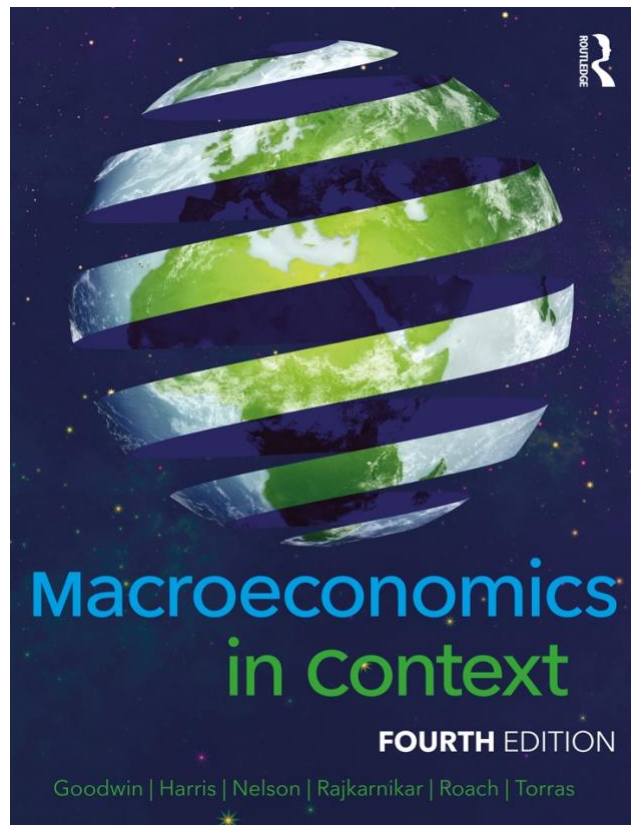


# Student Study Guide

## Macroeconomics in Context Fourth Edition

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## CHAPTER 1

# ECONOMIC ACTIVITY IN CONTEXT

*Macroeconomics in Context* (Goodwin, et al.)

### Chapter Overview

This chapter introduces you to the basic topics of macroeconomics, and presents the main macroeconomic goals: 1) living standards growth, 2) stability and security, and 3) financial, social, and ecological sustainability. The chapter highlights that the goal of living standards growth may or may not contribute to the general goal of human well-being. It also provides an introduction to the key economic activities of (1) resource management, (2) consumption, (3) production, and (4) distribution. The chapter also provides a brief overview of the major historical developments in macroeconomics, from classical economics, to Keynesian and monetarist economics, and finally to the challenges in the 21<sup>st</sup> century.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Distinguish the concerns of macroeconomics from microeconomics.
2. Define the difference between normative and positive questions.
3. Differentiate between intermediate and final goals.
4. Discuss the relationship between economics and well-being.
5. Identify and describe the three main macroeconomic goals.
6. Define the four essential economic activities.
7. Define the five types of capital.
8. Explain the difference between stock and flows.
9. Understand the importance of managing capital stocks.
10. Identify and distinguish the major historical traditions of economic thought.

### Key Terms

economics

well-being

microeconomics

macroeconomics

recession

unemployment

inflation

macroeconomy

global economy

economic actor (agent)

positive questions

normative questions

assets

intermediate goal

final goal

living standards growth

economic growth

gross domestic product (GDP)

economic development

labor productivity

business cycle (trade) cycle

technological progress  
conscious consumption  
restorative development  
precautionary principle  
contextual economics  
resource management  
capital stock  
natural capital  
manufactured capital  
human capital  
social capital  
financial capital  
investment  
depreciation  
production  
inputs  
outputs  
investment goods  
waste products  
stock

flow  
stock-flow diagram  
distribution  
exchange  
transfer  
in-kind transfers  
dependency needs  
consumption  
saving  
classical economics  
division of labor  
specialization  
capitalists  
laissez-faire economy  
Say's Law  
aggregate demand  
Keynesian economics  
Monetarism

### Active Review

#### *Fill in the Blank*

1. While the study of economic activities of individuals, households, and business at the sub-national level is the concern of \_\_\_\_\_ the national and global level is the concern of, the study of economic activities of \_\_\_\_\_.
2. Questions about facts or “how things are” are \_\_\_\_\_ questions, while questions about values and “how things should be” are \_\_\_\_\_ questions.
3. The three main macroeconomic goals identified in this chapter are \_\_\_\_\_ , \_\_\_\_\_ , and \_\_\_\_\_.
4. The process of moving from a situation of poverty and deprivation to a situation of increased production and plenty is referred to as \_\_\_\_\_.
5. The increase in the level of production in a country or region is called \_\_\_\_\_ growth while improvements in diet, housing, medical attention, education, working conditions, access to care, transportation, communication, entertainment, etc. is called \_\_\_\_\_ growth.

6. The fluctuations in the level of production, including recessions on the one hand and booms on the other hand, is called \_\_\_\_\_.
7. The goal that recognizes a serious responsibility to future generations is the goal of \_\_\_\_\_.
8. Protecting wildlife in a national park is an example of the economic activity of \_\_\_\_\_.
9. Gary's Gasoline Station is for sale. Gary hopes to get a good price for the station in part because he has built up a good reputation with customers. The good will of Gary's customers is a form of \_\_\_\_\_ capital.
10. The activity that turns inputs into new goods and services, or outputs, is called \_\_\_\_\_.
11. Your grandmother sends you a check for \$100. This form of resource distribution is referred to as a \_\_\_\_\_.
12. A gardener hears that a pesticide he has been using may have toxic effects on birds. Rather than wait to find out what further studies show about its effects, he finds another way of controlling insects in his garden. By taking action to protect birds, despite uncertainty about the dangers of the pesticide, the gardener is exercising the \_\_\_\_\_ principle.
13. The school of economics that is associated with the idea that individual self-interest is a positive force and that governments should let markets function without interference is called \_\_\_\_\_.
14. The economist who argued that the market mechanism can fail by leaving insufficient demand and that governments could intervene by increasing aggregate demand was named \_\_\_\_\_.
15. The school of thought that argued that governments should aim for steadiness in the money supply rather than play an active role is called \_\_\_\_\_.

*True or False*

16. Economic phenomena such as the rate of unemployment and inflation are studied in microeconomics.
17. The number of fish sold per day at Big City Fish Shop is an example of a stock.
18. Planting new trees in a forest is an example of making an investment.
19. Monetarists believe the government should change money supply to boost aggregate demand during a recession.

20. According to the Keynesians, the government can reduce unemployment through changes in its spending and taxation policies.

**Short Answer**

21. What types of questions would concern microeconomics, versus macroeconomics?

22. What are the “three basic economic questions” that economists often address when examining how much economic output is produced?

23. Once countries already have a high level of production, how might they achieve living standards growth?

24. Why is the goal of stability and security important to many people? What problems typically emerge during periods of instability?

25. The goal of sustainability requires that we address what three questions?

26. Identify the four essential economic activities.

27. Name the five types of capital.

28. Explain the difference between a stock and a flow.

29. What are the two main forms of economic distribution? What is the difference between them?

30. Explain how the classical school views the role of markets and government intervention in fighting business cycles.
31. Explain how Keynesian economics views the role of markets and government intervention in fighting business cycles.
32. Explain how Monetarist economics views the role of markets and government intervention in fighting business cycles.
33. Describe some of the key changes that the U.S. economy has undergone since the 1980s.
34. What two developments are demanding new ways of looking at the economic world in the 21<sup>st</sup> century? What kinds of sustainability questions do they raise?

### **Self Test**

1. With what kinds of topics does macroeconomics concern itself?
- A. Economic activities of individual firms, households, and other organizations
  - B. Forces of supply and demand in a particular market
  - C. Consumer behavior and firms output decisions
  - D. The labor market, wages, and hiring decisions
  - E. Aggregate economic phenomena like the rate of unemployment and inflation
2. Which of the following is an example of a normative question?
- A. What is the nation's rate of economic growth?
  - B. What is the nation's rate of inflation?
  - C. What is the nation's rate of unemployment?
  - D. What is the nation's level of GDP?
  - E. Is the goal of sustainability of greater importance than the goal of economic growth as we move into the 21<sup>st</sup> century?

3. Which of the following is *not* an example of one of the three macroeconomic goals discussed in the text?
  - A. Preventing the economy from experiencing too much unemployment.
  - B. Preventing the economy from experiencing too much inflation.
  - C. Keeping living standards high enough for people to live decent, meaningful lives.
  - D. Making sure the economy is sustainable into the future.
  - E. Providing the best environment for corporations.
  
4. What explains the fact that the value of global production grew by a factor of 7.2 between 1960 and 2020, while the value of global production per capita has grown by a factor of 2.8?
  - A. Global population also grew, though not as fast as total production.
  - B. The increase in global production has occurred simultaneously with a decline in global population.
  - C. The increase in global production has occurred simultaneously with growth in the global workforce.
  - D. The increase in global production has occurred simultaneously with decline in the global workforce.
  - E. The growth in the global population has been greater than the growth in global production.
  
5. How is labor productivity defined?
  - A. The level of output produced per capita.
  - B. The level of output produced per worker (or worker-hour).
  - C. The level of output produced as a share of GDP.
  - D. The level of human capital in the workforce.
  - E. The level of output produced per capital input.
  
6. Why is the instability of the business cycle a problem?
  - A. During recessions there is high unemployment, and resources are underutilized.
  - B. High unemployment is associated with individual and social stress, such as suicide, domestic violence, illness and crime.
  - C. During booms, high inflation can erode purchasing power, savings and pensions.
  - D. Unpredictable fluctuations in rates of inflation, interest rates, and foreign exchange rates make it difficult for individuals and organizations to plan for the future.
  - E. All of the above.
  
