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# U.S. Trade Deficit and the Impact of Changing Oil Prices

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# Summary

Imported petroleum prices fell from an average price of $91.23 per barrel of crude oil in 2014 to an average price of $47.428 per barrel in 2015, or a drop of 48%. This represents the lowest price per barrel of crude oil since early 2009, when the global economy was slowing sharply. In early 2016, the price per barrel of oil slipped below $30 at times. Similarly, the volume of crude oil imports for 2015 fell by 1.4% from the amount imported in 2014. The sharp decline in the average price of a barrel of crude oil combined with the drop in the amount, or the volume, of oil imports in 2015 compared with 2014 not only resulted in a drop in the overall value of imported crude oil, but also a sharp drop in the share of the total U.S. merchandise trade deficit that is associated with the trade deficit in energy imports.

In general, market demand for oil remains highly resistant to changes in oil prices and reflects the unique nature of the demand for and the supply of energy-related imports. Turmoil in the Middle East is an important factor that continues to create uncertainty in global petroleum markets and was one of the most important factors in causing petroleum prices to rise sharply in early 2011 and in 2012. A slowdown in the rate of growth in the Chinese economy, combined with a collapse in raw material prices, a slowdown in the rate of economic growth among commodity-exporting developing economies and continued slow rates of growth among many of the major developed economies has held down demand for energy products, despite the sharp drop prices that typically would stimulate demand. Also, increased production of energy products in the United States, an inability by the Organization of the Petroleum Exporting Countries (OPEC) to curtail production among its members, and the potential impact of new Iranian supplies of oil also have worked to push down the global market price of oil. Oil futures markets in February 2016 indicate that oil traders expect crude oil prices to trend in the range of $35-$40 per barrel through the end of 2016. This report provides an estimate of the initial impact of the changing oil prices on the nation's merchandise trade balance.

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# Background

According to data published by the Census Bureau of the U.S. Department of Commerce,[1] the average price of imported petroleum products averaged $47.428 per barrel in 2015, or a drop of 48% from the previous year. Oil futures markets in February 2016 indicate that oil traders expected crude oil prices to trend below the average of $47 per barrel in 2015 to a range of $35-$40 per barrel through 2016 and into 2017.

Energy prices have fluctuated sharply over the past four to five years, generally rising during the winter and spring months and then declining in the fall. In 2008, prior to the financial collapse, the average imported petroleum prices reached nearly $140 per barrel, before falling at a historic rate.[2] During the economic recession in 2009, however, average petroleum prices fell each month between August 2008 and February 2009, but then reversed course and rose by 85% between February and December 2009, climbing to nearly $80 per barrel at times. In 2010, imported petroleum prices reached a peak average price of about $77 per barrel in April before falling to around $72 per barrel in July 2010. In December 2010, as the pace of economic growth increased, imported petroleum prices averaged nearly $80 per barrel and continued to increase, reaching over $112 per barrel at times in March, April, and May 2011. In 2012, the average price of imported petroleum rose 1% over the same period in 2011 to reach an average price of $101.07 per barrel. In 2013, oil prices averaged around $97 per barrel, falling to an average monthly price of about $91 per barrel in 2014. Imported energy products, primarily crude oil, account for about one-fourth of the total annual U.S. energy consumption, measured in btus.[3]

Turmoil in the Middle East, natural disasters, hurricanes, droughts, the rate of economic growth in Asia and Europe, the prospects of Iranian oil exports, and the impact of low oil prices on U.S. investment and production of petroleum and natural gas—the United States is now the world's largest combined producer of oil and natural gas—could have a significant impact on the course of oil prices for the foreseeable future. As a result of changing petroleum prices, the average price of imported energy-related petroleum products worsened the U.S. trade deficit in 2006-2008 and 2010-2011.[4] Oil prices in 2013 averaged less than those in 2012; combined with a decline in the volume of imported oil, resulting in a decline in the role of energy imports in the nation's trade deficit from 40% of the overall deficit in 2012 to 33% in 2013, as indicated in **Figure 1**. By December 2015, energy imports had dropped to account for 9% of the total U.S. trade deficit, which stands at the lowest monthly share in over a decade. The U.S. overall trade deficit, however, rose slightly in 2015 compared with that recorded in 2014 due to a rise in imports of non-petroleum products.

Although the lower cost of energy-related imports has reduced the share of energy in the total U.S. merchandise trade deficit, the trade deficit itself reflects a number of different factors, each of which can affect the overall trade deficit. *Energy-related petroleum products* is a term used by the U.S. Census Bureau that includes crude oil, petroleum preparations, and liquefied propane

[1] U.S. Department of Commerce, U.S. Census Bureau, Report FT900, *U.S. International Trade in Goods and Services,* Table 17, February 5, 2016. The report and supporting tables are available at http://www.census.gov/foreign-trade/Press-Release/current_press_release/ftdpress.pdf.

