Made In America: Petroleum and Coal Products

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In 2012, shipments from the U.S. manufacturing sector totaled $5.7 trillion. So, what do we make in the United States? This series of manufacturing profiles by the U.S. Commerce Department's Economics and Statistics Administration (ESA) will answer that question one industry at a time. The focus of this profile is petroleum and coal products.[1] Previous profiles focused on machinery; food, beverages and tobacco products; transportation equipment (excluding motor vehicles); chemicals; and apparel, leather, and allied products.

Among other findings, this report shows that petroleum and coal products shipments totaled more than $850 billion in 2012, making it the largest manufacturing industry in the United States. In terms of jobs, however, the industry represented less than 1 percent of manufacturing employment in 2013. Wages in this capital intensive industry were 65 percent higher than the manufacturing sector as a whole. In 2014, after years of trade deficits, the United States became a net exporter of (refined) petroleum and coal products with a trade surplus of $4.2 billion.

As we continue to profile the various manufacturing industries, we will deepen our understanding of what is made in America and how it affects the economy as a whole.

Overview

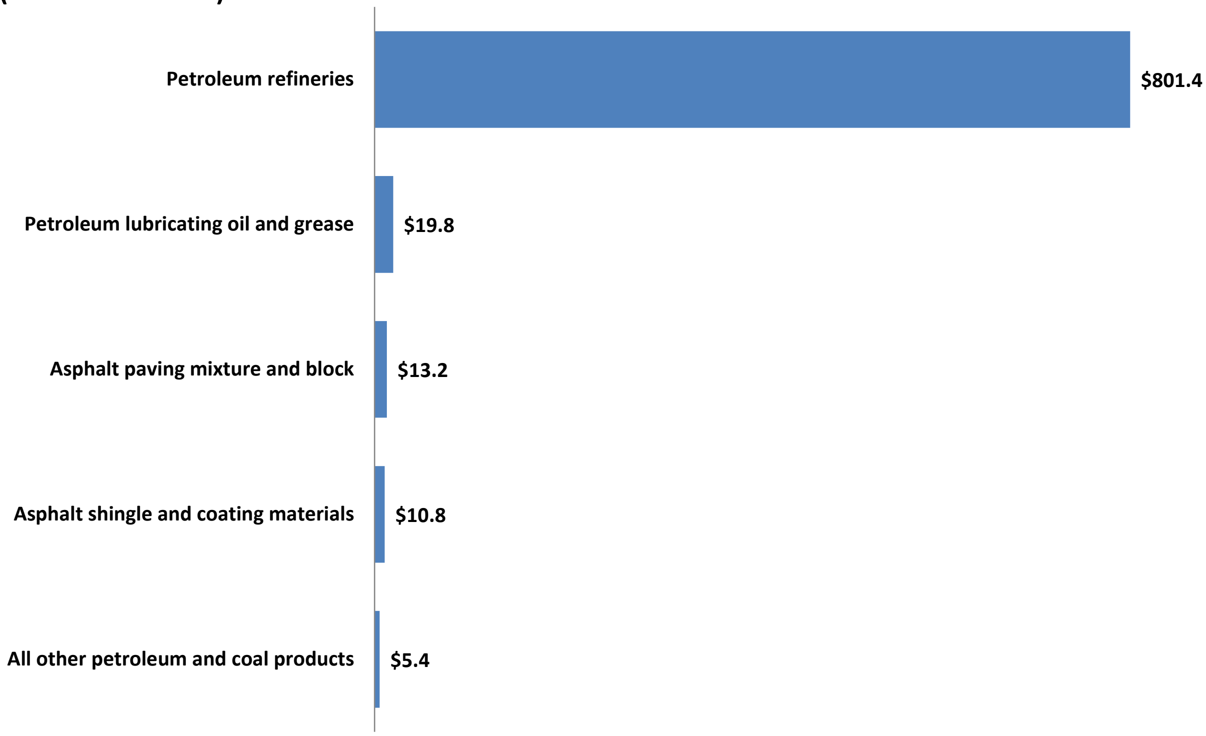
Due to significant price increases, the petroleum and coal products industry has grown tremendously over the past decade or so.[2] In 2002, shipments totaled $216.0 billion, or 5.5 percent of all manufacturing shipments, making it the seventh largest manufacturing industry. By 2012, industry shipments had nearly tripled, totaling $850.6 billion or 14.8 percent of all manufacturing shipments that year, making it the largest domestic manufacturing industry by value of output.