7. Which of the following are the three dimensions of sustainability as discussed in the text?
  - A. Ecological, financial, and social sustainability
  - B. Ecological, financial, and political sustainability
  - C. Ecological, financial, and cultural sustainability
  - D. Ecological, technological, and human sustainability
  - E. Ecological, technological, and social sustainability



8. Which of the following is *not* an issue concerning social sustainability?
- A. The disparities between the “haves” and the “have-nots.”
  - B. The ability of the next generation to contribute to a healthy economy and society
  - C. The need for steady growth in production
  - D. The creation of social disruption and political strife
  - E. The ability of the next generation to experience social and political participation and inclusion.
9. Which of the following best describes the precautionary principle?
- A. Clear cause and effect relationships must be established before taking action.
  - B. We should err on the side of caution when dealing with natural systems or human health.
  - C. The benefits of economic production and growth outweigh the risks of damage to natural systems or human health.
  - D. Business should not have to prove a product to be safe before being released on the market; rather a product must be proven unsafe before it is banned and pulled from the market.
  - E. We should take precautions before engaging in risky business investment.
10. Which of the following best describes the notion of conscious consumption?
- A. making consumption choices based on advertisements
  - B. making consumption choices based on price of goods
  - C. making consumption choices considering the environmental and social consequences of the choices made
  - D. making consumption choices based on cultural influences
  - E. making consumption choices based on income levels
11. Enjoying art at a museum is an example of
- A. production
  - B. consumption
  - C. exchange
  - D. transfer
  - E. resource management
12. Which of the following activities would be described as a resource management effort?
- A. Limiting the use of fossil fuels in an effort to limit global warming
  - B. Harvesting fish at a high rate
  - C. Extracting oil from known oil reserves
  - D. Using a well-designed machine to process leather for shoes
  - E. Selling seeds on the international market

13. Which of the following is an example of the economic activity of distribution?
- A. A baker makes 10 loaves of bread.
  - B. A plumber fixes a leak.
  - C. The legal speed limit is raised from 65 to 75 mph.
  - D. A couple enjoys a walk in the forest.
  - E. A retired worker receives Social Security benefits.
14. Which of the following is an example of a stock?
- A. The knowledge you have gained from your past education.
  - B. The amount of water that passes over a waterfall per second
  - C. The number of screwdrivers sold by a hardware store each week
  - D. The number of fish produced at a hatchery each day
  - E. The number of goldfish in the pet store's aquarium
15. A city government builds a new road. After five years the road develops some potholes, making it less useful. This decline in the value of the road over time is an example of
- A. fixed inventory
  - B. flows of capital services
  - C. depreciation
  - D. substitutability
  - E. a renewable resource
16. A diagram that shows how flows change the level of a stock over time is known as a(n)
- A. flow chart
  - B. flow diagram
  - C. stock-flow diagram
  - D. input-output model
  - E. capital stock diagram
17. Which of the following is *not* one of the ideas associated with the school of classical economics?
- A. Specialization and the division of labor
  - B. Laissez-faire and the functioning of markets free of government intervention
  - C. The pursuit of individual self-interest leads to positive economic outcomes.
  - D. Supply creates its own demand
  - E. Markets sometimes fail, necessitating government intervention.

18. Which of the following does *not* describe the economic events of the Great Depression?
- A. Stock markets plummeted in the 1929 stock market crash.
  - B. A lack of confidence in banks led to runs on the banks and bank failures.
  - C. Production dropped by about 30% between 1929 and 1933.
  - D. The unemployment rate peaked to 25% at the height of the depression.
  - E. The economic crises was short lived and markets quickly adjusted back to equilibrium.
19. Which of the following is *not* one of the ideas of Keynesian economics?
- A. An economy can experience insufficient demand
  - B. Governments can step in to help boost aggregate demand
  - C. Changes in government spending and taxation can help keep employment rates up
  - D. Governments should focus on keeping the money supply steady
  - E. Lowering interest rates alone may be insufficient if investors lack the confidence to engage in spending.
20. Which of the following was one of Keynes's suggested solutions, *and* was *not* generally adopted in the U.S. in the post-war era?
- A. Changes in government spending to stabilize the business cycle.
  - B. The role of government in keeping interest rates low to stimulate investment.
  - C. The involvement of government in controlling of the level and direction of national investment.
  - D. The role of government in purchasing goods and services to stimulate aggregate demand.
  - E. The role of government in manipulating taxation to stimulate aggregate demand.
21. Which of the following contributed to rising unemployment and increased inflation in the 1970s?
- A. Declining profits of U.S. firms due to increased competition from other industrialized nations
  - B. Decline in wages
  - C. High expenditures by the government
  - D. (a) and (c) only
  - E. (a) and (b) only
22. Which of the following is *not* one of the ideas associated with monetarist economics?
- A. Free-market economy drives out inefficiencies in the economic system.
  - B. A smaller government is good for the economy as it encourages private initiatives.
  - C. Efforts by the government to push unemployment too low could lead to inflation.
  - D. Governments should keep the money supply stable.
  - E. There are times when the government should take an active role by changing its spending policies.

23. According to the text, which of the following issues, not previously a major concern of macroeconomics, must macroeconomics confront in the 21<sup>st</sup> century?

- A. The ecological sustainability of our reliance on fossil-fuel based economic growth
- B. The social sustainability of the traditional model of economic development with the persistence of global poverty.
- C. The problem of business cycle fluctuations in unemployment and inflation.
- D. (a) and (b) only
- E. None of the above.

24. Which of the following characterizes the environmental challenges of the 21<sup>st</sup> century?

- A. The impressive growth of global GDP in the 20<sup>th</sup> century was accompanied by a dramatic increase in CO<sub>2</sub> emissions.
- B. There are limits to the capacity of the environment to absorb the by-products of economic growth.
- C. It is becoming more difficult for technological advancements to keep problems of resource depletion and pollution at bay.
- D. If continued at the current rate, the emissions of CO<sub>2</sub> and other greenhouse gasses may lead to dramatic disturbances to our environment and economy.
- E. All of the above.

### Answers to Active Review Questions

1. microeconomics, macroeconomics
  2. positive, normative
  3. living standards growth, stability and security, sustainability
  4. economic development
  5. economic, living standards
  6. the business cycle
  7. sustainability
  8. resource management
  9. social (capital)
  10. production
  11. transfer
  12. precautionary (principle)
  13. classical economics
  14. John Maynard Keynes
  15. monetarist economics
  16. False. They are studied in Macroeconomics.
  17. False, it's a flow.
  18. True
  19. False. Monetarists argued that governments should focus on keeping the money supply
- Chapter 1 – Economic Activity in Context 10

steady, even in a recession when unemployment was high.

20. True.
21. Microeconomics concerns itself with decision-making of individual consumers, firms and other organizations, such as how much to consume or produce of a product, while macroeconomics deals with aggregate production and expenditure, the level of unemployment, inflation, and interactions with the global economy.
22. The three basic questions are: what is produced, how is it produced, and for whom is it produced.
23. Once countries achieve a high level of production, they may achieve living standards growth by improving cultural, educational and environmental conditions, raising the quality of work-life, and promoting more equity.
24. The instability over the business cycle can be accompanied by high rates of unemployment, which is associated with falling incomes and social stress, like suicide, domestic violence, illness and crime. Alternatively the instability may result in inflation, which can erode the purchasing power of income, or wipe out the value of savings and pensions.
25. The goal of sustainability requires that we address whether economic activities are financially sustainable, whether they are socially sustainable, and whether they are ecologically sustainable.
26. The four essential economic activities are: resource management, production, distribution, and consumption.
27. The five types of capital are: natural capital, manufactured capital, human capital, social capital, and financial capital.
28. A stock is something whose quantity is measured at a point in time, whereas a flow measures the quantity of something over a period of time.
29. The two main forms of economic distribution are exchange and transfer. Exchange involves a two-way distribution, trading one thing for another, whereas a transfer involves a one-way distribution, giving something with nothing specific expected in return.
30. The classical school believes in the smooth functioning of market mechanisms, and that they work best when left alone. They generally do not think governments should intervene, and think that often government intervention makes things worse.
31. Keynesian economics believes markets often fail and governments have a role to intervene, especially in boosting aggregate demand during downturns.
32. Monetarist economics believes that the government should pursue a steady money supply and not intervene in the market actively over the course of the business cycle.
33. Since the 1980s, there have been periods of long economic expansions, through the rate of growth during these expansions have been lower than that in previous decades. Also, the occurrence of large asset bubbles, driven by speculation, has become more common, real wages have remained stagnant, inequality has increased, and big corporations have grown and more powerful.
34. Two developments that are demanding new ways of looking at the economic world in the 21<sup>st</sup> century are 1) the environmental impact of long-term fossil-fuel based economic growth, particularly with the dramatic rise in CO<sub>2</sub> emissions – this raises questions about ecological sustainability; and 2) the persistence of substantial global poverty and its threat to social sustainability.

## Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. E  | 13. E |
| 2. E  | 14. E |
| 3. E  | 15. C |
| 4. A  | 16. C |
| 5. B  | 17. E |
| 6. E  | 18. E |
| 7. A  | 19. D |
| 8. C  | 20. C |
| 9. B  | 21. D |
| 10. C | 22. E |
| 11. B | 23. D |
| 12. A | 24. E |

## Chapter 2

# FOUNDATIONS OF ECONOMIC ANALYSIS

*Macroeconomics in Context (Goodwin, et al.)*

### Chapter Overview

This chapter introduces standard concepts of economic modeling, efficiency, scarcity, opportunity cost, the production-possibilities frontier, and includes a review of graphing techniques. It describes two different macroeconomic models: the neoclassical model and the contextual model. It also provides an overview of the three spheres of economic activity: the core sphere, the public purpose sphere, and the business sphere. The chapter concludes with a description of the market system, including a discussion of the institutional requirements of markets. It also introduces the concepts of externalities, public goods, market power, transaction costs, information and expectations, and concern for human needs and equity in order to demonstrate why markets, while useful, are not on their own sufficient for organizing economic life in the service of well-being. In this chapter you will see these concepts set into a broader context of concern for well-being.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Distinguish and differentiate among the different methods of investigation: empirical investigation, and theoretical investigation.
2. Understand the concept of economic tradeoffs (or opportunity costs) in the face of abundance or scarcity.
3. Interpret and apply the production-possibilities frontier.
4. Describe the basic neoclassical model and the contextual model and discuss the applicability of the models in depicting the real-world economy.
5. Describe the three spheres of economy activity.
6. Distinguish the different meanings of the term “market”.
7. Describe the institutional requirements of markets.
8. Identify the advantages and limitations of markets.

### Key Terms

empirical investigation  
time-series data  
cross-sectional data  
historical investigation  
theoretical investigation  
model

ceteris paribus  
abundance  
scarcity  
production-possibilities frontier  
opportunity cost  
efficiency

basic neoclassical model  
utility  
factor markets  
product markets  
core sphere  
public-purpose sphere  
regulation  
direct public provision  
public good  
non-excludable good  
non-rival good  
business sphere  
informal sphere  
market (first meaning)  
institutions  
market (second meaning)

circular flow diagram  
“the” market (third meaning)  
private property  
common property  
explicit contract  
implicit contract  
physical infrastructure  
free riders  
externalities  
transaction costs  
market power  
static analysis  
dynamic analysis  
market failure  
negative (or inverse) relationship  
positive (or direct) relationship

### **Active Review**

*Fill in the blank.*

1. The observation and recording of specific phenomena of concern is called \_\_\_\_\_ investigation, whereas the analysis based in abstract thought is called \_\_\_\_\_ investigation.
2. When researchers study past events, they are conducting a(n) \_\_\_\_\_ investigation.
3. The Latin phrase that means “all else constant” or “other things equal” is \_\_\_\_\_.
4. A diagram that shows the tradeoffs between production of two goods is called a(n) \_\_\_\_\_.
5. You’re deciding whether to take an Economics course, or to take an Anthropology course. The \_\_\_\_\_ cost of taking the Economics course is the course you’re having to forego, the Anthropology course.
6. A process that achieves the maximum value of output from the given set of inputs can be described as \_\_\_\_\_.
7. The contextual model places economic activities within the \_\_\_\_\_ and \_\_\_\_\_ context.
8. Cooking family dinner at home is an activity of the \_\_\_\_\_ sphere.
9. Retailers such as Walmart, Target and Amazon are categorized under the \_\_\_\_\_ sphere.



