Assignment on Public Good and GDP

Due 12/23/2023 at noon

Part I: Multiple Choices

1. A good is excludable if
   a. one person's use of the good diminishes another person's enjoyment of it.
   b. the government can regulate its availability.
   c. it is not a normal good.
   d. people can be prevented from using it.

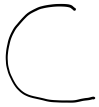
2. Both public goods and common resources are
   a. rival in consumption.
   b. nonrival in consumption.
   c. excludable.
   d. nonexcludable.

3. Governments can improve market outcomes for
   a. public goods but not common resources.
   b. common resources but not public goods.
   c. both public goods and common resources.
   d. neither public goods nor common resources.

4. Which of the following is usually true about government-provided goods?
   a. These goods have a zero opportunity cost.
   b. These goods are not scarce.
   c. People do not have to pay an explicit fee to enjoy these goods.
   d. The invisible hand is at work to ensure these goods are provided in the market

5. The provision of a public good generates a
   a. positive externality, as does the use of a common resource.
   b. positive externality and the use of a common resource generates a negative externality.
   c. negative externality, as does the use of a common resource.
   d. negative externality and the use of a common resource generates a positive externality.

6. Goods that are rival in consumption include both
   a. club goods and public goods.

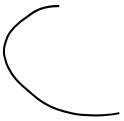


b. public goods and common resources.
c. common resources and private goods.
d. private goods and club goods.

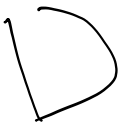
7. If a highway is congested, then use of that highway by an additional person would lead to a
a. negative externality.
b. positive externality.
c. Pigovian externality.
d. free-rider problem with rush-hour drivers stuck in traffic.

8. Who among the following is a free-rider?
a. Mike listens to National Public Radio but does not contribute to any fundraising efforts.
b. Greg takes the commuter rail to work, but he purchases the discounted monthly passes rather than buying tickets each day.
c. Peter sends his five children to a private school rather than to the public school in his neighborhood.
d. Bobby goes to Marsha's house to watch a basketball game on the local commercial television channel.

9. Which of the following is *not* a common resource?
a. Lions in the wild
b. A hiking trail in a public park
c. A vegetable garden
d. Fresh water

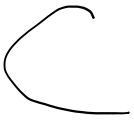


10. Which of the following is *not* a typical solution to the "Tragedy of the Commons?"
a. Taxing the use of the common resource
b. Turning the common resource into a club good
c. Turning the common resource into a private good
d. Regulating the use of the common resource



11. Which headline is more closely related to a microeconomics study than to a macroeconomics one?
a. Unemployment rate falls from 7.5% to 7.3%.
b. Real GDP falls by 0.4 percent in the third quarter.
c. Inflation was 2.4 percent last year.
d. The price of gasoline rises due to rising oil prices.

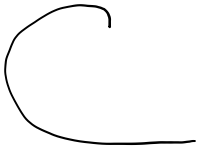
12. Which of the following statistics is usually regarded as the best single measure of a society's economic well-being?
a. The GDP deflator



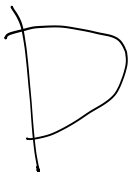
b. The inflation rate
c. Gross domestic product
d. The size of the government surplus

13. Gross domestic product includes all
a. legal final goods and services, but it excludes illegal final goods and services.
b. legal and illegal final goods, but it excludes all legal and illegal final services.
c. legal and illegal final goods and all legal and illegal final services.
d. legal and illegal final goods and legal final services, but it excludes illegal final services.

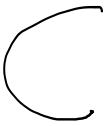
14. For an economy as a whole,
a. wages must equal profit.
b. consumption must equal income.
c. income must equal expenditure.
d. consumption must equal saving.



15. If an economy's GDP rises, then it must be the case that the economy's
a. income and saving rise.
b. income falls and the market value of all production rises.
c. income rises and the market value of all production falls.
d. income and the market value of all production both rise.



16. GDP is defined as the
a. value of all goods and services produced within a country in a given period of time.
b. value of all goods and services produced by the citizens of a country, regardless of where they are living, in a given period of time.
c. value of all final goods and services produced within a country in a given period of time.
d. value of all final goods and services produced by the citizens of a country, regardless of where they are living, in a given period of time.



