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Coal: A Key Player in Expanded U.S. Energy Exports

Abstract

In a November 2012 report that received significant attention in the media, the International Energy Agency (IEA) predicted that the United States will be nearly energy self-sufficient by the year 2035. Justifications for this claim include reports of declining oil consumption, the unlocking of natural gas resources through new technologies, and overall increases in U.S. energy production. As natural gas becomes more inexpensive and renewable energy sources continue to increase in usage, the energy mix in the United States (and other countries) is expected to change. The IEA estimates that 40 percent of world electricity generation was fueled by coal in 2011. Coal is the only major energy source for which the United States demonstrates a trade surplus. In 2011, the last calendar year for which data are available, the United States exported more than \$16 billion worth of coal, while importing only slightly less than \$3 billion in coal. Furthermore, coal is expected to remain one of the largest fuel sources in worldwide energy consumption for at least the next two decades. Second only to oil in meeting the energy needs of the world, coal generates more electricity for the United States and the world than any other single fuel.

With the key role that coal currently plays in the U.S. trade balance, and is expected to play in the future, it is interesting to look at recent volatile export price movements of this important U.S. resource.

Keywords

coal, energy exports, energy consumption, trade

Comments

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Coal: A key player in expanded U.S. energy exports

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In a November 2012 report that received significant attention in the media, the International Energy Agency (IEA) predicted that the United States will be nearly energy self-sufficient by the year 2035.¹ Justifications for this claim include reports of declining oil consumption, the unlocking of natural gas resources through new technologies, and overall increases in U.S. energy production.² As natural gas becomes more inexpensive and renewable energy sources continue to increase in usage, the energy mix in the United States (and other countries) is expected to change. The IEA estimates that 40 percent of world electricity generation was fueled by coal in 2011.³ Coal is the only major energy source for which the United States demonstrates a trade surplus.⁴ In 2011, the last calendar year for which data are available, the United States exported more than \$16 billion worth of coal, while importing only slightly less than \$3 billion in coal. Furthermore, coal is expected to remain one of the largest fuel

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- “Impact of the drought on corn exports: paying the price,” *Beyond the Numbers*, <http://www.bls.gov/opub/btn/volume-1/impact-of-the-drought-on-corn-exports-paying-the-price.htm>.

sources in worldwide energy consumption for at least the next two decades. Second only to oil in meeting the energy needs of the world, coal generates more electricity for the United States and the world than any other single fuel.

With the key role that coal currently plays in the U.S. trade balance, and is expected to play in the future, it is interesting to look at recent volatile export price movements of this important U.S. resource.

The recent growth in U.S. coal exports

Although most of the coal produced in the United States is consumed domestically, export volumes of coal have increased in recent years. The proportion of coal production going toward exports has also increased, doubling from 5 percent in 2009 to 10 percent in 2011. The majority of coal production consists of thermal or steam coal that goes to electricity generation, but metallurgical or coking coal is primarily used in making iron and steel. In fact, nearly 70 percent of global steel production depends on this grade of coal.⁵ Consequently, in 2011, metallurgical coal exports accounted for 77 percent of U.S. coal exports in terms of trade dollars and 65 percent in terms of volume.⁶

