



2015: What is Made in America?

In October 2014, we issued a report titled “What is Made in America?” which provided several estimates of the domestic share of the value of U.S. gross output of manufactured goods in 2012. In response to numerous requests for more current estimates, we have updated the report to provide 2015 data. We have also revised the report to clarify the methodological discussion. The original report is available at: www.esa.gov/sites/default/files/whatismadeinamerica_0.pdf. More detailed industry profiles can be found at: www.esa.gov/Reports/what-made-america.

By
Jessica R. Nicholson

ESA Issue Brief
#01-17

March 28, 2017

Executive Summary

Accurately determining how much of our economy’s total manufacturing production is American-made can be a daunting task. However, data from the Commerce Department’s Bureau of Economic Analysis (BEA) can help shed light on what percentage of the manufacturing sector’s gross output is considered domestic. This report works through several estimates of how to measure the domestic content of the U.S. gross output of manufactured goods, starting from the most basic estimates and working up to the more complex estimate, domestic content.

Gross output is defined as the value of intermediate goods and services used in production plus the industry’s value added. The value of domestic content, or what is “made in America,” excludes from gross output the value of all foreign-sourced inputs used throughout the supply chains of U.S. manufacturers.

Our analysis reveals that in 2015:

- The value of the gross output produced by U.S. manufacturers was \$5.7 trillion, with 82 percent of that value (\$4.7 trillion) consisting of domestic content. The manufacturing sector’s value added, which by definition is domestic, accounted for \$2.0 trillion of this gross output, while the value of the domestic content of intermediate inputs used by



manufacturers accounted for an additional \$2.6 trillion.¹ The balance of the \$5.7 trillion is accounted for by imported inputs.

- The highest dollar values of the domestic content of gross output in manufacturing were in the food and beverage and tobacco, chemical, and motor vehicles, bodies and trailers, and parts industries.
- The distinction between the U.S. content of what we produce and consume is stark. Only 53 percent of the total U.S. final demand for manufactured goods, a subset of total output consisting of personal consumption, business investment and government purchases, was domestically-produced. This figure takes into account both the purchases of imported final goods and imported intermediate inputs in U.S.-produced goods.

¹ Values do not add to \$4.7 trillion due to rounding.



Quantitative Measures of Made in America

Measuring how much of our economy's total production is American-made is quite challenging. For example, a car manufacturer located in the United States typically does not make all the parts of a car; rather, the company purchases parts (engines, seats, tires) made by other manufacturers and uses them as intermediate inputs which, along with labor and capital, are used to assemble automobiles. These intermediate inputs can be either imported or purchased domestically, and domestically purchased inputs may themselves contain some share of imported parts. Data from the Bureau of Economic Analysis (BEA) help untangle these complex supply chain relationships and shed light on the percentage of the value of an industry's gross output that is domestic.

Several caveats should be kept in mind.

1. This report does not discuss the "Made in the U.S.A." label overseen by the Federal Trade Commission (FTC) nor does it discuss domestic content requirement regulations.²
2. Most of the calculations below focus on the share of the value of U.S. manufacturing *gross output* that was actually created here. These measures do not look at the domestic content of what is *consumed* in the U.S, such as a T-shirt made overseas, imported to the United States, and purchased by a U.S. consumer. Figure 8 focuses on consumption and investment, and presents estimates of the domestic content of U.S. purchases of manufactured goods.
3. Multi-year comparisons of measured domestic content will be affected by exchange rate fluctuations. To the extent that a nation's currency increases in value, the measured value of the domestic content of that nation's output will also increase, all else equal. Similarly, large input price fluctuations will also affect multi-year comparisons of various estimates presented in this report.
4. This report relies on data from BEA's annual input-output (I-O) tables including the use table, make table, and import matrix. The I-O tables provide data on the production relationships between industries and commodities in the U.S. economy.³ The import matrix presents estimates of the values of imported commodities used as intermediate inputs or purchased as final consumption or investment goods. To create this table, BEA makes an assumption to distribute proportionally the total value of imports for a commodity across all industries. This distribution is done at a very detailed level where many commodities are uniquely used by individual industries. Data limitations do not allow BEA to estimate the specific import shares for each commodity by industry.⁴

