quite keep up during this time period. In 1980, two of the top 15 oil producers—the US and the United Arab Emirates—also ranked in the top 15 countries for per-capita GDP. In 2013, three nations (the US, Qatar, and Norway) made the top 15 in both categories. Clearly oil isn't the only thing greasing the wheels of commerce. The fact that oil production is a state-owned industry in some countries and a private enterprise in others is another likely contributor to the murkiness here.

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The United Arab Emirates' fall from the upper rungs of the GDP ladder is mysterious. In 1980, she ranked eleventh in the world in oil production, producing 1,747,000 barrels of oil per day. Her GDP was second in the world, a stunning \$81,788.95 per capita. By 2013, her oil production increased to 3,440,590 barrels/day—sixth in the world—while her per-capita GDP dropped to \$25,992.18, 28th in the world.

Of course, oil consumption is another important part of the economic picture. We present those data in [Tables 5, 6, and 7](#), in which we include population figures, as well as consumption and per-capita GDP. The changes across time for those factors for a given nation suggest several possible explanations for the forces and conditions of change.

Table 5
Top 15 Oil Consumers, 1980

Rank	Country	Consumption*	Percent	GDP per Capita [‡]	GDP Rank	Population [•]	Pop. Rank	Consumption per Capita
1	USA	17,056.28	34.0753%	\$26,113.12	14	227.22	3	75.07
2	Japan	4,960.00	9.9092%	\$20,962.92	25	116.78	7	42.47
3	France†	2,256.00	4.5071%	\$23,326.13	19	55.34	15	40.77
4	Italy	1,934.00	3.8638%	\$20,991.43	24	56.43	13	34.27
5	Canada	1,873.00	3.7419%	\$24,248.55	16	24.59	32	76.17
6	China	1,765.00	3.5261%	\$220.68	135	981.24	1	1.80
7	UK	1,725.00	3.4462%	\$22,038.65	22	56.31	14	30.63
8	Mexico	1,270.00	2.5372%	\$6,773.80	45	69.33	12	18.32
9	Brazil	1,148.00	2.2935%	\$4,151.19	51	122.2	6	9.39
10	Spain	990.00	1.9778%	\$14,882.87	32	37.44	24	26.44
11	Netherlands	792.00	1.5823%	\$26,272.99	13	14.15	47	55.97
12	India	643.00	1.2846%	\$292.54	130	697.23	2	0.92
13	Saudi Arabia	610.00	1.2187%	\$21,320.80	23	9.91	57	61.55
14	Australia	594.00	1.1867%	\$20,814.88	26	14.69	44	40.44
15	Iran	590.00	1.1787%	\$2,139.66	73	38.67	22	15.26
Top 15 Total		38,206.28	76.3290%					
Other Total (x Top 15)		11,848.46	23.6710%					
World Total		50,054.74						

* In thousands of barrels per day. ‡ In constant 2005 USD. • In millions. † Had Germany been unified in 1980, she would have ranked third worldwide in consumption, using 3,082 thousands of barrels per day.

Consumption data for 164 of 201 nations GDP data for 138 of 201 nations Population data for 194 of 201 nations

(Data from the World Bank, accessed at TheGlobalEconomy.com)

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Table 6
Top 15 Oil Consumers, 2013

Rank	Country	Consumption [◊]	Percent	GDP per Capita [‡]	GDP Rank	Population [•]	Pop. Rank	Consumption per Capita
1	USA	18,961.10	20.8463%	\$45,660.73	10	316.5	3	59.91
2	China	10,480.00	11.5220%	\$3,619.44	97	1357.38	1	7.72
3	Japan	4,530.82	4.9813%	\$37,573.38	19	127.34	10	35.58
4	India	3,660.00	4.0239%	\$1,164.34	134	1279.5	2	2.86
5	Russia*	3,493.00	3.8403%	\$6,922.79	67	143.51	9	24.34
6	Brazil	3,003.00	3.3016%	\$5,896.10	76	204.26	5	14.70
7	Saudi Arabia	2,961.00	3.2554%	\$16,748.21	41	30.2	44	98.05
8	Canada	2,431.28	2.6730%	\$37,753.63	17	35.16	37	69.15
9	Germany†	2,403.16	2.6421%	\$39,208.76	15	80.65	16	29.80
10	South Korea	2,324.01	2.5551%	\$23,875.18	32	50.22	26	46.28
11	Mexico	2,044.27	2.2475%	\$8,450.76	59	123.74	11	16.52
12	Iran	1,885.00	2.0724%	\$2,956.54	104	77.15	17	24.43
13	France	1,767.20	1.9429%	\$35,754.65	22	65.93	21	26.80
14	Indonesia	1,718.00	1.8888%	\$1,787.50	124	251.27	4	6.84
15	UK	1,507.80	1.6577%	\$40,199.32	14	64.11	22	23.52
Top 15 Total		63,169.64	69.4503%					
Other Total (x Top 15)		27,786.94	30.5497%					
World Total		90,956.58						
* Russia was part of the Former Soviet Union in 1980; individual country production figures begin in 1992. The 1992 figure is used here.								
† Had Germany been unified in 1980, she would have ranked third worldwide in consumption, using 3,082 thousands of barrels per day.								
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In our analysis of oil production, we saw that top oil producers don't necessarily land at the top of the GDP charts. But does burning more oil boost GDP? In 1980, two of the top 15 oil consumers, the US and the Netherlands, were also among the top 15 countries in GDP per capita. In 2013, the US, Germany, and the United Kingdom made both lists. These data suggest that more oil consumption doesn't necessarily translate into more per-capita GDP. With a growing focus on "green" technologies and as more nations seek to reduce oil consumption, we would expect oil's contribution to GDP to decrease.