10. The two main economic functions of the public-purpose sphere are \_\_\_\_\_ and \_\_\_\_\_.

11. If someone enjoys the benefit of a well-paved highway but refuses to pay for it, they would be considered a \_\_\_\_\_.

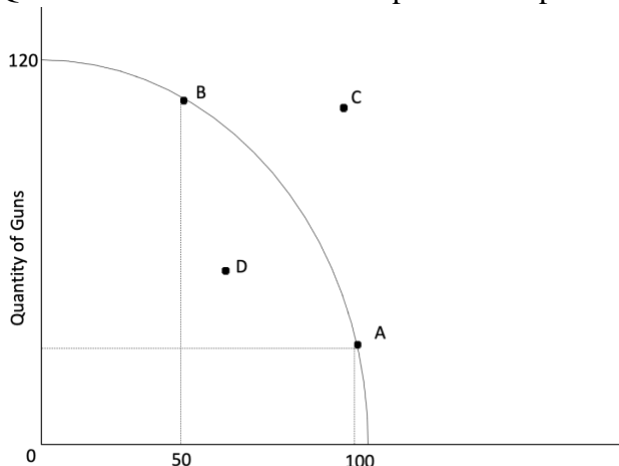
12. You decide to buy a used car. You discover that it is hard to get information on the quality of the used cars that are available and it takes a considerable amount of time to get the information you need to successfully get the car you had in mind. In other words, buying a used car turns out to be an activity with high \_\_\_\_\_.

13. A new factory begins discharging pollutants into a previously pristine river. Fish in the river begin to die, and people who make their living through fishing have trouble maintaining their catch. This factory is generating \_\_\_\_\_.

14. A professional musician practices piano every afternoon. Her neighbor listens to the music and enjoys it. Through her activity, the musician is creating a \_\_\_\_\_.

*True or False*

Questions 15 to 17 refer to the production possibilities frontier shown below.



15. In the graph shown above, at point B, society is producing the maximum possible amount of butter.

16. To move from point A to point B, society would have to cut down on its gun production and increase butter production.

17. Starting from point B, society would have to shift substantial resources away from butter production to increase gun production.

18. Business interests are aligned with maximizing both financial profits and social well-being.

19. The neoclassical model assumes that households make consumption decisions with the goal of maximizing utility and that businesses make production decisions with the goal of maximizing profits.

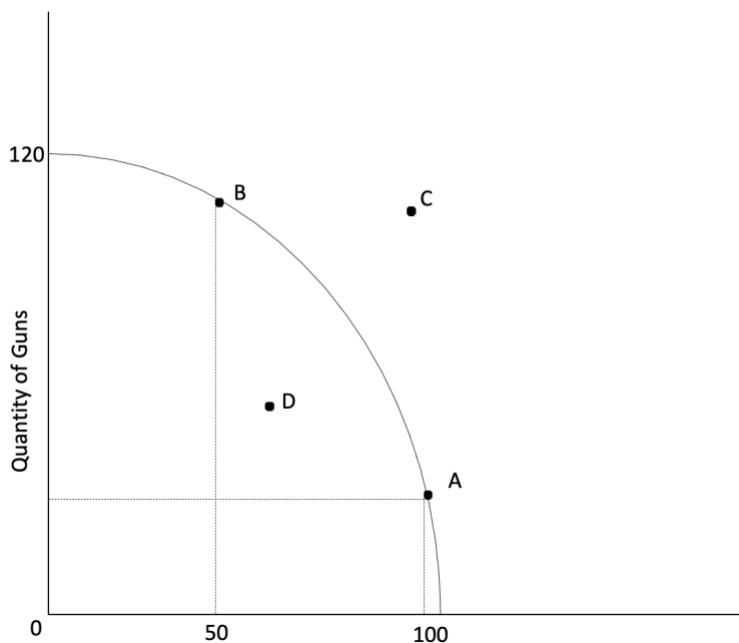
20. A public good is a good that is consumed by the public.

*Short Answer*

21. Assume you see that two macroeconomic variables are correlated with each other. But you want to know if there's an underlying or causal relationship between the two variables. Would you use an empirical or theoretical investigation? Explain why.

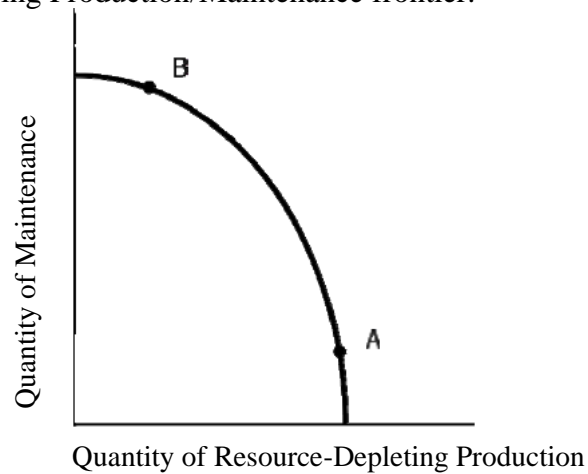
22. Why does a production possibilities frontier with increasing opportunity costs have a bowed-out shape?

23. Consider the following PPF:



Identify points that are a) inefficient and b) unattainable. How might a country be able to produce a combination of goods and services that was otherwise unattainable?

24. Consider the following Production/Maintenance frontier.



What would the future PPF look like if a high level of resource maintenance (e.g. point B) were chosen now? If a high level of resource depleting production (e.g. point A) were chosen now?

25. Name the two actors in the basic neoclassical (or traditional microeconomic) model of economics, and identify the assumptions the model makes of these two actors.

26. What does the basic neoclassical, or traditional, model of economics assume about markets?

27. Discuss the two key features of the contextual model.

28. What is the distinguishing characteristic of institutions in the public purpose sphere?

29. What are some of the strengths of the business sphere?

30. Describe some of the key activities conducted in the core sphere.

31. Provide an example of a market that fits the first meaning of markets (as a physical place), and an example of a market that fits the second definition (as an institution).

30. List two advantages of markets identified by the authors of the text.

31. Identify the four institutional requirements of markets.

32. Identify six disadvantages of markets (i.e. cases of market failures).

### Problems

1. Suppose that a society could produce the following maximum combinations of schools and airplanes in a given year:

Alternative	Quantity of schools	Quantity of airplanes
A	100	0
B	80	30
C	60	50
D	40	60
E	20	65
F	0	68

a. Draw a production possibilities frontier (PPF) with schools on the horizontal axis and airplanes on the vertical axis. Assume that the dots define a complete curve.

b. Is it possible and/or efficient for this society to produce 50 airplanes and 80 schools?

c. If society is currently producing at alternative C, then the opportunity cost of increasing the output of schools from 60 to 80 is \_\_\_\_\_ airplanes.

d. If society is currently producing at alternative E, then the opportunity cost of increasing the output of schools from 20 to 40 is \_\_\_\_\_ airplanes.

e. Is the opportunity cost of producing schools higher or lower moving from alternative C to B, than moving from E to D? Explain why.

2. (Appendix) Given the following data:

Year	Unemployment Rate (Percent)	Inflation Rate (Percent Per Year)
2017	4.4	2.1
2018	3.9	2.4
2010	3.7	1.8
2020	8.1	1.2
2021	5.4	4.7

a. Plot the unemployment data on a time series graph:

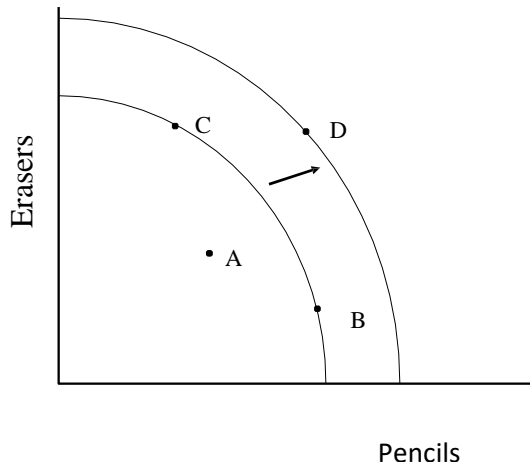
b. Plot the inflation data on a time series graph:

c. Now plot the unemployment and inflation data using a scatter diagram. Over any period of \_\_\_\_\_ years is there a positive relationship between the two variables? Over any period is there a negative relationship?

## Self Test

1. Suppose an investigator has 50 years of data on rates of industrial production and annual accumulations of CO<sub>2</sub>, and discovers a positive relationship between the two variables. This is an example of what type of investigation?
  - a. Theoretical investigation
  - b. Empirical investigation
  - c. Historical investigation
  - d. Both A and B.
  - e. A, B, and C.
2. What does the Production Possibilities Frontier represent?
  - a. A catalog of all possible production options, represented as percentages.
  - b. The tradeoffs between production and consumption options.
  - c. The tradeoffs between possible production levels for two goods.
  - d. The amount that a society could produce if it devoted all its resources to producing one good.
  - e. The possible gains from international trade in two or more goods.

Questions 3 and 4 refer to the following scenario:

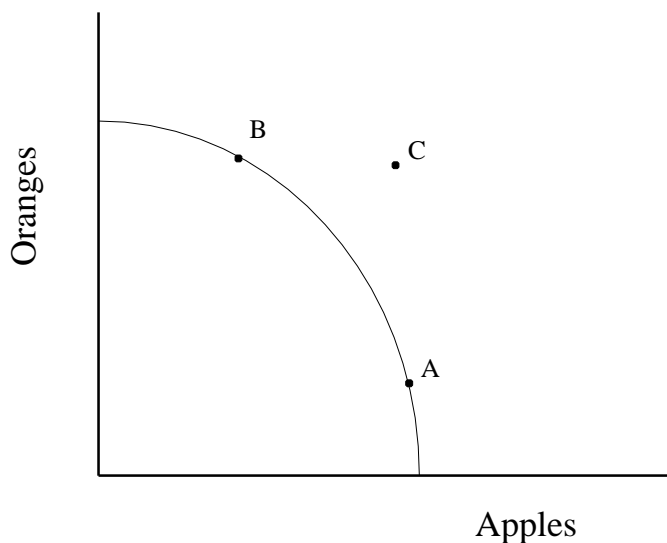


An economy produces two goods: pencils and erasers. Use the graph shown above depicting two possible production possibilities frontiers (PPFs) for this economy to answer questions 3 and 4.

