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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 \$46.47 per barrel in March 2015, or a drop of 45%. This represents the lowest price per barrel of crude oil since early 2009, when the global economy was slowing sharply. For a short time in 2009, the average price per barrel dropped below \$40. The average price of an imported barrel of crude oil in 2014 fell 6% from the average price in 2013. Similarly, the volume of crude oil imports in the first three months of 2015 fell by 7.6% from the same period 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 the January-March period in 2015 compared with the same period in 2014 resulted in a drop of 48% in the value of imported crude oil and 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 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. Although prices for imported crude oil fluctuated somewhat throughout 2011, they averaged 30% higher than in 2010 and added about \$100 billion to the total U.S. trade deficit in 2011. Energy import prices in 2013 averaged 4% lower than they were in 2012, pushing down the price of energy to consumers by the end of the year. During the same period, the total volume of petroleum products imported by the United States in 2013 fell below that imported in 2012, reducing the overall cost of imported energy to the economy and the overall trade deficit. In 2014, both the price of imported oil and the amount, or volume, of imported oil fell, reducing the share of the energy trade deficit in the total U.S. merchandise trade deficit. Through the first quarter of 2015, crude oil import prices averaged slightly less than \$52 per barrel. Oil futures markets in May 2015 indicate that oil traders expect crude oil prices to trend slowly upward through the end of 2015 and into 2016 to around \$58-\$60 dollars a barrel. 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 has fluctuated sharply over the past four to five years. Generally, petroleum prices rise during the winter and spring months and then decline 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

Oil futures markets in May 2015 indicated that oil traders expected crude oil prices to trend slightly upward through 2015 and into 2016 from the average of \$51 per barrel in the first quarter of 2015 to a range of \$58-\$60 per barrel by late spring 2016. Turmoil in the Middle East, natural disasters, hurricanes, droughts, the rate of economic growth in Asia and Europe, 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 price changes in 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 oil imported, this resulted 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**. In March 2015, energy imports had dropped to account for 11% of the total U.S. trade deficit, which stands as the lowest monthly share in over a decade.

If the first quarter 2015 trend persists through the end of the year, the nominal value of energy-related petroleum products could fall by nearly half that of 2014. While the lower cost of energy-related imports could reduce 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 and butane gas. Crude oil comprises the largest share by far within this broad category of energy-related imports.

¹ U.S. Department of Commerce, U.S. Census Bureau, Report FT900, *U.S. International Trade in Goods and Services*, Table 17, May 5, 2015. The report and supporting tables are available at http://www.census.gov/foreign-trade/Press-Release/current_press_release/ftdpress.pdf.

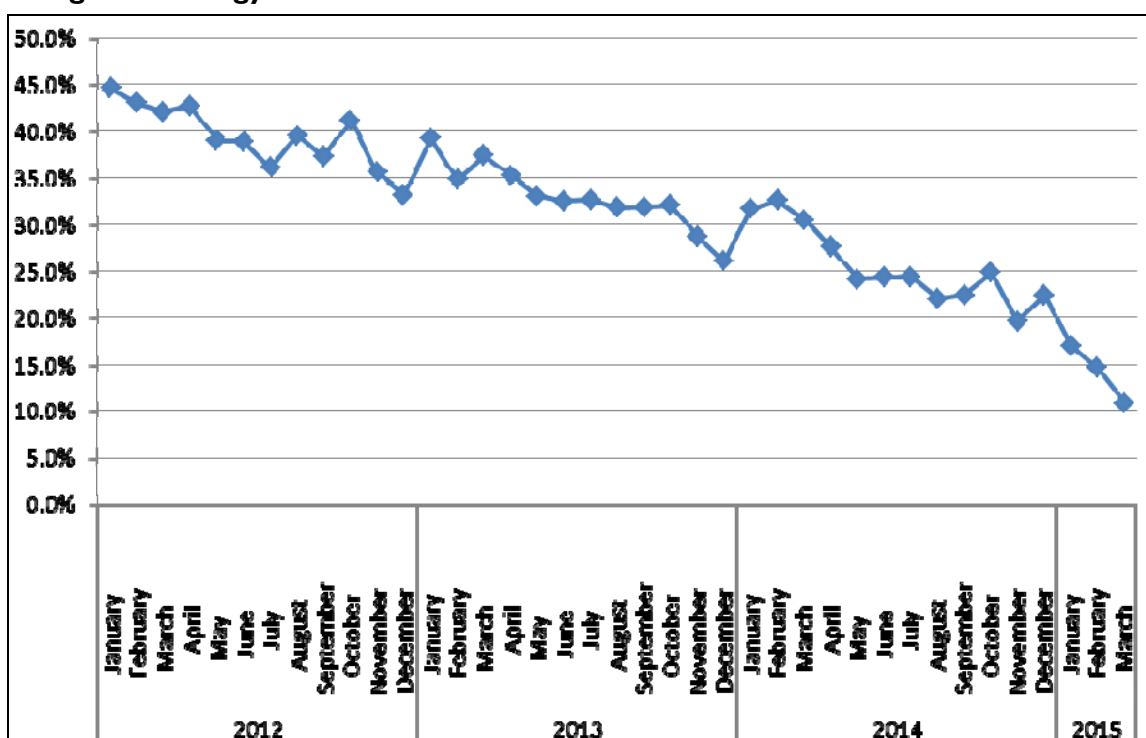
² For information about the causes of the run up in oil prices, see Hamilton, James, *Causes and Consequences of the Oil Shock of 2007-2008*, *Brookings Papers on Economic Activity*, Spring 2009.

