CHAPTER 2: MEASUREMENT OF MACROECONOMIC VARIABLES

Additional Questions

Problems and/or essay questions:

1.   What impact do you think that the movement of women from working in the household to working in the market has had on GDP? Why? Do you think that this points to a problem with GDP?

By moving to the market, women's work is now counted in GDP while it was excluded before. This does point to an important omission in GDP. However, household production has not been included in GDP because of the difficulty in finding prices for these activities.

2.   Explain the difference between the CPI and GDP deflator measures of inflation. Which one is likely to measure inflation higher? Why?

The GDP deflator measures the change in prices of all goods and services included in GDP while the CPI measures the change in price of a basket of goods that typical households consume. Because the CPI uses a fixed basket of goods, it ignores substitution to cheaper goods as well as unmeasured changes in quality, new goods, and unmeasured changes in shopping (such as the increased use of discount stores). As a result, the CPI tends to overestimate inflation and measure inflation higher than the GDP deflator.

3.   Assume the following national income accounting data in billions of dollars:

transfer payments to persons	500
personal taxes	120
Corporate profit tax payments, undistributed profits and valuation adjustments	200
interest paid to businesses	50
contributions to Social Security	350
net personal transfer payments to foreigners	15
personal interest income	160
government purchases of goods and services	100
consumption expenditures	750
gross investment	80
imports of goods and services	20
exports of goods and services	10
Depreciation	250
indirect taxes	100

a.   Calculate gross national product.

GNP = consumption (750)

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+ government purchases of goods and services (500)
+ investment (80)
+ exports (20)

− imports (10)

= 1,340.

b. Calculate net national product.

NNP = gross national product (1,340)
      − depreciation (250)

      = 1,090.

c. Calculate national income.

NI = net national product (1,090)
      − indirect taxes (100)

      = 990.

d. Calculate personal income.

Personal income = national income (990)

                    − corporate profits tax payments, undistributed profits and valuation
                        adjustments (200)
                    − contributions to Social Security (350)
                    + transfer payments to persons (500)
                    + personal interest income (160)

                    = 1,100.

e. Calculate personal disposable income.

Personal disposable income = personal income (990)
                               − personal taxes (120)

                               = 870.

f. Calculate personal saving.

Personal saving =   personal disposable income (870)
  − personal consumption expenditures (750)
  − interest paid to business (50)
  − net personal transfer payments to foreigners (15)

  = 55.

4. The implicit GDP deflator rose from 112.7 in 2005 to 116 in 2006. Calculate the rate of inflation between those 2 years.

$[(116 − 112.7) ÷ 112.7] × 100 = 2.93$ percent.

5. What kinds of economic activities are excluded from GDP? If GDP misses these things, then why do we use it?

GDP ignores underground activities, household production, externalities such as pollution, and income distribution. Economists still use it because it is highly correlated with all other measures of the quality of life, and as such serves as a useful summary statistic.

6. Why should imports be excluded from gross domestic product? How is a purchase of an import recorded in the components of GDP?

Imports are purchases by domestic buyers of goods and services produced abroad and gross domestic product is a measure of domestic production of goods and services. Any purchase of an import is included as a positive in consumption, and then subtracted out of GDP by recording it also as an import.

7. Briefly explain why gross domestic product is not a welfare measure.

Gross domestic product measures production of goods and services. It is neither a measure of welfare nor a measure of material well-being. GDP does not give any weight to leisure and it also fails to subtract some welfare costs of production.

8. Distinguish between investment goods and consumption goods. If you buy a car, is it investment or consumption? What if IBM buys a car? Are inventories a consumption or investment good?

Investment goods include the purchase of capital by firms and the purchases of homes by households. A car purchased by an individual is consumption, a car purchased by IBM is an investment good. Inventories are counted as an investment good.

9. Explain the difference between actual output and potential output. What does the difference between these variables represent?

Potential output represents the long-run level of output that is potentially achievable if all resources are used to their full utilization. Because potential output is a long-run concept, the difference between actual and potential output represents cyclical, or short-run, deviations in output from what is potentially achievable.

10. Discuss four problems with the CPI. Does the CPI tend to overestimate or underestimate the true inflation rate? How big is this bias?