According to the North American Industry Classification System (NAICS), the petroleum and coal industry transforms crude petroleum (oil) and coal into usable products such as gasoline, jet fuel, and diesel oil.[3] The majority of shipments from the industry are products made by oil refineries that process crude oil. Other products produced by the industry, but not made through the distillation of crude oil, include asphalt, tar paving mixtures, roofing cements, and petroleum jelly.[4]

Oil refineries are essentially factories that process materials already extracted from the ground; the industry does not include the exploration or drilling of crude oil from underground reserves.
The production of materials from refined petroleum, known as petrochemicals, is considered part of the chemicals industry.[5]

Shipments

Figure 1. Shipments in Petroleum and Coal Manufacturing, 2012
(billions of dollars)

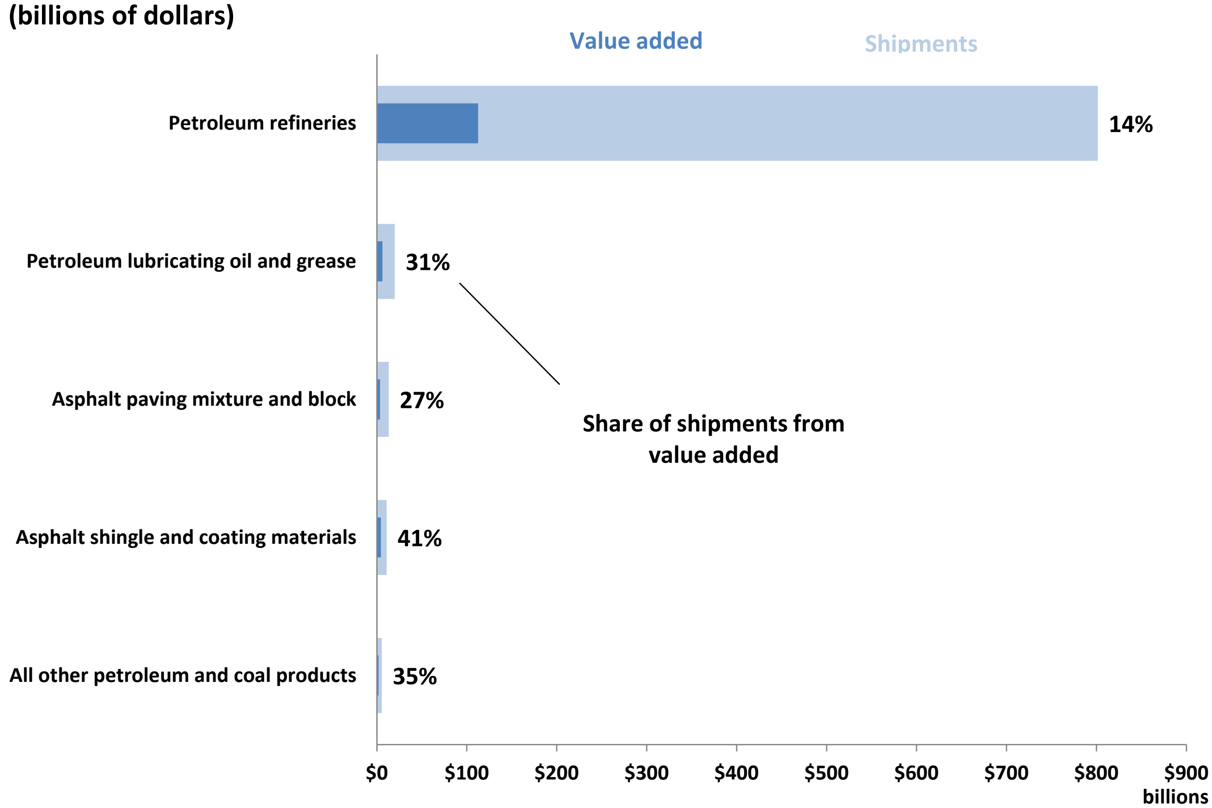


Source: Census Bureau, Economic Census

- In 2012, shipments from petroleum and coal manufacturing industries totaled $850.6 billion.
- Petroleum refineries dominated the petroleum and coal manufacturing industry. Their $801.4 billion in shipments accounted for 94 percent of all industry shipments.