The data in [Table 7](#) present fascinating contrasts as we consider changes in oil consumption over time. The US, for example, is the biggest consumer of oil in the world in absolute terms (Saudi Arabia claims the highest per-capita use; [see Table 6](#)). By 2013 our consumption had increased 11.1% over the 1980 figure. During that same time span, our per-capita GDP grew nearly 75%, while our population grew over 39%. But our per-capita oil use decreased by 15.16 barrels of oil per thousand people per day, a reduction of over 20 percent. So while our absolute oil use increased, our per-capita use decreased significantly. China's experience was different. She is now the second-largest oil consumer on earth, increasing her use by a whopping 493.77% since 1980. That uptick paid off, as her GDP per capita rose a spectacular 1,540.13% over that 33-year period. China's population grew at about the same rate as ours, increasing by a bit over 38%. Her per-capita oil use rose over 329%. One could speculate that China's per-capita use rose because the GDP grew so much that more people could afford to buy cars or tractors or other oil-consuming products. Or one could imagine that the huge increase in oil use was the engine, if you will, driving the gigantic increase in GDP per capita. Without further data collection, these questions remain, though it is reasonable to suppose that both factors are involved.

Next, we might consider India, home of the second-largest percentage jump in oil consumption, at 469.21%. She also saw an enormous increase in per-capita GDP, at 298.01%. But India's increase in consumption was 95% as large as China's, while her GDP gains were only 19% of China's. Clearly, whatever causes drove up India's per-capita oil consumption didn't result in the same kind of economic payoff that China registered. India's population grew by over 83% during this period, while per-capita oil consumption increased 210.17%. We might guess that less of India's incremental increase in oil consumption fueled industry when compared to China's.

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Table 7

Changes in Oil Consumption, GDP per Capita, Population, and Oil Consumption per Capita 1980-2013

Rank	Country	Δ in Oil Consumption*			Δ in GDP per Capita‡			Δ in Population•			Δ In Consumption per Capita	
		1980 Rank/Chg	2013-1980	Percent	1980 Rank/Chg	2013-1980	Percent	1980 Rank/Chg	2013-1980	Percent	2013-1980	Percent
1	USA	1/None	1,904.82	11.17%	14/+4	\$19,547.61	74.86%	3/None	89.28	39.29%	-15.16	-20.19%
2	China	6/+4	8,715.00	493.77%	135/+38	\$3,398.76	1540.13%	1/None	376.14	38.33%	5.92	329.23%
3	Japan	2/-1	-429.18	-8.65%	25/+6	\$16,610.46	79.24%	7/-3	10.56	9.04%	-6.89	-16.23%
4	India	12/+8	3,017.00	469.21%	130/-4	\$871.80	298.01%	2/None	582.27	83.51%	1.94	210.17%
5	Russia◊	No Data◊	-930.16	-21.03%	59/-8	\$2,321.30	50.45%	6/-3	-5.18	-3.48%	-5.41	-18.18%
6	Brazil	9/+3	1,855.00	161.59%	51/-25	\$1,744.91	42.03%	6/+1	82.06	67.15%	5.31	56.50%
7	Saudi Arabia	13/+6	2,351.00	136.29%	23/-18	-\$4,572.59	-21.45%	57/+13	20.29	204.74%	36.49	59.29%
8	Canada	5/-3	558.28	29.81%	16/-1	\$13,505.08	55.69%	32/-5	10.57	42.98%	-7.02	-9.22%
9	Germany†	No Data†	-2,020.00	-65.54%	20/+5	\$34,607.27	149.20%	9/-7	2.36	3.01%	-9.57	-24.31%
10	South Korea	16/+6	1,787.01	332.78%	52/+20	\$19,949.42	508.17%	23/-3	12.1	31.74%	32.19	228.50%
11	Mexico	8/-3	1,295.00	101.97%	45/-14	\$1,676.96	24.76%	12/+1	54.41	78.48%	-1.80	-9.81%
12	Iran	15/+3	1,295.00	219.49%	73/-31	\$816.88	38.18%	22/+5	38.48	99.51%	9.18	60.14%
13	France	3/-10	-488.80	-21.67%	19/-3	\$12,428.52	53.28%	15/-6	10.59	19.14%	-13.96	-34.25%
14	Indonesia	20/+6	1,310.00	321.08%	110/-14	\$1,239.10	225.95%	4/None	103.78	70.36%	4.07	147.16%
15	UK	7/-8	-217.20	-12.59%	22/+8	\$18,160.67	82.40%	14/-8	7.8	13.85%	-7.12	-23.23%