3. Which of the following events could cause the PPF to shift out?
  - a. Workers become less productive due to poor working conditions.
  - b. A hurricane destroys vital resources for pencil production.
  - c. A new machine is invented making it easier to produce both pencils and erasers.
  - d. All production costs rise proportionally.
  - e. The cost of eraser inputs goes up.

4. Which of the following statements is true?
- Moving from point C to point B requires shifting resources away from eraser production and into pencil production.
  - Point B represents a less efficient resource mix than point C.
  - Depletion of nonrenewable resources could lead the economy to shift from point C to point D.
  - Utility is maximized at point A.
  - At point A, society is producing all the pencils it can.

Question #5 refers to the graph shown below:



5. Which of the following statements is true?
- Point A is inefficient.
  - Point B is inefficient.
  - Point A is preferred to point B.
  - Point B is preferred to point A.
  - Point C cannot be attained with current technology.
6. Suppose there is a production possibilities frontier (PPF) for wine and cheese. Which of the following situations would shift the PPF inward (toward the origin)?
- A severe weather event that destroys much of the economy's productive capacity.
  - Discovery of a new, cheaper source of milk for making cheese.
  - Increased popularity of wine, as compared with cheese.
  - A technological breakthrough.
  - Improved education of the work force.

7. Which of the following is *not* an example of resource management activities that can lead to the PPF shifting outward in the future?

- a. Investment in plant, equipment, and physical infrastructure
- b. Investment in education and knowledge
- c. Investment in international diplomacy and conflict resolution
- d. Conservation of non-renewable resources such as fossil fuels
- e. Mandatory overtime and cutbacks in vacations that leave workers exhausted and in bad mental or physical health

8. In general, as production of a good increases, the opportunity cost of production increases. How is this notion reflected in the graph of production possibilities frontier (PPF)?

- a. The PPF bows inwards (that is, looks like a slide or a valley)
- b. The PPF bows outwards (that is, looks like a hillside).
- c. The PPF shifts in response to technological change.
- d. The PPF shows production of one good at a time.
- e. The PPF becomes flatter as resource availability increases.

9. Which one of the following is *not* an assumption of the basic neoclassical model?

- a. The actors in the economy are assumed to be households and firms
- b. Firms are assumed to maximize profits
- c. Households are assumed to maximize utility
- d. Markets are assumed to be perfectly competitive, with prices determined by supply and demand
- e. Communities are assumed to look after resource management and environmental protection

10. Which of the following statements below best fits the basic neoclassical model's perspective?

- a. Adam thinks that self-interested maximizing behavior and free markets lead to the best of all possible worlds.
- b. Karl thinks that workers are squeezed by greedy, profit-hungry bosses.
- c. Joseph experiences the booms and busts of the economy as if it were a rollercoaster ride.
- d. John thinks the economy is like an elevator that can get stuck in the basement, and can only be fixed by an elevator repairman.
- e. Julie values the work of volunteers and non-profit organizations in their communities that keeps the economy strong and vibrant.



11. Which of the following statements below best fits the contextual model's perspective?

- a. Markets are always perfectly competitive.
- b. Non-market production such as cooking, cleaning and caring for children should be included in our economic model
- c. The government should focus on helping businesses maximize profits.
- d. The core sphere is primarily responsible for all resource management activities.
- e. All of the above.

12. Which of the following statements is FALSE?

- a. The neoclassical model identifies firms and households as the two main economic actors.
- b. The neoclassical model assumes that firms always maximize profits.
- c. The contextual model focuses only on market activity.
- d. The contextual model considers the environmental costs of economic activity.
- e. There is some overlap between the neoclassical and the contextual model.

13. Which of the following is an example of a core sphere activity?

- a. James plays a game of catch with his nephew.
- b. Martha works at a bank.
- c. A local fire department responds to local emergencies.
- d. A national government purchases weapons.
- e. A publicly funded state college provides education.

14. The activities of the U.S. Environmental Protection Agency would be characterized as part of

- a. The core sphere
- b. The free rider sphere
- c. The public purpose sphere
- d. The business sphere
- e. The informal sphere

15. Which of the following is an activity in the business sphere?

- a. The government increases funding for public schools.
- b. Tina sells home-made jam at the local market.
- c. John helps a neighbor with yard work.
- d. Martha volunteers to organize a community clean up event.
- e. The local police department leads a training session on ensuring public safety.

16. Regulating the activities of financial institutions occurs in the
- a. public purpose sphere
  - b. the informal sphere
  - c. the banking sphere
  - d. the core sphere
  - e. the business sphere
17. Which of the following is not a characteristic of the informal sphere?
- a. It is often dependent on family and community connections
  - b. It operates under government regulation and oversight
  - c. It is comprised of small scale market enterprises
  - d. It may include illegal activities and services provided “off the books”
  - e. The relative size of informal sphere tends to be larger in less developed countries
18. Which of the following would *not* be considered a market by any of the three meanings of markets?
- a. Seattle’s Pikes Place Market, a tourist attraction known for its fish and flower stands.
  - b. The mall of America in Minnesota, the U.S.’s largest retail and entertainment complex.
  - c. The capitalist free market
  - d. The stock market
  - e. Marketplace, the radio program on national public radio.
19. Which of the following is *not* an example of an institutional requirement of markets?
- a. The deed of a house, identifying its owner.
  - b. A police force devoted to combating theft.
  - c. A firm’s reputation for making quality products.
  - d. Reliable roads and bridges that won’t fall apart
  - e. Central planners who are able to allocate and distribute resources
20. A city government maintains local roads. This service is an example of:
- a. A free rider
  - b. A public good
  - c. A positive externality
  - d. An external cost
  - e. A core sphere activity

21. Why are public goods often provided through government agencies and supported by taxes?

- a. Because they are goods that the public generally believes are valuable and important for the smooth functioning of the economy.
- b. Because the goods would not be well-provided by the private sector, since they are non-excludable.
- c. Because consumers of the goods have little incentive to pay for them, since they are non-excludable.
- d. Because of the problem of free riders, who would otherwise benefit from the public good without paying for it.
- e. All of the above.

22. Which of the following is an example of a positive externality?

- a. A musician performs in a concert. People pay to listen to the concert.
- b. An architect designs a house for herself to live in. She enjoys spending time in the house.
- c. A student volunteers in a shelter for the homeless.
- d. A homeowner plants a tree for shade around her house. The tree also provides shade for her next-door neighbor.
- e. A teacher drives his car to work and gets stuck in a traffic jam.

23. Which of the following is an example of a negative externality?

- a. A student receives a failing grade on a French exam.
- b. Your roommate throws a loud party that keeps you awake all night.
- c. You decide to take public transportation to work every day.
- d. A group of farmers pool their resources to purchase seeds for next year.
- e. You receive a letter saying your bank account is overdrawn.

24. A firm has an experienced worker who it has spent considerable time training. The economy goes into a recession, but the firm is reluctant to lay off the worker. Searching for another worker who is trained and trustworthy when the economy picks up again would entail which kind of costs?

- a. Opportunity costs
- b. Implicit costs
- c. Explicit costs
- d. Transactions costs
- e. External costs

25. Which of the following entities does *not* have substantial market power?
- An oil company like Exxon Mobil.
  - A multinational soft drink corporation like Coca Cola.
  - A government agency like the Department of Defense.
  - A computer software company like Microsoft.
  - A flower seller at a local farmers' market, where there are many flower sellers.

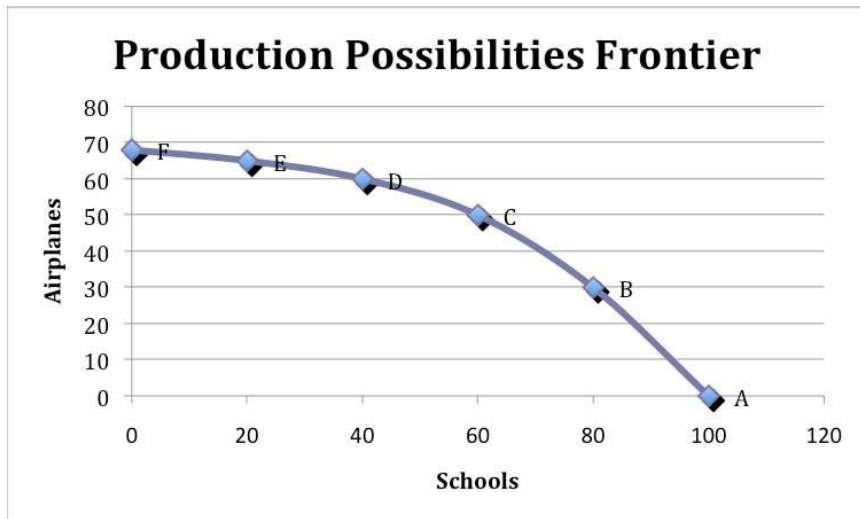
### Answers to Active Review Questions

- empirical, theoretical
- historical
- ceteris paribus
- production possibility frontier
- opportunity (cost)
- efficient
- environmental, social
- core
- business
- regulation and direct provision
- free rider
- transaction costs
- negative externality
- positive externality
- False. Society could produce more butter by producing fewer guns.
- False. To move from A to B, society would have to decrease butter production and increase gun production.
- True. At point B, society is already employing many of its resources to produce guns. Increasing gun production further will present high opportunity costs.
- False. Some of the decisions made by businesses with the goal of maximizing profits may come at the cost of social well-being. For example, cost-cutting measures such as reducing pay or benefits to workers by hiring temporary workers, or dodging environmental regulations to reduce production costs could have adverse impacts on social well-being.
- True. These are the key assumptions of the neoclassical model.
- False
- You would use a theoretical investigation. Empirical investigation is useful in describing macroeconomic phenomenon, but may be inadequate in explaining them. It may be clear that two variables are correlated, but unclear if there's a causal relation between the two. Theoretical investigation can more closely examine complex relationships between phenomena.
- The curve is bowed-out because some resources are better suited for the production of one good (e.g. butter) rather than the other (e.g. guns). And as we try to produce more and more of the other good (e.g. guns), it takes increasing amounts of resources to do so and thus we incur increasing opportunity costs.