- Shipments in petroleum lubricating oil and grease manufacturing, which makes products such as brake fluids and motor oils, were $19.8 billion. While this was small compared to value of shipments from petroleum refineries, it was larger than shipments from the entire apparel, leather, and allied products industry ($17.9 billion).

Value added

Figure 2. Value Added in Petroleum and Coal Manufacturing, 2012
(billions of dollars)

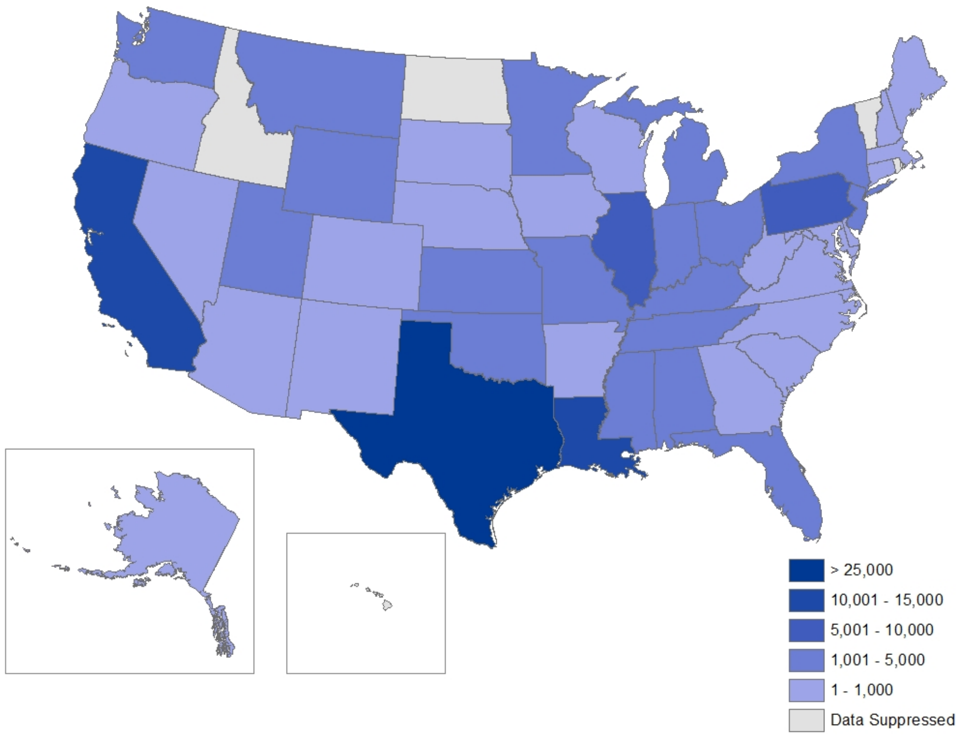


Source: Census Bureau, Economic Census

- In 2012, value added accounted for 15 percent of total petroleum and coal manufacturing shipments, the lowest among major manufacturing industries. The other 85 percent consisted of materials and inputs from other industries, mainly crude oil from the oil and gas extraction industry.[6]
- Production of petroleum and coal products is highly capital intensive. Returns to capital accounted for 88 percent of value added in 2012, well-above the overall manufacturing average of 50 percent.[7] Compensation of employees, or labor, accounted for only 10 percent of value added, while taxes on production and imports less subsidies made up the remaining 2 percent.
- The median hourly wage (as of May 2013) in the industry was $29.82, the highest among all manufacturing industries and 65 percent higher than the sector as a whole. The most common jobs in the industry were plant and system operators (21 percent of total employment, median wage $31.04), other production occupations (11 percent, $18.08), and engineers (8 percent, $51.95).[8]