   The CPI tends to overestimate the true inflation rate because it ignores the substitution of cheaper goods for more costly goods, because it ignores unmeasured changes in quality that also lead to increases in price, and because it ignores new products that are often cheaper than existing products. Economists have predicted that the positive bias may be as large as 1.1% a year.

11. Are all categories of government expenditures included in gross domestic product? What government activities are not included in GDP?

   No, all categories of government spending do not represent a demand for currently produced goods and services. For instance, government spending on transfer payment programs like social security and Medicare are not included.

12. Consider the following economy:

	2005		2006	
	Price	Qty	Price	Qty
Cars	$2,000	10	$3,000	12
Oranges	$1	1000	$1	1000
Computers	$1,000	4	$500	6

   Calculate chain-weighted GDP inflation between these two years. Would your answer be different if you used GDP inflation using only 2005 as the base year? Why or why not?

   Using 2005 as the base year, GDP deflation inflation is 29%. Using 2006 as the base year, GDP inflation is 32%. Thus, the chain-weighted inflation rate is30.5%. The reason for this difference is that using different base years means that different good get weighted differently as their prices change.

13. How does the treatment of international transactions differ with respect to gross national product and gross domestic product? Explain. Why do you think that the U.S government has switched from using GNP to using GDP

   Gross national product includes earnings of U.S. corporations overseas and U.S. residents working overseas, whereas gross domestic product does not include these earnings. Gross domestic product includes earnings from current production in the United States that accrue to foreign residents or foreign-owned firms, while gross national product excludes these items. GDP has become more attractive because in the current, more globalized economy, the nationality of workers and firms has become harder to distinguish. Hence, the switch to relying on location of production.

14. Discuss how economists measure the following: (i) aggregate expenditure, (ii) aggregate income, and (iii) aggregate output.

   They are all measured by GDP.

Additional Problems and/or Essay Questions:

15. What is the relationship between national income, personal income, disposable income, and GDP?

16. Why don't we count goods used in the production process, such as iron ore in steelmaking and sugar in cookie baking, when we are computing GDP? Are there any exceptions to this practice of not counting intermediate goods in GDP?

17. When should you expect to find nominal GDP above real GDP? When should you expect to find real GDP above nominal GDP? Explain your answer in conjunction with discussing how each of these variables is calculated.

18. Consider Table 2-7 in your book on the dating of business cycles. Characterize the business cycles listed here. Are they of regular length? Are they regularly spaced? What might this tell you about the difficulty of predicting business cycles?

19. In the national income accounts, education expenditures are treated as consumption. Do you think that this is appropriate? Why or why not? Why do you think the government records it this way?

20. Per capita GDP in the US was about $48,000 in 2011 and about $1,500 in India, a ratio of about 32 to 1. Do you think that this means that the US is really 32 times richer than India? Why or why not? What additional data would you need in order to make this calculation?

Multiple-Choice Questions:

1. The broadest measure of the aggregate price level is the
    a. GDP deflator.*
    b. consumer price index.
    c. producer price index.
    d. gross domestic product.

2. If the value of a price index was 125 for 2005 and 75 for 1982, and GDP was 2500 in 2005 compared to 600 in 1982, the value of real 2005 GDP in terms of 1982 prices is
    a. 1500.*
    b. 1000.
    c. 2500.
    d. 360.

3. The index that measures the change in price of a typical basket of consumer goods is
    a. the GDP deflator.
    b. the consumer price index.*
    c. nominal GDP.
    d. real GDP.

4. The investment component of GDP includes
    a. residential construction investment.
    b. inventory investment.
    c. business fixed investment.
    d. Both b and c
    e. All of the above *

5.   If the nominal GDP is $12,000 in 2005 and $15,000 in 2006, and if inflation is 10%
     between these years, then
     a.   employment fell between 2005 and 2006.
     b.   real GDP fell between 2005 and 2006.*
     c.   real GDP rose between 2005 and 2006.
     d.   the economy experienced no growth between these years.
     e.   everyone is rich now than they were before.