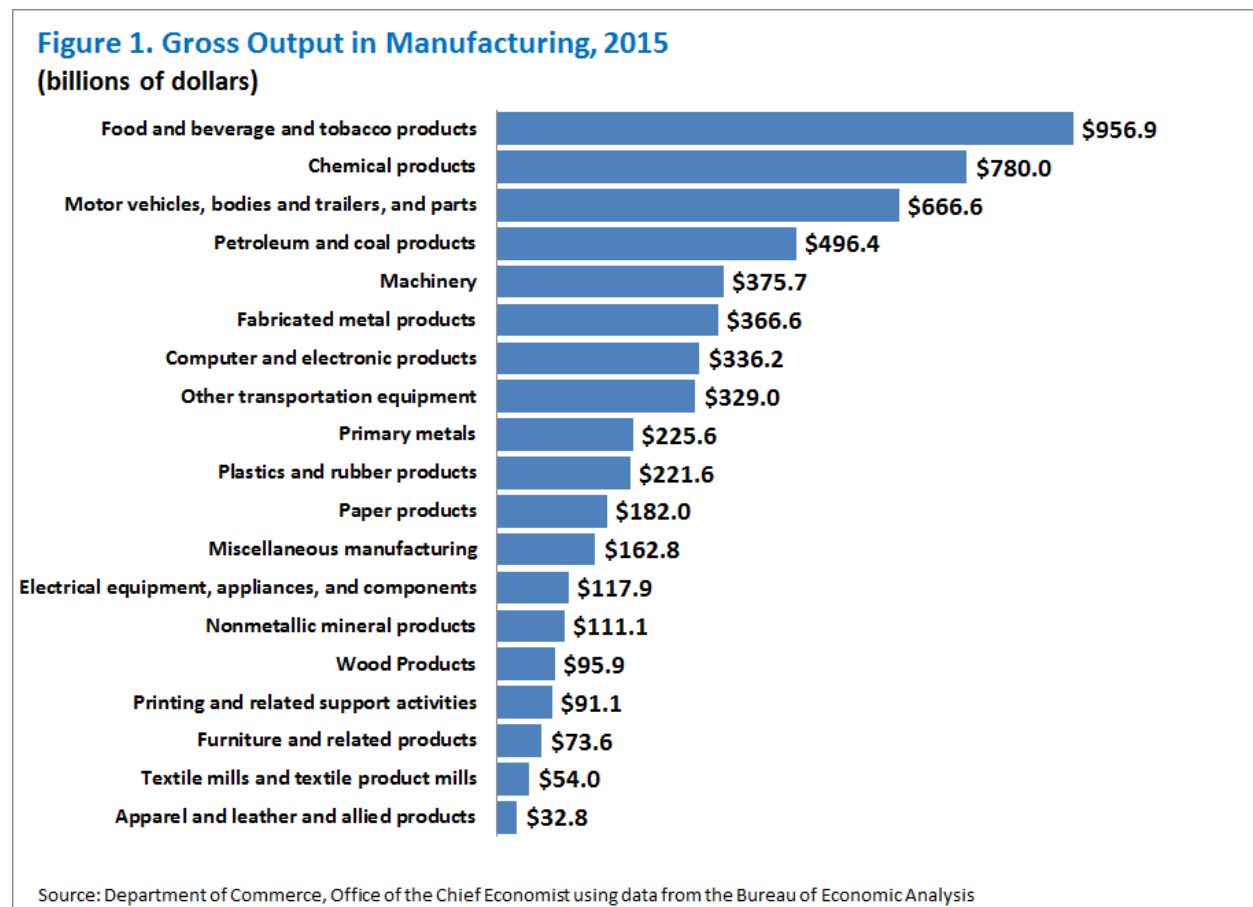
² The "Made in the U.S.A." label is what many people think of when considering what is manufactured in the United States. The Federal Trade Commission (FTC) has oversight responsibilities for the label and requires that "all or virtually all" of a product, including all significant parts and processing that go into the product, must be of U.S. origin. Complying with this standard can be more difficult than it would seem because of the ever-growing web of international supply chains. See Federal Trade Commission, Made in the USA. Available at: www.business.ftc.gov/advertising-and-marketing/made-usa.

³ For more information on the methodology of BEA's I-O tables, see: https://bea.gov/industry/pdf/industry_primer.pdf. For annual data, see: https://bea.gov/industry/io_annual.htm. The annual I-O tables contain less detail and are based on more limited source data than the benchmark I-O tables prepared at five-year intervals which incorporate detailed data from the Census Bureau's Economic Census. Currently, the latest benchmark I-O data is for 2007.

⁴ For more information on this data limitation, see: https://www.bea.gov/faq/index.cfm?faq_id=453.



Gross Output



One overall measure of the value of U.S. manufacturing output is gross industry output which equals the total value of all final and intermediate goods produced by an industry.⁵ As shown in Figure 1, in 2015 gross output of the U.S. manufacturing sector was \$5.7 trillion; food and beverages and tobacco products accounted for 17 percent of this total gross output, followed by chemical products (14 percent) and motor vehicles, bodies, and trailers, and parts (12 percent).^{6,7} Another way to think about gross

⁵ BEA publishes data on gross output (used in this report), while the Census Bureau publishes data on the total value of shipments in the Annual Survey of Manufactures (ASM) and the Economic Census. Gross output is a broader measure; for manufacturing it is measured as the value of shipments plus the change in finished goods and works-in-process inventory. In 2015, gross output in the manufacturing sector was \$5.7 trillion, while the total value of shipments was \$5.5 trillion. Estimates for industries within the sector vary between these two series as well.

⁶ This analysis is conducted using the 19 manufacturing industries identified by BEA in the annual input-output tables.