[2] For information about the causes of the run up in oil prices, see Hamilton, James, Causes and Consequences of the Oil Shock of 2007-2008, *Brookings Papers on Economic Activity*, Spring 2009.

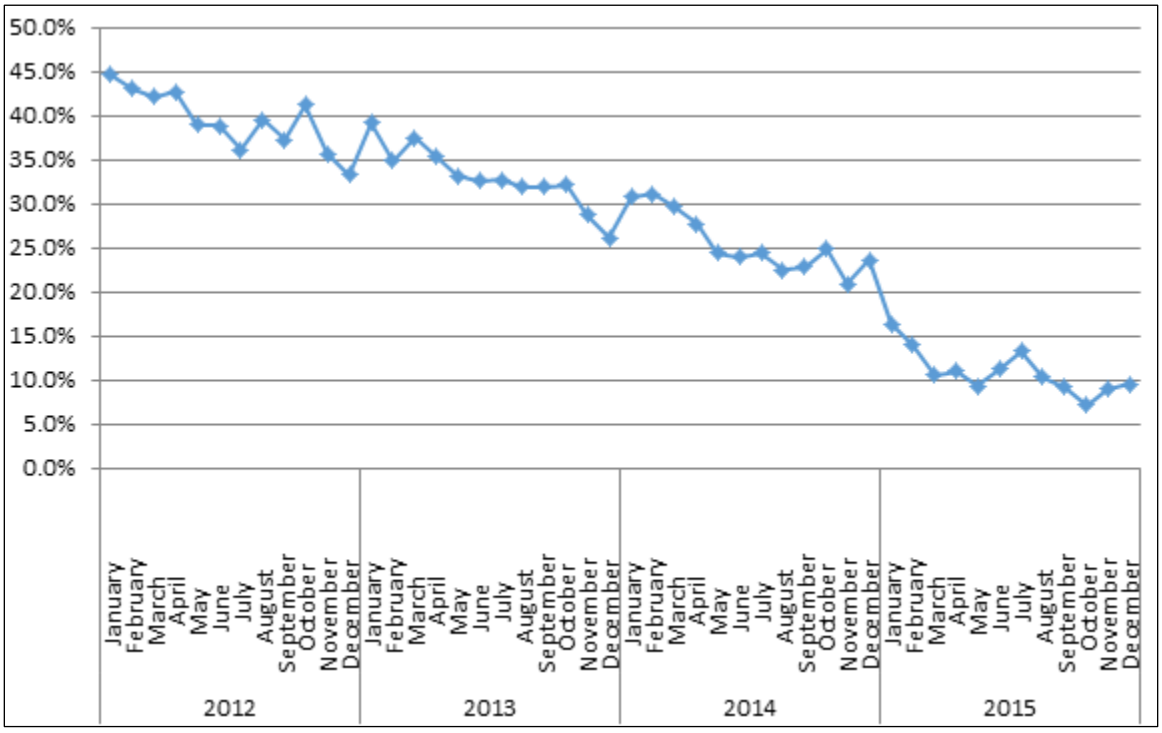
[3] *Monthly Energy Review*, U.S. Energy Information Administration, January 2016, p. 3.

[4] For additional information about U.S. oil imports, see out-of-print CRS Report R41765, *U.S. Oil Imports: Context and Considerations*, by Neelesh Nerurkar, available upon request.

and butane gas. Crude oil comprises the largest share by far within this broad category of energy-related imports.

In isolation from other events, lower energy prices tend to aid the U.S. economy by making it a more attractive destination for foreign investment. Such capital inflows, however, place upward pressure on the dollar against a broad range of other currencies. Periods of volatility or uncertainty in the global economy also spur investors to seek out such safe currencies as the dollar, which tend to push up the international value of the dollar. To the extent that the additions to the merchandise trade deficit are returned to the U.S. economy as payment for additional U.S. exports or to acquire such assets as securities or U.S. businesses, the U.S. trade deficit could be mitigated further. Lower energy prices also are expected to aid consumers by increasing their real incomes and to aid some businesses. How consumers respond to lower energy costs, however, is problematic. In 2015, consumers reportedly responded to lower energy costs by increasing consumption slightly and by increasing the saving rate and reducing credit card debt. In addition, energy producers have tended to respond to lower energy prices by curtailing new investments and by trimming payrolls.[5]

**Figure 1. Energy Trade Deficit as a Share of Total U.S. Merchandise Trade Deficit**




**Source:** Department of Commerce.

In 2011, the rise in oil prices, year over year, combined with a slight decrease in energy imports, pushed up the overall value of U.S. energy imports, which accounted for 44% of the total U.S. merchandise trade deficit. In 2012, the share of the U.S. trade deficit attributed to energy imports on an annual basis was 40%; the share in December 2012 was 33%, down from 42% recorded in

[5] Bureau of Economic Analysis, *National Income and Product Accounts, Gross Domestic Product: Fourth Quarter and Annual 2015*, January 29, 2016; Bureau of Economic Analysis, *GDP and the Economy: Advance Estimates for the Fourth Quarter of 2015*, February 2016.

