

How Do Economists Measure the Size of an Economy?

When economists study a country's economy, they can look at it from two different perspectives. They can study the economic decision making of individuals, households, and firms—the field known as microeconomics. Or, as you will do in this chapter, they can study the workings of the economy as a whole, the focus of macroeconomics. One of the first questions that scholars in the field of macroeconomics ask is, “How big is the economy?”

Gross Domestic Product: What an Economy Produces

The main measure of the size of a nation's economy is its gross domestic product. GDP is an economic indicator that measures a country's total economic output. In formal terms, **gross domestic product** is the market value of all final goods and services produced within a country during a given period of time. A steadily growing GDP is generally considered a sign of economic health.

The job of measuring U.S. GDP belongs to the Department of Commerce's Bureau of Economic Analysis. We can learn a lot about what is involved in this measurement by looking at the formal definition of gross domestic product phrase by phrase.

The market value . . . Our economy produces a vast variety of goods and services, everything from guitar lessons to computers. How can anyone add them all together to come up with a single measure of an economy's output? The Bureau of Economic Analysis does so by attaching a market value to each product. **Market value** is the price buyers are willing to pay for a good or service in a competitive marketplace.

Of all final goods and services . . . GDP is based on the market price of every “final” good or service that can be legally sold in a country. A **final good** is any new good that is ready for use by a consumer. A box of cereal is a final good, as is a new car. Goods that are used in the production of final goods, such as the grains used to produce cereal or the steel and rubber used to manufacture cars, are known as **intermediate goods**. Their market value is not counted in GDP because it is already included in the market value of the final good.

Produced within a country . . . To be included in GDP, goods and services must be produced within the country's borders. The firms that produce the goods and services do not necessarily have to be American owned. Cars manufactured in the United States by the Japanese automaker Toyota, for example, are included in this country's GDP.

During a given period of time. The Bureau of Economic Analysis calculates GDP every quarter, or three-month period. Economists use the calendar year GDP to compare production from year to year or from country to country. This annual GDP includes all final goods and services produced between January 1 and December 31. Goods do not have to have been sold during that period to be included in GDP. For example, a kayak manufactured in 2013 but sold in 2014 would be included in the 2013 GDP.

How Economists Calculate GDP

Economists typically calculate GDP by measuring expenditures on goods and services produced in a country. They divide the economy into four sectors: households, businesses, government, and foreign trade. Each sector's spending makes up one of the four components of GDP: household consumption (*C*), business investment (*I*), government purchases (*G*), and the net of exports minus imports (*NX*). Economists calculate GDP using this formula:

$$C + I + G + NX = \text{GDP}$$

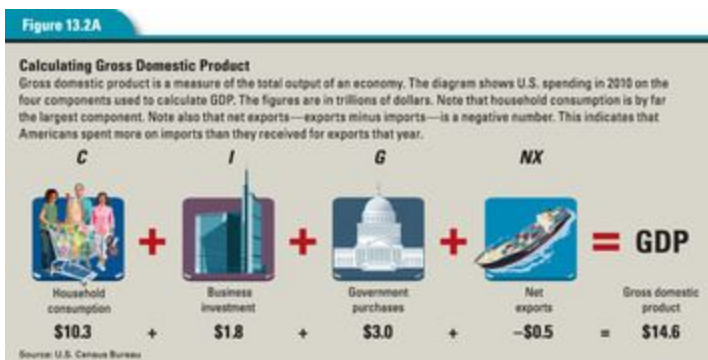


Figure 13.2A shows how this formula was used to calculate this country's GDP for the year 2010.