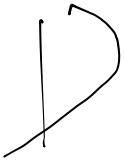
17. Which of the following is included in GDP?
a. The market value of rental housing services, but not the market value of owner-occupied housing services
b. The market value of owner-occupied housing services, but not the market value of rental housing services
c. Both the market value of rental housing services and the market value of owner-occupied housing services
d. Neither the market value of owner-occupied housing services nor the market value of rental housing services

18. Which of the following is included in the calculation of GDP?

a. The purchase of tutoring services from a tutor who holds citizenship outside the country but resides within the country.
b. The purchase of a new edition of a foreign textbook that was produced in a different nation.
c. The purchase of ink and paper supplies by a textbook company for the production of new textbooks.
d. The purchase of a used textbook from a friend who took the same class last year.

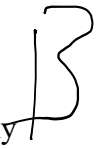
19. Over the last few decades, Americans have chosen to cook less at home and eat more at restaurants. This change in behavior, by itself, has

a. reduced measured GDP.
b. not affected measured GDP.
c. increased measured GDP by the value of the restaurant meals.
d. increased measured GDP by the value added by the restaurant's preparation and serving of the meals.



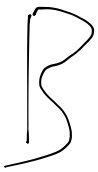
20. A company sells titanium to a bicycle company for $300. The bicycle company uses the titanium to produce a bicycle, which it sells for $400. Taken together, these two transactions contribute

a. $300 to GDP.
b. $400 to GDP.
c. between $400 and $700 to GDP, depending on the profit earned by the bicycle company when it sold the bicycle.
d. $100 to GDP.



21. A newspaper article informs you that most businesses increased production in the last quarter but also sold from their inventories during the last quarter. Based on this information GDP likely

a. decreased.
b. increased.
c. stayed the same.
d. may have increased, decreased, or stayed the same.



22. The Carters' oldest son attends Big State University. He and his parents pay all his fees and tuition. These payments count in GDP as

a. investment.
b. government spending.
c. consumption of services.
d. consumption of durable goods.

23. To encourage formation of small businesses, the government could provide subsidies; these subsidies

a. would be included in GDP because they are part of government purchases.
b. would be included in GDP because they are part of investment expenditures.
c. would not be included in GDP because they are transfer payments.
d. would not be included in GDP because the government raises taxes to pay for them.

24. Net exports equal
a. exports plus imports.
b. imports minus exports.
c. Y − (C + I + G).
d. Y − (C − I − G).

25. A Chinese household receives a government transfer for 1500 RMB, which it uses to purchase a 40 RMB pair of shoes made in Thailand by a Thai firm, a 1240 RMB television made by a Korean firm in Korea, and 220 RMB on groceries from a local store. As a result, China's GDP
a. increases by 40.
b. increases by 220.
c. increases by 280.
d. increases by 1500.

26. If in some year nominal GDP was $40 billion and the GDP deflator was 70, what was real GDP?
a. $110.0 billion
b. $175.0 billion
c. $57.1 billion
d. $30.0 billion

27. Suppose the government passes a law eliminating holidays and, as a result, the production of goods and services increases because people work more days per year (and thus enjoy less leisure per year). Based on this scenario, which of the following statements is correct?
a. GDP would definitely increase, despite the fact that GDP includes leisure.
b. GDP would definitely increase because GDP excludes leisure.
c. GDP could either increase or decrease because GDP includes leisure.
d. GDP could either increase or decrease because GDP excludes leisure.

Part II: Short Answers

1. There are three households in a community. Their demand curves for public television in hours of programming, Q, are given respectively by:

$$P1 = \$200 - Q,$$
$$P2 = \$240 - Q,$$

P3 = $320 - 2Q.

Suppose public television is a public good that can be produced at a cost of $200 per hour.

(a) What is the efficient number of hours of public television?
(b) How much public television would a competitive private market provide? (Hint: the price at the competitive market would be just equal to the corresponding marginal cost)
(c) If the government charges each group for watching public TV at price of $200/hour, then it becomes excludable. In such cases, how many hours of programming would each of the group consume, respectively? How many hours of programming would the government provide in the market?

2. The mayor of Newton is considering proposals to deal with an unsafe intersection. She could install a traffic light at a cost of $50,000 or she could install stop signs at a cost of $5,000. The traffic light is expected to reduce the risk of fatality by 0.45% and the stop signs are expected to reduce the risk of fatality by 0.054%. If the value of human life is estimated to be $10 million, **what choice should the mayor make**? Explain.