³ *Monthly Energy Review*, U.S. Energy Information Administration, May 2015, 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.

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. 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. How consumers respond to lower energy costs, however, is problematic. In 2014, consumers reportedly responded to lower energy costs by increasing their saving 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 I. 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 December 2011. In 2013, the share of the U.S. trade deficit attributable to energy imports was at 33%, down from 40% in 2012.

⁵ Bureau of Economic analysis, *National Income and Product Accounts, Gross Domestic Product: First Quarter 2015*, May 29, 2015.

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 2014 indicate that with the average price per barrel of oil of around \$91, the U.S. trade deficit in petroleum fell by \$44 billion in 2014 from the amount recorded in 2013.

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.

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

	January-March					
	2014		2015			
	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	865.8	\$82.7	830.2	-4.1%	\$45.3	-45.1%
Crude oil	694.1	\$63.7	641.2	-7.6%	\$33.2	-48.0%

	January through December					
	2014		2015			
	(Actual values)		(Estimated 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	3,242.2	-4.1%	\$173.9	-45.1%
Crude oil	2,700.9	\$246.4	2,495.1	-7.6%	\$128.2	-48.0%

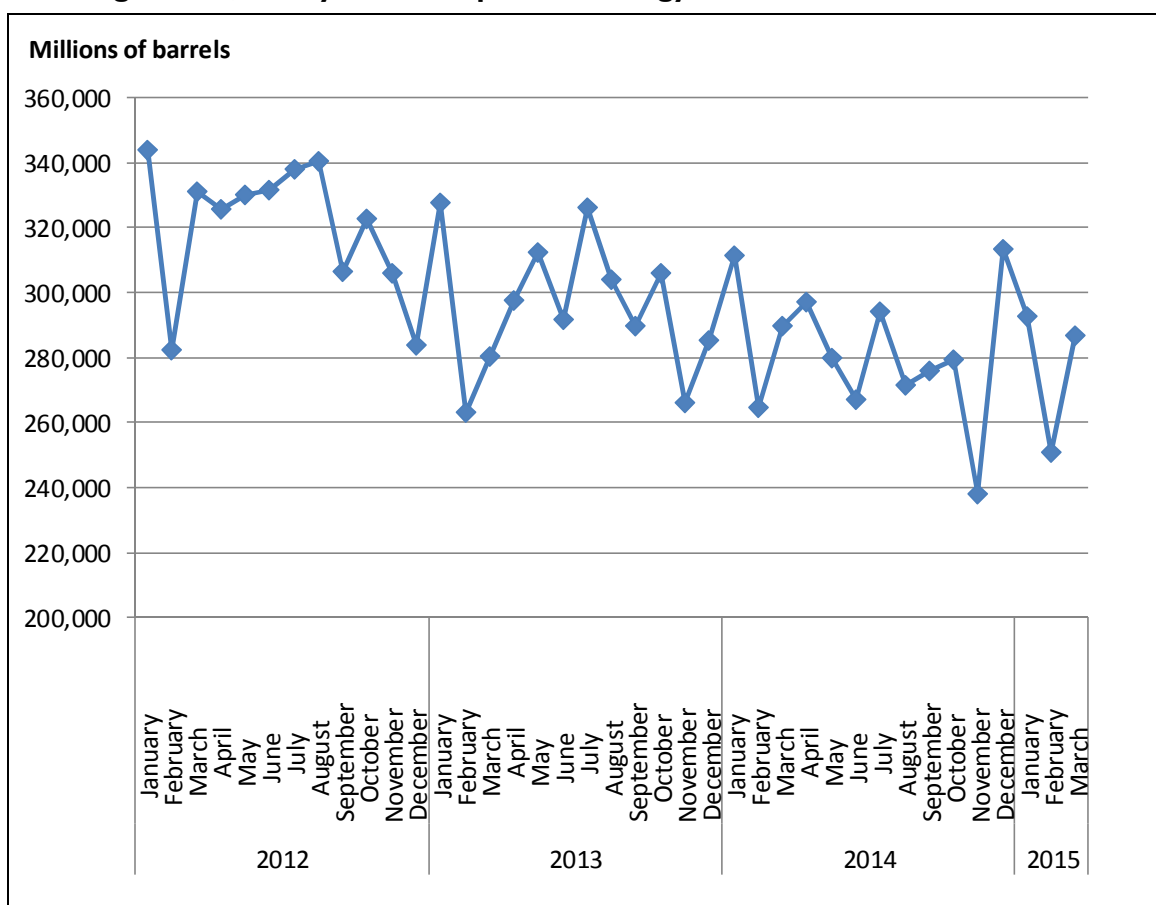
Source: U.S. Department of Commerce, U.S. Census Bureau, Report FT900, *U.S. International Trade in Goods and Services*, Table 17, May 5, 2015.