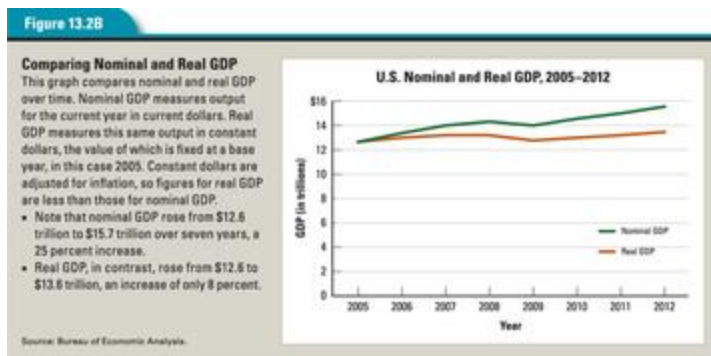
Household consumption, C. This component of GDP consists of goods and services bought by people in households for personal use. Household consumption ranges from food and fuel to movie tickets and medical care.

Business investment, I. This component consists largely of business investment in capital goods, such as buildings and machinery. It also includes goods produced but not yet sold.

Government purchases, G. Federal, state, and local government purchases of goods and services are also included in GDP. Economists do not count government transfer payments, such as welfare or Social Security benefits, as part of GDP. These payments do not create new production, nor do they involve the purchase of goods or services by the government.

Net exports, NX. In calculating the impact of trade on GDP, economists focus on **net exports**—the value of all exports minus all imports. This makes sense because when a country exports goods and services, those exports bring money back home. The sale of these goods increases the exporting country's GDP. Just the opposite happens, however, when a country imports goods and services. The money used to pay for these imports leaves the economy, thus decreasing the importing country's GDP.

Net exports can be either positive or negative. When exports exceed imports, net exports are positive and increase GDP. When imports exceed exports, net exports are negative and decrease GDP.



Adjusting for Inflation: Nominal vs. Real GDP

Economists use GDP figures to determine not only how big an economy is, but whether it is growing or shrinking and at what rate. For example, the GDP of the United States in 2011 was \$15.1 trillion. The GDP in 2012 was \$15.7 trillion. The difference between these two figures suggests that the economy grew by some \$0.6 trillion, or 4.0 percent, from 2011 to 2012.

However, is determining changes in economic output as simple as subtracting an earlier year's GDP from a later year's GDP? The answer is no, and the reason is inflation, which drives up the prices of goods and services over time.

Simply calculating GDP by adding the spending on its four components yields what economists call nominal GDP.

Nominal GDP measures the output of an economy valued at today's prices, or in current dollars. **Current dollars** reflects the purchasing power of the dollars in the year they are spent. Using current dollars does not take the effect of inflation into account. Inflation can cause prices in current dollars to rise from year to year. And if prices go up, nominal GDP will increase over time, even if the actual output of the economy does not.



To compensate for the effects of inflation, the Commerce Department calculates what is called real GDP. **Real GDP** measures the output of an economy not in current dollars, but in constant dollars. The value of **constant dollars** is fixed

at a rate that was current in a specified base year. Because the purchasing power of constant dollars is fixed, real GDP allows us to compare the total output of an economy from year to year as if prices had never changed.

In the example above, real GDP figures show that U.S. economic output grew by only 2.3 percent during 2012, not 4.5 percent as indicated by nominal GDP figures. Figure 13.2B compares nominal and real U.S. GDP over several years.

Adjusting for Population: Per Capita GDP

Economists also use GDP to compare the economies of individual countries. To make accurate comparisons, economists must adjust GDP yet again. This time they do so to take population size into account.

Adjusting for population is accomplished by calculating per capita GDP. *Per capita* means “per person.” **Per capita GDP** is a nation's real gross domestic product divided by its population. It is an accepted measure of a society's standard of living.

Consider the United States and Norway, for example. In 2012, the GDP of the United States was about \$15.7 trillion. This was more than 55 times the size of Norway's GDP of \$0.28 trillion. The difference is not surprising, considering that the U.S. population was more than 315 million and that of Norway just over 5 million. A country with more people generally produces more goods and services, resulting in a higher GDP.

As this example shows, size alone does not provide a complete picture of a country's economy. This is why economists use per capita GDP to compare one nation to another. In 2012, the per capita GDP of the United States was \$49,800. The per capita GDP of Norway was \$55,300. Despite having a much smaller economy, Norwegians had a higher standard of living than Americans did.