December 2011. In 2015, the share of the U.S. trade deficit attributable to energy imports averaged 11%, down from an average of 26% in 2014. By December 2015, energy imports accounted for 9% of the total U.S. merchandise trade deficit.

# Recent Trends

Summary data from the Census Bureau for the change in the volume, or quantity, of energy-related petroleum imports and the change in the price, or the value, of those imports for 2014 and 2015 are presented in **Table 1**. The data indicate that during 2014, the United States imported about 3.4 billion barrels of energy-related petroleum products, valued at $317 billion. On average, energy-related imports for 2014 were down 4.7% in volume terms from the average amount in 2013 and cost 10% less than similar imports during 2013. In general, U.S. demand for oil imports responds slowly to changes in oil prices. According to various studies, U.S. demand for oil is correlated more closely to U.S. per capita income than to changes in oil prices.[6] Data for 2015 indicate that the United States imported 3.4 billion barrels of energy-related petroleum products, slightly more than was imported in 2014, valued at $170 billion, down 46% from the value in 2014. Most importantly, the average price per barrel of crude oil in 2015 was $47 per barrel, down 48% from the average price of $91 per barrel in 2014.

**Table 1. Summary Data of U.S. Imports of Energy-Related Petroleum Products, Including Oil (not seasonally adjusted)**

| | January through December | | | | | |
|---|---|---|---|---|---|---|
| | 2014 | | 2015 | | | |
| | (Actual values) | | (Actual values) | | | |
| | Quantity (millions of barrels) | Value ($ billions) | Quantity (millions of barrels) | % change 2014 to 2015 | Value ($ billions) | % change 2014 to 2015 |
| Total energy-related petroleum products | 3,381.4 | $316.6 | 3,384.8 | 0.1% | $170.2 | -46.3% |
| Crude oil | 2,700.9 | $246.4 | 2,662.1 | -1.4% | $125.8 | -48.9% |

**Source:** U.S. Department of Commerce, U.S. Census Bureau, Report FT900, *U.S. International Trade in Goods and Services,* Table 17, February 5, 2016.

