

How Do Imports Affect GDP?

"Not everything that counts can be counted, and not everything that can be counted counts."

—attributed to **Albert Einstein**



Introduction

Gross domestic product (GDP) is the total market value, expressed in dollars, of all final goods and services produced in an economy in a given year. When compared with previous periods, GDP tells whether an economy is producing more output (expanding) or less output (contracting). As such, it is a useful measure of the health of the economy and among the most important and widely reported economic data. A variety of people, from business owners to policymakers, consider GDP when making decisions. Additionally, international trade is measured as part of GDP and is a large and growing component of our nation's economy. It's also an important, but controversial, political issue. However, the current textbook and classroom treatment of how international trade is measured as part of GDP can lead to misconceptions if not properly explained. This essay intends to correct misconceptions and provide clear instruction.

Measuring GDP

As you can imagine, measuring the value of all final goods and services produced in an economy is a challenging task. GDP can be measured equally well by counting either total expenditures or total income. Here is a very simple fictional example. Fred and Sarah live on Islandia, a remote island. Fred catches fish in the bay, and Sarah climbs trees to gather coconuts. In this case, Fred and Sarah both produce and purchase goods—Fred sells fish to Sarah, and Sarah sells coconuts to Fred. In a given period,

Fred sells 10 fish to Sarah for 4 shells (island currency) per fish, or 40 shells total. Sarah gathers and sells 15 coconuts to Fred for 3 shells per coconut, or 45 shells total. We can measure the value of island production by either tracking their expenditures (spending) or by tracking the income each earns from producing and selling their goods. Fred's production yields 40 shells in income when he sells to Sarah, and Sarah's production yields 45 shells of income when she sells to Fred; using the income approach, the GDP of Islandia is 85 shells. Likewise, if we track total spending, Fred spends 45 shells on coconuts, and Sarah spends 40 shells on fish; using the expenditure approach, the GDP of Islandia is also 85 shells. Because any spending is someone's income and vice versa, using either measurement approach results in the same answer. Of course, tracking an actual economy is a bit more complicated.

Domestic Expenditures

The typical textbook treatment of GDP is the expenditure approach, where spending is categorized into the following buckets: personal consumption expenditures (C); gross private investment (I); government purchases (G); and net exports ($X - M$), composed of **exports** (X) and **imports** (M). Textbooks often capture this in one relatively simple equation:

$$\text{GDP} = C + I + G + (X - M).$$

Table 1 The Components of U.S. GDP			
Expenditure variable	Expenditure category	Definition	In trillions of U.S. dollars
C	Personal consumption expenditures	Household expenditures for durable and nondurable consumer goods and services	\$13.88
I	Gross private investment	Business expenditures for newly produced capital goods (machinery, equipment, tools, and buildings), household purchases of homes, and additions to inventories	\$3.58
G	Government purchases	Government expenditures for goods and services that the government consumes in providing public goods and for public capital that has a long lifetime	\$3.50
X	Exports	Goods or services that are produced domestically but sold abroad	\$2.57
M	Imports	Goods or services that are produced abroad but sold domestically	\$3.12
X – M	Net exports	Exports – imports	\$–0.55

NOTE: GDP data for 2018:Q2.
SOURCE: Federal Reserve Bank of St. Louis FRED®; <https://fred.stlouisfed.org/release/tables?rid=53&eid=12998>.

The equation is an identity—an equation that is true for all values of the variables because of the way the variables are defined (Table 1). So an extra dollar of spending on C, I, G, or X will also increase GDP by one dollar. In other words, if you purchase a \$30,000 car (produced in the United States), that would add \$30,000 to the personal consumption expenditures (C) category. GDP would also increase by \$30,000. The same would be true if the spending had been by a business to invest (I) in technology or equipment or by government (G) to build infrastructure or fund public schools. The income approach should yield identical results because spending by one person is income for another.

Barney's Bananas

Suppose Fred and Sarah "discover" a nearby inhabited island. Barney, on the neighboring island, sells 10 bananas to Sarah for 3 shells each, and Sarah sells 10 coconuts to Barney for 3 shells each. For Sarah, bananas are imports and coconuts are exports. How does this affect the GDP of Islandia? Because GDP measures the value of goods produced on the island, the 30 shells Sarah receives by exporting to Barney contributes to Islandia's GDP. But, the value of the imported goods (bananas) are not

counted in Islandia's GDP because they were not produced on the island. Remember that GDP measures *domestic* production. To be clear, the value of the imported bananas do not add to, or subtract from, Islandia's GDP because imports have no impact on GDP. The next section explains why imports do not add to or subtract from GDP, even though the equation reads $GDP = C + I + G + (X - M)$. If you are wondering, Barney's bananas would be counted as GDP on Barney's island.