23. Point D is inefficient and point C is unattainable. One could get to an unattainable point such as point C through technological progress, or the acquisition of additional resources.
24. If Point B were chosen, the PPF would shift outwards, leading to a larger set of production possibilities in the future. If Point A were chosen, the PPF would shift inwards, leading to a smaller set of production possibilities in the future.
25. Firms and households. Firms are assumed to maximize profits, and households are assumed to maximize their utility (or satisfaction).
26. It assumes that markets are perfectly competitive and smoothly functioning, and that prices are determined purely by forces of supply and demand.
27. The contextual model places economic activity in the environmental and social contexts. This model specifies economic activity as occurring within three spheres: core, public purpose, and business.
28. The distinguishing characteristic of institutions in the public purpose sphere is that they exist to serve the common good for a group larger than an individual or family, and do not have the goal of making a profit.
29. Because business sphere is focused on profit maximization, they are likely to encourage innovation and have higher efficiency.
30. Some of the key activities in the core sphere include producing of goods and services (such as cooking, lawn mowing, and providing care to dependent members), organizing savings and investment, allocating consumption spending, making labor supply decisions, and organizing of the use of leisure time.
31. A local farmer's market would be an example of a market understood as a physical place with both buyers and sellers of a good. The market for goods sold on eBay, the stock market or the market for oil, are examples of markets understood as institutions.
32. Markets can be an efficient way of allocating resources. Markets involve voluntary exchanges. Another advantage identified in the text is that markets encourage innovation and creativity.
33. The four institutional requirements of markets are: private property, social institutions of trust, good physical infrastructure, and money.
34. Six disadvantages or cases of market failure are: public goods, externalities, market power, inequality, transactions costs, and information/expectations problems.

## Answers to Problems

1. a.



b. No, 50 airplanes and 80 schools is unattainable, because it's beyond the PPF.

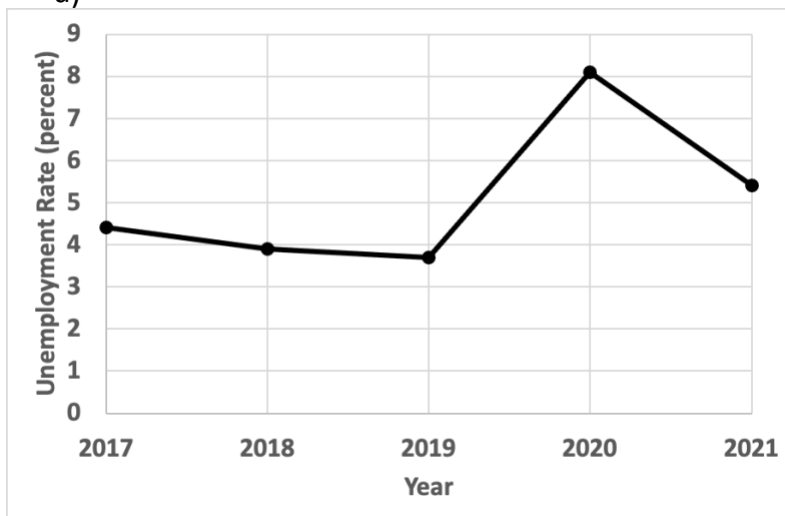
c. To go from 60 to 80 schools, 20 airplanes must be given up. Thus the opportunity cost of 20 schools is 20 airplanes.

d. To go from 20 schools to 40 schools, 5 airplanes must be given up. Thus, the opportunity cost of 20 schools is 5 airplanes, starting from alternative E.

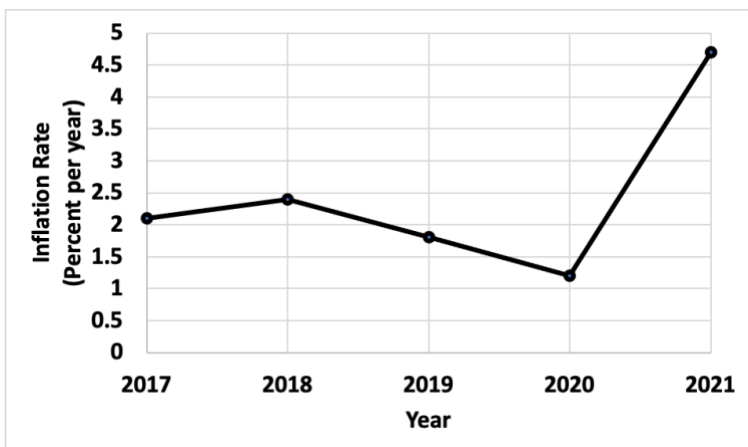
e. The opportunity costs of moving from C to B is higher than it is moving from E to D. As we try to get more and more schools, we're using resources not as well suited into the production of schools, incurring increasing costs.

2. (Appendix)

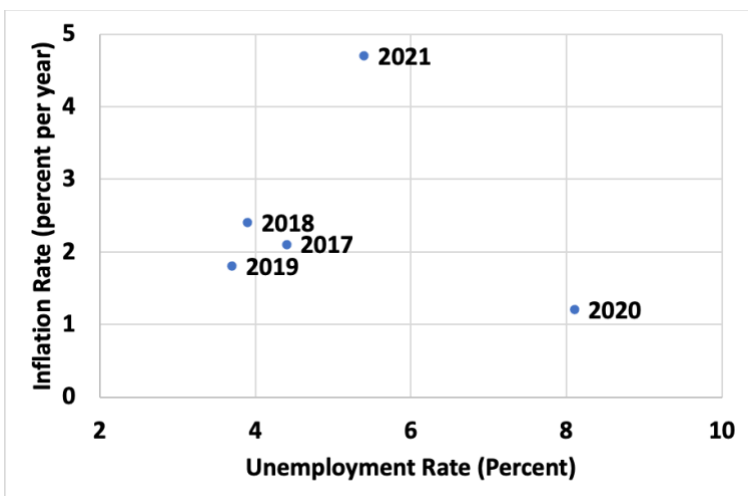
a)



b)



c)



### Answers to Self Test Questions

1. B
2. C
3. C
4. A
5. E
6. A
7. E
8. B
9. E
10. A
11. B
12. C

13. A
14. C
15. B
16. A
17. B
18. E
19. E
20. B
21. E
22. D
23. B
24. D
25. E

## Chapter 3

# SUPPLY AND DEMAND

*Macroeconomics in Context (Goodwin, et al.)*

### Chapter Overview

In this chapter, you'll find the basics of supply and demand analysis. As you work through this chapter, you will start learning how to manipulate supply and demand curves as a way to analyze the relationships among prices, volume of production, and other factors. You will learn about the various factors that can shift a supply or demand curve up or down, the concepts of equilibrium and market adjustment and the concept of elasticity. You will also be asked to consider how supply and demand analysis may or may not be useful in explaining macroeconomic phenomena.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Understand the characteristics of the market theorized in the classical model.
2. Interpret supply and demand curves.
3. Understand the difference between a change in supply (demand) and a change in the quantity supplied (demanded).
4. Describe some changes that would cause a shift in a supply curve, or a demand curve.
5. Explain how price adjusts due to changes in supply and demand.
6. Identify what is meant by the "price elasticity" of demand (supply).
7. Appreciate the usefulness and limitations of the theory of supply and demand in the real world, and its relevance to macroeconomics.

### Key Terms

demand  
supply  
perfectly competitive markets  
self-correcting market  
supply curve  
change in quantity supplied  
change in supply  
demand curve  
change in quantity demanded  
change in demand  
substitute good  
complementary good  
surplus  
shortage

market equilibrium  
market disequilibrium  
theory of market adjustment  
price elasticity  
price elasticity of demand  
price elasticity of supply  
quantity adjustments  
menu costs  
speculation  
speculative bubble  
subprime mortgage



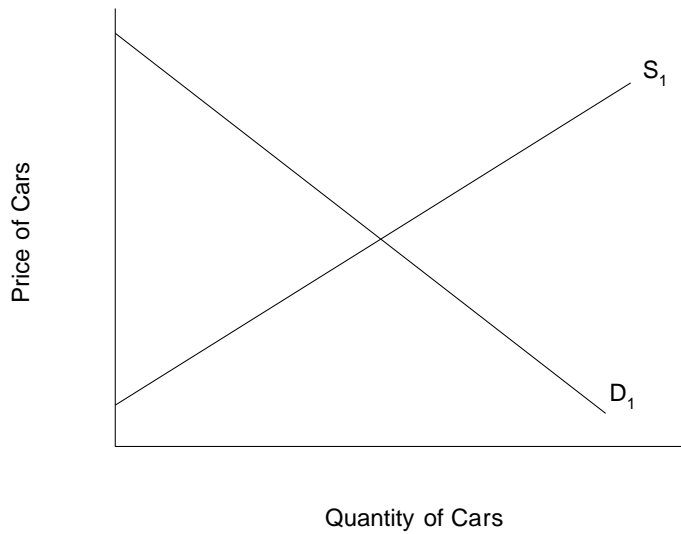
## Active Review

### *Fill in the Blank*

1. Assume that in the market for tulips, there are hundreds of buyers and sellers of tulips, all of the tulips are identical, and it is extremely easy for anyone to become a tulip farmer and sell tulips. This market would most likely be characterized as a \_\_\_\_\_ market.
2. You decide to take a Uber ride when there is a heavy rain and most buses are running late. Many other commuters are also using Uber services for the same reason, which instantly increases the price of Uber rides. This market would be characterized as a \_\_\_\_\_ market.
3. A curve indicating the quantities that buyers are willing to purchase at various prices is known as a(n) \_\_\_\_\_ curve.
4. You notice that when the price of gasoline goes up in your town, people buy less gasoline. Assuming that nothing else has changed, this would be described by economists as a change in \_\_\_\_\_.
5. Tabitha needs furniture for her room. She is deciding between a medium-sized couch and a large armchair. Either the couch or the armchair could fulfill her need for sitting space in the room. The couch and the armchair can be referred to as \_\_\_\_\_ goods.
6. When people eat french fries, they like to put ketchup on them. Due to an increase in the price of french fries, total sales of french fries decrease. At the same time, ketchup sales also decrease. This phenomenon can be explained by noting that french fries and ketchup are \_\_\_\_\_ goods.
7. Surplus and shortage are both instances of \_\_\_\_\_.
8. A curve indicating the quantities that sellers are willing to offer at various prices is known as a(n) \_\_\_\_\_ curve.
9. In general, in a basic model showing supply and demand, if the supply curve shifts to the right, equilibrium price will \_\_\_\_\_ and equilibrium quantity will \_\_\_\_\_.
10. Henry notices that when the price of bread goes up by 10%, the quantity demanded falls only slightly. To measure by how much quantity demanded falls, Henry should use the \_\_\_\_\_ of demand.
11. When people rush to buy an asset because they expect the price to continue to rise and thereby expect to profit from the asset's appreciation in value, this can cause the emergence of a \_\_\_\_\_.