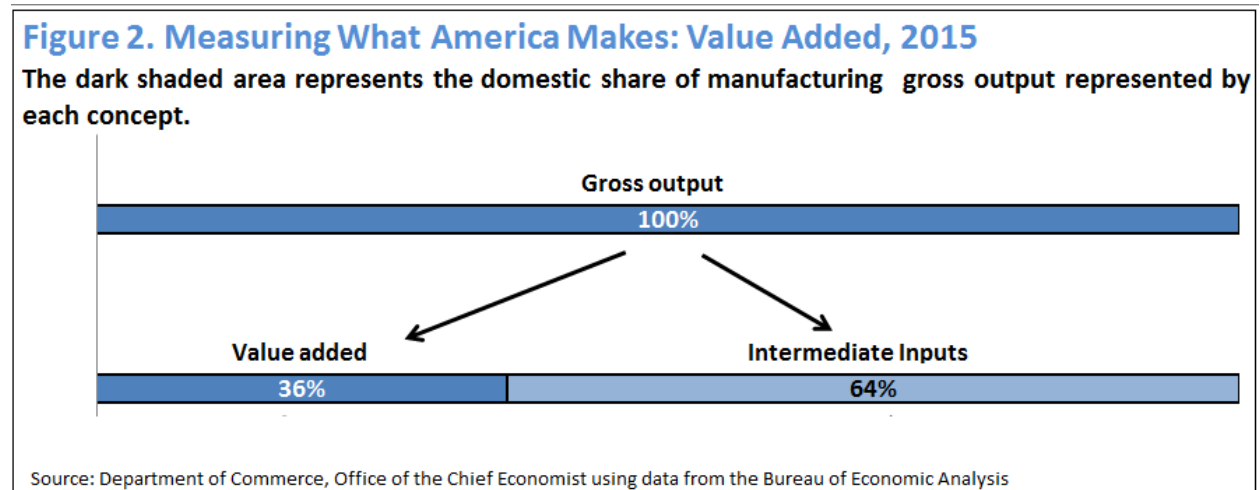
⁷ Nominal gross output across manufacturing industries generally increased from 2012 to 2015. Notable exceptions are primary metals where gross output fell by 24 percent; and the petroleum and coal products industry, where gross output fell dramatically by 39 percent. Because gross output is not adjusted for prices, any increase or decrease in an industry's output over time may reflect either changes in the total amount of goods produced or the prices of those goods. Real output measures remove price effects from the historical comparison. Real output, as measured by the Federal Reserve's industrial production indices, was down 6 percent for primary metal products and up 6 percent for petroleum and coal products from 2012 to 2015. (Calculated using annual averages; data is from the Federal Reserve, available at www.federalreserve.gov/Releases/g17/download.htm.)

industry output is that it equals the total dollar amount of all the inputs used by an industry to produce its goods, plus value added—or payments to employees, capital, and the government. Gross output is measured in dollar value, not units produced. High-priced goods, like airplanes or cars, contribute a high value to gross output for each unit produced. On the other hand, relatively lower-priced items, like a box of cereal or a T-shirt, contribute much less value per unit produced.

Value Added

Gross output reveals the total value of U.S. manufacturers' production including parts used by manufacturers as intermediate inputs. By contrast, data on value added, which BEA defines as a measure of output after accounting for the intermediate inputs used in production, solely measures the additional economic contribution made by an industry to U.S. production. The sum of value added across manufacturing is equal to the sector's contribution to overall U.S. gross domestic product. The main components of value added include the returns to labor (compensation of employees), returns to capital (as measured by gross operating surplus), and returns to government (as measured by taxes on production and imports less subsidies).⁸

For example, only inputs used by an auto manufacturer, such as the labor and capital required to assemble the car parts into an automobile, will be considered as value added by the auto manufacturer; the value of other purchased inputs, such as windshield wipers produced by a different manufacturer, are excluded. On average for the manufacturing sector as a whole, value added in 2015 was equal to about 36 percent of gross output, as shown in Figure 2.



⁸ As with output, both BEA and the Census Bureau (through ASM and the Economic Census) provide estimates of value added. Due to different source data as well as methodologies, the two estimates differ considerably. For the sake of consistency across measurements, this report uses BEA data to estimate value added. However, because Census data provides a more detailed look at sub-industries within the manufacturing sector, it may be more useful in other cases.

