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Crude oil prices spur gains for U.S. import and export price indexes, despite the appreciating dollar: 2016 annual summary

Since 2012, the U.S. import and export price indexes have experienced a downward trend. However, in 2016, these indexes reversed trend as both recorded over-the-year increases. Crude oil prices and exchange rates tell much of the story. This article discusses how changes to these two fundamental economic characteristics contributed to 2016 trends and examines the price movements found in detailed indexes for U.S. imports and exports.

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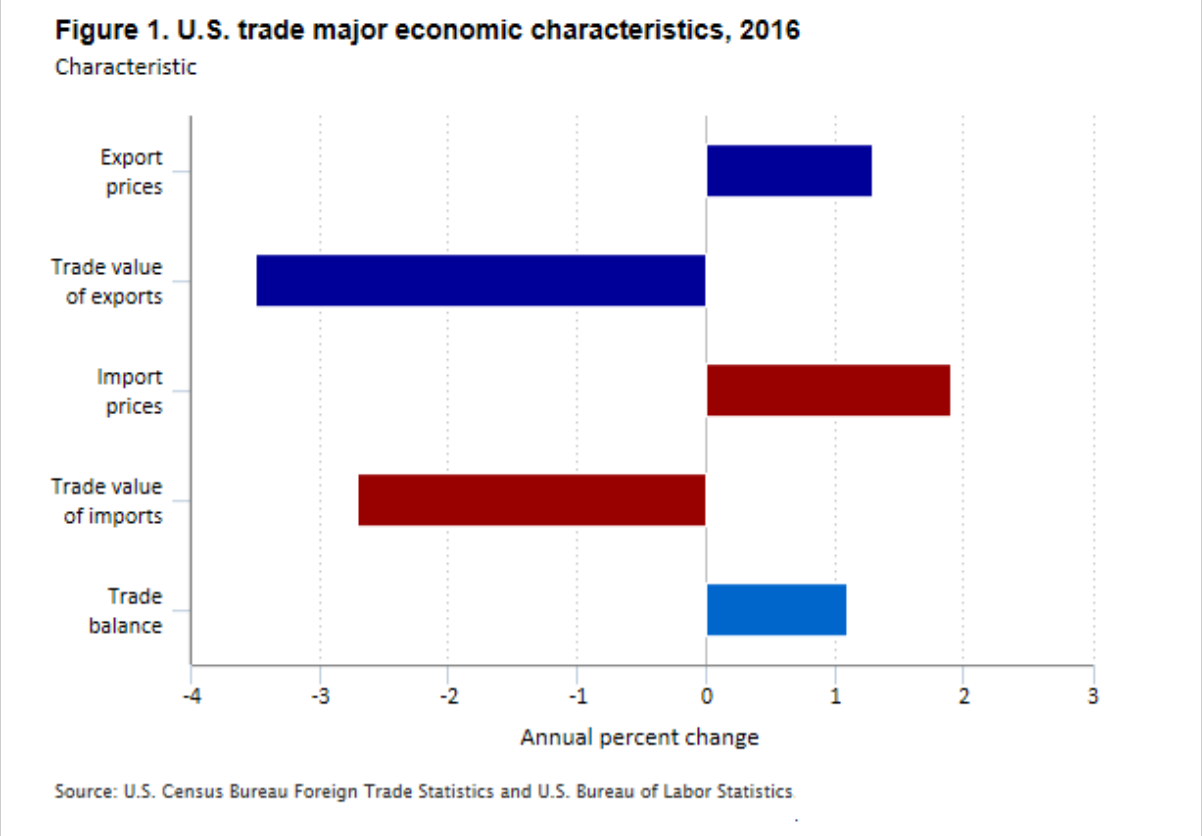
Major U.S. trade statistics in 2016

In 2016, prices for U.S. imports and exports rose 1.9 percent and 1.3 percent, respectively.[1] This marked the first calendar-year price increase for both imports and exports since 2011. The U.S. dollar appreciated over 2016, continuing the upward trend that began in 2014 and persisted through 2015. However, a strong U.S. dollar and the resulting downward pressure on prices was not enough to offset increasing fuel prices, which drove both import and export prices upward.

In 2016, the total trade value of goods fell, despite rising import and export prices. The trade value of U.S. export goods fell 3.5 percent from 2015 to 2016, from $1.5 trillion to $1.45 trillion.[2] Likewise, the value of total trade of U.S. import goods declined 2.7 percent, from $2.25 trillion to $2.19 trillion.[3] As a result of the changes in total trade value for export and import goods, the U.S. trade balance was reduced by 1.1 percent, from $745 billion to $737 billion.[4] (Figure 1 charts these economic characteristics, along with import and export prices.) According to the U.S. Census Bureau, these declines were attributable to a drop in total trade value for two product categories: (1) industrial supplies and materials and (2) capital goods. Values for these items were largely affected by a global slowdown in crude oil production, petroleum products production, and demand for associated oil drilling equipment and machinery.[5]



In 2016, the U.S. dollar appreciated against most major currencies because of improved overall economic conditions in the United States. This was at least partially attributable to the 0.25-percentage point interest rate hike implemented by the U.S. Federal Reserve in December 2015—the first rate increase in 7 years.[6]

The relative strength of the dollar affects U.S. import and export prices. Typically, a stronger dollar lowers prices for both because importers use fewer dollars to buy the same foreign goods and exporters lower prices to maintain competitiveness.[7] Many commodity prices are inversely correlated to the strength of the U.S. dollar. For example, when the dollar appreciates, gold and other precious metal prices generally fall. This relationship exists because these precious metals are generally considered safe-haven investments, attractive during economic downturns but less appealing during periods of economic stability, when the dollar is generally strong.[8] Crude oil prices are similarly affected, tending to fall when the dollar is strong. Because crude oil is priced in U.S. dollars, the dollar's appreciation stimulates supply and dampens demand, contributing to a fall in price.

Over the past 3 years, the U.S. dollar appreciated roughly 26 percent against a broad-based average of foreign currencies, placing downward pressure on the U.S. import and export price indexes. However, unlike in 2014 and 2015, prices for imports and exports both increased in 2016. The crude oil and petroleum market responded to global market fundamentals rather than exchange rate pressures. The increase in the top-level import and export price indexes was largely a result of rebounding fuel prices.[9]

Rebounding fuel prices: the primary catalyst in 2016

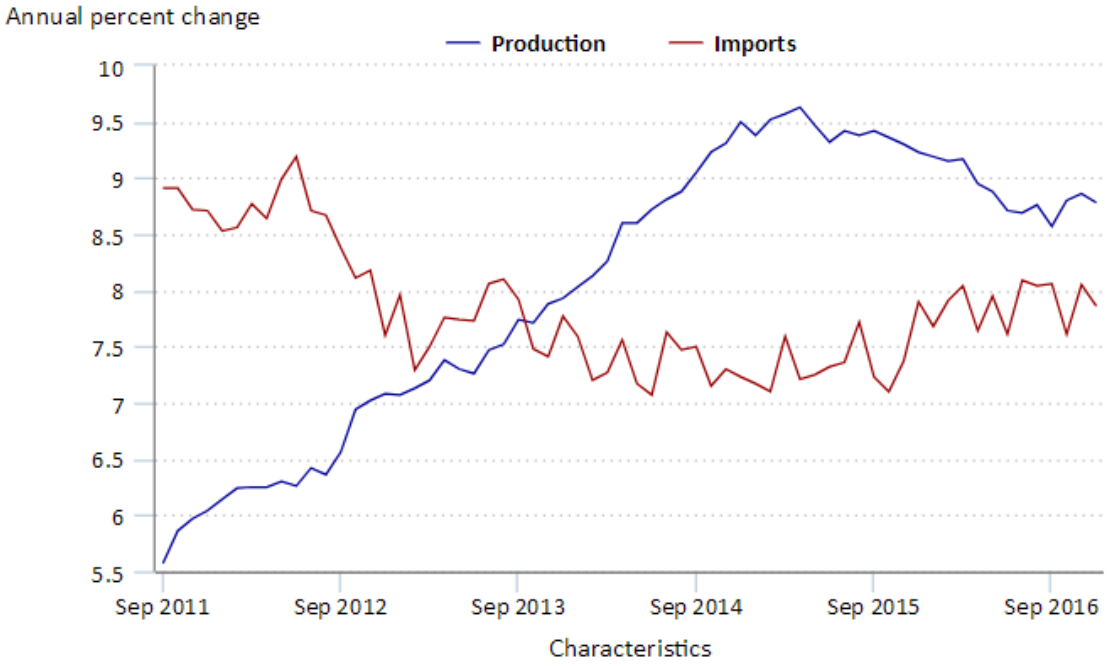
The U.S. Bureau of Labor Statistics (BLS) all-commodities import and export price indexes are calculated using the U.S. Bureau of Economic Analysis (BEA) detailed end-use classification system.[10] The BEA end-use category of fuels and lubricants includes crude oil, refined petroleum and petroleum products, coal, and natural gas. Fuels play a crucial role in all aspects of the economy. They support most forms of transportation, serve as a primary energy source for industries and homes, and are an important input to the production of specific goods such as chemicals, plastics, and synthetic rubber. In 2016, fuel prices and the increased weight of fuel in the value of trade were the major contributors to higher prices for both U.S. imports and exports. Of all the products in the fuels category, petroleum carries the greatest weight.[11] In order to fully understand the impact of the large petroleum price increases in 2016, it is important to examine trends in the crude oil market over the past few years.