◊ Russia was part of the Former Soviet Union in 1980; individual country production figures begin in 1992. The 1992 figure is used here.

† Had Germany been unified in 1980, she would have ranked third worldwide in consumption, using 3,082.00 thousands of barrels/day.

* Thousands of barrels per day ‡ In constant 2005 USD. • In millions.

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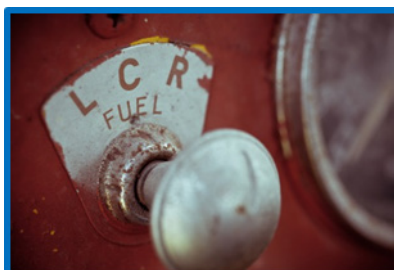
The Wild and Woolly World of Crude Oil

What Happens Next?

The honest answer to that question is *we don't know*. Many factors contribute to shifts in oil production and pricing, including unpredictable elements like wildfires, political unrest, and civil war. OPEC's latest meeting, on June 2, did not result in a production cap. However, Bloomberg reports that production and stocks of oil are falling in the US; a shrinking supply should eventually lift prices (["OPEC Unity Keeps Oil Near \\$50, Sends Speculators to Sidelines" June 5, 2016](#)). One point to keep in mind as these fluctuations continue: the entire energy sector of the S&P 500 comprises only 7.3%, and not all of those securities are oil-related. This relatively low contribution to the total capitalization of the index will serve to mute market volatility, for better or for worse, resulting directly from oil price changes.

And Finally, In Case You Missed It

Towneley founder and chair Wes McCain wrote a fascinating blog post recounting his personal experience investing in oil and gas wells. [You can find it here](#).



Glossary

Brent (aka North Sea Brent): A blended crude stream produced in the North Sea region which serves as a reference or "marker" for pricing a number of other crude streams.

Contract 1: A futures contract specifying the earliest delivery date. For crude oil, each contract expires on the third business day prior to the 25th calendar day of the month preceding the delivery month. If the 25th calendar day of the month is a non-business day, trading ceases on the third business day prior to the business day preceding the 25th calendar day. After a contract expires, Contract 1 for the remainder of that calendar month is the second following month.

Contracts 2-4: Represent the successive delivery months following Contract 1.

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The Wild and Woolly World of Crude Oil

Crude oil: A mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include:

- Small amounts of hydrocarbons that exist in gaseous phase in natural underground reservoirs but are liquid at atmospheric pressure after being recovered from oil well (casinghead) gas in lease separators and are subsequently commingled with the crude stream without being separately measured. Lease condensate recovered as a liquid from natural gas wells in lease or field separation facilities and later mixed into the crude stream is also included;
- Small amounts of nonhydrocarbons produced with the oil, such as sulfur and various metals;
- Drip gases, and liquid hydrocarbons produced from tar sands, oil sands, gilsonite, and oil shale.

Liquids produced at natural gas processing plants are excluded. Crude oil is refined to produce a wide array of petroleum products, including heating oils; gasoline, diesel and jet fuels; lubricants; asphalt; ethane, propane, and butane; and many other products used for their energy or chemical content.

Futures Price: The price quoted for delivering a specified quantity of a commodity at a specified time and place in the future.

***Petrostate:** A small oil-rich country in which institutions are weak and wealth and power are concentrated in the hands of a few.

Spot Price: The price for a one-time open market transaction for immediate delivery of a specific quantity of product at a specific location where the commodity is purchased "on the spot" at current market rates.

West Texas Intermediate (WTI - Cushing): A crude stream produced in Texas and southern Oklahoma which serves as a reference or "marker" for pricing a number of other crude streams and which is traded in the domestic spot market at Cushing, Oklahoma.

(Source: Except for "petrostate, US Energy Information Administration, ["Definitions, Sources, and Explanatory Notes."](#) *Petrostate definition from [Dictionary.com.](#))