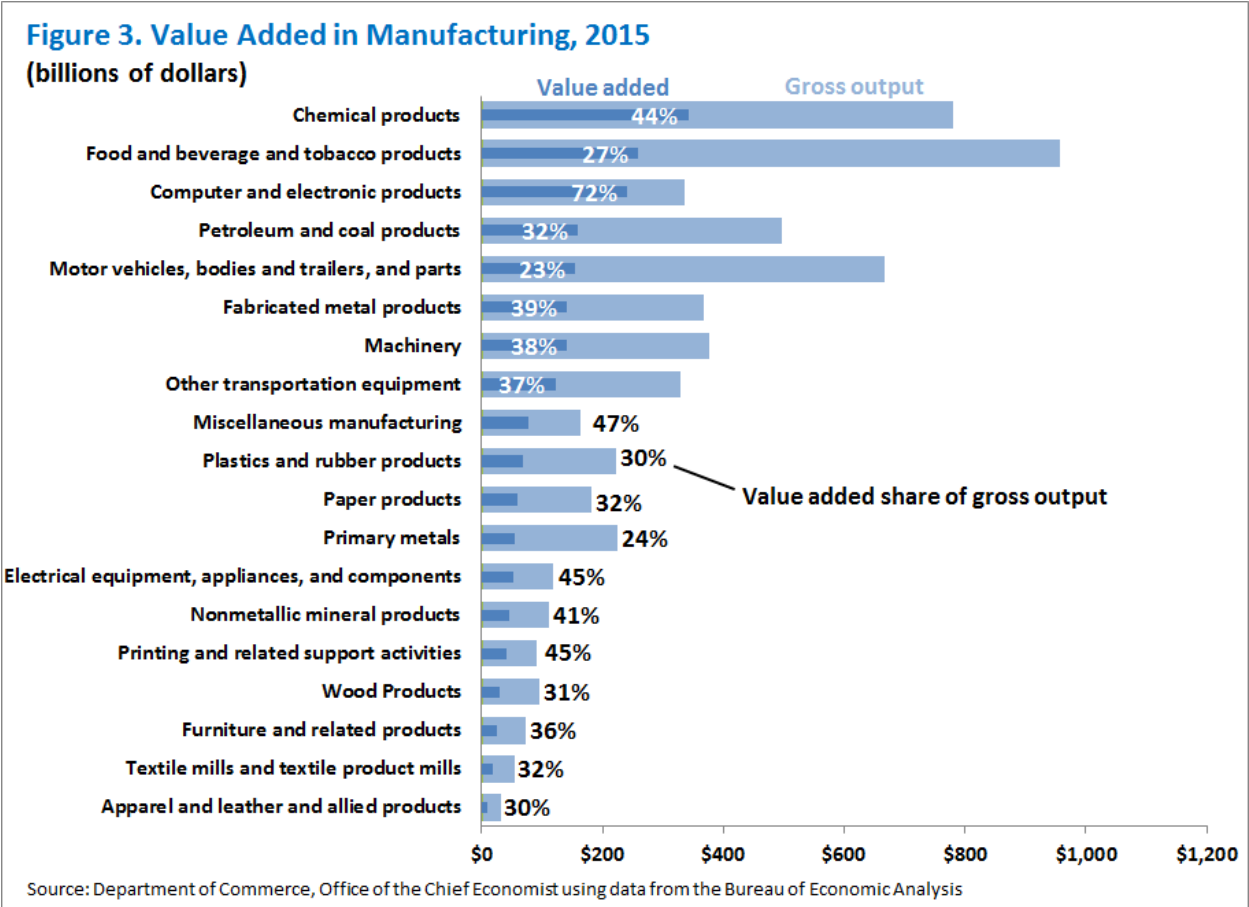


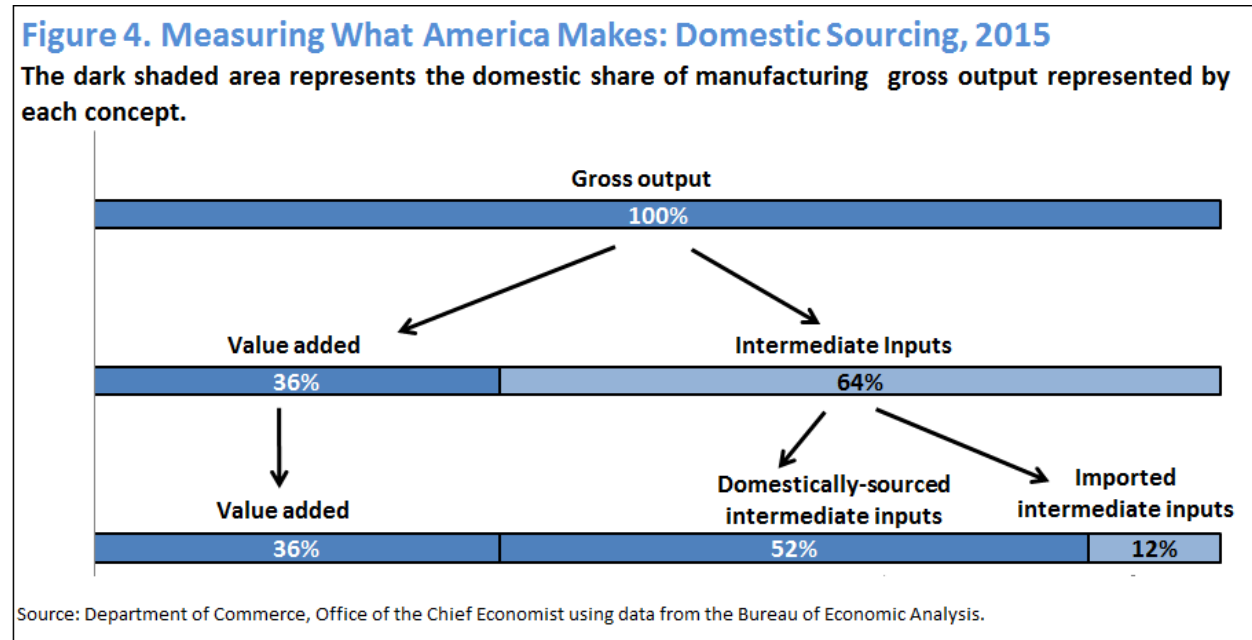
Figure 3 displays U.S. manufacturing industries ranked by the dollar amount of their value added in 2015. Because of differing contributions of labor and capital, as well as variation in the amount of intermediate inputs used by different industries, the order of industries shown in Figure 3 is somewhat different from the order shown in Figure 1.

The chemical products industry’s value added of \$342 billion in 2015 was the largest, though it comprised only 44 percent of the value of that industry’s gross output. For the motor vehicles and parts industry, \$155 billion, or 23 percent of the value of its gross output, came from value added, while the rest came from domestic and imported intermediate inputs. Near the other end of the spectrum is the computer and electronic products industry, where 72 percent of gross output was composed of value added in 2015.⁹

⁹ In 2012, value added accounted for 65 percent of gross output from the computer and electronic parts industry. All three components of value added increased from 2012 to 2015, with the largest increase attributed to gross operating surplus, which accounted for 34 percent of gross output in the computer and electronic products industry in 2012 and 39 percent in 2015. See footnote 10 for more information on the components of value added.

