# Answers to end-of-chapter problems

## Chapter 2

### Quick Check

1. a. True/Uncertain. Real GDP increased by a factor of 5; nominal GDP increased by a

factor of 28. We usually think of GDP in real terms

b. False.

c. True.

d. False. The level of the CPI means nothing. The rate of change of the CPI is one measure of inflation.

e. Uncertain. Which index is better depends on what we are trying to measure—inflation faced by consumers or by the economy as a whole.

f. True

g. True

h. False

i. False. The Phillips curve is a relation between the change in inflation and the level of unemployment.

2. a. No change. This transaction is a purchase of intermediate goods.

b. +$100: personal consumption expenditures

c. +$200 million: gross private domestic fixed investment

d. +$200 million: net exports

e. No change. The jet was already counted when it was produced, i.e., presumably when Delta (or some other airline) bought it new as an investment.

3. a. The value of final goods =$1,000,000, the value of the silver necklaces.

b. 1st Stage: $300,000. 2nd Stage: $1,000,00-$300,000=$700,000.

GDP: $300,000+$700,000=$1,000,000.

c. Wages: $200,000 + $250,000=$450,000.

Profit: ($300,000-$200,000)+($1,000,000-$250,000-300,000)

=$100,000+$450,000=$550,000.

GDP: $450,000+$550,000=$1,000,000.

4. a. 2005 GDP: 10($2,000)+4($1,000)+1000($1)=$25,000

2006 GDP: 12($3,000)+6($500)+1000($1)=$40,000

Nominal GDP has increased by 60%.

b. 2005 real (2005) GDP: $25,000

2006 real (2005) GDP: 12($2,000)+6($1,000)+1000($1)=$31,000

Real (2006) GDP has increased by 24%.

c. 2005 real (2006) GDP: 10($3,000)+4($500)+1,000($1)=$33,000

2006 real (2006) GDP: $40,000.

Real (2006) GDP has increased by 21.2%.

d. The answers measure real GDP growth in different units. Neither answer is incorrect, just as measurement in inches is not more or less correct than measurement in centimeters.

5. a. 2005 base year:

Deflator(2005)=1; Deflator(2006)=$40,000/$31,000=1.29

Inflation=29%

b. 2006 base year:

Deflator(2005)=$25,000/$33,000=0.76; Deflator(2006)=1

Inflation=(1-0.76)/0.76=.32=32%

c. Analogous to 4d.

6. a. 2005 real GDP = 10($2,500) + 4($750) + 1000($1) = $29,000

2006 real GDP = 12($2,500) + 6($750) + 1000($1) = $35,500

b. (35,500-29,000)/29,000 = .224 = 22.4%

c. Deflator in 2005=$25,000/$29,000=.86

Deflator in 2006=$40,000/$35,500=1.13

Inflation = (1.13 -.86)/.86 = .31 = 31%.

1. Yes, see appendix for further discussion.

7. a. Usual output growth is positive as population grows and output per worker grows.

b. The unemployment rate rises more in a year when output growth is -2%.

c. The unemployment rate at which the rate of inflation does not change is about 6%, considerably larger than zero.

d. The slope does not tell us much about whether one economy is better than another. A slope of 0.8 simply says that, on average, inflation falls more with a given increase in the unemployment rate.

### Dig Deeper

8. a. The quality of a routine checkup improves over time. Checkups now may include EKGs, for example. Medical services are particularly affected by this problem since there are continual improvements in medical technology.

b. The new method represents a 10% quality increase.

c. There is a 5% true price increase. The other 10% represents a quality increase. The quality-adjusted price of checkups using the new method is only 5% higher than checkups using the old method last year.

d. You need to know the relative value of pregnancy checkups with and without ultra-sounds in the year the new method is introduced. Still, since everyone chooses the new method, we can say that the quality-adjusted price of checkups has risen by less than 15%. Some of the observed 15% increase represents an increase in quality.

9. a. Measured GDP increases by $10+$12=$22. (Strictly, this involves mixing the final goods and income approaches to GDP. Assume here that the $12 per hour of work creates a final good worth $12.)

b. No. The true value of your decision to work should be less than $22. If you choose to work, the economy produces the value of your work plus a takeout meal. If you choose not to work, presumably the economy produces a home-cooked meal. The extra output arising from your choice to work is the value of your work plus any difference in value between takeout and home-cooked meals. In fact, however, the value of home-cooked meals is not counted in GDP. (Of course, there are other details. For example, the value of groceries used to produce home-cooked meals would be counted in GDP. Putting such details aside, however, the basic point is clear.)

**Explore Further**

10. a. The table below has the data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Earlier recession | |  | Crisis Recession | |
| Date | GDP growth | | Date | GDP growth |
| 1999.1 | 0.890595 |  | 2007.1 | 0.135753 |
| 1999.2 | 0.781715 |  | 2007.2 | 0.899962 |
| 1999.2 | 1.272143 |  | 2007.3 | 0.730248 |
| 1999.4 | 1.795443 |  | 2007.4 | 0.423518 |
| 2000.1 | 0.261704 |  | 2008.1 | -0.44424 |
| 2000.2 | 1.950406 |  | 2008.2 | 0.329394 |
| 2000.3 | 0.084453 |  | 2008.3 | -0.92859 |
| 2000.4 | 0.592452 |  | 2008.4 | -2.30077 |
| 2001.1 | -0.32848 |  | 2009.1 | -1.70994 |
| 2001.2 | 0.654689 |  | 2009.2 | -0.17294 |
| 2001.3 | -0.27549 |  | 2009.3 | 0.420843 |
| 2002.4 | 0.349502 |  | 2009.4 | 0.937414 |

GDP growth has larger negative values in the crisis recession

b. Within the three years above, the unemployment rate peaks at 10.0% in October 2009 and at only 5.7% in December 2001.

## c. The unemployment rate is high even at the end of the 3-year periods above. Unemployment stays high well after the fall in output. The labor market does not recover quickly.