6.   Personal income equals personal disposable income plus
     a.   payroll taxes.
     c.   transfer payments.
     d.   dividend payments.
     d.   personal saving.
     e.   personal taxes.*

7.   To calculate personal savings, you would need information on all of the following except:
     a.   personal disposable income.
     b.   personal consumption expenditures.
     c.   interest paid to business.
     d.   government expenditure.*
     e.   personal transfer payments to foreigners.

8.   In the event of deflation, or negative inflation, then
     a.   real GDP is always lower than nominal GDP.
     b.   real GDP is always lower than nominal GDP after the base year.
     c.   real GDP is always lower than nominal GDP.
     d.   real GDP is always higher than nominal GDP before the base year.
     e.   None of the above*

9.   If real GDP exceeds potential GDP, this means that
     a.   output is below the level produced at the benchmark rate for high employment and high
          rate of resource utilization.
     b.   this cannot occur; the economy can never be at a point where real GDP exceeds
          potential GDP.
     c.   cyclical output is above what the economy can sustain in the long-run.*
     d.   the economy is expanding.

10. In the base year, the relationship between nominal and real GDP is
     a.   uncertain.
     b.   one of equality.*
     c.   real GDP is higher.
     d.   nominal GDP is higher.

11. The calculation of potential output in the United States has been complicated recently by
     problems in
     a.   calculating unemployment.
     b.   distinguishing real from nominal income.
     c.   calculating a high-employment, or long-run average, level unemployment rate.*
     d.   measuring depreciation and, therefore, net national product.

12. Which of the following are <u>not</u> included in the consumption component of gross domestic product?
    a. Purchases of stocks and bonds.*
    b. Consumer durable goods
    c. Nondurable consumption goods
    d. Consumer services

13. Goods in the CPI inflation are weighted by
    a. the price of each good.
    b. the share of each good in GDP.
    c. the share of each good in the budget of an average household.*
    d. the share of each good in total consumption.

14. Gross domestic product includes
    a. all intermediate and final goods and services produced.
    b. the current production of final goods and services with a country's borders.*
    c. exchanges of assets.
    d. the current production of final goods and services by a country's citizens.
    e. All of the above

15. Chain-weighted GDP deflator inflation differs from GDP deflation inflation because:
    a. it uses different goods in its calculation.
    b. it uses two different base years to get the quantities used to calculate the index.
    c. it uses a constant set of prices every year.
    d. it uses two different base years to get the prices used to calculate the index.*

16. National income is defined as gross national product minus
    a. depreciation and net taxes.*
    b. national income.
    c. depreciation.
    d. personal disposable income.

17. Inventory is the
    a. net change in inventories of final goods awaiting sale.
    b. net change in inventories of materials used in the production process.
    c. included in investment when calculating GDP.
    d. Both <u>a</u> and <u>b.</u>
    e. All of the above.*

18. Business fixed investment
    a. includes the building of single- and multi-family housing units.
    b. is the change in business inventories.
    c. is the smallest subcomponent of investment.
    *d. consists of purchases of a newly produced plant and equipment.

19. Consumption expenditure includes
    a. the production of consumption goods not sold and held in inventory.
    b. the purchase of consumption goods made domestically but consumed by foreigners.
    c. purchase of goods and services by local government.
    d. services, durables, and non-durable goods.*

20. Inventory investment is
    a. never positive.
    b. often negative.
    c. can be either negative or positive.*
    d. always positive.

21. Real gross national product is
    a. the same as national income if there were no depreciation and taxes.*
    b. always less than national income.
    c. always greater than real gross domestic product.
    d. always less than nominal gross national product.

22. Based on the data in Table 2-7, recessions in the U.S. are
    a. irregular in length but evenly spaced.
    b. rare.
    c. regularly spaced and regular in length.
    d. irregular in length and irregularly spaced.*

23. Government purchases of goods and services
    a. consist of current output of goods and services purchased by the federal government only. b. includes the current output of goods and services bought by the federal, state, and local governments.*
    c. are the largest component of gross national product.
    d. include both defense spending and spending on social security.