Note: Estimates for January through December 2015 were developed by CRS from data in January-March, 2015, and data for 2014 published by the Census Bureau using a straight line extrapolation.

Oil Import Volumes

Commerce Department data also indicate that in the period of January-March 2015, the quantity of energy-related petroleum products imported by the United States fell by 4.71% compared with the comparable period in 2014; crude oil imports in the three-month period in 2015 fell by 7.6% from the same period in 2014. Compared with the January-March period in 2014, the average value of energy-related petroleum products imports fell by 45.1% in 2015, while the average value of crude oil imports fell by 48%.

As **Figure 2** shows, imports of energy-related petroleum products can vary sharply at times on a monthly basis, but the general trend from January 2012 to March 2015 has been downward. In March 2015, imports of energy-related petroleum products averaged about 286 million barrels per month, compared with an average of 289 million barrels per month in January 2014, or a decrease of 1.0%.

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

Source: U.S. Department of Commerce.

Oil Import Values

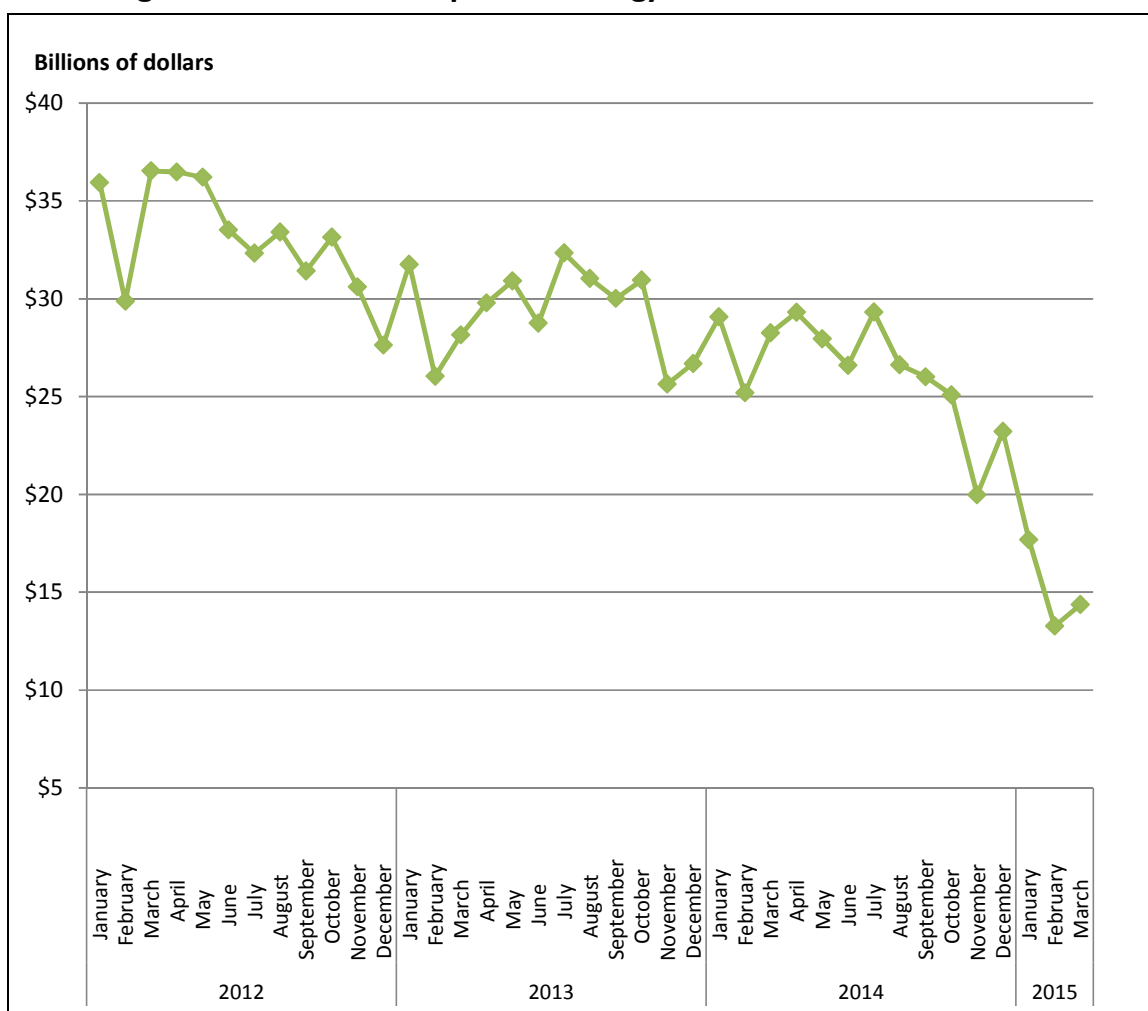