Employment in Petroleum and Coal Products

Figure 3. Annual Average Employment in Petroleum and Coal Products Manufacturing, 2013

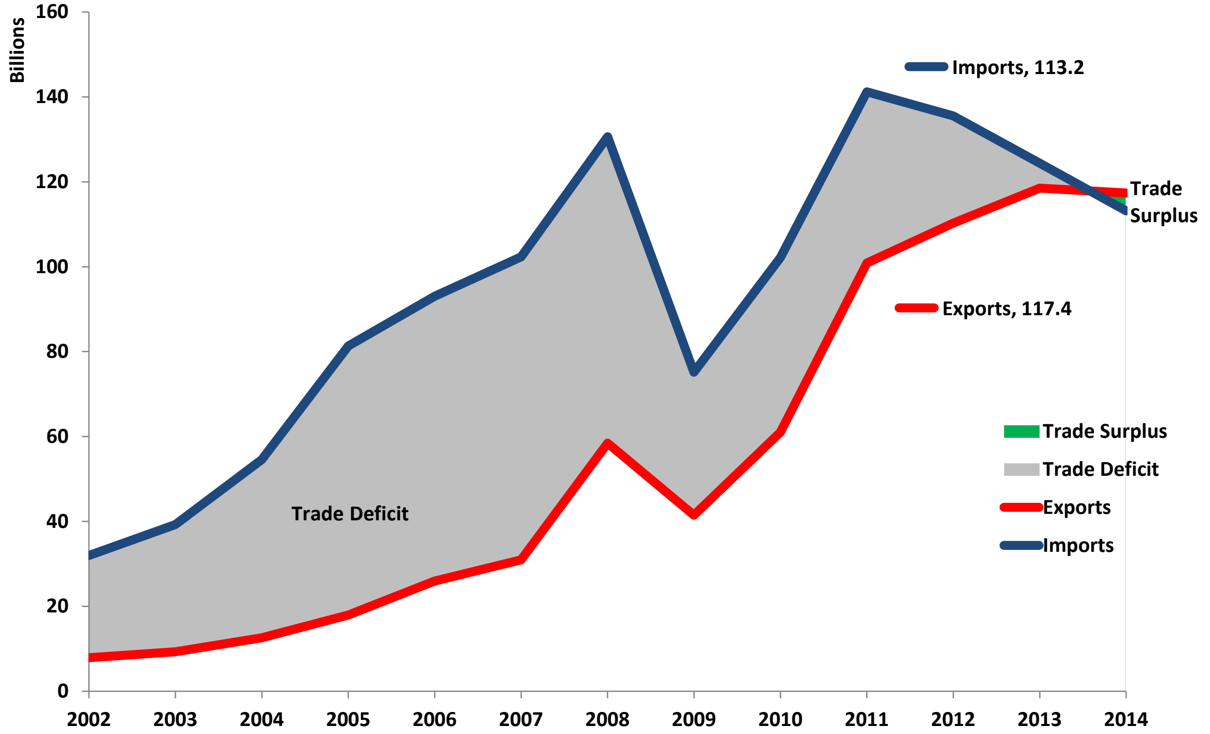


Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

- Despite being the largest industry in terms of shipments, manufacturing of petroleum and coal products comprised less than 1 percent of manufacturing jobs in 2013.
- Sixty four percent of all U.S. employment in petroleum and coal products manufacturing was in petroleum refinery products in 2013. Asphalt paving mixture and block manufacturing accounted for another 12 percent.
- Roughly one-in-five jobs in the petroleum and coal products industry resided in Texas in 2013, the latest year for which statewide data are available. Its 25,000 jobs were followed by 13,700 in California and 11,600 in Louisiana.
- Lousiana had the highest share of petroleum and coal manufacturing employment relative to overall state employment . However, this still represented less than 1 percent of Lousiana's overall employment.