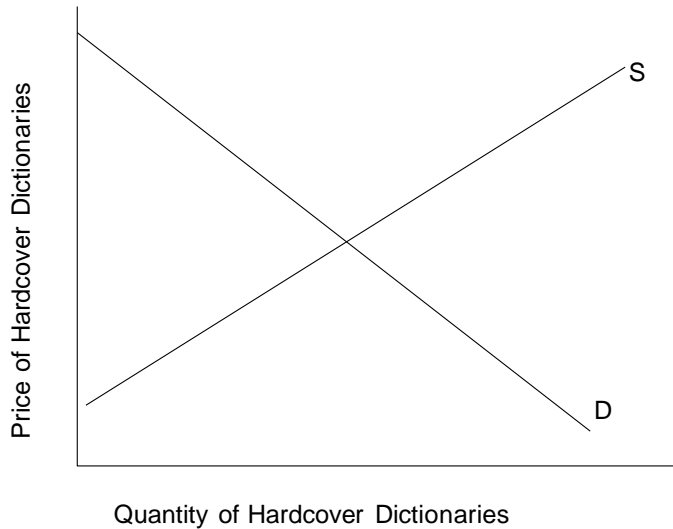


## Problems



1. For the following questions, refer to the graph shown above.
  - a. Label the equilibrium point as  $E_1$ , the equilibrium quantity as  $Q_1$ , and the equilibrium price as  $P_1$ .
  - b. Show how the supply curve will change if car manufacturers achieve a technological breakthrough that allows them to produce cars more cheaply.
  - c. If the price stayed at  $P_1$ , would a surplus or a shortage result from the technological breakthrough described in part (b)? Answer in words, and show on the graph.
  - d. Assuming market forces work quickly, show the new equilibrium price to which the market will adjust. Label this point as  $E_2$ . Label the new equilibrium quantity as  $Q_2$ , and the new equilibrium price as  $P_2$ .
  - e. In words, summarize the information that you have shown in your adjustments to the graph in parts (a) through (d).

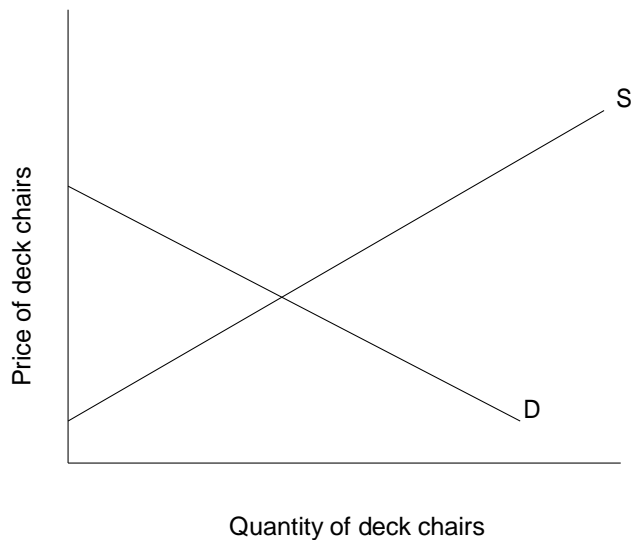
2. The following graph shows supply and demand for hardcover unabridged English dictionaries. Suppose that a new dictionary resource is created on the Internet, decreasing people's interest in buying large dictionaries in book form. For the questions below, state the answer in words and, where relevant, diagram your answer.



- What happens to the demand curve for hardcover dictionaries, as a result of this Internet innovation? (Answer in words and diagram.)
- What happens to the supply curve as a result of the Internet innovation? (Answer in words and diagram.)
- What happens to the price of hardcover dictionaries as a result of the innovation? Show the new price level on the graph you drew for part (b).

3. Refer again to the graph above, showing the market for hardcover dictionaries. What are the two types of change in this market that would lead the equilibrium price to *rise*?

4. In a popular new movie, a central character spends much of his time sitting on a white deck chair. Suddenly, white deck chairs come into fashion and everybody wants one. The graph below shows the market for deck chairs *before* the movie came out.

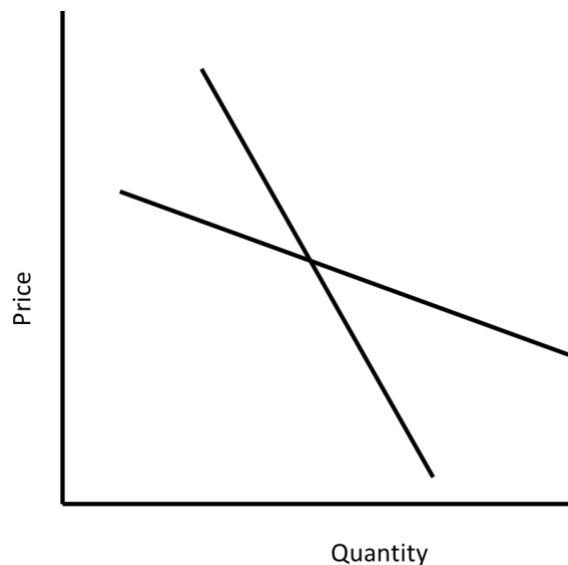


- a. On the diagram above, show what happens to the market for deck chairs as a result of the movie.
- b. Show the size of the shortage that exists in the short term, before the market adjusts to equilibrium.
- c. Label the new equilibrium point as  $E_2$ .

5. Using the same example of the market in white deck chairs, describe and, on separate graphs, show the changes in equilibrium price and quantity that would occur in response to the following events.

- a. A key input for making deck chairs becomes more expensive (*ceteris paribus*).
- b. In a highly publicized event, someone falls off a poorly constructed deck chair and sustains a serious head injury (*ceteris paribus*).

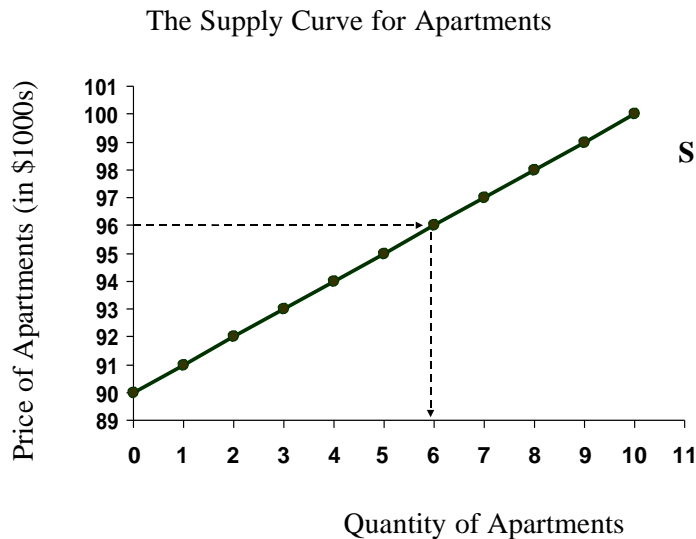
6. Sketch a supply curve graph illustrating a student's willingness to sell his textbooks from all his classes, right now. Assume that the student will receive offers of this sort: "I'll give you [a fixed number of dollars] apiece for all the books you want to sell." Carefully label the vertical and horizontal axes. Suppose that at an original offer of \$30 per book, the student will be willing to sell three books, because he knows that he can replace these three for less than \$30 each at a local bookstore. Mark this point on your first graph. Assume further that at \$40 he would be willing to sell four books, at \$50 he would supply five books, and so on. Now, on separate graphs labeled (a), (b), and (c), show this line and his offer at \$30 and the precise new *point* or an approximate new *curve* that illustrates each of the following contrasts. Consider them separately, assuming no Internet resources in considering (c).
- He is offered \$70 per book instead of \$30
  - He discovers that the textbook materials for many of his classes are available free on the Internet
  - The local bookstore raises its prices substantially
7. Consider the market for diamond rings. For each of the following, draw a graph and describe the likely effects on equilibrium price and quantity (assuming the market functions like the one described in the text). Explain your reasoning.
- Valentine's Day is approaching
  - Manufacturers discover new industrial uses for diamonds, driving up the prices that jewelers have to pay to obtain the gems
  - New deposits of diamonds are discovered
  - The price of cubic zirconium "gems" (high-quality fake diamonds) falls
  - People experience an increase in their wealth
8. Suppose the demand for oranges is more price elastic in the demand for chocolate. On the graph below, indicate which line represents the demand for oranges, and which represents the demand for chocolate.



## Self Test

1. Which of the following is a characteristic of the sort of market imagined by classical macroeconomists?
  - a. A market with speculation
  - b. A market with only one seller
  - c. A market with long-term contracts
  - d. A perfectly competitive market
  - e. A long supply-chain market
  
2. Which of the following is true for a “self-correcting” market?
  - a. The government sets the price and the market respects that decision.
  - b. Imbalances between buyers and sellers are automatically reduced through changes in prices
  - c. Sellers use their market power to set prices high and persistent surpluses are the result.
  - d. Buyers use their market power to set prices low and persistent shortages are the result.
  - e. Sellers use their market power to set prices high and persistent shortages are the result.

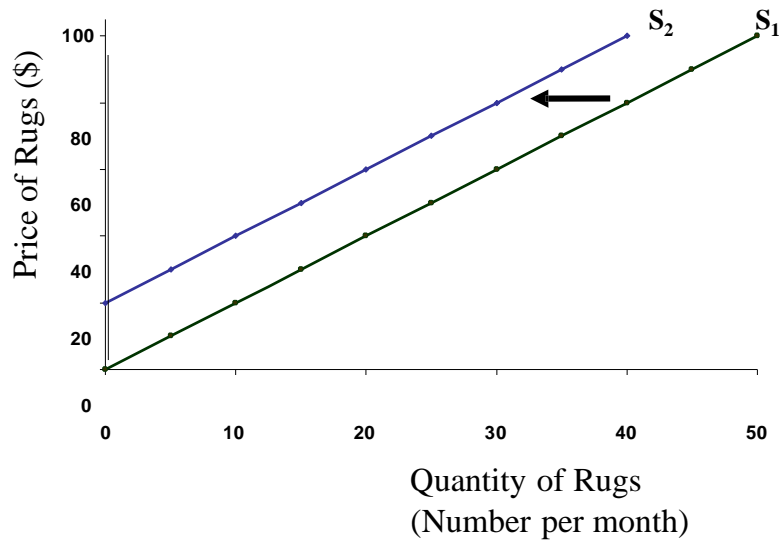
Questions 3 to 5 refer to the following graph:



3. Based on the figure above, how many apartment owners would be willing to sell their apartments for \$91,000?
- None
  - One
  - Two
  - Six
  - All ten apartment owners
4. In the scenario depicted in the figure above, up to ten apartments may be available for sale. Suppose that ten more apartment owners enter the market, for a total of twenty available apartments. These new entrants into the market would be all willing to sell their apartments for any price above \$90,000. Which of the following statements accurately describes the resulting change in the supply curve?
- The supply curve shifts upward.
  - The supply curve shifts to the right.
  - The supply curve shifts to the left.
  - The supply curve becomes longer.
  - The supply curve can no longer be represented by a straight line.
5. In the situation described in question #4, how many apartment owners would be willing to sell their apartments for \$91,000?
- None
  - One
  - Two
  - Ten
  - Eleven
6. Which of the following statements is true, regarding the supply of a particular good, and that good's own price?
- A price increase shifts the supply curve to the right.
  - A price decrease shifts the supply curve to the right.
  - A price increase shifts the supply curve downward.
  - A price change alone does not shift the supply curve.
  - A price change is the only way to shift the supply curve.