As indicated in **Table 2**, the nominal dollar value of energy-related imports in 2014 was \$316.6 billion, down 6% from the value of energy imports in 2013, which accounted for about 14% of the value of total U.S. merchandise imports. In previous periods, energy prices rose sharply in 2007 and continued rising from January through July 2008, not following previous trends 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 March 2015 was \$46.47, down 45% from an average price of \$93.91 in March 2014, and stands as the lowest average monthly value recorded since April 2009.

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

Period	Total energy-related petroleum products ^a		Crude oil			
	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
January	311.6	\$29.1	256.5	8,275	\$23.1	\$90.21
February	264.5	\$25.2	212.5	7,590	\$19.5	\$91.53
March	289.7	\$28.3	225.0	7,259	\$21.1	\$93.91
April	297.2	\$29.3	238.8	7,960	\$22.8	\$95.48
May	279.6	\$28.0	213.1	6,876	\$20.5	\$96.12
June	267.2	\$26.6	213.9	7,131	\$20.6	\$96.41
July	294.0	\$29.3	238.7	7,701	\$23.4	\$97.81
August	271.3	\$26.6	215.4	6,947	\$20.7	\$96.32
September	276.0	\$26.0	226.5	7,550	\$21.0	\$92.54
October	279.1	\$25.1	224.1	7,229	\$19.8	\$88.47
November	237.9	\$20.0	188.9	6,296	\$15.7	\$82.95
December	313.3	\$23.2	247.4	7,980	\$18.2	\$73.64
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

Source: U.S. Department of Commerce, U.S. Census Bureau, Report FT900, *U.S. International Trade in Goods and Services*, Table 17, May 5, 2015.

- 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.