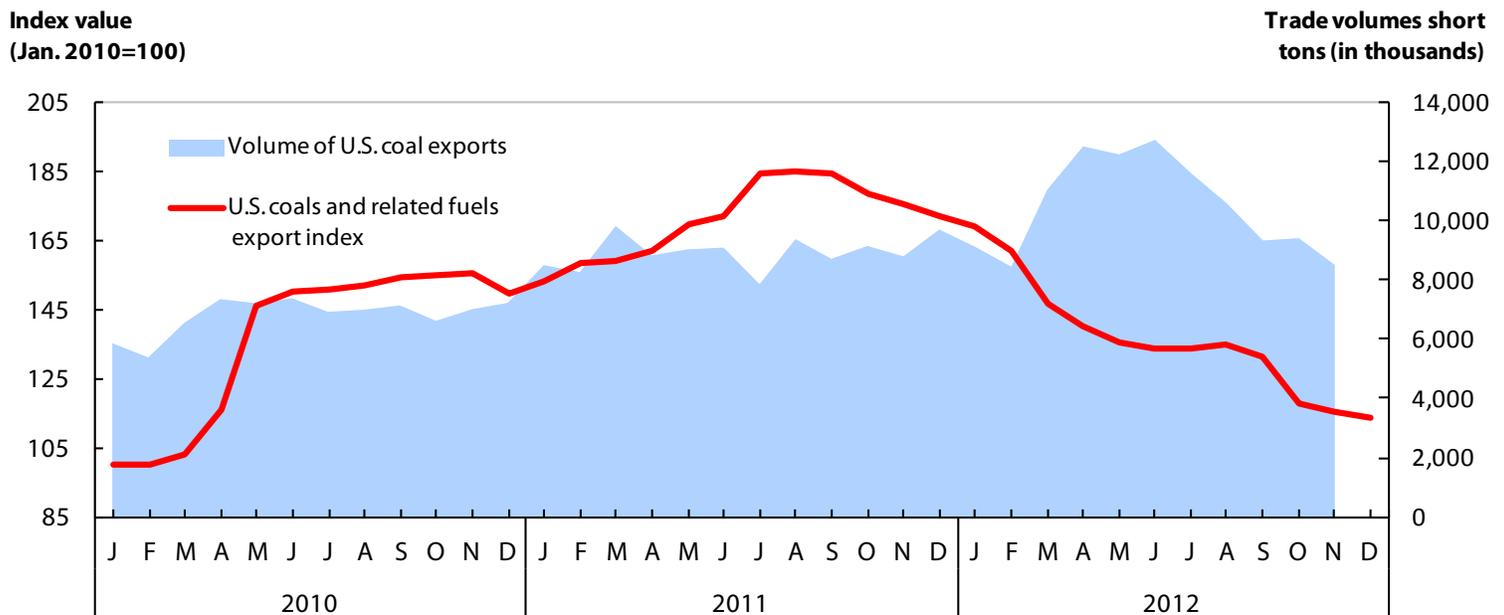
As seen in chart 1, export coal prices began to climb in early 2010. After rising only 5.9 percent over the previous 24 months, the BLS coal and related fuels export price index rose 51.8 percent during the first 6 months of 2010. The index for metallurgical coal increased 71.3 percent over this period. Prices for both coal and related fuels and metallurgical coal continued to advance at a more modest pace until December 2010. Overall for 2010, the indexes increased 51.6 and 68.2 percent, respectively.

U.S. coal producers were able to increase both export volumes and prices in 2010 because of growing energy needs in markets such as China and India and the reduced world coal supply caused by heavy rains and flooding in major coal exporting countries.⁷ In 2010, exports to Asian markets increased 176 percent from 2009 levels, primarily because of a surge in exports of metallurgical coal to China, Japan, and South Korea.⁸ Metallurgical coal exports accounted for 83 percent of the growth in 2010 export volumes.

Export prices for coal continued to increase until September 2011. In August 2011, the year-to-date increase in export prices stood at 23.7 percent. Prices then declined

Chart 1

U.S. coal exports: price index and volumes, January 2010–December 2012



Source: Price index from U.S. Bureau of Labor Statistics and trade volumes from the Energy Information Administration *Monthly Energy Review*.

7.0 percent over the remaining months of the year, ending with a 15.1-percent increase overall for 2011. Metallurgical coal prices recorded a similar trend, increasing 27.1 percent for the first 8 months in 2011, before declining 7.3 percent for the remainder of the year, and finishing with a 17.8-percent advance for the year.