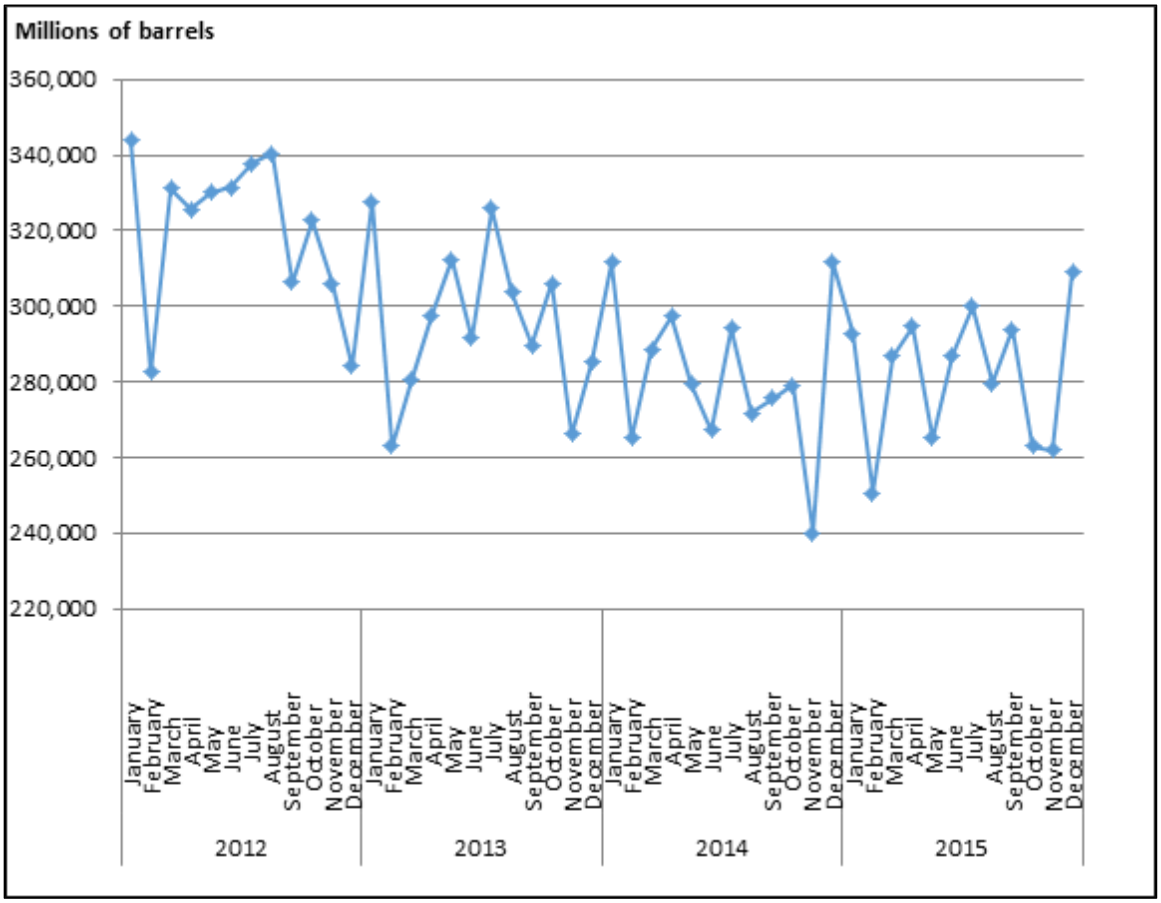
## Oil Import Volumes

Commerce Department data also indicate that in 2015, the quantity of energy-related petroleum products imported by the United States increased by 0.1% compared with such imports in 2014; year over year, crude oil imports fell by 1.4%. As **Figure 2** shows, imports of energy-related petroleum products can vary sharply at times on a monthly basis, but the general trend from

[6] Hamilton, Causes and Consequences of the Oil Shock of 2007-2008; *World Economic Outlook*, Chapter 3, International Monetary Fund, April 2011. According to the IMF, for developed economies, a 10% increase in oil prices is estimated to result in a 0.2% decrease in oil consumption, but a 10% increase in income leads to a 6.8% increase in oil consumption.

January 2012 to December 2015 has been downward. In December 2015, imports of energy-related petroleum products averaged about 309 million barrels per month, down slightly from the average of 311 million barrels per month in December 2014, but above the average of 282 million barrels per month for 2015.

**Figure 2. Quantity of U.S. Imports of Energy-Related Petroleum Products**




**Source:** U.S. Department of Commerce.

## Oil Import Values

As indicated in **Table 2**, the nominal dollar value of energy-related imports in 2015 was $170 billion, down 46% from the value of energy imports in 2014, which accounted for about 8% of the value of total U.S. merchandise imports. In previous periods, energy prices rose have varied sharply, occasionally, not following the general trend of falling during the winter months. The cost of U.S. imports of energy-related petroleum products rose from about $17 billion per month in early 2007 to $53 billion a month in July 2008, but fell to $13.6 billion a month in February 2009, reflecting a drop in the price and in the volume of imported oil. As **Table 2** shows, the average price of imported oil in 2015 was $47.26, down 46% from an average price of $91.23 in 2014. In December 2015, the average price of imported oil stood at $36.60 per barrel, the lowest average monthly value recorded since July 2004.