Lead up to 2016 global and U.S. market trends

When demand for oil fell during the Great Recession, the U.S. benchmark price—the West Texas Intermediate (WTI) crude oil price—fell to a monthly average low of $39 per barrel in February 2009.[12] Subsequent improvements in the global economy and low interest rates pushed oil prices upward from 2009 to 2011. By April 2011, prices had rebounded 180 percent from the February 2009 low, peaking at a monthly average of $109 per barrel.[13] These increased crude oil prices created opportunities and incentives for more capital-intensive oil production, such as hydraulic fracturing, and alternative energy production, like natural gas extraction.

In late 2011, U.S. crude oil production rose as a result of both increased pumping of traditional oil wells and the growth of hydraulic fracturing and horizontal drilling technologies that provide access to previously unattainable oil reserves. Crude oil production rose 73 percent, from 5.6 million barrels a day in September 2011 to 9.6 million barrels a day at its peak in April 2015.[14] In October 2013, domestic crude oil production surpassed crude oil imports for the first time since February 1995. As seen in figure 2, crude oil imports declined steadily as the United States became less reliant on foreign oil. Imports fell from 8.9 million barrels per day in September 2011 to a low of 7.1 million barrels per day in June 2014, a 20.7-percent decline.[15] Crude oil imports remained below 7.5 million barrels per day as production slowed during the second half of 2015.[16] Domestic production also slipped over the rest of 2015, falling to 9.2 million barrels per day by the end of the year.[17]

Figure 2. U.S. crude oil production and imports, millions of barrels per day, September 2011 to December 2016



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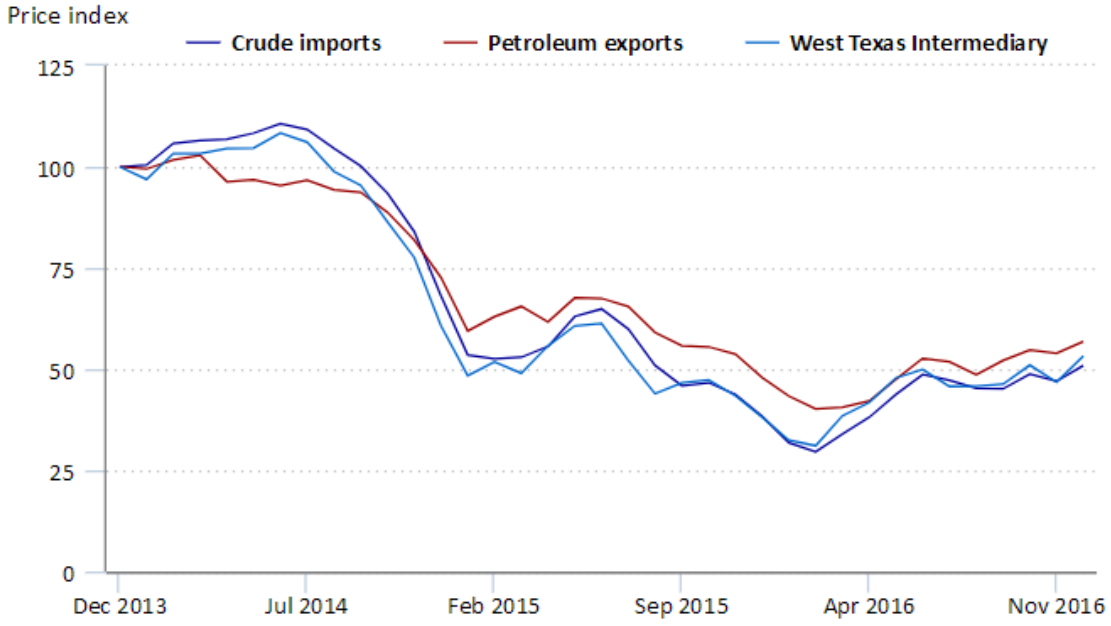
Source: U.S. Energy Information Administration.

The major contributor to the fall in petroleum prices in 2014 and 2015 was oversupply in the global market, as oil producers failed to decrease output despite declining prices. Over the course of 2014 and 2015, WTI crude oil prices declined 62 percent, yet global crude production continued to grow, peaking in December 2015 at 81 million barrels per day.[18] The glut in supply coincided with shrinking global demand, further boosting global crude oil inventories. Economies in Europe and China slowed toward the end of 2014 and through 2015, and shifts to cheaper alternative fuel sources and the development of more fuel-efficient machinery further weakened overall demand for crude.[19] In addition, the relatively strong performance of the U.S. economy affected the value of the U.S. dollar, which appreciated 20 percent from 2014 to 2015.[20]

U.S. import and export prices

Similar price fluctuations were reflected in the U.S. import price index for crude oil. As seen in figure 3, U.S. export prices for petroleum products trend closely with U.S. crude import prices and WTI prices. Prices for crude oil imports rose 27.6 percent in 2011, as global growth pushed demand. Over the next 2 years, import prices fell 8.4 percent in 2012 and 2.5 percent in 2013, as production increased globally. The 2012 decline marked the first calendar-year drop in crude oil import prices since the Great Recession. In 2014, as crude oil prices began to decrease, prices for imports followed suit, declining 31.9 percent over the year. During 2015, crude import prices fell 43.7 percent, marking the fourth straight year of declining prices. After increasing during the first part of 2014, import prices fell 65.3 percent from June 2014 through December 2015.

Figure 3. Price indexes for U.S. crude oil imports, U.S. petroleum products exports, and West Texas Intermediary prices, December 2013 to December 2016



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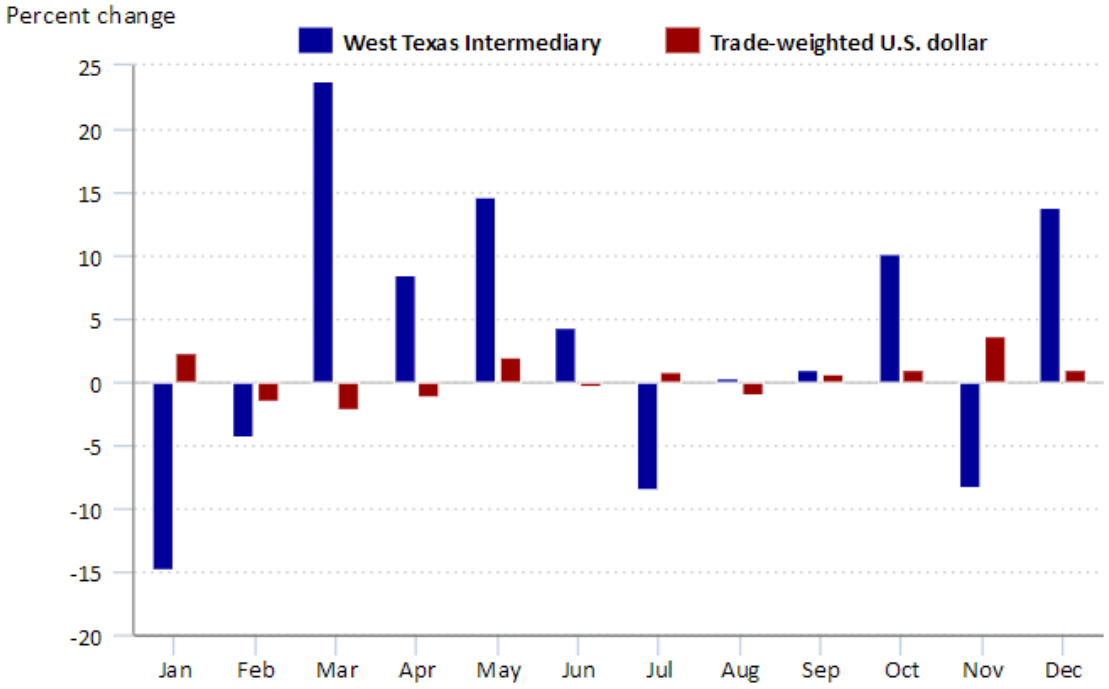
Source: U.S. Bureau of Labor Statistics and U.S. Energy Information Administration.