Question #7 refers to the following graph.



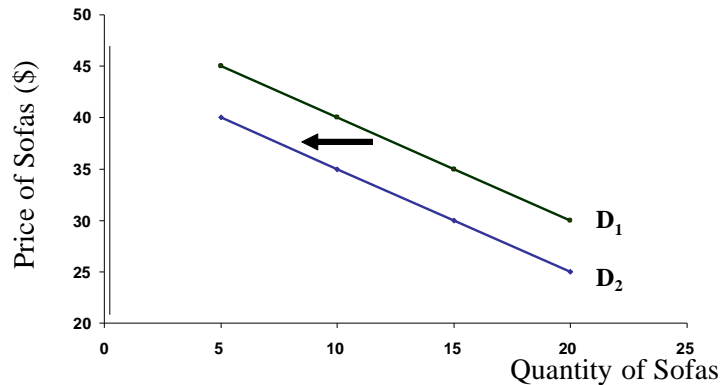
7. The graph shown above depicts two possible supply curves for production of handmade rugs.  $S_1$  is the initial supply curve, and  $S_2$  is the new supply curve after a change has occurred in the market. Which of the following events could have caused this shift?

- Several rug makers have left the market, making handmade rugs more scarce.
- Several new rug makers have entered the market, making handmade rugs more plentiful.
- The price of thread used in rugs has dropped, making it cheaper to produce rugs.
- Rugs have come into fashion, so buyers want more of them.
- Rugs have gone out of fashion, so buyers want fewer of them.

8. Which of the following is an example of movement *along* a supply curve?

- The quantity of apples offered for sale increases as the price of apples rises.
- An apple orchard burns down in an accidental fire, decreasing the number of suppliers on the market.
- Thanks to good weather conditions, apple growers enjoy a bumper crop this year.
- The price of pears doubles, increasing demand for apples.
- The price of fertilizer increases, making it more expensive to produce apples.

Question #9 refers to the following graph:



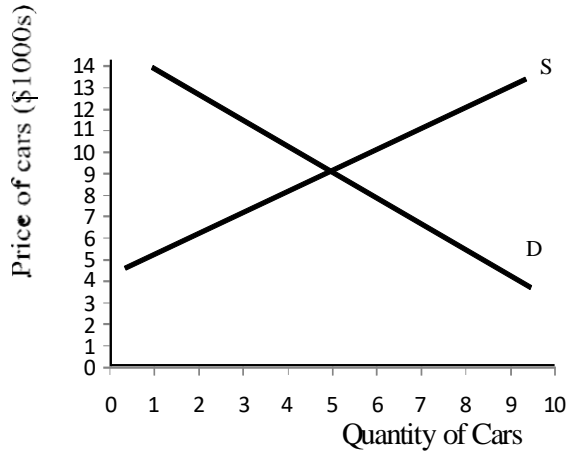
9. Assume that sofas and arm chairs are substitute goods. The graph shown above illustrates the demand curve for sofas. Which of the following events could have triggered the shift in demand from  $D_1$  to  $D_2$ , as shown above?

- a. The price of sofas increased.
- b. The price of armchairs increased.
- c. The price of labor for making sofas increased.
- d. The price of sofas decreased.
- e. The price of armchairs decreased.

10. A bike shop in a small town has received a shipment of 10 new bicycles. The shop offers the bikes for sale at a price of \$300 each. At this price, however, there are only two people in town who are willing to buy a bicycle. This situation can be described as

- a. disequilibrium
- b. shortage
- c. surplus
- d. equilibrium
- e. both a and c are correct

Questions 11 to 13 refer to the following graph.



11. When the price of cars is \$5000, which of the following terms is *not* an accurate description of the situation?

- a. Quantity demanded exceeds quantity supplied.
- b. A shortage exists.
- c. The market is in disequilibrium.
- d. Fewer than five cars are available for sale.
- e. The market is in equilibrium.

12. Beginning from the price of \$5000, which of the following events would be predicted by the theory of market adjustment?

- a. Some buyers who are willing to pay more will bid the price of cars up.
- b. The market will remain in disequilibrium.
- c. Prices will fall.
- d. All buyers will remain in the market.
- e. The supply and demand curves will shift to achieve equilibrium.

13. Now suppose that the local government invests in a new, very efficient fleet of buses. Now, it is easy and affordable to get from one place to another without having your own car. What change in the graph shown above is most likely to result from the new bus service?

- a. The supply curve shifts to the right.
- b. The supply curve shifts to the left.
- c. The demand curve shifts to the right.
- d. The demand curve shifts to the left.
- e. None of the above.

14. Suppose the demand curve for gasoline shifts to the right, as global demand from India and China increases. Suppose also that new discoveries of oil enable an increase in the supply of gasoline to be sold on the market. Assuming that nothing else changes, what is the likely effect on the equilibrium price of gasoline?

- a. The equilibrium price rises.
- b. The equilibrium price falls.
- c. The equilibrium price remains the same.
- d. The effect on the equilibrium price is uncertain, as it depends of the extent of the shifts in supply and demand.
- e. None of the above.

15. Suppose we observe an increase in the world price of corn. Which of the following could have caused the price increase?

- a. An increase in the demand for corn by households in China and India.
- b. An increase in the demand for corn for use in ethanol production in the U.S.
- c. A fall in the supply of corn due to a drought in Australia.
- d. A rise in the price of fertilizer, a key input in the production of corn.
- e. All of the above.

16. Suppose the price elasticity of demand for oil is found to be very inelastic. Which of the following factors could account for its inelasticity?

- a. Oil is a greatly needed item, as it is a key ingredient for gasoline and many other industrial products and processes.
- b. There are few substitutes available for oil.
- c. Oil accounts for a very small part of consumers' budgets, so an increase in the price of oil is barely noticed by consumers.
- d. Oil accounts for a very large part of consumers' budgets, so an increase in the price of oil is quickly noticed and consumers greatly reduce the amount of oil they purchase.
- e. Both a and b.

17. Which of the following markets do not operate like the classical model's perfectly competitive and self-correcting mechanisms?

- a. Markets with long-term contracts
- b. Retail markets, such as for clothing, with prices posted on tags and long supply chains
- c. Restaurants with high menu costs
- d. The market for computer operating systems
- e. All of the above

18. Assume there's been a fall in demand for automobiles in the U.S. Which of the following best describes a "quantity adjustment" made by the U.S. automobile producers?
- Producers lower their price.
  - Although supply now is greater than demand at the initial equilibrium price, producers continue to produce at the same rate, despite the resulting surplus of automobiles on the market.
  - Producers primarily reduce their production levels, rather than lowering their price.
  - Producers raise their price, hoping to maintain their profit margins.
  - Producers raise their production levels, to entice customers back with more automobiles to choose from.
19. Which of the following markets have experienced speculative bubbles (somewhere, at some point in history)?
- The stock market
  - The real estate market
  - The market for mortgage-based securities
  - The market for foreign exchange
  - All of the above
20. Which of the following reflects a Keynesian view of how the market mechanism may operate?
- Sometimes price adjustments are very slow
  - Sometimes price adjustments are too fast
  - Sometimes the market can get stuck at an equilibrium that is undesirable.
  - The market mechanism often does not work smoothly, thus necessitating some corrective measures by government.
  - All of the above.

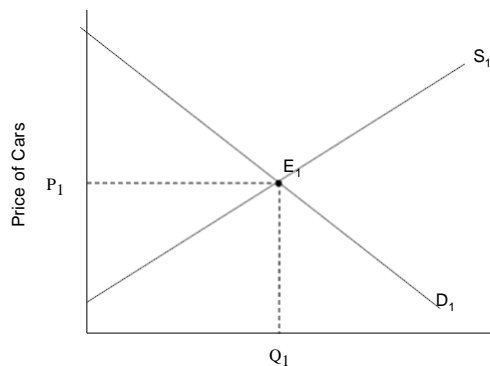
### Answers to Active Review Questions

- perfectly competitive
- self-correcting
- demand
- quantity demanded
- substitute
- complementary
- market disequilibrium
- supply
- decrease, increase
- price elasticity
- speculative bubble
- True. For example, a drought would decrease the supply of lemons.

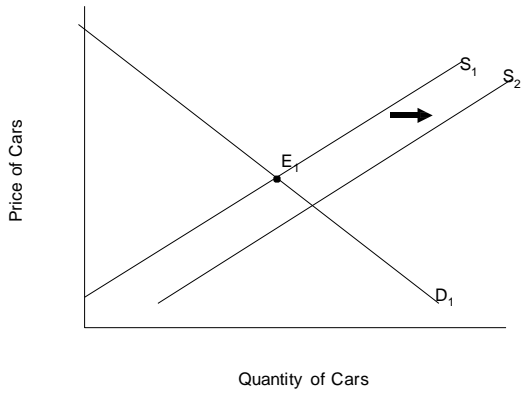
13. True.
14. True.
15. False. In general, an increase in demand tends to increase both equilibrium price and equilibrium quantity.
16. False. In a shortage situation, the quantity demanded exceeds the quantity supplied.
17. The demand curve slopes downward because in general, the higher the price of the good, the fewer people will want to buy it.
18. "Change in quantity demanded" refers to movement *along* the demand curve. For example, if the price of apples rises, all other things being equal, people will buy fewer apples; thus, the quantity demanded will decrease. A "change in demand" refers to a situation in which the entire demand curve shifts. For example, if a large number of new people move into your neighborhood, there will be a larger pool of people interested in buying apples at the local grocery store.
19. No, this market is not in equilibrium; there is a surplus of SUVs.
20. No, this market is not in equilibrium; there is a shortage of movie tickets.
21. The price elasticity of demand is the percentage change in quantity demanded divided by the percentage change in price. The price elasticity of supply is the percentage change in quantity supplied divided by the percentage change in price.
22. In retail markets with long supply chains, prices may adjust very slowly. In stock markets, prices may adjust very rapidly.

### Answers to Problems

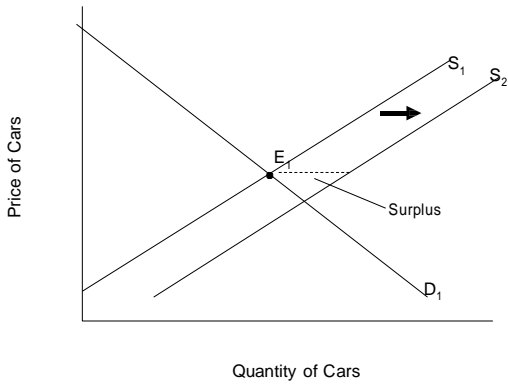
1.a.