Domestic Sourcing

Value added provides useful information about the contribution of U.S. manufacturing to our economy and, by definition, all of value added is domestic in nature. However, it does not provide any information about the amount of intermediate inputs that went into making a finished good, nor about the origin of these inputs. For example, to say that the value added in the auto manufacturing industry is \$155 billion does not tell us how “American” a car is. To what extent can cars or any products “assembled in America” using imported parts be differentiated from products with deeper American origins?

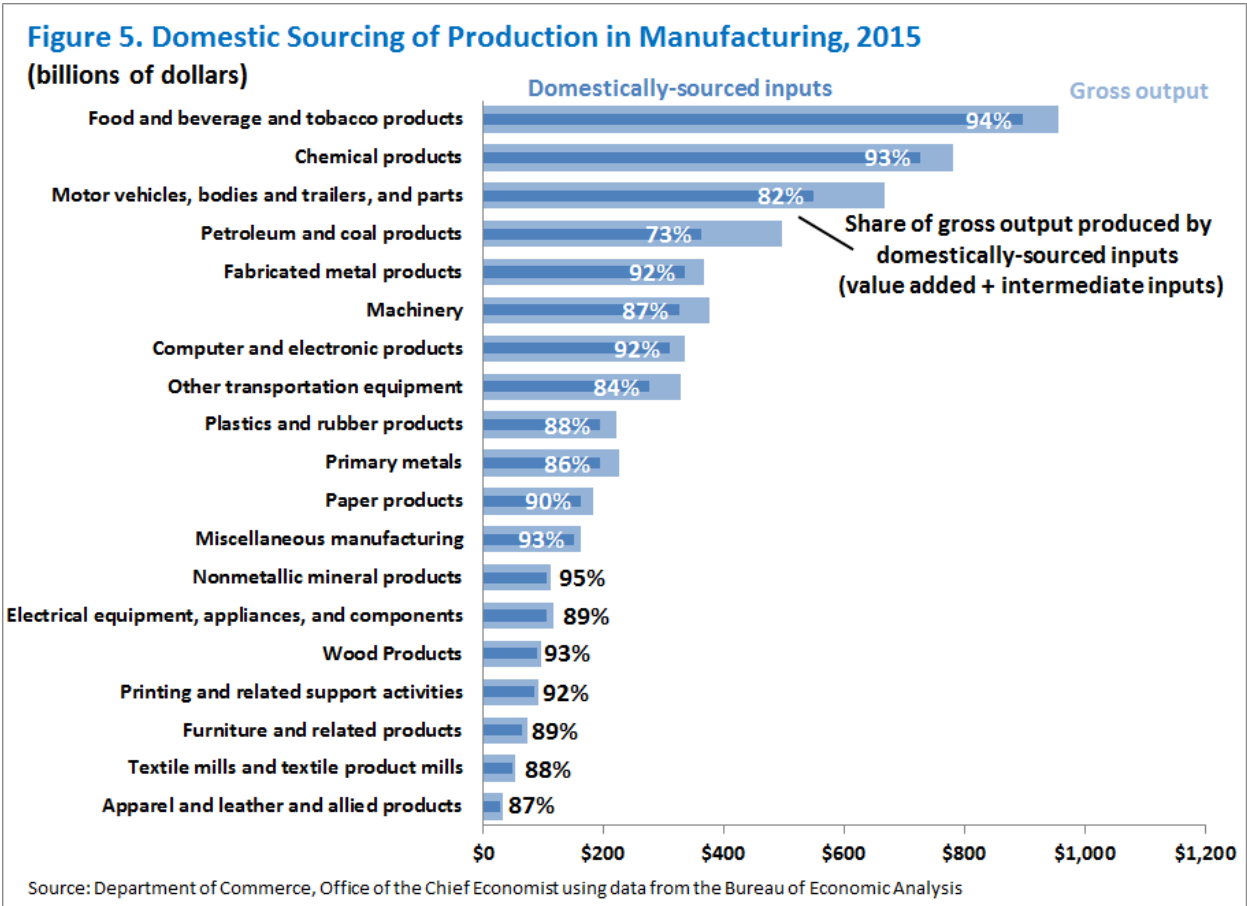


To answer that question, we define “domestically-sourced intermediate inputs” as those inputs that were purchased in the United States (i.e. not imported). Because value added is always domestic, adding together value added and domestically-sourced intermediate inputs gives us an estimate of the total value of gross output that is derived from domestic sourcing. Figure 4 illustrates this concept by showing the calculation for the overall manufacturing sector. In 2015, 88 percent of gross output in U.S. manufacturing was domestically-sourced, of which 52 percent was domestically-sourced intermediate inputs and 36 percent was value added.

As shown in Figure 5, in each manufacturing industry, with one exception, more than 80 percent of the value of total commodity output was comprised of value added and domestically-sourced intermediate inputs in 2015. The one exception is the petroleum and coal products industry: historically, many petroleum refineries have imported their primary intermediate input—crude oil—which has led to a relatively lower share of domestically-sourced inputs. In 2012, the share of domestically-sourced inputs in this industry was 60 percent. As noted earlier, U.S. production of crude oil has increased dramatically, which has also led to an increase in the share of domestically-sourced inputs in the petroleum and coal products industry (73 percent in 2015).

As an estimate of the overall value of what is made in America, the domestic sourcing estimate is relatively straightforward and is preferred over gross output, which includes imported inputs, and value

added, which does not account at all for intermediate inputs. However, a flaw in this measure of what is made in America is that it relies on the assumption that inputs purchased from domestic suppliers have no foreign content, which is likely untrue.