The economic factors that influenced global crude oil prices have had roughly the same affect on export petroleum prices. Prices for U.S. petroleum exports plummeted during the collapse in global crude oil prices, although they continued to trend slightly above crude oil prices. This decline began April 2014, as the index decreased 6.3 percent during the month. Prices continued to drop over the course of 2014, falling 27.3 percent, then declined another 34.1 percent in 2015. In total, from April 2014 through the end of 2015, prices fell 53.4 percent. The decline in export prices was less than that of import prices, reflecting a different product mix. Crude oil is a major component of import prices, and export prices are heavily weighted towards refined petroleum products.

Crude oil market in 2016

Throughout 2016, global crude oil prices and output fluctuated primarily because of the dollar's appreciation, chronic oversupply, expectations of drops in production and inventory, and instability within the Organization of the Petroleum Exporting Countries (OPEC).[21] In the United States, domestic production of crude oil dropped, imports remained below pre-2013 levels, and legislation was passed to allow export of crude oil for the first time in 40 years.[22] As seen in figure 4, although fluctuating for most of the year, crude oil prices and the strength of the U.S. dollar both increased over 2016. Global market factors pushed crude oil prices higher despite downward pressure from a stronger U.S. dollar.

Figure 4. Monthly price change for crude oil and petroleum products, West Texas Intermediary and trade-weighted U.S. dollar indexes, 2016



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Source: U.S. Energy Information Administration and Federal Reserve Bank of St. Louis.

The appreciation of the dollar likely contributed to a further decline in world oil prices in the first 2 months of 2016. On February 11, WTI spot prices for crude oil fell to $26.19 per barrel, a 15-year low.[23] The low crude prices made it increasingly difficult for oil companies to remain profitable and may have deterred investment in future exploration. U.S. companies slowed production, and many oil rigs were shut down altogether. The number of U.S. crude oil rotary rigs in operation fell from 1,539 in December 2014 to 320 in May 2016.[24] As seen in figure 2, U.S. production of crude oil fell from an average of 9.23 million barrels per day in December 2015 to 8.77 million barrels per day in December 2016, a decline of 4.98 percent.[25]

Overall, global production flattened and expectations of curtailing output from major oil-producing countries sparked a recovery for crude oil prices.[26] This coincided with a short period (February to April) of depreciation for the dollar. Future expectations of shrinking global supply propped up prices despite friction over production quotas among OPEC countries.

As prices recovered, large oil producers (for example, Russia and Saudi Arabia) and medium ones (for example, Iraq and Norway) began to increase production. Most other countries either kept production steady or lowered it. Overall, total world oil production averaged 80,557 thousand barrels a day in 2016, compared with 80,448 thousand barrels a day in 2015.[27] By the end of the third quarter of 2016, global production had started to rise but domestic production levels had fallen to its lowest point since March 2014. After April 2014, WTI prices dipped only in July and November of 2016. In October 2016, reports of inventory drawdowns for gasoline and distillates (which include diesel and heating oil) helped push crude prices up globally.[28] However, global production increased in November, leading to excessive crude supply and inventories, which pushed down the average WTI price. In late

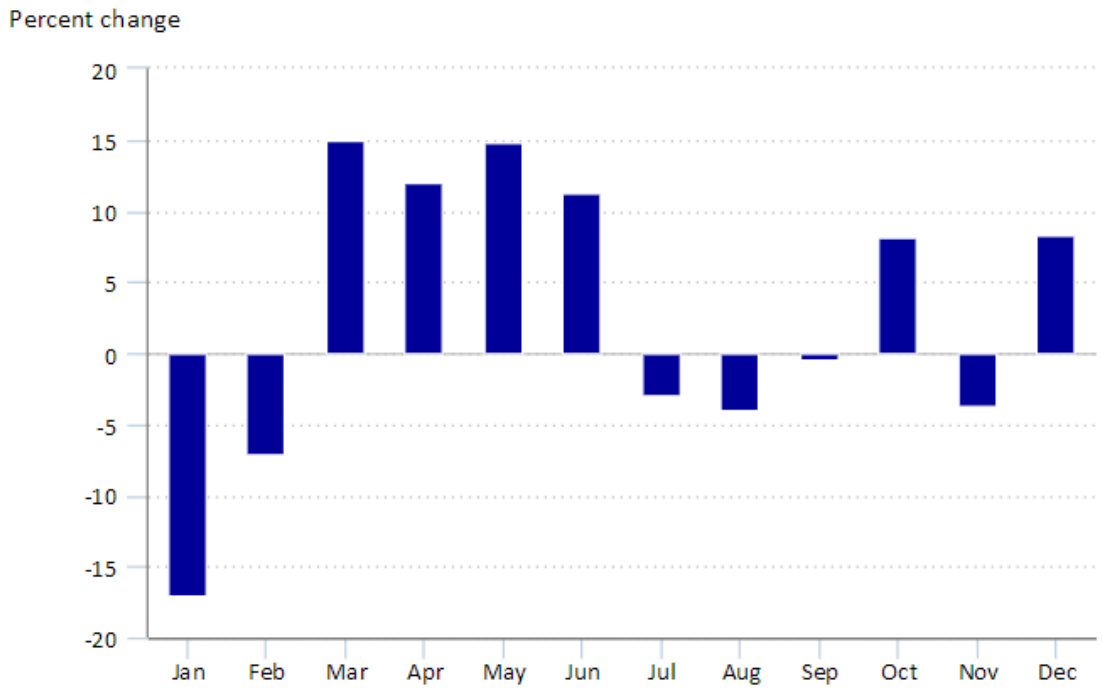
November, OPEC agreed on a deal to reduce production of crude oil by 1.2 million barrels a day, which drove crude oil prices upward in December.[29]

U.S. crude oil and petroleum prices in 2016

Imports

In 2016, the import price index for crude oil rose 32.7 percent over the year and was the largest contributor to the increase in U.S. import prices overall. However, in the first 2 months of the year, prices for import crude oil continued the downward trend of the past few years, declining 22.9 percent. As seen in figure 5, the rebound started in March, when prices rose 14.9 percent, marking the largest monthly increase since June 2009. Prices continued to increase over the next 3 months, rising 43.1 percent over the second quarter of 2016. During the third quarter, prices decreased each month, likely because of high inventory levels and steady production from OPEC.[30] Following the cyclical pattern of supply cuts and gluts, prices rose 8.2 percent in October, before falling 3.7 percent in November. Prices then rose 8.3 percent in December 2016. Despite rising prices throughout the year, U.S. crude oil production fell below its 2015 level.[31]

Figure 5. U.S. crude oil imports monthly price change, 2016



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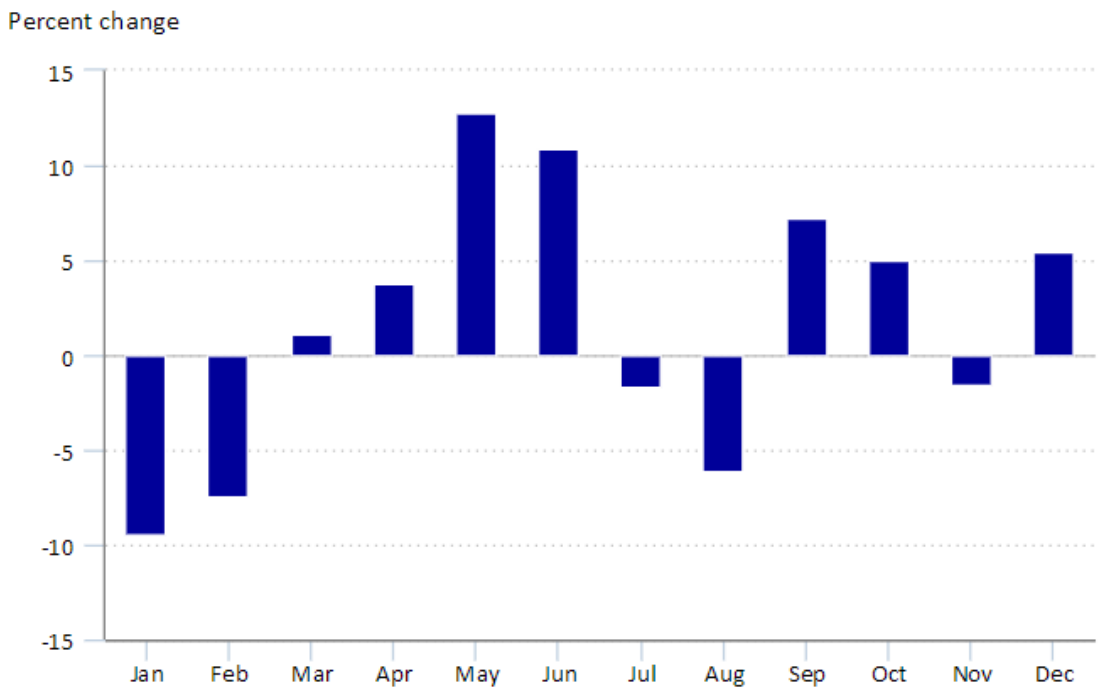
Source: U.S. Bureau of Labor Statistics.