The volume of U.S. coal exports was 31.3 percent higher in 2011 than in 2010.⁹ The expansion of coal-fired power plants in both China and India contributed to the increase in international demand for coal. However, U.S. domestic demand was limited by competition from natural gas. With higher sales prices in Asia and Europe in 2011, U.S. coal exporters diverted the highest proportion of coal production to exports since 1992.¹⁰

As seen in chart 2, the proportion of coal trade dollars coming from Asia experienced sizable increases in 2010 and 2011. The dollar value of U.S. exports to only China and India increased by more than \$1.8 billion from 2002 to 2011.¹¹ Overall, the export value of coal exports increased by almost \$15 billion over this same period.¹²

A reversal in coal prices

In contrast, in 2012, export coal prices turned down sharply. The export index fell 33.9 percent from December 2011 to December 2012, after surging 74.4 percent for

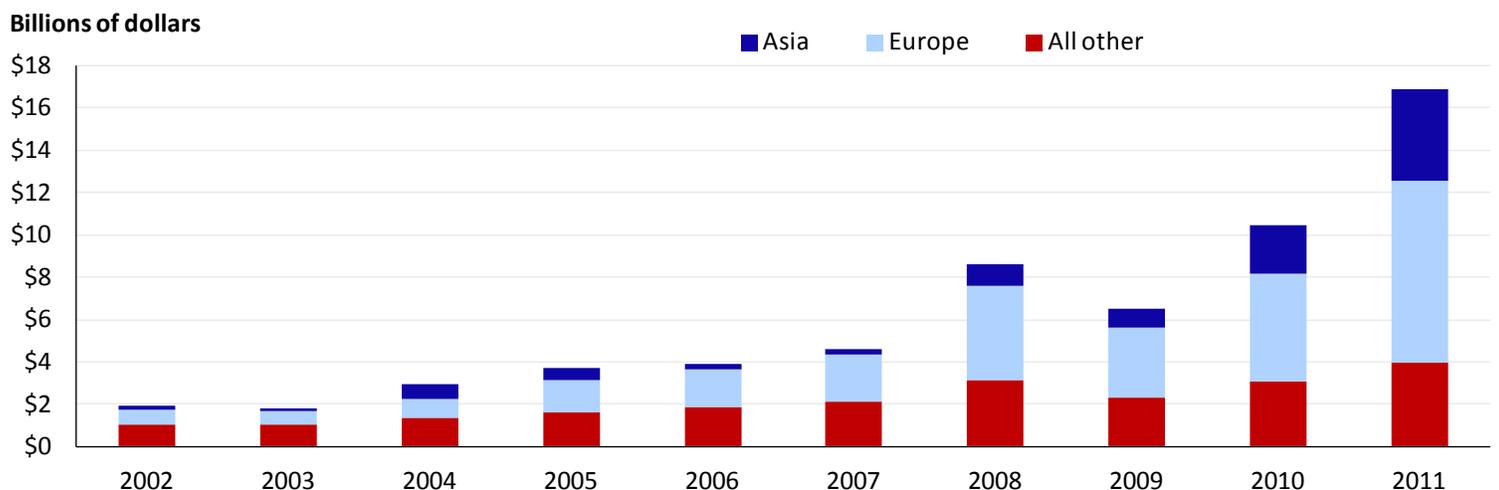
the 2 preceding years. The declining export price of coal was attributable to such factors as decreased domestic demand, a slowdown in economic growth in both China and India, and the continuing weakness seen in European economies.

Although U.S. coal production fell in 2012, export volumes grew to record levels. Even as the United States transitions away from coal usage, certain European nations are relying more heavily on coal. With oil and natural gas prices still relatively strong in Europe, inexpensive U.S. coal is more in demand by European utility companies.¹³ The price for carbon emissions permits in the European Union has also fallen, making coal even more attractive to utilities. Compared with 2011, exports to Europe were up 29.4 percent for the year by the third quarter of 2012, with the United Kingdom and Italy accounting for more than half of the increase.¹⁴ Exports to Asia were up 23.7 percent for the year by the third quarter of 2012, mainly because China doubled the amount of coal imported from the United States.¹⁵

According to the U.S. Energy Information Administration, in 2013, U.S. export coal volumes are expected to remain above 100 million short tons for the third straight year and international coal prices are expected to be lower.¹⁶ In the

Chart 2

U.S. export coal trade dollar values in billions of dollars for Asia, Europe, and all other regions, 2002–2011



Source: U.S. Bureau of Labor Statistics.

coming year, U.S. export coal prices will be influenced by the difference between domestic and international natural gas prices, increased coal use in newly industrialized economies, and Asian domestic production levels for coal, along with other factors. BLS will continue tracking export prices for this historically important U.S. commodity in order to identify market and economic trends.