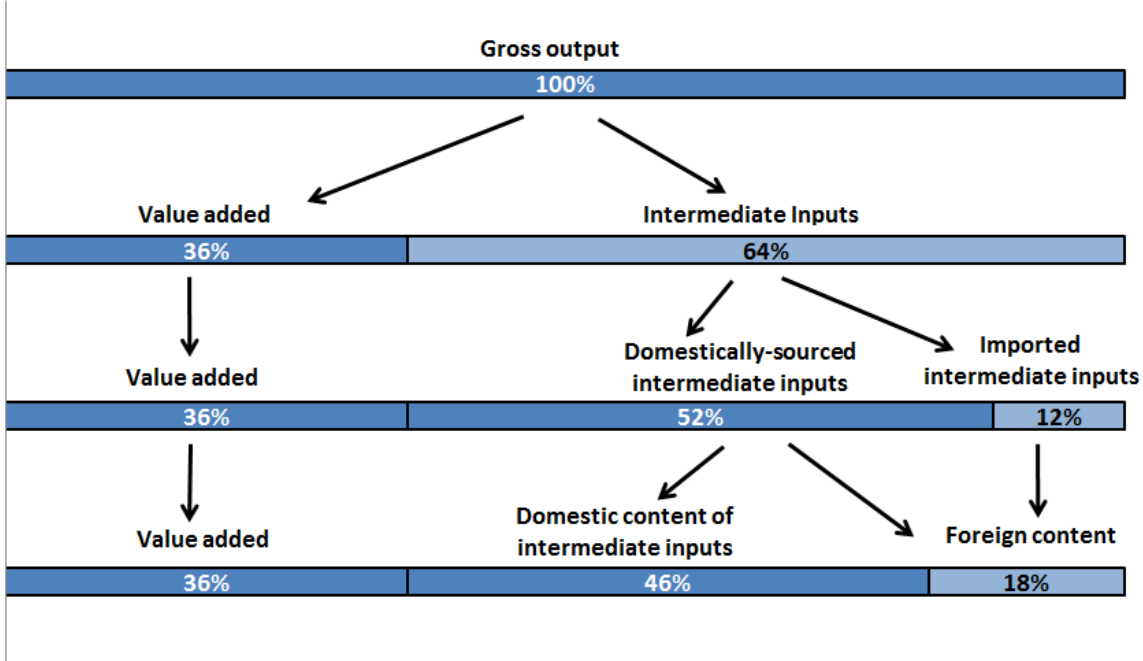
Domestic Content

As noted above, the domestic sourcing estimates in Figures 4 and 5 rely on the assumption that intermediate inputs purchased in the United States for use in domestic manufacturing do not contain any foreign material. While this simplifies the calculation of domestic content, it is possible—and even likely—that domestically-sourced intermediate inputs have at least some foreign content that entered earlier in the supply chain. A more precise measure of the value of the portion of gross output that is made in America would not include the portion of domestically-sourced intermediate inputs that originated overseas. To return to the auto parts example, an automobile manufacturer may purchase engines from a domestic car parts supplier but the pistons used in these engines may have come from a foreign source.



Figure 6. Measuring What America Makes: Domestic Content, 2015

The dark shaded area represents the domestic share of manufacturing gross output represented by each concept.



Source: Department of Commerce, Office of the Chief Economist using data from the Bureau of Economic Analysis

Thus, to get a more accurate measure of domestic content of an industry’s gross output, we must next remove the value of foreign inputs from domestically-sourced intermediate inputs (see Figure 6). This calculation removes the value of imports at each stage of production sequentially and determines the value of the domestic content (including value added and intermediate inputs) of each industry’s gross output.¹⁰ In 2015, the share of domestic content of total output in the manufacturing sector was 82 percent, 6 percentage points lower than the share of domestically-sourced manufacturing output shown in Figure 4.

¹⁰ BEA developed the methodology for calculating the domestic content of industry production. The calculation relies on a series of matrix algebra operations using the estimates from the input-output tables and import matrix.