Exports[32]

Prices for fuels and lubricants were the major contributor to the increase in overall U.S. export prices in 2016. Over the course of the year, the export price index for petroleum products increased 18.6 percent, reversing the downward trend of 2014 and 2015. Prices fell 16.2 percent over the first 2 months of 2016, coinciding with oversupply in global markets, but rose 1.1 percent in March. (See figure 6.) This marked the first monthly increase since May 2015. Similar to import prices for crude oil, export prices for petroleum products gained over the second quarter, going up 29.8 percent. This included a 12.8-percent rise in May, representing the largest monthly increase since November 2007. Prices then dipped in July and August, as global crude oil inventories were at record levels. In the final 4 months of the year, export petroleum prices increased 16.8 percent. The announcement of a crude oil supply cut from OPEC in late November pushed petroleum prices up 5.5 percent in December.

Figure 6. U.S. petroleum products exports monthly price change, 2016



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Source: U.S. Bureau of Labor Statistics.

Import price indexes: 2016 highlights

Background

After more than a decade of fluctuations that included 4 straight years of price declines (2012–16), overall prices for U.S. imports went up in 2016. Import prices for all commodities rose 5.6 percent over the 2007–16 period. Import prices showed higher-than-normal volatility over much of the 10-year period. The largest annual decline occurred in 2008, during the Great Recession, as import prices declined 10.1 percent. Prices experienced a strong recovery over the following 3-year period, increasing 24.2 percent. U.S. import prices stalled in 2012 and 2013,

before falling crude oil prices pulled the price index down even further in 2014 and 2015. Higher import prices in 2016 were not enough to offset the 16.1-percent decrease experienced over the 4 previous years. (See table 1.)

Table 1. Import prices 12-month percent changes, 2007 to 2016

Year	All commodity imports	Excluding fuels	Fuels
2007	10.6	3.1	42.1
2008	-10.1	1.2	-47.0
2009	8.6	.3	62.2
2010	5.3	3.0	14.2
2011	8.5	3.4	24.9
2012	-2.0	.0	-7.9
2013	-1.1	-1.2	-1.2
2014	-5.6	.0	-29.1
2015	-8.3	-3.4	-41.0
2016	1.9	.2	24.7

Source: U.S. Bureau of Labor Statistics.

U.S. import prices in 2016

Import prices for all commodities rose 1.9 percent in 2016. Prices for imports fell early in 2016, declining 1.3 percent in January and 0.5 percent in February, continuing the downward trend of 2015. Trending with crude oil prices, import prices rose 0.4 percent in March, the first monthly increase since June 2015. During the second quarter of 2016, import prices recorded their largest monthly increases; in May, the index rose 1.2 percent, the largest advance since March 2012 (1.4 percent). After rising 3.1 percent from February to July, import prices fell 0.2 percent in August. Prices ended the year by going up 0.9 percent over the final 4 months. Nonfuel import prices recorded little change in 2016.

Fuel imports

Crude oil, petroleum and petroleum products, natural gas, coal, and other fuels compose the fuels and lubricants price index. Import prices for fuels and lubricants increased 24.7 percent in 2016, after declining in each of the past 4 years. This increase marked the largest year-over-year advance since a 24.9-percent increase in 2011. This was largely spurred by a significant price increase that occurred during the second quarter of 2016, when the price index for fuel imports rose 36.8 percent. Import prices for petroleum and petroleum products, specifically fuel oil prices, led the over-the-year gains. Since petroleum products are a byproduct of crude oil,[33] the price for petroleum products is highly correlated with the price of crude oil.

Natural gas, a fuel import, saw its prices increase significantly in 2016. Natural gas is a substitute fuel source, and its price changes are correlated with price changes for other fuel sources. When crude oil prices increase, the demand for natural gas and other alternative fuel sources rise. This, in turn, puts upward pressure on prices for natural gas.

In 2016, natural gas import prices rose 28.9 percent, the largest calendar-year increase since 2005. This increase followed a decline of 43.7 percent over the previous year, when the United States achieved record levels of natural gas production, 78.78 billion cubic feet per day,[34] and registered record levels of working gas inventories, 3.68 billion cubic feet.[35] According to the U.S. Energy Information Administration, annual marketed production of natural

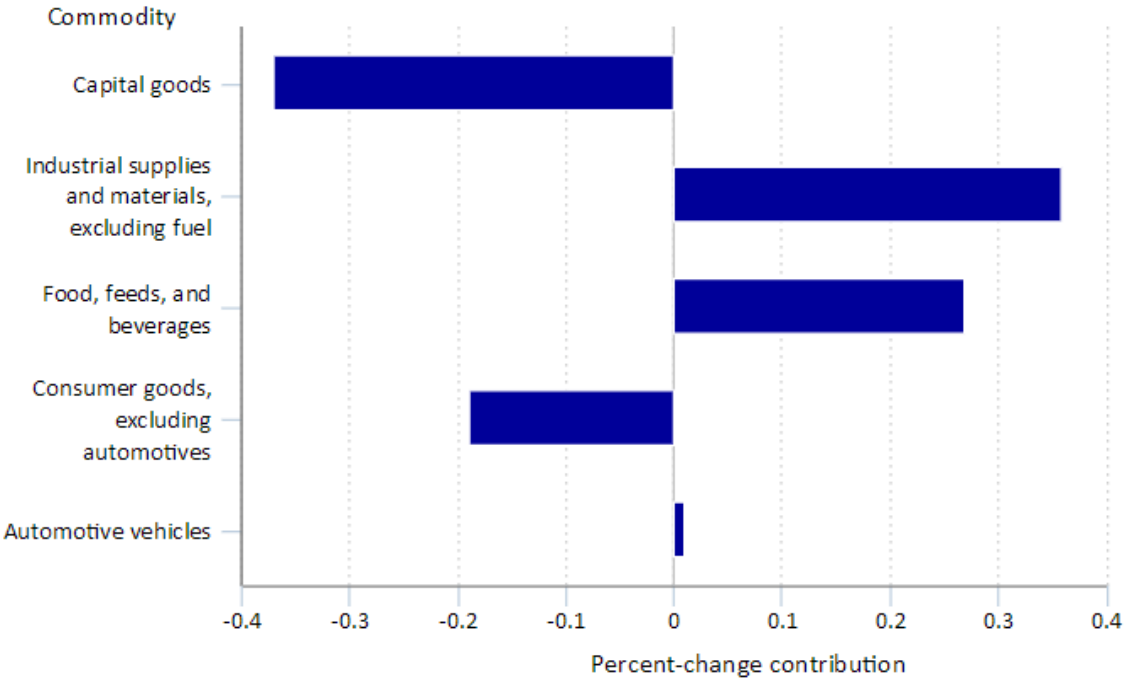
gas in the United States dipped during 2016, for the first time since 2005, falling to 77.31 billion cubic feet per day.[36] This decline, along with higher consumption than in 2015, brought down the working gas inventories throughout the year to 3.31 billion cubic feet, alleviating global oversupply.[37]

Natural gas import prices were down in the first half of 2016, at a time of global oversupply and low crude petroleum prices. However, natural gas import prices rose during the second half of the year. Prices for natural gas imports were spurred by higher crude prices, warmer weather during the summer months, expectations for colder seasonal weather in the upcoming winter, and increased industrial demand as the United States shifted from coal to natural gas. These conditions created a strong impetus for companies to stockpile reserves quickly for the winter months, pushing prices up 57.5 percent from June through September.[38] After a downturn in October, prices rose again during the final 2 months of the year.

Nonfuel imports

Following a 3.4-percent decline in 2015, nonfuel import prices ticked up 0.2 percent in 2016, despite downward pressure from a strengthening U.S. dollar. Although relatively modest, this uptick was the first calendar-year increase for the price index for nonfuel imports since 2011. As seen in figure 7, higher prices for both nonfuel industrial supplies and materials, and foods, feeds, and beverages more than offset lower prices for capital goods and consumer goods.

Figure 7. Major contributors to the 0.2-percent increase in import prices, excluding fuel, 2016



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Source: U.S. Bureau of Labor Statistics.