3. The following table contains data for country HHH in the year of 2022.

Household purchases of durable goods	$1,695
Household purchases of nondurable goods	$1,717
Household purchases of services	$400
Household purchases of new housing	$704
Purchases of capital equipment	$310
Inventory changes	$399
Purchases of new structures	$611
Depreciation	$117
Salaries of government workers	$1,422
Government expenditures on public works	$589
Transfer payments	$777
Foreign purchases of domestically produced goods	$88
Domestic purchases of foreign goods	$140

Based on the above table, what was HHH's GDP, Consumption, Investment, and Net Export?

4. The country of Batavia produces only chocolates and watches. Below is a table with recent information on Batavia production and prices. The base year is 2009.

Prices and Quantities

Year	Price of A Box of Chocolates	Boxes of Chocolates	Price of Watches	Quantity of Watches
2008	$4	100	$50	10
2009	$5	90	$50	15
2010	$5	100	$60	15
2011	$6	80	$65	12

(a) What was the nominal GDP for 2008, 2009, 2010, and 2011?
(b) What was the real GDP for 2008 ~ 2011?
(c) What was the GDP deflator for 2008 ~ 2011?
(d) What was the inflation rate for 2009 ~ 2011?
(e) If the consumption basket is 80 boxes of chocolates and 15 watches, what was the CPI in each year?

HW 4 Answer for Principles of Economics

Part I

1-5 d d c c b 6-10 c a a c b 11-15 d c a c d

16-20 c c a d b 21-25 b c c c b 26-27 c b

Part II

1. (a) $P_1+P_2+P_3=MC$ $200-Q+240-Q+320-2Q=200 \Rightarrow Q^*=140$

(b) $Q_1=200-P_1$ $Q_2=240-P_2$ $Q_3=160-\frac{1}{2}P_3$ $P_1=P_2=P_3$ $P=MC=200$

$Q=Q_1+Q_2+Q_3=600-\frac{5}{2}P \Rightarrow Q=100$

(c) $P=200 \Rightarrow Q_1=0$ $Q_2=40$ $Q_3=60$

$Q=\max\{Q_1\ Q_2\ Q_3\}=60$

2. Benefit of installing a traffic light < cost of ...

$0.45\% \times \$10 \text{ million} = \$45{,}000 < \$50{,}000$

Benefit of stalling stop signs > cost of ...

$0.054\% \times \$10 \text{ million} = \$5{,}400 > \$5{,}000$

so the mayor should opt for stalling stop signs at the intersection.

3. C = Dourcble goods + Nondurable goods + Services = 1695 + 1717 + 400 = 3812

I = Capital Equipment + Inventory Chanes + New structures + New housing = 310 + 399 + 610 + 704 = 2024

Nx = Exports - Imports = 88 - 140 = -52

GDP = C + I + G + NX = 3812 + 2024 + 1422 + 589 - 52 = 7795.

4 (a) 2008: $4\times100+50\times10=900$ 2009: $5\times90+50\times15=1200$

2010: $5\times100+60\times15=1400$ 2011: $6\times80+65\times12=1260$

(b) 2008: $5\times100+50\times10=1000$ 2009: $5\times90+50\times15=1200$

2010: $5\times100+50\times15=1250$ 2011: $5\times80+50\times12=1000$

(c) 2008: $\frac{900}{1000}\times100=90$ 2009: $\frac{1200}{1200}\times100=100$ 2010: $\frac{1400}{1200}\times100=112$ 2011: $\frac{1260}{1000}\times100=126$

(d) 2009 $\frac{100-90}{90}\times100=11.1$ 2010 $\frac{112-100}{100}\times100=12$ 2011: $\frac{126-112}{112}\times100=12.5$

(e) 2008: $4\times80+50\times15=1070$ 2009: $5\times80+50\times15=1150$

2010: $5\times80+60\times15=1300$ 2011: $6\times80+65\times15=1455$

CPI 2008: $\frac{1070}{1150} \times 100 = 93$ 2009: $\frac{1150}{1150} \times 100 = 100$

2010: $\frac{1300}{1150} \times 100 = 113$ 2011: $\frac{1455}{1150} \times 100 = 126.5$