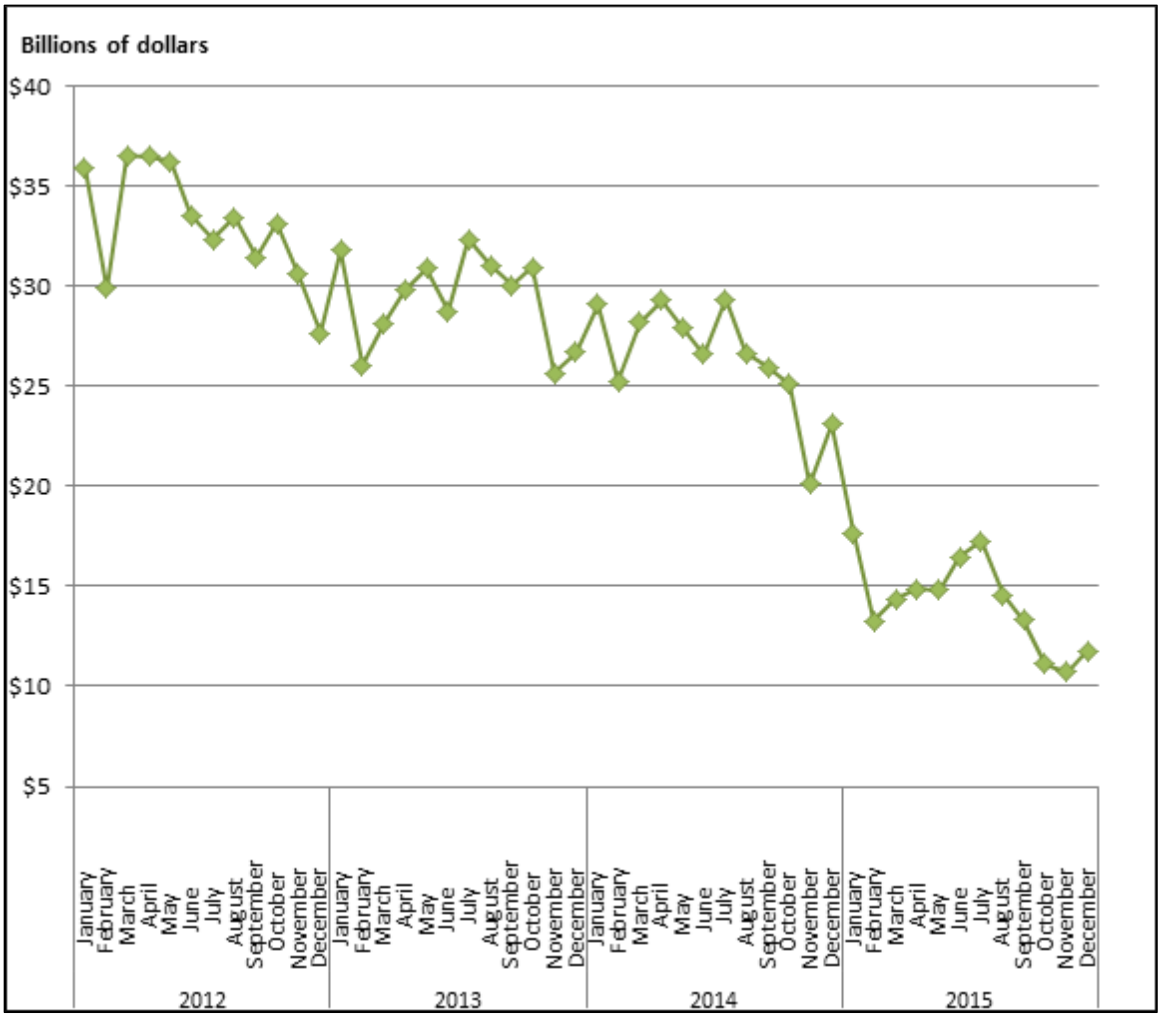
**Table 2. U.S. Imports of Energy-Related Petroleum Products, Including Crude Oil (not seasonally adjusted)**

| | Total energy-related petroleum products[a] | | Crude oil | | | |
|---|---|---|---|---|---|---|
| **Period** | **Quantity (millions of barrels)** | **Value ($ billions)** | **Quantity (millions of barrels)** | **Thousands of barrels per day (average)** | **Value ($ billions)** | **Unit price (dollars)** |
| | | | **2014** | | | |
| Jan.-Dec. | 3,381.4 | $316.6 | 2,700.9 | 7,400 | $246.4 | $91.23 |
| | | | **2015** | | | |
| January | 292.9 | $17.7 | 222.8 | 7,186 | $13.1 | $58.96 |
| February | 250.7 | $13.3 | 192.1 | 6,859 | $9.5 | $49.53 |
| March | 286.6 | $14.4 | 226.4 | 7,302 | $10.5 | $46.47 |
| April | 294.6 | $14.9 | 235.9 | 7,864 | $11.0 | $46.52 |
| May | 265.1 | $14.8 | 201.9 | 6,512 | $10.2 | $50.76 |
| June | 287.1 | $16.5 | 223.4 | 7,446 | $12.0 | $53.76 |
| July | 300.0 | $17.2 | 236.6 | 7,632 | $12.8 | $54.20 |
| August | 279.6 | $14.5 | 219.4 | 7,078 | $10.8 | $49.33 |
| September | 294.0 | $13.3 | 231.4 | 7,714 | $9.9 | $42.72 |
| October | 262.9 | $11.1 | 206.7 | 6,669 | $8.3 | $40.12 |
| November | 261.9 | $10.7 | 211.1 | 7,035 | $8.3 | $39.24 |
| December | 309.4 | $11.8 | 254.4 | 8,207 | $9.3 | $36.60 |

**Source:** U.S. Department of Commerce, U.S. Census Bureau, Report FT900, *U.S. International Trade in Goods and Services,* Table 17, February 5, 2016.

a. "Energy-related petroleum products" is a term used by the Census Bureau and includes crude oil, petroleum preparations, and liquefied propane and butane gas.