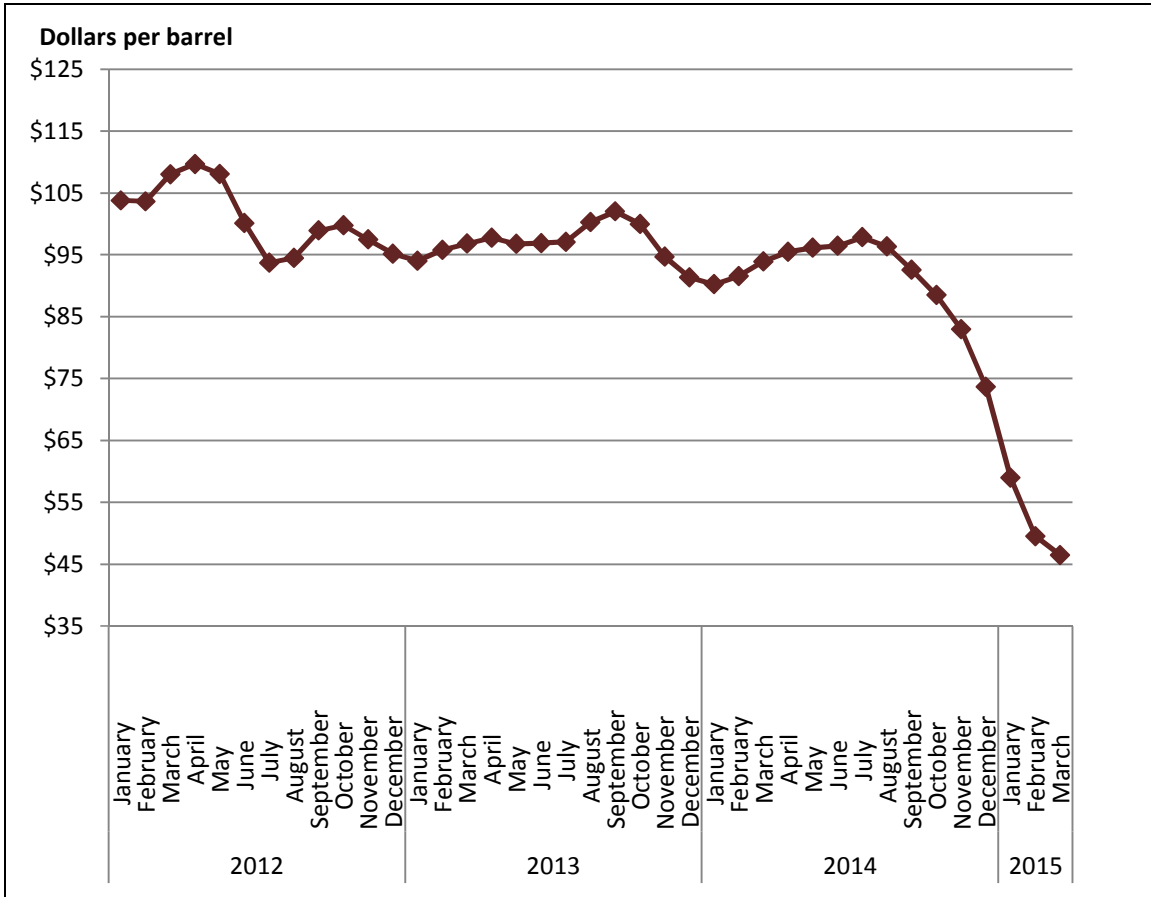
Oil Import Prices

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 2014, oil prices rose from \$90.21 per barrel in January to \$97.81 in July. By December 2014, however, oil prices had fallen to an average price of \$73.64 per barrel. Average monthly imported oil prices continued to fall during the first three months in 2015, falling to \$46.47 in March 2015.

⁷ Report FT900, *U.S. International Transactions in Goods and Services*, Table 17, May 5, 2015.

Between March and June 2015, however, average imported oil prices moved upward toward \$60 per barrel.