Fourth quarter 2012 highlights

Import prices

The price index for overall imports declined 1.5 percent in 2012, following an increase of 8.5 percent for the previous year and a 5.3-percent advance in 2010. (See table 1.) The decrease in import prices was driven by a 6.4-percent decline in the price index for fuel imports. This was the first calendar-year decline in import prices since 2008.

Fuel import prices. Prices for fuel imports (which account for nearly one-quarter of the overall import prices index) fell 6.4 percent in 2012, the first calendar-year decrease since a 47.0-percent drop in 2008. During the final quarter of 2012, the price index for fuel imports declined 2.8 percent.

Petroleum prices led the overall decline in fuel prices in 2012, falling 7.1 percent for the year. Following advances of 27.1 percent and 16.2 percent for the 2 previous years, prices for import petroleum trended mostly down throughout 2012, declining 4.1 percent in the final quarter. Both supply concerns and weak demand contributed to the lower prices. Concerns about the U.S. and European economies contributed to weak worldwide demand. In

particular, worries remained about the direction of the U.S. economy (the world's largest) and the so-called fiscal cliff, until a compromise was reached by the U.S. government at the beginning of 2013.

In addition, despite a pledge to rein in overproduction, the Organization of the Petroleum Exporting Countries (OPEC) produced more crude oil than forecasted for demand in 2012.¹⁷ This took place in spite of growing competition from both the United States—which reached the highest level of oil production in nearly 15 years—and from Russia.¹⁸ In fact, the U.S. Energy Information Administration predicted that net imports of liquid fuels, including crude oil and petroleum products, would fall to their lowest level since 1987 and would post numbers that were only half of the peak levels reached between 2004 and 2007.

For the year, natural gas prices advanced 14.2 percent, the first calendar-year increase since 2005, when the index rose 54.9 percent. The price index for natural gas rose 50.3 percent during the final quarter of 2012, after increasing 18.4 percent and 18.0 percent in the last 2 months of the year. Cooler-than-average temperatures during the end of 2012 produced strong demand and pushed up overall prices.¹⁹

Nonfuel import prices. In contrast to fuel prices, nonfuel prices ticked up 0.1 percent in 2012, the smallest year-end increase since the index recorded no change in 2002. As shown in chart 3, higher prices for automotive vehicles were the most significant contributor to the overall increase in nonfuel import prices. During 2012,