**Figure 3. Value of U.S. Imports of Energy-Related Petroleum Products**



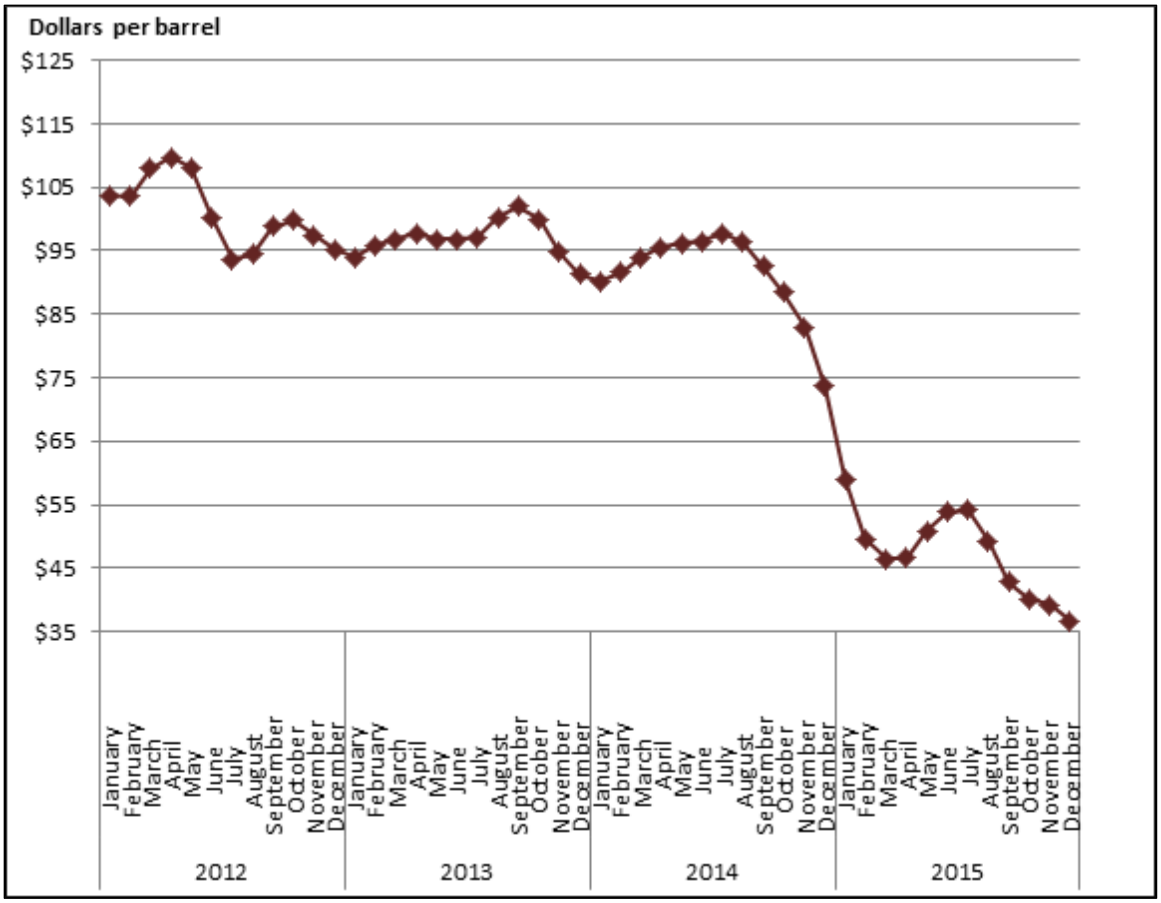

**Source:** U.S. Department of Commerce.

## Oil Import Prices

Crude oil comprises the largest share of energy-related petroleum products imports. According to Census Bureau data,[7] the price of imported crude oil has fluctuated sharply at times. For instance, from January 2008 to June 2008, the average price of crude oil increased by 39%, rising from $84 per barrel to $117 per barrel. As shown in **Figure 4**, oil import prices varied in the general range of $90 and $108 per barrel between January 2012 and October 2014, after which imported oil prices have experienced a sharp drop. Crude oil prices rose from an average of $94 per barrel in January 2013 to $102 per barrel in September 2013, the highest average monthly value recorded up to that point in 2013, but fell to an average imported price of $91.34 in December 2013. In 2015, oil prices fell from $58.96 per barrel in January to $36.60 in December. In 2016, oil prices generally have hovered in the range of $30 to $35 dollars per barrel, but have fallen below $30 per barrel at times. Oil prices have not dropped below $30 per barrel since early 2004.

[7] Report FT900, *U.S. International Transactions in Goods and Services*, Table 17, February 5, 2016.