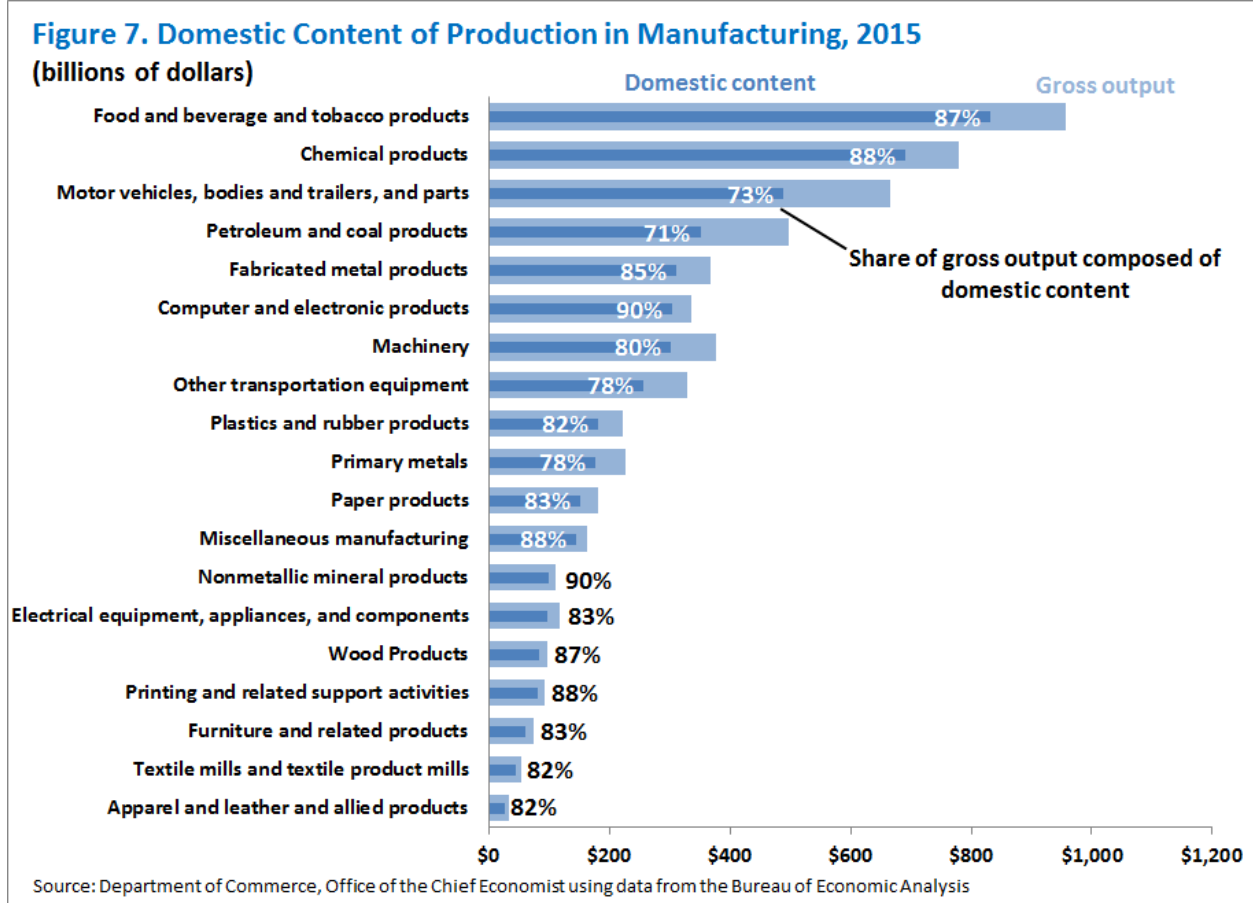


Figure 7 shows that, even after correcting for the part of domestically sourced inputs that came from foreign sources, a large share of the value of U.S. manufacturing output is comprised of domestic content—80 percent or more for most industries in 2015. To see how these estimates of domestic content differ from the estimates of domestic sourcing, consider the motor vehicle and parts industry. While 82 percent of the gross output of the industry is accounted for by labor, capital, and other inputs sourced in the United States (see Figure 5), a relatively large portion of these other inputs contain content that was imported from abroad. As a result, as seen in Figure 7, the domestic content of this industry is 73 percent, significantly lower than the simpler estimate of domestic sourcing used above.

Domestic Content of Purchases

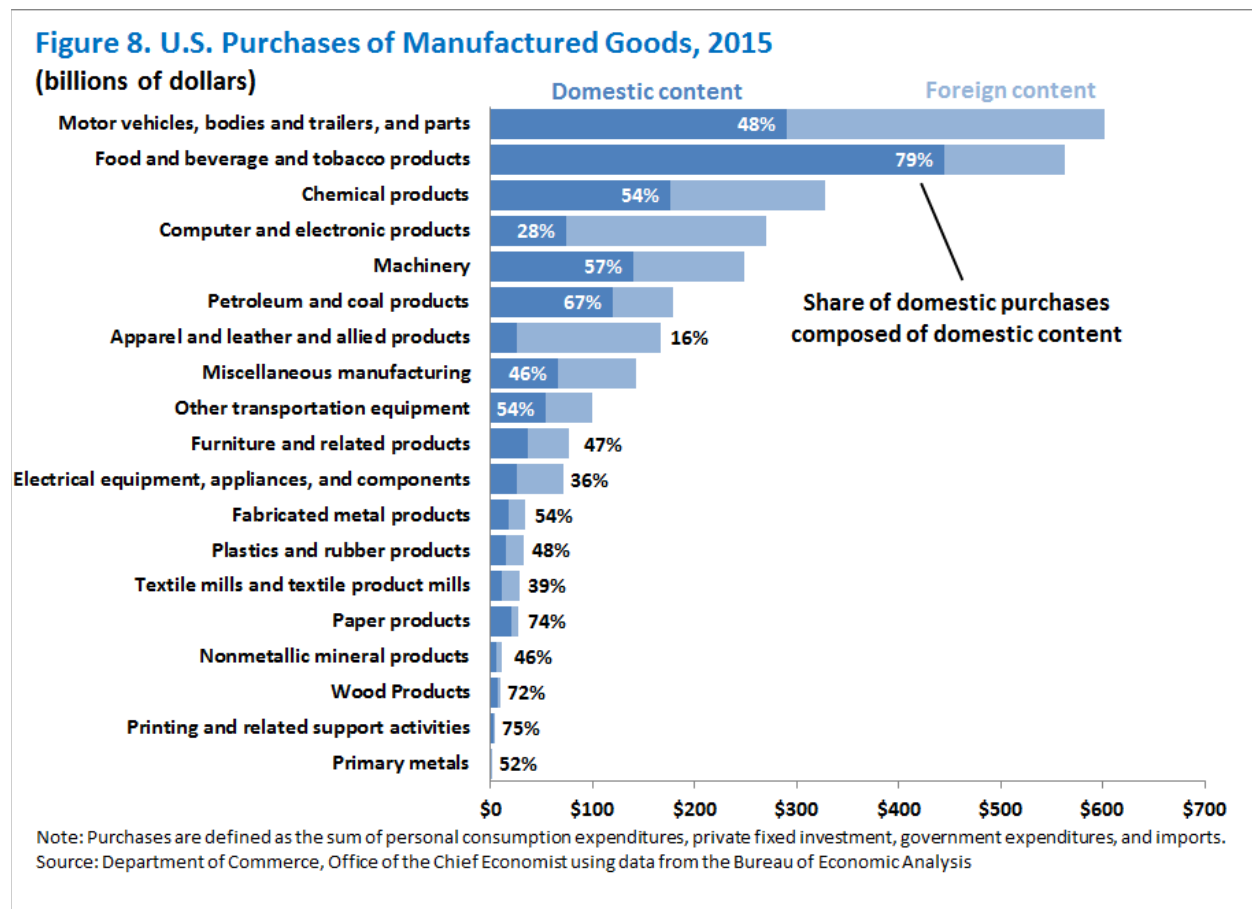
To this point, we have focused on the production of manufactured goods in the United States and we found that, on average, of the total manufacturing gross output of \$5.7 trillion, 82 percent was comprised of domestic content. However, while a large percentage of the value of goods that are made in America is from domestic sources, this does not necessarily imply that the domestic content of the goods that we purchase from our store shelves is also high.