24. Which of the following governmental expenditures are not included in gross domestic product?
    a. The construction of federal buildings
    b. Social Security payments*
    c. Salaries for senators
    d. Purchases of new defense weapons

25. Assume that gross national product amounts to $4300.5 billion, depreciation is $550.1 billion, and indirect taxes are $399.3 billion. Then, net national product amounts to
    a. $3351.1 billion.
    b. $4549.8 billion.
    c. $3851.2 billion.
    d. $3750.4 billion.*

26. Which of the following are not included as a component of national income?
    a. Corporate profits
    b. Compensation of employees
    c. Net interest income
    d. Capital gains and capital losses*

27. In the U.S., the largest share of national income is earned in the form of
    a. taxes on production.
    b. wages and salary.*
    c. interest earned on capital.
    d. corporate profits.

28. The most commonly used measure of changes in the cost of living for households
    a. real GDP.
    b. the CPI.*
    c. nominal GDP.
    d. the GDP deflator.

29. Which of the following indices best signals future movements in retail prices?
    a. The implicit GDP deflator
    b. nominal GDP
    c. The consumer price index
    d. The producer price index*
    e. The measure of economic welfare (MEW)

30. Personal saving
    a. equals national income less personal consumption expenditures.
    b. is personal disposable income minus consumption expenditures.*
    c. is the value of stocks and bonds.
    d. equals personal income minus taxes.
    e. is personal disposable income less personal taxes.

31. Potential output
    a. is defined as the level of real output that the economy could produce at high rates of resource utilization.
    b. only occurs when both the unemployment rate and inflation rate are zero.
    c. can be estimated by choosing benchmark measures of high resource utilization.
    d. Both a and c*

32. The primary emphasis in U.S. national income accounts is on
    a. gross national product.
    b. gross domestic product.*
    c. net national product.
    d. personal disposable income.

33. Profits earned in the United States by a foreign-owned firm would be included in
    a. gross domestic product and gross national product.
    b. gross national product but not in gross domestic product.
    c. gross domestic product but not in gross national product.*
    d. neither gross domestic product nor gross national product.

34. In the U.S., government expenditure accounts for
    a. 10% of GDP
    b. 20% of GDP*
    c. 40% of GDP
    d. government expenditure is not included in GDP

35. The most volatile component of GDP over the business cycle is
    a. consumption.
    b. net exports.
    c. investment.*
    d. government purchases.

36. When moving from gross domestic product to gross national product, one has to
    a. add earnings by foreign residents and firms in the United States.
    b. subtract earnings by foreign residents and firms in the United States.
    c. subtract foreign earnings of U.S. residents and firms.
    d. add foreign earnings of U.S. residents and firms.
    e. Both <u>b</u> and <u>d</u>*

37. Which of the following helps economists avoid double counting in computing of GDP?
    a. Including goods and services produced only within a given area.
    b. Only include transfer payments made by the government and not individuals.
    c. Only include capital purchases by corporations and not by family-owned firms.
    d. Avoiding the use of intermediate goods in calculating GDP.*

38. Which of the following would be included in GDP?
    a. Production of computers by IBM in Japan
    b. The value of a car.
    c. The commission on the sale of your house.*
    d. The value of childcare provided at home by the child's mother.

39. Policymakers utilize gross domestic product figures
    a. to monitor recessions and expansions.
    b. as a means to measure welfare.
    c. to observe long-run growth trends.
    d. Both <u>a</u> and <u>c</u>
    e. All of the above*

40. The natural rate of unemployment
    a. is 6 percent.
    b. is the long-run average rate of unemployment.
    c. is 4 percent.
    d. varies between 4 and 6 percent.

41. Which of the following is true about unemployment?
    a. the benchmark high-employment level is most likely between 3 and 4 percent
    b. In recent years, the appropriate benchmark high-employment level has risen.
    c. Based on the experience of the 1960s, a 7 percent unemployment rate was too low to be sustained without a buildup of inflationary pressure
    d. During the 1970s, the benchmark high-employment level rose but this was not observed by economists at the time.*

42. GDP is an imperfect measure of well-being because
    a. it does not measure standards of living.
    b. it does not include household production.
    c. it ignores many of the costs of production.
    d. it excludes many goods produced within markets.
    e. both <u>b</u> and <u>c</u>.*