Capital Goods

Prices for capital goods imports decreased 1.2 percent in 2016, continuing a 4-year downward trend. The largest contributor to the decline was nonelectrical machinery prices, which decreased 1.5 percent in 2016. Lower prices for computers, peripherals, and semiconductors, along with falling import prices for industrial engines, pumps, and compressors, were also major contributors. Computers, peripherals, and semiconductor prices decreased 2.3 percent in 2016. Throughout the year, competition and innovation within the industry continued to exert downward pressure on prices. The price index for computers, peripherals, and semiconductors has not recorded an annual increase since 1988. The import price index for industrial engines, pumps, and compressors fell 2.9 percent in 2016. Prices have been steadily declining since late 2014, as the U.S. dollar has appreciated and prices for metal, a primary input, have fallen over the past few years.

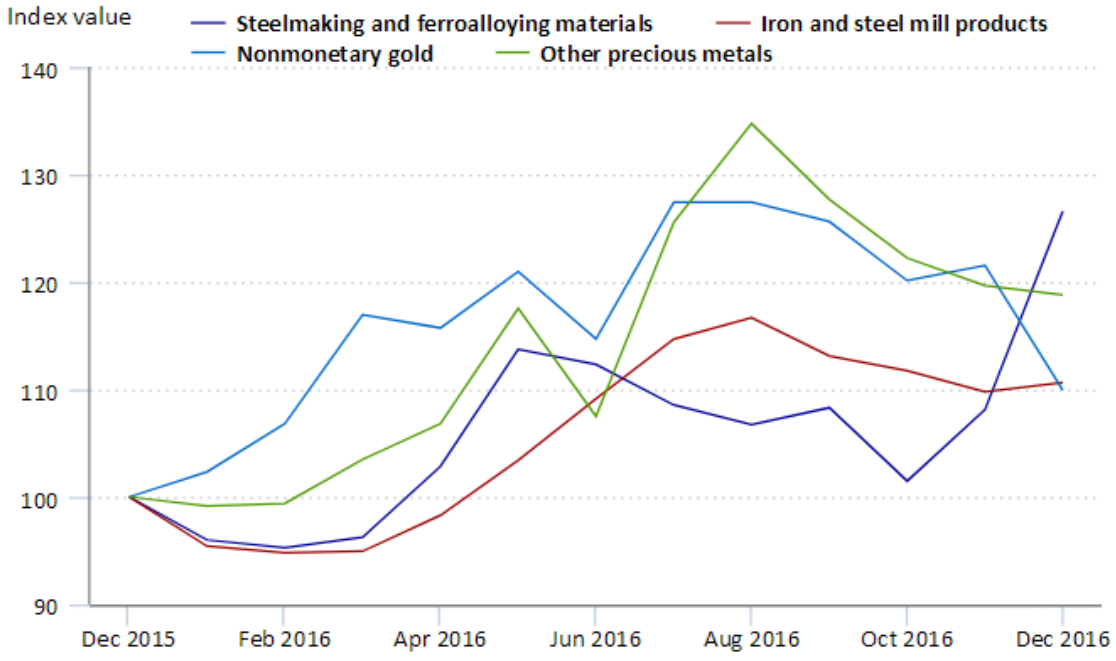
Industrial supplies and materials (excluding fuels)

Prices for nonfuel industrial supplies and materials imports increased 2.5 percent in 2016, after falling 11.1 percent the previous year. This growth represented the first annual price increase since 2011. Unfinished metals prices led the overall gains, as prices rose 12.3 percent in 2016. This increase was a change from the previous year, when prices fell 22.6 percent.

Import prices for most metals reversed trend in 2016, recording large price increases over the year despite downward pressure by an appreciating U.S. dollar. Global supply for metals tightened in 2016, as falling prices over the past few years slowed investment. Mine closures, environmental constraints, and global policy developments (particularly in Indonesia, the Philippines, and China) forced markets to rebalance.[39] In addition, a credit stimulus in China spurred demand for metals that helped prices rebound.[40] Metals, specifically steelmaking materials, experienced a large price increase toward the end of the year, as future expectations for U.S. infrastructure spending increased global demand.

As seen in figure 8, steelmaking and ferroalloying materials increased 26.6 percent in 2016. This gain resulted from a sharp rise in scrap and ore prices towards the end of the year. The gain included a 17.1-percent increase in December, the largest monthly increase since April 2008. Prices for iron and steel mill products rose 10.7 percent over the year, as material inputs and tighter supply led to higher prices. The other large contributors to the rise in unfinished metals prices were nonmonetary gold and precious metals, whose prices increased 9.9 percent and 18.8 percent, respectively. These metals are typically seen as safe investments that investors flock to in times of uncertainty. Both a brief period of depreciation of the U.S. dollar during the first half of 2016 and the uncertaintly that followed the U.K. Brexit decision contributed to increased demand for precious metals. However, the U.S. dollar began strengthening after August. That, coupled with improving global economic indicators, led to lower prices for nonmonetary gold and precious metals over the remainder of year. Other metals with significant import price increases in 2016 include nickel (22.2 percent), tin (42.7 percent), and zinc (74.1 percent).

Figure 8. Index values for selected unfinished metals related to durable goods, December 2015 to December 2016



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Source: U.S. Bureau of Labor Statistics.

Consumer goods, excluding automotive

Prices for consumer goods—consisting of nondurables, manufactured; durables, manufactured; and nonmanufactured consumer goods—decreased 0.7 percent in 2016, following a 0.6-percent decline in 2015. The 2016 drop matched the largest calendar-year decrease since 2001, as the stronger U.S. dollar continued to affect import prices for consumer goods. Price declines of 1.5 percent for imported manufactured durable goods and 4.2 percent for nonmanufactured consumer goods were key contributors to the 2016 consumer goods decline. The import manufactured durables index has not experienced a calendar-year increase since 2011, while prices for nonmanufactured consumer goods declined for the first time since 2012.

Within the price index for durable manufactured goods, the category of other household goods, which is dominated by cellular phones, fell 1.9 percent. Intense competition and innovation in the cell-phone market pushed prices downward in 2016, marking the fifth consecutive calendar-year decrease. Diamond prices were the main contributor to the nonmanufactured consumer goods price change, decreasing 4.1 percent. After remaining largely stable throughout 2016, prices for import diamonds fell 3.8 percent in December, the largest monthly decline since the index was first published in December 2007. Prices declined because of lower-than-normal demand during the December holiday season and demonetization in India,[41] a key player in the diamond market.[42]

Foods, feeds, and beverages

Import prices for foods, feeds, and beverages increased 4.0 percent in 2016, following a 5.3-percent decrease in 2015. In 2016, the import price index for fruit and fruit preparations was the main contributor to the overall rise in food prices, increasing 23.1 percent for the year. That was the largest calendar-year increase for the index since its first publication in 1981.

A major shortage in the global supply of avocados caused large price increases. The shortage was the result of higher-than-normal temperatures and severe droughts in the major avocado-producing areas of Mexico and California. Global demand for avocadoes had been growing steadily, which further exacerbated the supply shortage and caused prices to spike significantly.

Automotive vehicles

The price index for imported automotive vehicles recorded no change in 2016, after declining 1.9 percent the previous year. Prices for automotive vehicles have not recorded a calendar-year increase since 2012. Lower prices over the year for most automotive parts offset a 0.5-percent rise in October for passenger cars, an increase spurred by the introduction of 2017 models.

Export Price Indexes: 2016 Highlights

In 2016, overall U.S. export prices rose for the first time since 2012. (See table 2.) This increase followed a 6.6-percent decrease in 2015, the largest annual decline in the 24-year history of the U.S. export price index. Over the past 10 years, prices for overall U.S. exports went up 7.8 percent. After falling 2.9 percent in 2008, during the Great Recession, prices for U.S. exports rebounded over the next 4 years, increasing 15.4 percent. They dipped slightly in 2013, falling 1.0 percent, then declined again in 2014 and 2015, falling 3.0 percent and 6.6 percent, respectively. The 2014 and 2015 declines were largely due to the crash in crude oil and petroleum prices and the appreciating dollar. U.S. export prices, similarly to import prices, dipped in the first quarter of 2016, before turning upward during the second quarter and closing the year slightly higher than in 2015.

Table 2. Export prices 12-month percent changes, 2007 to 2016

Year	All commodity exports	Excluding agriculture	Agriculture
2007	6.0	4.5	23.3
2008	-2.9	-2.2	-10.9
2009	3.4	2.9	9.2
2010	6.5	5.1	20.5
2011	3.6	4.0	1.0
2012	1.1	-.3	13.4
2013	-1.0	-.4	-6.4
2014	-3.0	-2.8	-5.2
2015	-6.6	-5.9	-12.9
2016	1.3	1.4	-.3

Source: U.S. Bureau of Labor Statistics.