We can look at this same \$5.7 trillion in output from the perspective of the sale of goods used as intermediate inputs in manufacturing production and the value of final demand by U.S. households,

business and government. Again, the value of intermediate inputs used to produce manufactured goods was \$3.6 trillion.

The remainder of the \$5.7 trillion is final demand. Final demand is composed of all final purchases by U.S. consumers, businesses, and governments; net exports (exports minus imports); and the change in private inventories. Subtracting out inventories leaves the value of final purchases made in the United States. In 2015, final purchases by U.S. consumers, businesses, and governments of manufactured goods was \$2.9 trillion—including goods manufactured here and imported from abroad.

Of the \$2.9 trillion, 53 percent was domestic content. This figure takes into account both the purchases of imported final goods and imported intermediate inputs in U.S.-produced goods. Figure 8 shows by major commodity how much of the value of U.S. final purchases was met by American-made content.



The contrast between the domestic content of American-made goods and what we see in stores is especially clear when it comes to apparel.¹¹ Output from the U.S. apparel industry was, on average, 82 percent American in 2015; however, only 16 percent of the apparel that was sold as final products in the United States that year was American in origin. On the other end of the spectrum are food, beverage,

¹¹ As in the 2014 report, Figure 8 presents data classified by commodities rather than industries. All previous figures in this report present data classified by industries.



and tobacco products, for which domestic content accounts for 79 percent of the value of what U.S. consumers, businesses, and governments purchased in 2015.

Conclusion

As we have seen, there are a number of ways to measure what is “made in America,” all of which have some benefits and drawbacks. Gross industry output gives us an idea of the dollar value of what the American manufacturing sector produces, but it includes the value of imported inputs. Value added excludes the value of all intermediate inputs.

This report re-introduces and measures concepts that more precisely calculate the portion of manufacturing gross output that is “made in America”: domestic sourcing and domestic content. The domestic sourcing calculation is relatively simple, but it assumes that all inputs purchased from American suppliers were made in the U.S.A. Domestic content, on the other hand, is complex to calculate but provides the best picture of what it really means to say “made in America” for a particular industry.

Finally, the measure of what percent of domestic purchases of manufactured goods is met by U.S. production provides a look from the consumer and business perspective and shows that the domestic content of what we produce and what we purchase in the United States is not the same. Although much of the U.S. demand for manufactured goods is met by foreign products, it is evident that a large portion of the gross output of the U.S. manufacturing sector is domestic.

Acknowledgments

The author would like to thank *Ryan Noonan, Economist in the Department of Commerce Office of the Chief Economist*, who co-authored the original 2014 report and provided comments and other assistance in this update.

Additionally, the author would like to thank the following persons who provided comments, suggestions, and other contributions to the update of this report. Any errors in the report are solely the author's responsibility.

Rob Rubinovitz, Deputy Chief Economist, Department of Commerce

Dave Langdon, Economist and Senior Policy Advisor

Regina Powers, Economist

Adji Fatou Diagne, Pathways Economist

Rick Lattimer, Policy Analyst

The following colleagues at the Bureau of Economic Analysis developed the methodology for estimating domestic content and provided clarification on concepts, as needed.

Thomas Howells, Chief, Input-Output Statistics Branch

Gabriel Medeiros, Economist, Input-Output Statistics Branch

Suggested citation:

Nicholson, J. R., & Noonan, R. Office of the Chief Economist, Economics and Statistics Administration, U.S. Department of Commerce. (2017). 2015: What is Made in America? (ESA Issue Brief # 01-17). Retrieved from http://esa.doc.gov/sites/default/files/2015-what-is-made-in-america_0.pdf.

**U.S. Department of Commerce
Economics and Statistics Administration
Office of the Chief Economist
Room 4848
1401 Constitution Ave., NW
Washington, DC 20230
www.esa.gov**

**Technical inquiries:
Office of the Chief Economist
(202) 482-3523**

**Media inquiries:
Office of External Affairs
(202) 482-3331**

