

■ Answers to Textbook Problems

Review Questions

1. Both total output and output per worker have risen strongly over time in the United States. Output itself has grown by a factor of 100 in the last 133 years. Output per worker is now six times as great as it was in 1900. These changes have led to a much higher standard of living today.
2. The business cycle refers to the short-run movements (expansions and recessions) of economic activity. The unemployment rate rises in recessions and declines in expansions. The unemployment rate never reaches zero, even at the peak of an expansion.
3. A period of inflation is one in which prices (on average) are rising over time. Deflation occurs when prices are falling on average over time. Before World War II, prices tended to rise during war periods and fall after the wars ended; over the long run, the price level remained fairly constant. Since World War II, however, prices have risen fairly steadily.
4. The budget deficit is the annual excess of government spending over tax collections. The U.S. federal government has been most likely to run deficits during wars. From the early 1980s to the mid-1990s, deficits were very large, even without a major war. The U.S. government ran surpluses for several years, from 1998 to 2001.
5. The trade deficit is the amount by which imports exceed exports; the trade surplus is the amount by which exports exceed imports, so it is the negative of the trade deficit. In recent years the United States has had huge trade deficits. But from 1900 to 1970, the United States mostly had trade surpluses.
6. Macroeconomists engage in forecasting, macroeconomic analysis, macroeconomic research, and data development. Macroeconomic research can be useful in investigating forecasting models to improve forecasts, in providing more information on how the economy works to help macroeconomic analysts, and in telling data developers what types of data should be collected. Research provides the basis (results and ideas) for forecasting, analysis, and data development.
7. The steps in developing and testing an economic model or theory are: (1) state the research question; (2) make provisional assumptions that describe the economic setting and the behavior of the economic actors; (3) work out the implications of the theory; (4) conduct an empirical analysis to compare the implications of the theory with the data; and (5) evaluate the results of your comparisons. The criteria for a useful theory or model are that (1) it has reasonable and realistic assumptions; (2) it is understandable and manageable enough for studying real problems; (3) its implications can be tested empirically using real-world data; and (4) its implications are consistent with the data.
8. Yes, it is possible for economists to agree about the effects of a policy (that is, to agree on the positive analysis of the policy), but to disagree about the policy's desirability (normative analysis). For example, suppose economists agreed that reducing inflation to zero within the next year would cause a recession (positive analysis). Some economists might argue that inflation should be reduced, because they prefer low inflation even at the cost of higher unemployment. Others would argue that inflation isn't as harmful to people as unemployment is, and would oppose such a policy. This is normative analysis, as it involves a value judgment about what policy should be.
9. Classicals see wage and price adjustment occurring rapidly, while Keynesians think that wages and prices adjust only slowly when the economy is out of equilibrium. The classical theory implies that unemployment will not persist because wages and prices adjust to bring the economy rapidly back to equilibrium. But if Keynesian theory is correct, then the slow response of wages and prices means that unemployment may persist for long periods of time unless the government intervenes.

10. Stagflation was a combination of stagnation (high unemployment) and inflation in the 1970s. It changed economists' views because the Keynesian approach couldn't explain stagflation satisfactorily.

Numerical Problems

1. (a) Average labor productivity is output divided by employment:
 2011: 12,000 tons of potatoes divided by 1000 workers = 12 tons of potatoes per worker
 2012: 14,300 tons of potatoes divided by 1100 workers = 13 tons of potatoes per worker
 - (b) The growth rate of average labor productivity is $[(13/12) - 1] \times 100\% = 8.33\%$.
 - (c) The unemployment rate is:
 2011: $(100 \text{ unemployed}/1100 \text{ workers}) \times 100\% = 9.1\%$
 2012: $(50 \text{ unemployed}/1150 \text{ workers}) \times 100\% = 4.3\%$
 - (d) The inflation rate is $[(2.5/2) - 1] \times 100\% = 25\%$.
2. The answers to this problem will vary depending on the current date. The answers here are based on the August 2012 release of the National Income and Product Accounts, Tables 1.1.5 and 3.2. Numbers are at annual rates in billions of dollars.

| | 2010 | 2011 | 2012Q2 |
|--------------------------|----------|----------|----------|
| GDP | 14,498.9 | 15,075.7 | 15,606.1 |
| Exports | 1,844.4 | 2,094.2 | 2,192.9 |
| Imports | 2,356.1 | 2,662.3 | 2,766.0 |
| Federal Receipts | 2,395.4 | 2,519.6 | 2,680.6 |
| Federal Expenditures | 3,703.4 | 3,757.0 | 3,775.1 |
| a. | | | |
| Exports/GDP | 12.7% | 13.9% | 14.1% |
| Imports/GDP | 16.3% | 17.7% | 17.7% |
| Trade Imbalance/GDP | -3.5% | -3.8% | -3.7% |
| b. | | | |
| Federal Receipts/GDP | 16.5% | 16.7% | 17.2% |
| Federal Expenditures/GDP | 25.5% | 24.9% | 24.2% |
| Deficit/GDP | 9.0% | 8.2% | 7.0% |

Analytical Problems

1. Yes, average labor productivity can fall even when total output is rising. Average labor productivity is total output divided by employment. So average labor productivity can fall if output and employment are both rising but employment is rising faster.

Yes, the unemployment rate can also rise even though total output is rising. This can occur a number of different ways. For example, average labor productivity might be rising with employment constant, so that output is rising; but the labor force may be increasing as well, so that the unemployment rate is rising. Or average labor productivity might be constant, and both employment and unemployment could rise at the same time because of an increase in the labor force, with the number of unemployed rising by a greater percentage.

2. Just because prices were lower in 1890 than they were in 2012 does not mean that people were better off back then. People's incomes have risen much faster than prices have risen over the last 100 years, so they are better off today in terms of real income.

3. There are many possible theories. One possibility is that people whose last names begin with the letters *A* through *M* vote Democratic, while those whose names begin with the letters *N* through *Z* vote Republican. You could test this theory by taking exit polls or checking the lists of registered voters by party. However, this theory fails the criterion of being reasonable, since there is no good reason to expect the first letters of people's last names to matter for their political preferences.

A better theory might be one based on income. For example, you might make the assumption that the Republican Party promotes business interests, while the Democratic Party is more interested in redistributing income. Then you might expect people with higher incomes to vote Republican and people with lower incomes to vote Democratic. Taking a survey of people as they left the polls could test this. In this case the assumptions of the theory seem reasonable and realistic, and the model is simple enough to understand and to apply. So it is potentially a useful model.

4. (a) Positive. This statement tells what *will* happen, not what *should* happen.
 (b) Positive. Even though it is about income-distribution issues, it is a statement of fact, not opinion. If the statement said "The payroll tax should be reduced because it . . .," then it would be a normative statement.
 (c) Normative. Saying taxes are too high suggests that they *should* be lower.
 (d) Positive. Says what *will happen* as a consequence of an action, not what *should be done*.
 (e) Normative. This is a statement of preference about policies.
5. A classical economist might argue that the economy would work more efficiently without the government trying to influence trade. The imposition of tariffs increases trade barriers, interfering with the invisible hand. The tariffs simply protect an industry that is failing to operate efficiently and is not competitive internationally.

A Keynesian economist might be more sympathetic to concerns about the steel industry. Keynesians might argue that there may need to be a long-run adjustment in the steel industry, but would want to prevent workers in the steel industry from becoming unemployed in the short run.