U.S. export prices in 2016

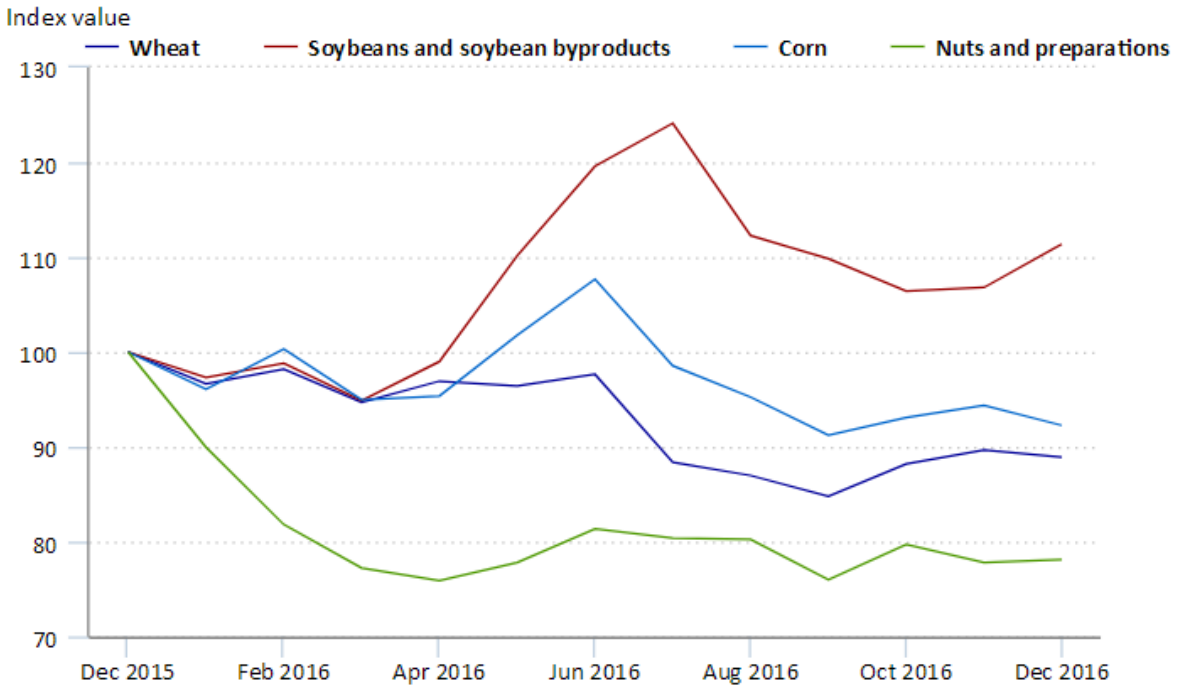
U.S. export prices for all commodities rose 1.3 percent in 2016. After declining by 1.4 percent in the first 3 months of the year, they rose 0.5 percent in April, marking the first monthly increase since May 2015. Over the next 3 months, prices continued to move upward, increasing 2.0 percent. In May, export prices rose 1.1 percent, marking the largest monthly increase since March 2011. After 4 consecutive months of higher prices, the overall export price index fell 0.8 percent in August. But this decline proved short lived, as export prices increased 0.3 percent the following month. Prices rose 1.0 percent over the final 4 months of 2016.

Through 2016, export prices for agricultural products declined, albeit by the smallest percentage of the past 4 years, while export prices for nonagricultural products increased for the first time since 2011. Petroleum and petroleum products were the primary drivers of this rise in prices in nonagricultural product prices.

Agricultural exports

The price index for agricultural exports fell 0.3 percent in 2016, after declining 12.9 percent in 2015, 5.2 percent in 2014, and 6.4 percent in 2013. Agricultural export prices fell 2.7 percent over the first quarter of 2016, then rebounded in the second quarter with a 6.4 percent increase. As seen in figure 9, lower export prices for wheat, corn, other feed grains, and nuts contributed to the decline, which more than offset higher prices for soybeans. For wheat, corn, and other feed grains, export prices decreased largely because of oversupply in the global market. Weaker income growth in developing countries and a stronger U.S. dollar weakened global demand and put further downward pressure on most agricultural prices.[43]

Figure 9. Index values for selected agricultural exports, December 2015 to December 2016



Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Prices for wheat exports declined 11.1 percent in 2016 as a result of increased production. Nearly perfect weather conditions throughout major U.S. wheat producing regions greatly increased yields and total output in 2016.[44] Total U.S. production rose to 2.3 billion bushels, the largest output since 2008. This was the fourth consecutive year the wheat exports index decreased, with prices falling 48.2 percent over the 2012–16 period. Prices fluctuated throughout 2016, but fell during the third quarter of the year, by 13.2 percent.

Export corn prices went down 7.7 percent in 2016, continuing the declines that had occurred in each of the previous 3 years. From 2012 through 2015, corn prices declined 52.5 percent. Aided by excellent field conditions, U.S. corn production reached a historic high of 15.2 billion bushels in 2016, up 11 percent from 2015.[45] U.S. corn exports increased in 2016, and ending stocks also reached a record high. After decreasing 5.0 percent through the first quarter of 2016, prices rose 13.4 percent in the next quarter. Forecasts for increased U.S. corn exports propped up prices for corn in May and June, as U.S. exports improved relatively to those of other corn-exporting countries.[46] However, oversupply in global markets pushed prices down 15.3 percent during the third quarter. Prices for corn stabilized in the final quarter of 2016.

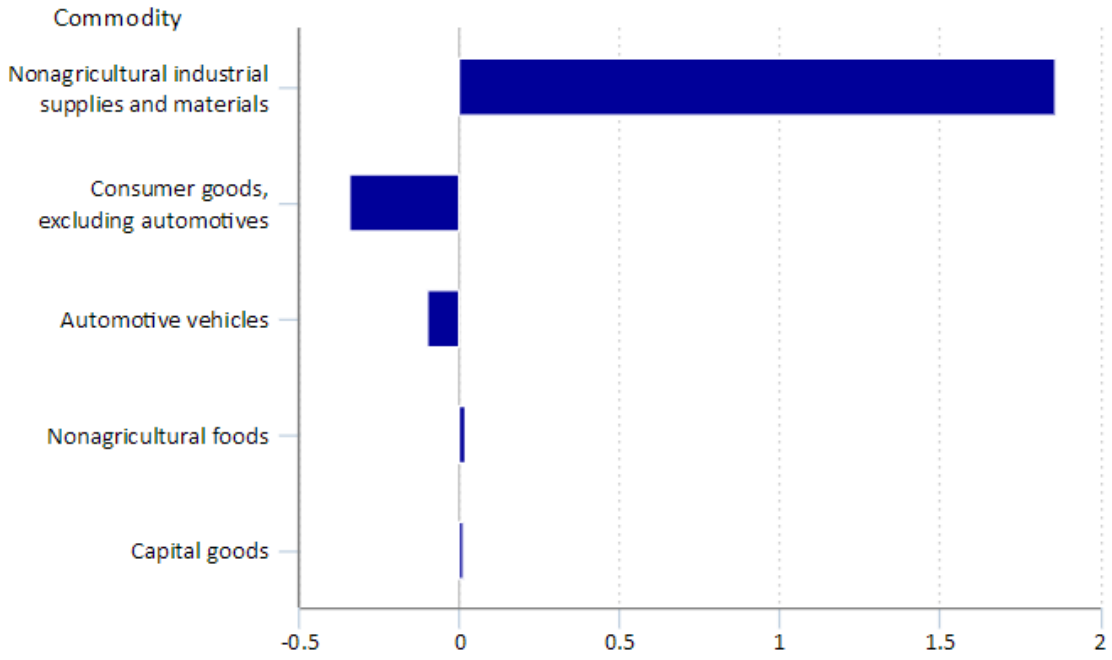
In 2016, U.S. export prices for nuts dropped significantly for the second consecutive year, falling 21.9 percent. Prices fell 24.1 percent during the first 4 months of 2016, then remained relatively stable through the rest of the year. Almond prices drove the large price declines at the beginning of 2016, after rising in 2015 because of reports of the health benefits from eating almonds.[47] The upturn in early 2016 resulted from increased global demand coupled with inadequate supply; supply was dampened because of droughts and water shortages in California, where nearly 80 percent of the world's almonds are produced.[48] In February 2016, prices began to fall, as increasingly higher prices eroded demand. Favorable weather also raised production levels, creating oversupply in the global market.

After seeing 3 consecutive years of price declines, U.S. soybean exports rebounded in 2016, rising 11.4 percent. Prices had fallen in the months leading up to 2016 because of both lower demand and higher global soybean production. Throughout 2016, global demand for soybeans ticked up, contributing to higher prices. Prices fell 5.1 percent in the first quarter, but rebounded in April, increasing 4.4 percent. Expectations of lower yields and a 1-percent decline in sown acreage in the United States drove soybean export prices upward in May, with prices increasing 11.3 percent.[49] Prices continued to rise throughout the summer as global demand improved and poor weather conditions hampered production in South America.[50] Soybean prices cooled off in the third quarter, declining 14.3 percent as global production exceeded previous estimates. Soybean prices increased 4.7 percent over the final 2 months of the year. Higher crude oil prices also had a positive impact on prices for soybeans because of the role of soybeans in the biofuel sector.

