

Final goods are goods intended for the final user. For example, gasoline is a final good; but crude oil, from which gasoline and other products are derived, is not.

Before using GDP to measure output growth, we must first adjust GDP for price changes. Let's say GDP in Year 1 is \$1,000 and in Year 2 it is \$1,100. Does this mean the economy has grown 10 percent between Year 1 and Year 2? Not necessarily. If prices have risen, part of the increase in GDP in Year 2 will merely represent the increase in prices. We call GDP that has been adjusted for price changes *real* GDP. If it isn't adjusted for price changes, we call it *nominal* GDP.

To compute real GDP in a given year, use the following formula:

$$\text{Real GDP in Year 1} = (\text{nominal GDP} \times 100) / \text{price index}$$

To compute real output growth in GDP from one year to another, subtract real GDP for Year 2 from real GDP in Year 1. Divide the answer (the change in real GDP from the previous year) by real GDP in Year 1. The result, multiplied by 100, is the percentage growth in real GDP from Year 1 to Year 2. (If real GDP declines from Year 1 to Year 2, the answer will be a negative percentage.) Here's the formula:

$$\text{Output growth} = \frac{(\text{real GDP in Year 2} - \text{real GDP in Year 1})}{\text{real GDP in Year 1}} \times 100$$

For example, if real GDP in Year 1 = \$1,000 and in Year 2 = \$1,028, then the output growth rate from Year 1 to Year 2 is 2.8%: $(1,028 - 1,000) / 1,000 = .028$, which we multiply by 100 in order to express the result as a percentage.

To understand the impact of output changes, we usually look at real GDP per capita. To do so, we divide the real GDP of any period by a country's average population during the same period. This procedure enables us to determine how much of the output growth of a country simply went to supply the increase in population and how much of the growth represented improvements in the standard of living of the entire population. In our example, let's say the population in Year 1 was 100 and in Year 2 it was 110. What was real GDP per capita in Years 1 and 2?

Year 1

$$\text{Real GDP per capita} = \frac{\text{Year 1 real GDP}}{\text{population in Year 1}} = \frac{\$1,000}{100} = \$10$$

Year 2

$$\text{Real GDP per capita} = \frac{\$1,028}{110} = \$9.30$$

In this example, the average standard of living fell even though output growth was positive. Developing countries with positive output growth but high rates of population growth often experience this condition.

Now try these problems using the information in Figure 11.3.



Figure 11.3

Nominal and Real GDP

	Nominal GDP	Price Index	Population
Year 3	\$5,000	125	11
Year 4	\$6,600	150	12

8. What is the real GDP in Year 3? _____
9. What is the real GDP in Year 4? _____
10. What is the real GDP per capita in Year 3? _____
11. What is the real GDP per capita in Year 4? _____
12. What is the rate of real output growth between Years 3 and 4? _____
13. What is the rate of real output growth per capita between Years 3 and 4? _____
(Hint: Use per-capita data in the output growth rate formula.)

All About GDP

Part A

Is This Counted as Part of GDP?

Which of the following are *included* and which are *excluded* in calculating GDP? Explain your decisions.

1. A monthly check received by an economics student who has been granted a government scholarship
2. A farmer's purchase of a new tractor
3. A plumber's purchase of a two-year-old used truck
4. Cashing a U.S. government bond
5. The services of a mechanic in fixing the radiator on his own car
6. A Social Security check from the government to a retired store clerk
7. An increase in business inventories
8. The government's purchase of a new submarine for the Navy
9. A barber's income from cutting hair
10. Income received from the sale of Nike stock

Part A adapted from William B. Walstad, Michael W. Watts, Robert F. Smith and Campbell R. McConnell, *Instructor's Manual to Accompany Economics*, 10th ed. (New York: McGraw-Hill Book Co., 1987), p. 33. Parts B and C written by John Morton, National Council on Economic Education, New York, N.Y.

Part B**GDP: Is It Counted and Where?**

For each of the following items, write one of the following in the space provided:

C if the item is counted as *consumption spending*.

I if the item is counted as *investment spending*.

G if the item is counted as *government spending*.

NX if the item is counted as *net exports*.

NC if the item is *not counted* in GDP.

- ___ 11. You spend \$7.00 to attend a movie.
- ___ 12. A family pays a contractor \$100,000 for a house he built for them this year.
- ___ 13. A family pays \$75,000 for a house built three years ago.
- ___ 14. An accountant pays a tailor \$175 to sew a suit for her.
- ___ 15. The government increases its defense expenditures by \$1,000,000,000.
- ___ 16. The government makes a \$300 Social Security payment to a retired person.
- ___ 17. You buy General Motors Corp. stock for \$1,000 in the stock market.
- ___ 18. At the end of a year, a flour-milling firm finds that its inventories of grain and flour are \$10,000 above the amounts of its inventories at the beginning of the year.
- ___ 19. A homemaker works hard caring for her spouse and two children.
- ___ 20. Ford Motor Co. buys new auto-making robots.
- ___ 21. You pay \$300 a month to rent an apartment.
- ___ 22. Apple Computer Co. builds a new factory in the United States.
- ___ 23. R.J. Reynolds Co. buys control of Nabisco.
- ___ 24. You buy a new Toyota that was made in Japan.
- ___ 25. You pay tuition to attend college.

Part C**Why Are Items Counted or Not Counted in GDP?**

26. We count only the final retail price of a new good or service in GDP. Why?
27. A purely financial transaction will not be counted in GDP. Why?
28. When a homeowner does home-improvement work, the value of the labor is not counted in GDP. Why?