

Common Sense Economics - Gross Domestic Product (GDP): What Is It and How Is It Measured?

Gross Domestic Product (GDP) is the market value of all final user goods and services produced domestically during a time period (a year or quarter). GDP is a measure of production – it is designed to measure the output of goods and services produced in an economy. The definition of GDP tells us a lot about what it measures. It measures the “market value” of the goods and services produced. The market prices paid for various items determine how much they will add to GDP. For example, if a new automobile is sold for \$20,000 compared to \$1,000 for a new television set, the auto will add 20 times as much to GDP as the television set.

Goods and services are counted only when purchased by their final users. Many goods go through several intermediate stages of production. Purchases of raw materials and goods as they go through these intermediate production stages are not counted because their value will be reflected in the purchase price paid by the final user of the good or service. Therefore, double-counting would result if the raw materials and intermediate goods were counted as well as the purchase prices paid by their ultimate users.

GDP is a measure of “domestic production”: the output produced within the geographic borders of the country regardless of whether it reflects the productive efforts of citizens or foreigners. Production outside of a country’s geographic borders by its nationals is excluded. For example, the income generated by an American business consultant working in Mexico would add to the GDP of Mexico, but not that of the United States. Correspondingly, the income of a Japanese chemical engineer working in the U.S. would be included in the GDP of the United States, but not that of Japan.

Only goods and services produced during the current period are included in this year’s GDP. The purchase and sale of used items are omitted because they do not reflect current production. Their value was previously counted during the earlier period when they were produced. For example, the sale of a 2007 automobile in 2010 would not be included in the 2010 GDP because it was not produced in 2010. It was already included in GDP in 2007 when it was manufactured and including it again when the used item was re-sold would involve double-counting. In contrast, the services of a person helping to arrange for the transaction of used items, real and financial assets, and other goods does reflect

current production. Thus, sales commissions and other payment for sales services rendered during the year are counted when they are provided.

Financial transactions and income transfers are excluded because they do not involve production.

The buying and selling of stocks and other financial instruments like bonds, mutual funds and certificates of deposit represent a transfer of ownership from one person or organization to another. Likewise, social security benefits, disability payments, gifts, and other income transfers are merely movements of income and ownership rights from one party to another. They do not involve current production, and therefore these transfers are not included in GDP.

GDP is a measure of production through markets. Non-market productive activities are omitted.

For example, production within the household such as food preparation and child care services do not involve market transactions and therefore they are not included in GDP.

Further, GDP also omits the activities of the underground economy -- unrecorded transactions such as those involving illegal activities like drug trade, prostitution, and income that is unreported in order to evade taxes.

GDP measures the output of goods and services produced in both the private and government sectors. The domestic output of the business sector is included, regardless of whether the firms are owned by nationals or foreigners. As we discussed above, governmental income transfers are omitted. But purchase and/or provision of goods and services by local, state, and federal governments are included in GDP because they reflect current production.

GDP COMPARISONS ACROSS TIME

When making GDP comparisons across time, it is important to adjust for changes in the general level of prices. There are two reasons why nominal GDP may be higher in one period than another: (1) an increase in the general level of prices and (2) an increase in the quantity of goods and services produced. Only the latter will improve living standards. Therefore, as nominal GDP changes across time, it is important to distinguish between GDP increases that merely reflect higher prices from those that result from an expansion in the quantity of goods and services produced.

Economists use a price index, the GDP deflator, to adjust the nominal GDP data for the impact of increases in the general level of prices through time. The GDP deflator is a measure of the general level of prices relative to a base year, which is assigned a value of 100. As prices rise relative to the base year, the GDP deflator will increase proportionally. The GDP deflator can be used along with nominal GDP to derive real GDP, which is GDP measured in dollars of constant purchasing power. Real GDP nets out the increase in nominal GDP that merely reflects an increase in the general level of prices. Real GDP in this time period (t) measured in terms of the price level of the base year, is equal to:

$$\text{Real GDP}_t = \frac{(\text{Nominal GDP}_t) * 100}{(\text{GDP Deflator}_t)}$$

If prices are higher now than during the earlier base year, the ratio on the right will be less than one and it will adjust the current nominal GDP figure for the higher current level of prices compared to the earlier base year. Consider the GDP figures for the United States in 2005 and 2009. In 2009, the nominal GDP of the United States was \$14,256 billion compared to only 12,638 billion in 2005. Thus nominal GDP was 12.8 percent higher in 2009 than 2005. However, a large portion of this increase in nominal GDP reflected inflation rather than an increase in real output. The GDP deflator, the price index that measures changes in the cost of all goods included in GDP, increased from 100.0 during the 2005 base year to 109.7702 in 2009. This indicates that prices rose by about 9.8 percent between 2005 and 2009 (109.7702 -100, expressed as a percentage). In order to derive the 2009 real GDP, the 2009 nominal GDP must be deflated for the higher general

level of prices compared to 2005. Using the equation above, the 2009 nominal GDP of \$14,256.3 billion is first multiplied by 100 and then divided by the GDP deflator of 109.7702. This yields a real GDP of \$12,987.4 billion $[(\$14,256.3 * 100) / 109.7702]$, only 2.8 percent more than in 2005. Thus, while nominal GDP expanded by 12.8 percent, real GDP increased by only 2.8 percent.

When comparing GDP across time, using real GDP rather than nominal GDP is vitally important. The real GDP figures factor out the changes in the general level of prices, leaving only changes in the actual output of goods and services produced. This makes real GDP comparisons more meaningful.

Furthermore, when considering living standards across time, one would want to use per capita GDP, that is, GDP per person. Increases in per capita GDP indicate that a larger quantity of goods and services per person is being produced over time. Without increases in output per person, improvements in living standards are unlikely.

In the United States, the Department of Commerce's Bureau of Economic Analysis (BEA) calculates GDP quarterly and uses these calculations to offer an overview of the U.S. economy. The BEA produces economic statistics that influence decisions of government officials, business people, and private individuals. The statistics provided at <http://www.bea.gov/index.htm> offer a comprehensive, up-to-date picture of the U.S. economy.

GDP Exercise. The exercise below provides you with actual GDP figures retrieved from the BEA. It poses questions that will help you better understand GDP and why it matters.

1. Complete the table below and show all work.

Year	Nominal GDP in billions of current dollars	“Real” GDP in billions of chained 2005 dollars	Implicit Price Deflator
2000	9,951.5		88.6
2001		11,347.2	90.7
2002	10,642.3	11,553.0	
2003	11,142.1		94.1
2004		12,263.8	96.8
2005	12,638.4	12,638.4	100
2006	13,398.9	12,976.2	
2007		13,254.1	106.2
2008	14,441.4		108.5
2009	14,256.3	12,987.4	109.8

2. Why are nominal and real GDP the same in 2005?
3. When making GDP comparisons across time, why is it important to use real GDP rather than nominal GDP?
4. Why does the size of a country’s GDP matter? How does it affect you and the people in your community, state and country?