Nonagricultural exports

Prices for nonagricultural exports increased 1.4 percent in 2016, after falling 5.9 percent in 2015. As seen in figure 10, the increase—which more than offset a decline in prices for consumer goods and automotive vehicles—was driven by higher prices for nonagricultural industrial supplies and materials and for nonagricultural foods. Export prices for capital goods recorded no change in 2016.

Figure 10. Major contributors to the 1.4-percent increase in export prices, excluding agriculture, 2016



Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Nonagricultural industrial supplies and materials

The export price index for nonagricultural industrial supplies and materials increased 6.2 percent in 2016, after falling 15.8 percent in 2015. The overall advance in export prices for nonagricultural industrial supplies and materials in 2016 was driven by significant price increases during the second quarter of the year. In May 2016, prices rose 3.2 percent, the largest monthly increase since March 2011. Higher prices for fuel and metals were the main contributors to the rise.

Increasing petroleum prices drove higher fuel prices in 2016. Export prices for coal and natural gas also went up. Coal and natural gas are energy substitutes for petroleum and crude oil; therefore, their prices tend to be positively correlated.

The price index for coal rose 33.0 percent in 2016, after falling 59.4 percent over the previous 4 years. Lower prices and increased use of cleaner alternative fuel sources led to a sharp downturn in coal production.[51] In the United States, coal production dropped from 1,000 million short tons in 2014 to 728.2 million short tons in 2016.[52] Prices for U.S. coal exports declined 6.2 percent over the first 3 quarters of 2016, before rising 41.7 percent in the fourth quarter. The reversal in coal prices was driven, in part, by an overhaul in the Chinese coal industry and China's push to increase the use of alternative fuel sources. China is the largest producer of coal, but its production has been shrinking since 2012 as oversupply in the market generated huge inventories.[53] In April 2016, China introduced additional coal-production caps. However, as China's production has decreased, its demand for

coal imports has increased.[54] The tightening global supply for coal created a brief but significant upturn at the end of 2016 in U.S. coal export prices.

Export prices for natural gas increased 67.4 percent in 2016, after falling 44.2 percent the previous year. These prices were influenced by the same factors that affected natural gas import prices. Higher crude oil prices, warmer weather during the summer months, expectations for a colder winter, and increased industrial demand from companies shifting from coal to natural gas all contributed to higher prices for natural gas exports.

Nonferrous and other metals significantly contributed to higher export prices for U.S. nonagricultural industrial supplies and materials. Export prices for nonferrous and other metals increased 12.2 percent in 2016, after falling the past 4 years. Prices rose 8.5 percent over the first 4 months of 2016, as increased nonmonetary gold prices initially offset lower prices for other nonferrous metals that appeared to bottom out in early 2016. Nonmonetary gold and other precious metal prices were the main contributors to the rise, increasing 9.9 and 14.4 percent, respectively, as the U.K. Brexit decision pushed investors toward safer investments.[55]

The global recovery in crude oil prices and a stronger U.S. dollar put downward pressure on nonferrous and other metals export prices in the second half of 2016. Similarly to prices for U.S. imports, export prices for nonmonetary gold and for other precious metals fell 13.8 percent and 4.8 percent, respectively, from July through the end of the year. Those declines more than offset a 16.8-percent increase in copper prices during the fourth quarter of 2016, as expectations of increased investment in U.S. infrastructure pushed prices upward.[56]

Consumer goods, excluding automotive

Export prices for consumer goods declined for a fifth consecutive year in 2016, decreasing 2.4 percent. The 2016 drop in prices matched the largest calendar-year drop since BLS first published the price index in 1983. Prices for consumer goods, volatile throughout 2016, fell during the final quarter of the year. The fall included a 1.0-percent decline in December, the largest 1-month decrease in more than 25 years.

Nondurable manufactured goods prices fell 1.8 percent in 2016, largely because of the 1.9 percent decline in prices for medicinal, dental, and pharmaceutical preparatory materials. Durable manufactured goods prices decreased 2.3 percent in 2016. As was the case with imports, the largest contributor to the lower prices for durable goods manufactured exports in 2016 was miscellaneous household goods, which fell 7.4 percent. This decline was driven by lower prices for cellular phones.

Automotive vehicles, parts, and engines

Prices for automotive vehicles fell 0.9 percent during 2016, building on the 0.5-percent decline the previous year. The 2016 decrease was the largest calendar-year drop since the price index was first published in 1981. In the automotive vehicle exports category, prices for passenger cars, engines and engine parts, and nonengine parts and accessories all recorded record calendar-year declines in 2016, falling 1.6 percent, 0.5 percent, and 1.4 percent, respectively. The automotive vehicle and parts industry is a highly competitive global market, so export prices for these items are strongly influenced by exchange rates. Lower metal and material prices over the past few years also led to lower input costs.

Nonagricultural foods

Nonagricultural food exports consist primarily of fish and shellfish, as well as alcoholic beverages. Prices for nonagricultural foods rose 3.1 percent in 2016, following a 4.2-percent decline in 2015. Despite recording the largest calendar-year increase since the index rose 14.1 percent in 2011, the index only minimally contributed to the rise in overall nonagricultural export prices, as seen in figure 10.

Capital goods

Capital goods export prices were stable in 2016, following a 0.5-percent decrease in 2015. Lower prices for computer, peripherals, and semiconductors exports were offset by higher prices in transportation equipment, excluding motor vehicles. Computer, peripherals, and semiconductors export prices fell 4.1 percent over the year, while transportation equipment increased 3.0 percent. The price index for computers, peripherals, and semiconductors continued a long-term downward trend; the index has recorded calendar-year decreases in every year since 1988, except for a 0.3-percent increase in 2012. Export prices for capital goods, excluding computers, peripherals, and semiconductors, increased 0.8 percent in 2016.

Conclusion

The U.S. import and export price indexes rose in 2016 because the dynamics of the world oil market ran counter to traditional expectations. Crude oil prices rebounded after hitting a 15-year low in February 2016, which proved to be the pivotal catalyst driving higher prices for overall U.S. imports and exports. In March, import and export prices began to increase, reversing the negative trend of the past few years. Improved global economic conditions, steady production of crude, and the potential for future reductions in crude oil production facilitated the recovery for crude oil prices in 2016. As the global economy strengthened, prices for U.S. imports and exports recovered steadily, preserving the first annual increase for both U.S. import and export prices since 2011.

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NOTES

1 Throughout this article, changes in a given calendar year refer to the percent change from December of the previous year to December of the reference year

2 “Exports of goods by principal end-use category” (U.S. Census Bureau), https://www.census.gov/foreign-trade/statistics/historical/SAEXP.pdf.

3 “Imports of goods by principal end-use category” (U.S. Census Bureau), https://www.census.gov/foreign-trade/statistics/historical/SAIMP.pdf.

4 “Trade in goods with world, seasonally adjusted” (U.S. Census Bureau), https://www.census.gov/foreign-trade/balance/c0004.html.

5 *U.S. International Trade in Goods and Services*, CB 17-17–BEA 17-06–FT-900 (16-12) (U.S. Census Bureau, December 2016), https://www.census.gov/foreign-trade/Press-Release/2016pr/12/ft900.pdf.

6 Jon Hilsenrath and Ben Leubsdorf, “Near zero, expects ‘gradual’ tightening path,” *The Wall Street Journal,* December 16, 2015, https://www.wsj.com/articles/fed-raises-rates-after-seven-years-at-zero-expects-gradual-tightening-path-1450292616.

7 U.S. import and export price indexes are calculated using prices in dollar terms. Approximately 6 percent of import prices and 4 percent of export prices need to be converted from foreign currency to dollars, causing a direct impact on exchange-rate changes for those prices.

8 Kristen Reed, "Impact of the strengthening dollar on U.S. import prices in 2015," *Beyond the Numbers: Global Economy*, vol. 5, no. 12 (U.S. Bureau of Labor Statistics, August 2016), https://www.bls.gov/opub/btn/volume-5/impact-of-the-strengthening-dollar-on-us-import-prices-in-2015.htm.

9 "Trade weighted U.S. dollar price index: broad," *Federal Reserve Economic Data* (Federal Reserve Bank of St. Louis, February 5, 2016), https://fred.stlouisfed.org/series/TWEXB.