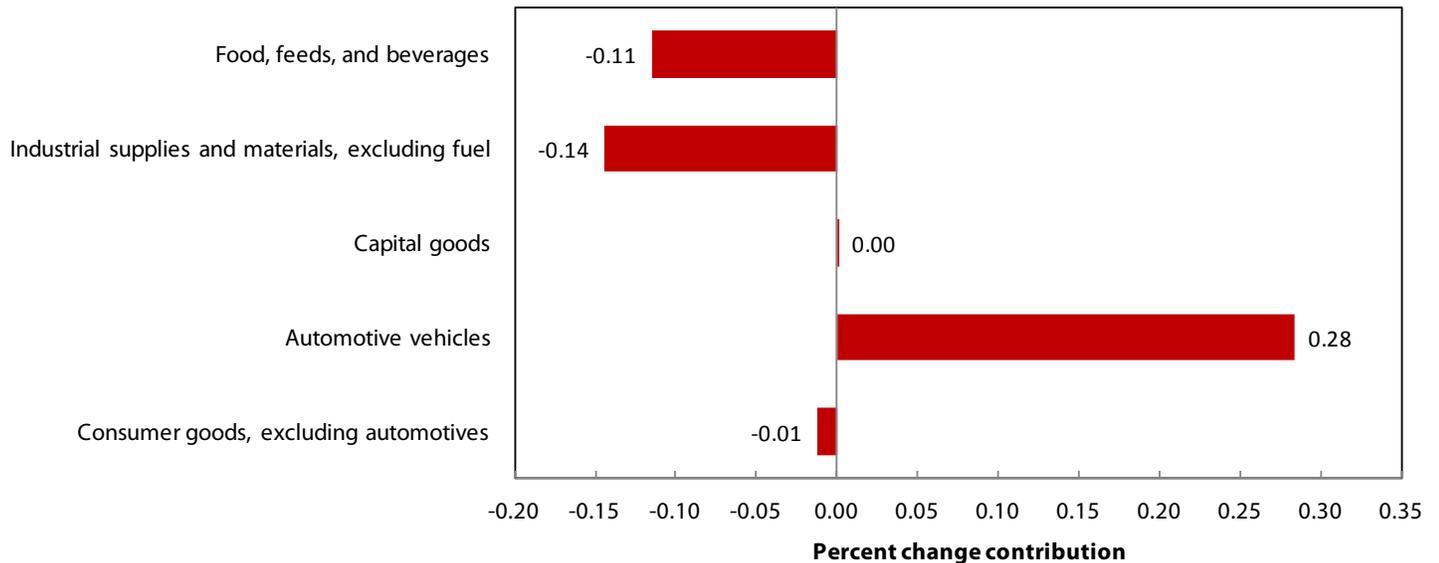
Table 1

Summary of December-to-December percent changes in all-commodity imports and exports, fuel and agricultural indexes, 2003–2012

Index	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
All-commodity imports	2.4	6.7	8	2.5	10.6	-10.1	8.6	5.3	8.5	-1.5
Excluding fuels	1	3	1.1	2.9	3.1	1.2	0.3	3	3.4	0.1
Fuels	13.2	31.5	43.5	0.9	42.1	-47	62.2	14.2	24.9	-6.4
All-commodity exports	2.2	4	2.8	4.5	6	-2.9	3.4	6.5	3.6	1.1
Excluding agricultural	1.3	5	2.6	3.7	4.5	-2.2	2.9	5.1	4	-0.4
Agricultural	13.4	-5.9	4.9	13.5	23.3	-10.9	9.2	20.5	1	12.8

Chart 3

Major contributors to the 0.1-percent increase in import prices, excluding fuel, 2012



Note: Due to rounding, figures do not add to total.

Source: U.S. Bureau of Labor Statistics.

the price index for capital goods remained unchanged, while consumer goods prices edged down 0.1 percent and prices for foods, feeds, and beverages fell 1.7 percent.

Prices for automotive vehicles advanced 1.9 percent in 2012, following a 3.3-percent increase the previous year. The 2012 increase was driven by a 1.3-percent rise in the first 4 months of the year. Higher prices for passenger cars, up 2.3 percent, led the overall increase in automotive vehicles prices.

The price index for nonfuel industrial supplies and materials decreased 0.8 percent in 2012, the first calendar-year decline since a 0.2-percent drop in 2008. The decline in 2012 followed a 6.7-percent increase in 2011 and a 12.2-percent advance in 2010. A 4.9-percent decrease in unfinished metals prices led to the overall decline.

Prices for foods, feeds, and beverages fell 1.7 percent in 2012, after rising 6.0 percent the previous year. The 2012 decrease was the largest calendar-year drop since a 4.7-percent decline in 2001. The price index for coffee led the 2012 decrease, falling 26.8 percent over the year. As the 2012–2013 crop season started in October, the International Coffee Organization reported increased

production in several exporting countries, especially Brazil, which drove prices down.²⁰