Trade in Petroleum and Coal Products

Figure 4. U.S. Petroleum and Coal Products Trade, 2002-2014
(billions of dollars)



Source: Census Bureau, USA Trade

- The United States exported $117.4 billion of (refined) petroleum and coal products in 2014, which accounted for 10 percent of total exports of manufactured goods.
- The United States' principal export markets for petroleum and coal products were Mexico ($19.0 billion), Canada ($14.7 billion), and the Netherlands ($8.2 billion).
- Although there have been large fluctuations in the petroleum and coal trade balance over the last decade, there has been a steady improvement in the balance since 2011. In 2014, the United States recorded a trade surplus of $4.2 billion,[9] the first surplus on record (data are available from 2002).
- More than half of all petroleum and coal products purchased by U.S. consumers and businesses in 2012 were domestically made.[10]

Endnotes

1. For additional information about how to measure what is made in America and for further explanation of concepts used in this report, see Economics and Statistics Administration, "What is Made in America?" available at: http://www.esa.doc.gov/Reports/what-made-america.

2. It is important to note that the large increase in the dollar amount of shipments was explained by price changes and not by increases in production. From 2002 to 2012 the price of petroleum and coal products increased 284 percent (Producer Price Index, Bureau of Labor Statistics, Industry 324 Petroleum and coal products manufacturing: http://www.bls.gov/ppi/home.htm) while production increased just 7 percent (Industrial Production and Capacity Utilization, Board of Governors of the Federal Reserve System, Petroleum and coal products NAICS 324: http://www.federalreserve.gov/releases/G17/Current/default.htm). This compares to a 10 percent increase in overall manufacturing production from 2002-2012.

3. The petroleum and coal products subsector is categorized by the North American Industry Classification System (NAICS) as NAICS 324. Industry definition available at: http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=324&search=2012 NAICS Search. For full classification structure, see: https://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2012.

4. U.S. Energy Information Administration, glossary: http://www.eia.gov/tools/glossary/index.cfm.

5. For more information on Mining, Quarrying, and Oil and Gas Extraction see NAICS code 211. Industry definition available at: http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=211&search=2012 NAICS Search. The export of crude oil is subject to short supply export controls. For more information see Bureau of Industry and Security's FAQs at http://www.bis.doc.gov/index.php/policy-guidance/faqs. For information about Petrochemical Manufacturing see NAICS code 32511. Industry definition available at: http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=32511&search=2012 NAICS Search.

6. Value added considers only the new production completed at each stage of the manufacturing process—i.e., the labor and capital applied by each firm to the purchased inputs produced elsewhere. This measure of manufacturing activity is derived in the Economic Census by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end of year inventories.

7. For this calculation, we use Bureau of Economic Analysis data rather than Economic Census data. Because of data limitations in the Economic Census data, it is difficult to separate value added into labor, capital, and tax components. Bureau of Economic Analysis industry data available from: www.bea.gov. For more information on these concepts, see "Measuring the Nation's Economy: An Industry Perspective. A Primer on BEA's Industry Accounts." Bureau of Economic Analysis. Available at: http://bea.gov/industry/pdf/industry_primer.pdf.

8. For more information on the occupations and wages in the petroleum and coal products manufacturing industries, refer to the Occupational Employment Statistics program of the Bureau of Labor Statistics. Available at: http://www.bls.gov/oes/current/naics4_324100.htm.

9. For detailed international trade statistics, see the U.S. Census Bureau's USA Trade Online data portal. Available at: https://usatrade.census.gov/.

10. Economics and Statistics Administration, "What is Made in America?" See Figure 8.