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

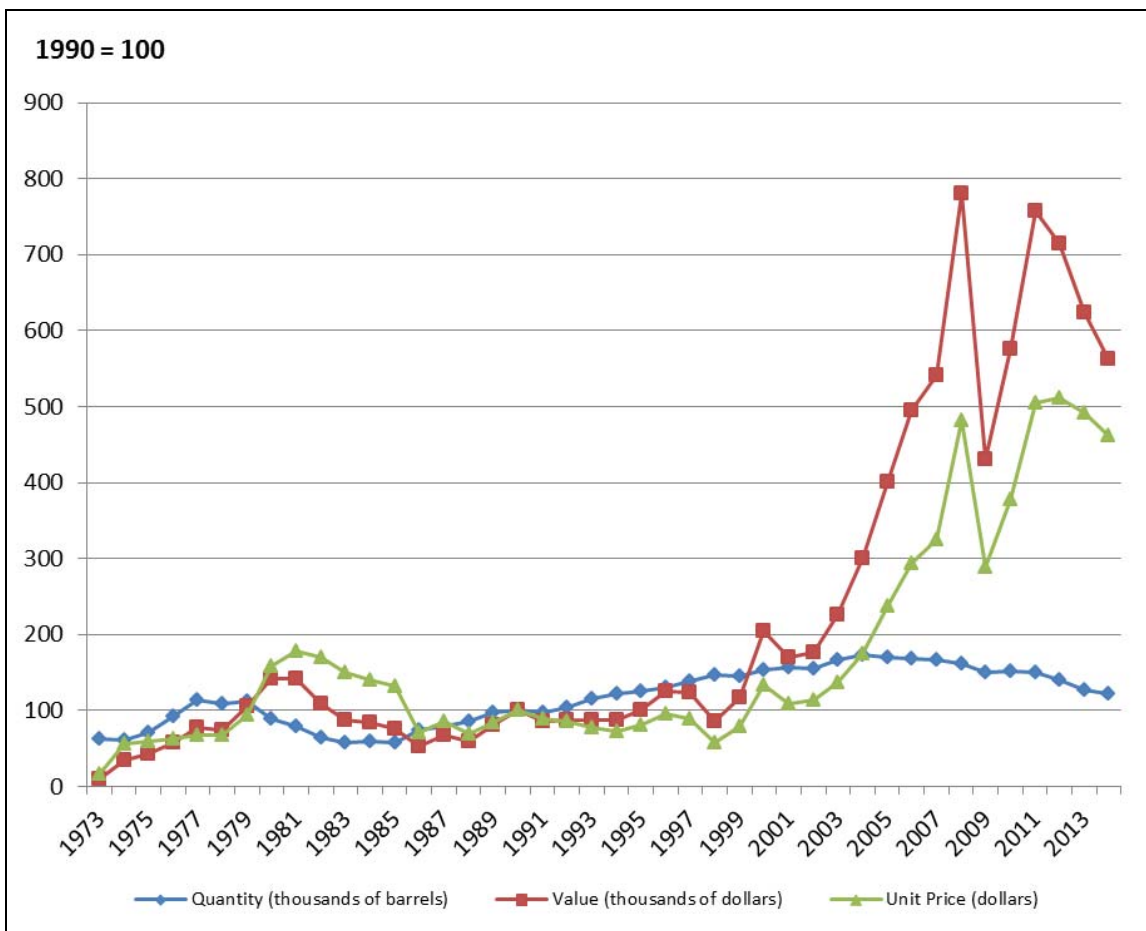


Source: U.S. Department of Commerce.

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 size 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 2014, 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 22% between 1990 and 2014 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 four and a half times between 1990 and 2014 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 over five and a half times between 1990 and 2014 on an index number basis.

Figure 5. Quantity, Value, and Price of Imported Crude Oil by the United States, 1973-2014

(Index terms; 1990 = 100)



Source: U.S. Department of Commerce.

From January 2012 through August 2014, the average monthly price of imported oil moved in a relatively narrow band around \$100 per barrel. Since then, however, the average monthly price has fallen by nearly half. Should these lower prices hold through 2015, the energy portion of the U.S. trade deficit will be sharply lower than in previous years. Importantly, as the price of imported oil has been dropping, 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.

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 2014 and the first three months of 2015 continues through 2015, the contribution of energy imports to the overall U.S. trade deficit will fall by year-end 2015 below that set in 2014. The average monthly price of imported oil, however, reportedly rose during the second quarter of 2015, which likely will increase the share of energy imports from the 10% recorded in March 2015; shares likely will remain below those experienced prior to January 2015. 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 2014 to push the cost of energy imports slightly lower than in 2013. The pace of economic growth in the United States was a bit erratic in 2014, which had an important effect on both the levels of oil imports and the price of such imports. The pace of economic growth has also been tenuous in both Europe and Asia, where such economies as China have experienced a slowdown in their annual rates of economic growth and such major economies as Japan and much of 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.

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 in 2011 and into 2012 and was an important factor driving up oil prices. In 2013, 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 the 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 generally is treated by 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. 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 could worsen 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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