**Figure 4. U.S. Import Price of Crude Oil**

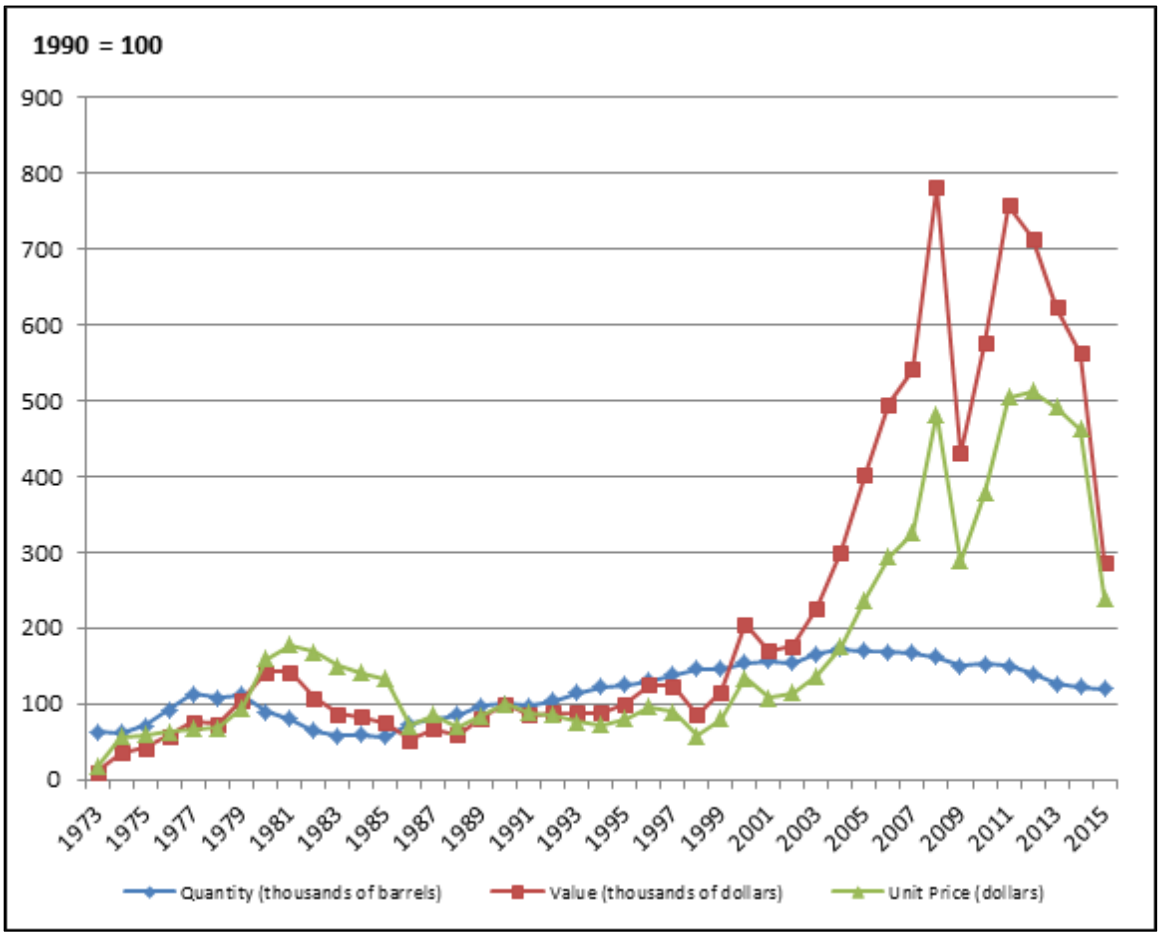



**Source:** U.S. Department of Commerce.

As previously indicated, the combination of changes in the volume, value, and prices of crude oil can have a large impact on the total value of U.S. imports and on the composition of the U.S. trade deficit. **Figure 5** shows the annual amounts of the volume, value, and price of U.S. crude oil imports from 1973 to 2015, represented in index terms with 1990 as the base year. The data indicate that the overall volume of U.S. imports of crude oil increased by about 20% between 1990 and 2015 in index terms. The price of crude oil, represented by the average price of a barrel of crude oil on an annual basis, rose by about two and a half times between 1990 and 2015 in index terms. As a result, the total value of U.S. crude oil imports, representing the price per barrel times the number of barrels of crude oil on an annual basis, rose by about three times between 1990 and 2015 on an index number basis.

**Figure 5. Quantity, Value, and Price of Imported Crude Oil by the United States, 1973-2015**

(Index terms; 1990 = 100)




**Source:** U.S. Department of Commerce.

As the price of energy-related imports has dropped, the amount of oil imports also has declined, signaling potentially important changes in the U.S. energy market. The United States has become the world's largest combined producer of oil and natural gas, which reduces the need for oil imports. In addition, continued improvements in the energy use of the economy, or the amount of energy that is needed to sustain a certain level of economic activity, appear to be continuing to improve. A slow rate of economic growth also has consequences for energy consumption in the economy and the role of imported energy products. Lower energy prices, however, are not a panacea for the U.S. economy as a whole. The U.S. energy sector has trimmed employment and curtailed investment projects that could pose problems for future energy production. Lower energy prices also are negatively affecting energy-exporting countries that, in turn, negatively affecting with which they engage in international trade. A slowdown in global trade will have a slightly negative impact on the U.S. economy, although international trade continues to account for a small share of U.S. GDP.