43. A recession is a period when
    a. output growth is negative for two consecutive quarters
    b. actual output falls below potential output and the rate of unemployment falls below the high- employment benchmark.
    c. unemployment reaches 10 percent for an extended period of time.
    d. actual output falls below potential output and the rate of unemployment rises above the high-employment benchmark..*

44. Which of the following statements is (are) correct?
    a. Both recessions and expansions can now be dated with great accuracy
    b. The dating of recessions and expansions is very subjective.*
    c. The dating of recessions and expansions is complicated by determining potential output.
    d. Both b and c

45. The contemporary rate of unemployment that is often put forth as a benchmark high-employment level ranges from
    a. 4.5 to 5 percent.
    b. 4.0 to 6 percent.*
    c. 6 to 6.5 percent.
    d. 1 to 4.5 percent.

46. In the United States, an official dating of business cycles
    a. is executed by the Federal Reserve Bank of New York.
    b. originates with the Department of Commerce.
    c. was started by the Bureau of Labor Statistics Institute.
    d. is performed by the Business Cycle Dating Group of the National Bureau of Economic Research.*

47. In 1996, an advisory commission, appointed by the Senate Finance Committee, estimated that, due to certain distortions, the CPI overstates inflation by
    a. .5 percentage points per year.
    b. 2.0 percentage points per year.
    c. 1.1 percentage points per year.*
    d. .25 percentage points per year.

48. The CPI overestimates inflation because
    a. it often ignores the invention of new goods.*
    b. it always includes discount stores.
    c. it allows substitution from more expensive goods to cheaper goods.
    d. all of the above.

49. The value of every monetary transaction in the economy would be included in
    a. GDP.
    b. potential GDP.
    c. personal income.
    d. national income.
    e. None of the above.*

50. What was the largest and most important economic event of the 1900s?
    a. The terrorist attacks of 9/11.
    b. Ronald Reagan's tax cuts.
    c. The Great Depression.*
    d. The inflation of the 1970s.

51. A new chain-weighted measure of real GDP
    a. was introduced by the Bureau of Economic Analysis in 1995.
    b. uses the average of prices in a given year and prices in the previous year instead of using prices in a base year as weights.
    c. differs greatly from previous measures that utilized the base year method.
    d. Both a and b*
    e. All of the above

52. Possible sources of an upward bias in the CPI include the
    a. quantity adjustment bias.
    b. substitution bias.
    c. new products bias.
    d. Both b and c*
    e. All of the above

53. The period between a business cycle peak and the subsequent trough is called
    a. a recession.*
    b. a complete cycle.
    c. an expansion.
    d. a change in economic trend.

54. Suppose that Firestone Tires buys raw rubber for $5,000 and then uses this to make tires it sells for $20,000. As a result, GDP has risen by:
    a. $20,000*
    b. $5,000
    c. $15,000
    d. $25,000

55. Suppose that Apple computer buys computer components for $10,000 and uses them to make ipods that they sell to Best Buy for $30,000. Best Buy sells these ipods for $32,000. As a result, GDP has risen by:
    a. $22,000
    b. $2,000
    c. $20,000
    d. $32,000*

56. Suppose that a firm spends $200,000 to build a factory in 2012 that is expected to have a life of 10 years. As a result, GDP in 2012 will increase by:
    a. $20,000
    b. $200,000*
    c. You need to know the selling price of the factory to answer this question.
    d. It depends upon the tax law regarding depreciation.

57. In the national income accounts, investment includes all of the following EXCEPT:
    a. stock market purchases.*
    b. inventories.
    c. purchases of equipment.
    d. new home sales.

58. The largest component of GDP in the US is typically:
    a. government purchases.
    b. social securtity.
    c. consumption.*
    d. investment.
    e. net exports.

59. If a US citizen is employed by a US company in Russia, the income she earns is:
    a. part of US GNP and Russian GDP.*
    b. part of US GNP and Russian GNP.
    c. part of US GDP and Russi GNP
    d. part of US GDP and Russia GDP.

60. What is the relationship between real and nominal GDP?
    a. real GDP = nominal GDP – Price level
    b. nominal GDP = Real GDP/Price level
    c. real GDP = nominal GDP/Price level*
    d. real GDP = nominal GDP + Price level.