Limitations of GDP as an Indicator of Economic Health

Gross domestic product is a useful tool for measuring economic growth. But as a measure of the overall health of an economy, GDP has several limitations.

GDP leaves out unpaid household and volunteer work. Unpaid activities can have value. A volunteer firefighter, for example, and a parent who stays home to raise children are both doing important work. But because no money is exchanged, such work does not show up in a country's GDP.

GDP ignores informal and illegal exchanges. GDP statistics do not count informal or illegal economic activity as part of a nation's output. An **informal economy** is one that operates without government regulation. Occasional babysitters, for example, are paid for their work, but such transactions are not counted as part of a country's GDP. Barter is another type of informal exchange that is not reflected in GDP.

GDP counts some negatives as positives. A rise in GDP is not always a good sign. For example, after a hurricane, rebuilding can generate economic activity, which in turn can boost GDP. But people are still far worse off than they would have been if disaster had not struck. Over-exploitation of natural resources can also boost GDP. For example, cutting down a rainforest will raise GDP in the year of the harvest, but this temporary rise is no guarantee that people will be better off in the future without that resource.

GDP ignores negative externalities. GDP does not reflect the impact of negative externalities such as pollution. A rapidly industrializing country like China, for example, can have a rising GDP even as water and air quality decline. Moreover, GDP turns a negative into a positive when money is spent in response to environmental damage. For example, if a chemical spill from a factory contaminates a drinking well, people's purchases of bottled water are added to GDP.

GDP places no value on leisure time. Citizens of industrialized nations today enjoy more free time than ever before. This leisure time is a major benefit of living in a modern economy. Yet because time is not sold in markets, it is not reflected in GDP.

GDP says nothing about income distribution. A high per capita GDP may suggest that everyone in a society receives a fair share of goods and services. But per capita GDP is an average. It tells us nothing about how income is distributed in a society. Saudi Arabia, for example, has a high per capita GDP but huge income gaps between its richest and poorest citizens.

As this list of limitations suggests, there is much that GDP does not tell us about a society's economic welfare. As Robert Kennedy once observed,

[GDP] is indifferent to the decency of our factories and the safety of our streets alike. It does not include the beauty of our poetry or the strength of our marriages, or the intelligence of our public debate or the integrity of our public officials . . . It measures everything, in short, except that which makes life worthwhile.

—Senator Robert Kennedy, 1968



How GDP Growth Makes People Better Off

For all its limitations, GDP still matters. As a country's per capita GDP increases, so too do other indicators of well-being, such as those listed below.

Literacy and education. Studies show that countries with a high per capita GDP have high levels of education. The [literacy rate](#)—the percentage of people in these countries who can read and write—is at or near 100 percent. Literacy rates are much lower in countries with low per capita GDP. People with more education generally have better jobs and higher incomes than people with less education.

Health and life expectancy. GDP is related to the health of a population. One measure of health is [life expectancy](#)—the number of years, on average, that a person is expected to live. People live longer in countries with high per capita GDP than in countries with low per capita GDP. Another measure of health is [infant mortality](#)—the rate at which babies die during their first year of life. Because people in wealthier countries have better medical care and nutrition, infant mortality rates are lower in countries with high per capita GDPs.

Standard of living. Not surprisingly, people in countries with high per capita GDP tend to be more prosperous than people in low-GDP countries. Their houses are bigger and more comfortable. They have more food and clothing and better access to services. While such material prosperity is surely no guarantee of individual happiness, overall, people are better off living in a society with a high standard of living.

Assignment:

1. Give an example of an economic activity included in GDP, and explain why it is included. Also give an example of an economic activity not included in GDP, and explain why it is not included.

2. Complete the table.

	Definition	How is it Measured?
Nominal GDP		
Real GDP		
Per Capita GDP		

Which of these measures would an economist use to compare GDP from various time periods, and why?

Which measure would an economist use to compare the GDP of various countries, and why?

4. Do you think GDP is a good measure of economic health? Why or why not?