# Issues for Congress

The fall in the prices of energy imports in 2014 and 2015, combined with a decrease in the total volume of energy imports, resulted in a smaller contribution to the overall U.S. trade deficit in 2014 and 2015. If the trend set in 2015 continues through 2016, the contribution of energy imports to the overall U.S. trade deficit could fall slightly from the share set in December 2015. The average monthly price of imported oil continues to be volatile, making it difficult to determine when and at what level the price will stabilize in 2016 and 2017. The ubiquitous nature of oil in the economy generally means that changes in energy prices will affect the U.S. rate of inflation and the rate of economic growth. Various factors, dominated by events in the Middle East, a slowdown in the rate of economic growth in Asia and other developing economies, and an increase in natural gas production in the United States, combined in 2015 to push the cost of energy imports slightly lower than in 2014. The pace of economic growth in the United States slowed in the last quarter of 2015, which affects both the level of oil imports and the price of such imports. The pace of economic growth has also been tenuous in Europe, Asia, and among developing economies where such economies as China, Brazil, and Russia have experienced a slowdown in their annual rates of economic growth and such major economies as Japan and many economies in Europe are continuing to struggle with significant economic challenges.

Typically, energy import prices have followed a cyclical pattern as energy prices rise in the summer months and fall in the winter. The slowdown in the rate of economic growth in the United States and elsewhere in 2009 sharply reduced the demand for energy imports and caused oil prices to tumble from the heights they reached in July 2008. An important factor that often affects crude oil prices is the impact Atlantic hurricanes have on the production of crude oil in the Gulf of Mexico and droughts in the midwestern United States that can reduce the production of corn and, therefore, the availability of ethanol, which puts upward pressure on gasoline prices. Recently, the price of oil has been affected by increased energy production in the United States and a combination of global economic events, including: the slowdown in the Chinese economy; a sharp drop in commodity prices that have negatively affected commodity producers and their trading partners; the international exchange value of the dollar; a lack of cohesion among OPEC oil producers; and the prospects of a resumption of oil production in Iran, among other events.

The return to a positive rate of economic growth in 2010 placed upward pressure on the prices of energy imports and contributed to the nation's merchandise trade deficit. Some of the impact of this deficit could be offset if some of the dollars that accrue abroad are returned to the U.S. economy through increased purchases of U.S. goods and services or through purchases of such other assets as corporate securities or acquisitions of U.S. businesses. Some of the return in dollars likely will come through sovereign wealth funds, or funds controlled and managed by foreign governments, as foreign exchange reserves boost the dollar holdings of such funds. Such investments likely will add to concerns about the national security implications of foreign acquisitions of U.S. firms, especially by foreign governments, and to concerns about the growing share of outstanding U.S. Treasury securities that are owned by foreigners.

Social turmoil in the Middle East created uncertainty in the oil markets since 2011 and has been an important factor driving up oil prices. Slower-than-expected economic growth in various regions of the world reduced slightly the demand for oil and pushed down the average price of energy imports. Increased energy production in the United States also reduced the amount of energy imports, which may well have contributed to the forces that tended to draw down the price of energy on world markets. Higher prices for energy imports may have been one contributing factor in spurring the economy to improve its energy efficiency, find alternative sources of energy, or search out additional supplies of energy. For Congress, the lower costs of imported oil

could tend to ease the nation's merchandise trade deficit. Other economic effects are more difficult to assess. While lower energy costs should improve conditions for both producers and consumers, lower energy prices could dissuade energy producers from investing in new sources of energy, while the increase in consumers' real incomes from lower energy prices could either spur consumption, or could encourage consumers to use their extra income to increase saving and reduce debts.

Congress, through its direct role in making economic policy and its oversight role over the Federal Reserve, could face the dilemma of sluggish economic growth, stagnant tax revenues, and falling prices and deflation. Traditionally, sluggish economic growth has been addressed through increased government spending and lowering interest rates to loosen credit and to stimulate investment. The impact on the U.S. merchandise trade deficit also is not straightforward. While lower imported energy prices reduce the energy component of the trade accounts, the overall value of exports and imports is determined by a number of factors, including the international exchange value of the dollar and relative rates of growth in demand for exports and imports. Consequently, while the energy component of the U.S. trade deficit has fallen appreciably, the overall U.S. trade deficit has not fallen. If the rate of growth in the U.S. economy, even at low rates, outpaces that of its trading partners, the overall trade deficit potentially worsens even with lower energy prices due to a relatively stronger U.S. demand for imports than foreign demand for U.S. exports. Under such circumstances, Congress potentially could face pressure to examine the causes of the deficit and to address the underlying factors that are generating that deficit.

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