The Misleading Aspects of Net Exports

International trade is captured in the net exports portion of the expenditures equation ($X - M$). In this approach, exports (X) are added in the same way as the other variables (C , I , and G) and contribute to GDP—an extra dollar of spending increases GDP by one dollar. However, in the expenditures equation, imports (M) are subtracted. On the surface, this implies that an extra dollar of spending on imports (M) would decrease GDP by one dollar. For example, let's assume you spend \$30,000 on an imported car; because imports are subtracted (i.e., " $- M$ "), the equation seems to imply that \$30,000 should be subtracted from GDP (Table 2). However, this cannot be correct because GDP measures *domestic* production, so imports (foreign production) should have no impact on GDP.

Table 2 Do Imports Subtract from GDP?						
GDP	=	C	+	I	+	G + (X - M)
-\$30,000						-\$30,000

Correcting Misconceptions

When the Bureau of Economic Analysis (BEA) measures economic output, it categorizes spending with the National Income and Product Accounts (NIPA). Some of this spending, which is counted as C , I , and G , is spent on

imported goods.¹ As such, the value of imports must be subtracted to ensure that only spending on domestic goods is measured in GDP. For example, \$30,000 spent on an imported car is counted as a personal consumption expenditure (C), but then the \$30,000 is subtracted as an import (M) to ensure that only the value of domestic production is counted (Table 3). As such, the imports variable (M) functions as an accounting variable rather than an expenditure variable. To be clear, the purchase of domestic goods and services increases GDP because it increases domestic production, but the purchase of imported goods and services has no direct impact on GDP.

Table 3 The Imports Variable (M) Is an Accounting Variable								
GDP	=	C	+	I	+	G	+	(X - M)
\$0		+\$30,000						-\$30,000

This approach to GDP allows for correct accounting of **intermediate goods** in a global economy where few goods fall cleanly into the two buckets of being produced either domestically or abroad. In fact, most "domestically produced" goods include some foreign parts or components. It is also important to notice that while C, I, and G measure spending on only *final* goods and services, exports (X) and imports (M) also include intermediate goods.² For example, if \$10,000 in imported parts are used in the production of a car in a U.S. factory (an "American" car) and the car is sold in the United States for \$30,000, then the \$30,000 counts as personal consumption expenditures (C); but \$10,000 is subtracted to account for the value of the imported (M) parts, so the effect on U.S. GDP is \$20,000 (Table 4).

Table 4 Domestically Produced Car Using Imported Parts								
GDP	=	C	+	I	+	G	+	(X - M)
+\$20,000		+\$30,000						-\$10,000

Exports of intermediate goods also count.³ For example, assume an American business produces and sells \$30,000 in parts to a foreign business that uses them to assemble a product in its country. While much of the focus in counting GDP is on *final* goods and services, exports of intermediate goods contribute to GDP. In this case, exporting \$30,000 in parts will increase U.S. GDP by \$30,000 (Table 5). This accounting helps capture the truly global nature of many products.

Table 5 Exporting Intermediate Goods								
GDP	=	C	+	I	+	G	+	(X - M)
+\$30,000								+\$30,000

Conclusion

GDP measures domestic production of final goods and services. The expenditure approach calculates GDP using total spending on domestic goods; but the equation, as stated, can lead to a misunderstanding of how imports affect GDP. More specifically, the expenditure equation seems to imply that imports reduce economic output. For example, in nearly every quarter since 1976, net exports (X – M) have been negative (see the graph and Table 1), which seems to imply that trade reduces domestic output and growth. This can influence people's perspective on trade. This essay explains that the imports variable (M) corrects for the value of imports that have already been counted as personal consumption (C), gross private investment (I), or government purchases (G). And remember, the purchase of domestic goods and services should increase GDP, but the purchase of imported goods and services should have *no direct impact* on GDP.

NOTE: GDP is used as an indicator of economic growth. A GDP stacking graph shows the contributions of personal consumption expenditures (blue), gross private investment (red), government purchases (purple), and net exports (green). Net exports have been negative for nearly every

quarter since 1976. The visual nature of the graph implies that net exports are a drag on economic growth.

SOURCE: Federal Reserve Bank of St. Louis FRED[®];
<https://fred.stlouisfed.org/graph/?g=kEUE>.

Notes

¹ Bureau of Economic Analysis. "Measuring the Economy: A Primer on GDP and the National Income and Product Accounts." 2015;
https://www.bea.gov/national/pdf/nipa_primer.pdf.

² Fox, D.R. and McCully, C.P. "Concepts and Methods of the U.S. National Income and Product Accounts." Bureau of Economic Analysis, NIPA Handbook. 2017; <https://www.bea.gov/national/pdf/all-chapters.pdf>, accessed January 10, 2018.

³ Fox and McCully.

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