10 The International Price Survey collects prices of import and export goods based on Harmonized Tariff Schedule and Schedule B classifications. These product classifications are then mapped to the BEA end-use and North American Industry Classification System (NAICS) codes. Indexes for the three classification systems—Harmonized, BEA, and NAICS—are calculated and published.

11 In December 2015, a 40-year ban on exporting U.S. crude oil was lifted, and U.S. companies began exporting crude in January 2016. These values are not yet reflected in the U.S. export price index.

12 "Cushing, OK WTI spot price FOB (dollars per barrel)" (U.S. Energy Information Administration), http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=rwtc&f=m.

13 Ibid.

14 *Short-term energy outlook data browser,* table 1, "U.S. energy market summary" (U.S. Energy Information Administration), https://www.eia.gov/outlooks/steo/data/browser.

15 Ibid.

16 Ibid.

17 Ibid.

18 *Monthly Energy Review*, "Table 11.1b, World crude oil production: Persian Gulf nations, non-OPEC and the world" (U.S. Energy Information Administration, September 2017), chap. 11, p. 171, https://www.eia.gov/totalenergy/data/monthly/archive/00351709.pdf; and "Cushing, OK WTI spot price FOB " (U.S. Energy Information Administration), http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pets=rwtcf=m.

19 Dave Mead and Porscha Stiger, "The 2014 plunge in import petroleum prices: what happened?" *Beyond the Numbers: Global Economy*, vol. 4, no. 9 (U.S. Bureau of Labor Statistics, May 2015), https://www.bls.gov/opub/btn/volume-4/the-2014-plunge-in-import-petroleum-prices-what-happened.htm.

20 "Trade weighted U.S. dollar index: broad," (Federal Reserve Bank of St. Louis) https://fred.stlouisfed.org/series/TWEXBMTH.

21 Globally, petroleum is priced in U.S. dollars. Therefore, a stronger U.S. dollar makes oil more expensive for buyers not using U.S. dollars. This, in turn, reduces demand for petroleum.

22 Amy Harder and Lynn Cook, "Congressional leaders agree to lift 40-year ban on oil exports," *The Wall Street Journal*, December 16, 2015, https://www.wsj.com/articles/congressional-leaders-agree-to-lift-40-year-ban-on-oil-exports-1450242995.

23 "Cushing, OK WTI spot price FOB " (U.S. Energy Information Administration), http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=rwtc&f=m.

24 *Monthly Energy Review*, "Table 5.1, Crude oil and natural gas drilling activity measurements" (U.S. Energy Information Administration, January 2017), chap. 5, p. 91, https://www.eia.gov/totalenergy/data/monthly/archive/00351701.pdf.

25 *Monthly Energy Review*, "Table 3.1, Petroleum overview" (U.S. Energy Information Administration, September 2017), chap. 3, p. 49, https://www.eia.gov/totalenergy/data/monthly/archive/00351709.pdf.

26 Christian Berthelsen, "U.S. oil prices hit $40 a barrel, extending recent rally," *The Wall Street Journal*, March 17, 2016, https://www.wsj.com/articles/oil-prices-up-after-fed-holds-interest-rates-1458209451.

27 *Monthly Energy Review*, "Table 11.1b, World crude oil production: Persian Gulf nations, non-OPEC and world" (U.S. Energy Information Administration, September 2017), chap. 11, p. 171, https://www.eia.gov/totalenergy/data/monthly/archive/00351709.pdf.

28 Barani Krishnan and Ethan Lou, "Oil ends up; refined products draw offset U.S. crude build," *Reuters*, October 12, 2016, http://www.reuters.com/article/us-global-oil-idUSKCN12D031.

29 Benoit Faucon and Georgi Kantchev, "Oil surges on OPEC deal to cut production," *The Wall Street Journal*, November 30, 2016, https://www.wsj.com/articles/opec-reaches-deal-to-cut-oil-production-1480518187.

30 *Monthly Energy Review*, "Table 11.1a, World crude oil production: selected OPEC members" (U.S. Energy Information Administration, September 2017), chap. 11, p. 170, https://www.eia.gov/totalenergy/data/monthly/archive/00351709.pdf.

31 "EIA: U.S. crude oil production in 2016 decreased, while exports increased," *World Oil,* March 16, 2017, http://www.worldoil.com/news/2017/3/16/eia-us-crude-oil-production-in-2016-decreased-while-exports-increased.

32 The U.S. export index measure for 2016 does not include prices for crude oil because the trade value for crude oil did not meet the publication benchmark for the export index. Nonetheless, the aggregate "fuels and lubricants" price index incorporates crude oil price changes, and other fuels that account for a larger share of U.S. export trade value, such as refined petroleum products and natural gas, are affected by the price changes in the crude oil market.

33 "Oil: crude and petroleum products explained" (U.S. Energy Information Administration), http://www.eia.gov/energyexplained/index.cfm?page=oil_home.

34 "Table 5a, U.S. natural gas supply, consumption, and inventories" (U.S. Energy Information Administration, February 7, 2017), https://www.eia.gov/outlooks/steo/data/browser/.

35 Ibid.

36 Ibid.

37 Ibid.

38 Timothy Puko, "Natural gas prices rise on strong demand," *The Wall Street Journal*, September 26, 2016, https://www.wsj.com/articles/natural-gas-prices-rise-on-strong-demand-1474903475.

39 "Commodity Markets Outlook" (World Bank Group, January 2017), p. 23,

http://pubdocs.worldbank.org/en/820161485188875433/CMO-January-2017-Full-Report.pdf.

40 Ibid, p. 23.

41 In an effort to prevent tax evasion and money laundering, India instituted a demonetization program that invalidated 500 and 1000 rupee notes, the two largest national currencies. The ban made 86 percent of India's cash reserves worthless, severely cutting back on the purchase of luxury items like diamonds.

42 "Diamond prices decline amid India liquidity crisis," *Rapaport Diamonds.net*, January 3, 2017,

http://www.diamonds.net/News/NewsItem.aspx?ArticleID=58411&ArticleTitle=Diamond%2BPrices%2BDecline%2BAmid%2BIndia%2BLiquidity%2BCrisis.

43 Bryce Cooke, Getachew Nigatu, Kari Heerman, Maurice Landes, and Ralph Seeley, "Global macroeconomic developments drive downturn in U.S. agricultural exports" (U.S. Department of Agriculture, January 2017), p. 2, https://www.ers.usda.gov/webdocs/publications/35809/59822_aes-94.pdf?v=42563.

44 Jennifer Bond and Olga Liefert, "U.S. 2016/17 winter wheat yield projected to hit record high" (U.S. Department of Agriculture, June 14, 2016).

45 "Crop production 2016 summary," (U.S. Department of Agriculture, January 2017), p. 11.

46 "Corn exports increase price forecasts," (National Corn Growers Association, June 10, 2016), http://www.ncga.com/news-and-resources/news-stories/article/2016/06/corn-exports-increase-price-forecasts.

47 Emiko Terazono, "Almond prices crushed by demand slump and bumper harvest," *Financial Times*, January 19, 2016, https://www.ft.com/content/253b49ae-be07-11e5-9fdb-87b8d15baec2.

48 Ibid.

49 Mark Ash and Shelbi Knisley, "Outlook for 2016/17 soybean prices strengthens as demand draws down stocks" (U.S. Department of Agriculture, May 12, 2016).

50 *Oilseeds: World Markets and Trade*, "U.S. export prospects brighten on tightening soybean supplies in South America" (U.S. Department of Agriculture, July 14, 2016).

51 Clifford Krauss, "Coal industry casts itself as a clean energy player," *The New York Times*, February 26, 2017,

https://www.nytimes.com/2017/02/26/business/energy-environment/coal-industry-clean-energy.html.

52 *Monthly Energy Review*, "Table 6.1, Coal overview" (U.S. Energy Information Administration, September 2017), chap. 6, p.97, https://www.eia.gov/totalenergy/data/monthly/archive/00351709.pdf.

53 Dan Strumpf and Rhiannon Hoyle, "China's coal-market reforms fuel rebound in prices," *The Wall Street Journal*, August 15, 2016, https://www.wsj.com/articles/chinas-coal-market-reforms-fuel-rebound-in-prices-1470654404.

54 Rhiannon Hoyle, "Coal prices on fire," *The Wall Street Journal*, November 11, 2016, https://www.wsj.com/articles/coal-prices-on-fire-1478840770.

55 Riva Gold and Mike Bird, "Dow Industrials tumble after 'Brexit' vote" *The Wall Street Journal*, June 25, 2016, https://www.wsj.com/articles/pound-plunges-on-u-k-vote-to-leave-eu-1466753711.

56 "What's driving the metals price recovery?" *Thomson Reuters*, October 6, 2016, https://blogs.thomsonreuters.com/financial-risk/commodities/whats-driving-metals-price-recovery/.

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