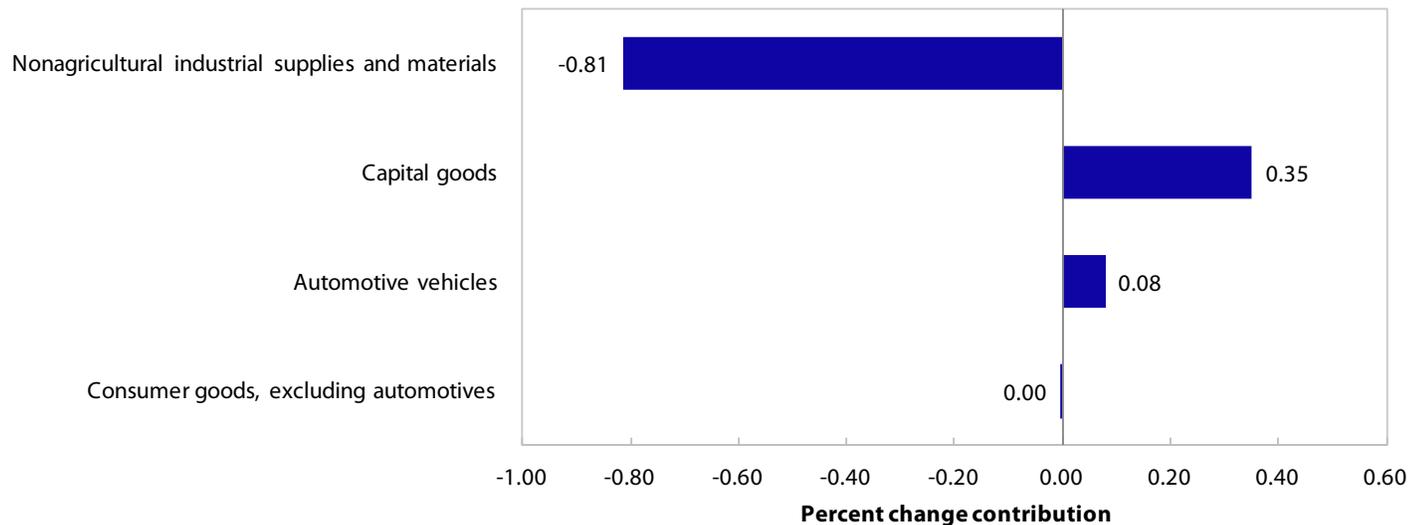
Export prices

U.S. export prices rose 1.1 percent in 2012, the smallest calendar-year increase since a 2.9-percent decrease in 2008. The increase in 2012 followed a 3.6-percent increase in 2011 and a 6.5-percent advance in 2010. A 12.8-percent jump in the price index for agricultural commodities more than offset a 0.4-percent decline in nonagricultural commodities prices.

Agricultural export prices. Prices for agricultural exports increased 12.8 percent in 2012, following a 1.0-percent advance in 2011 and a rise of 20.5 percent in 2010. Over the last 4 years, the index has increased by more than 49 percent. Higher prices for soybeans, corn, and wheat, up 31.6 percent, 26.9 percent, and 28.0 percent, respectively, all contributed to the overall increase in agricultural export prices. The drought that hit most of the United States in 2012 severely affected agricultural crops across the nation, with most of the price increases occurring during the summer. As a result of drought-related crop damage, U.S. export prices for corn soared nearly 128 percent above the 20-year historical average.²¹ Meanwhile, droughts in Russia, Ukraine, and Kazakhstan cut global wheat stocks for the 2012–2013 season.²²

Chart 4

Major contributors to the 0.4-percent decrease in export prices, excluding agriculture, 2012



Note: Due to rounding, figures do not add to total.

Source: U.S. Bureau of Labor Statistics.

Nonagricultural export prices. The price index for nonagricultural exports declined 0.4 percent over the past 12 months, following a 4.0-percent increase in 2011. As seen in chart 4, a 2.2-percent drop in nonagricultural industrial supplies and materials drove the decrease. This drop in prices for nonagricultural industrial supplies and materials more than offset rising prices for capital goods and automotive vehicles.

The 2012 decrease in nonagricultural industrial supplies and materials prices followed an 8.0-percent advance in 2011 and was the largest calendar-year decrease since a 9.3-percent drop in 2008. Lower prices for fuels and lubricants were the main drivers for a drop in the nonagricultural export price index throughout the year as well as the fourth quarter.

Capital goods prices rose 1.0 percent in 2012. Rising prices for electrical generating equipment were the major factors in the increase. In 2012, automotive vehicles prices advanced 0.9 percent, while prices for consumer goods were unchanged. ■

This **BEYOND THE NUMBERS** report was prepared by Yemi Assefa, Helen McCulley, Myron Murray, and Sharon Royales, economists in the Office of Prices and Living Conditions, International Price Program. Email: MXPinfo@bls.gov. Telephone: 202-691-7101.

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