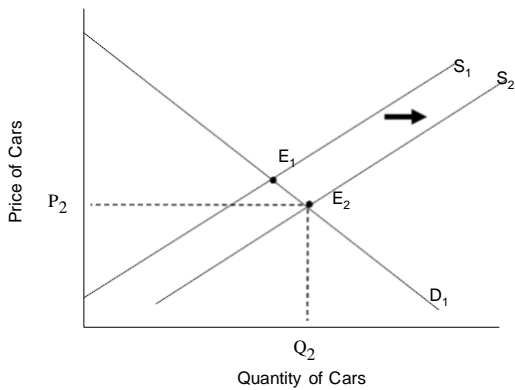
1. b.



1. c. The shift in the supply curve creates a temporary surplus.

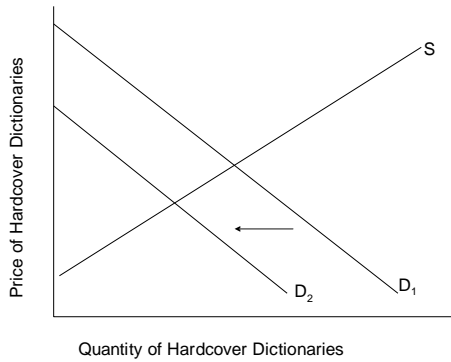


1. d.



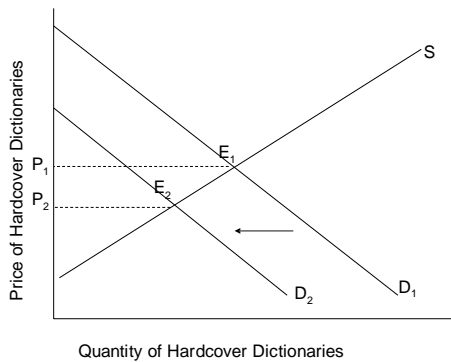
1. e. The supply curve has shifted to the right. The equilibrium price has fallen, and equilibrium quantity has risen.

2. a. The demand curve shifts to the left.



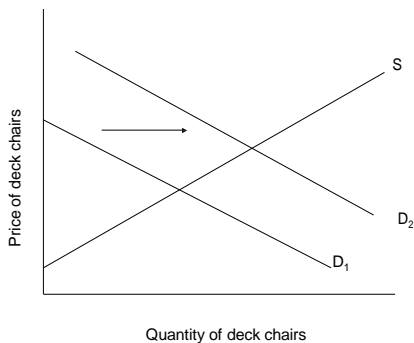
2. b. The supply curve does not shift.

2. c. The price of hardcover dictionaries at the new equilibrium,  $E_2$ , is lower.



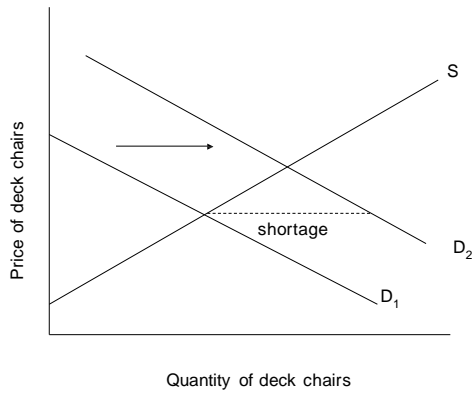
3. The equilibrium price could rise as a result of the supply curve shifting to the left (i.e. a decrease in supply), or as a result of the demand curve shifting to the right (i.e. an increase in demand).

4. a.. The demand curve shifts to the right, as shown below.

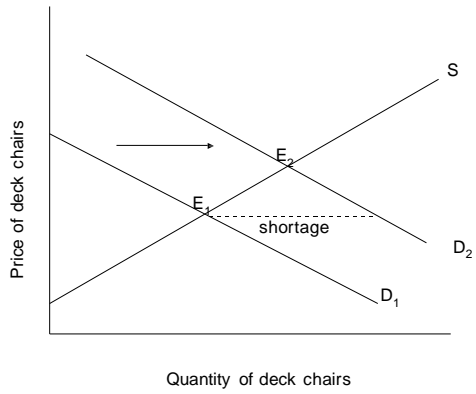




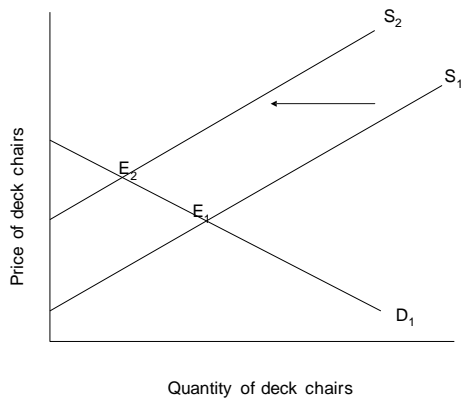
4. b.



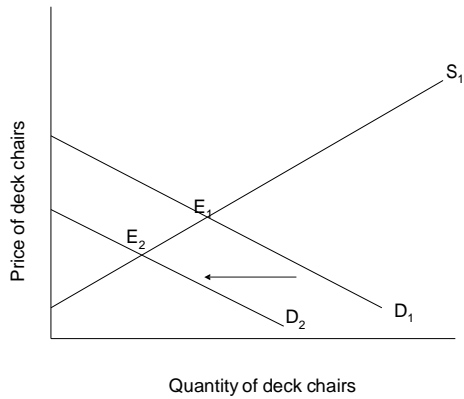
4. c.



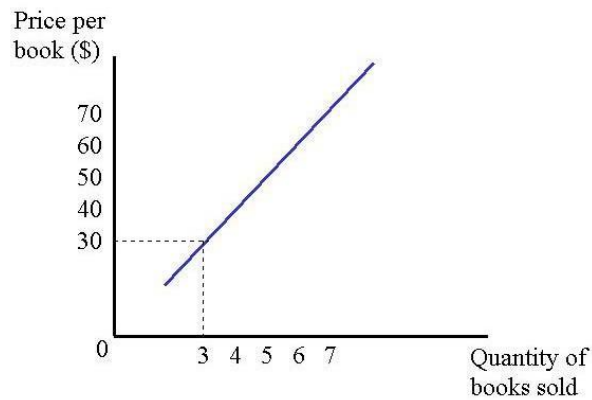
5. a. The supply curve shifts to the left, leading to a higher equilibrium price and lower equilibrium quantity.



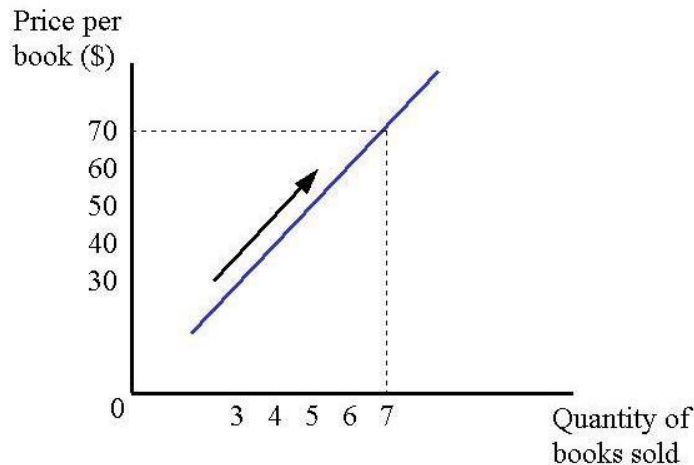
5. b. The demand curve shifts to the left, leading to a lower equilibrium price and lower equilibrium quantity.



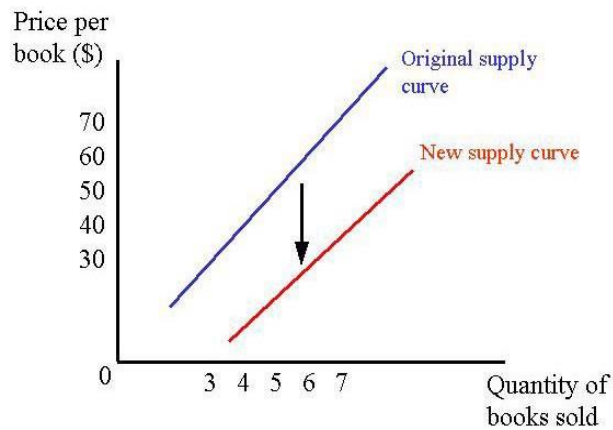
6. The student's original supply curve and his willingness to sell three books at a price of \$30 per book is shown in the graph below:



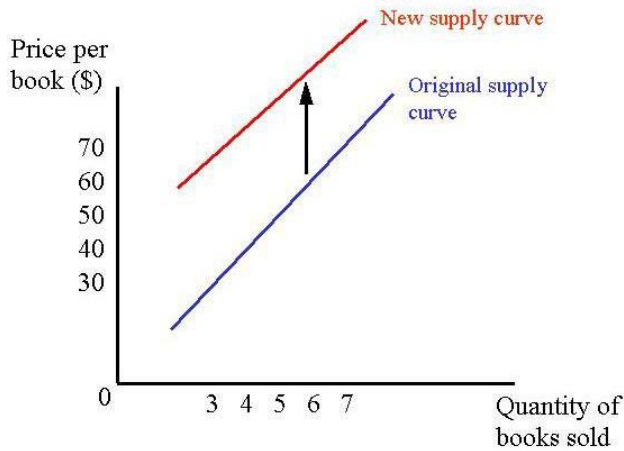
a) If the student is offered \$70 per book instead of \$30, this would imply movement along the supply curve. Moving along the supply curve, the student would now sell seven books:



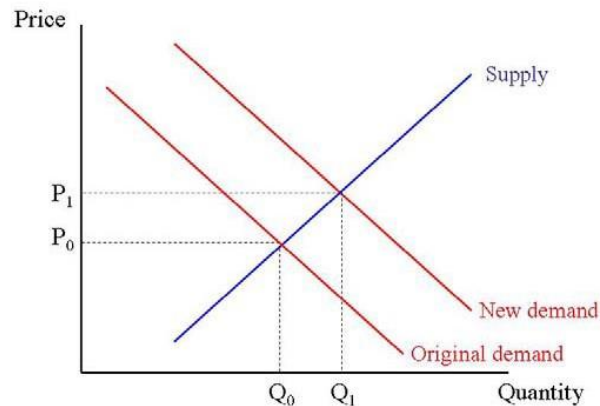
- b) If course material is available on the Internet for free, the student would be forced to lower his prices, shifting the supply curve downward:



- c) If the bookstore raises their prices, the student would be able to raise his prices as well, shifting his supply curve upward:

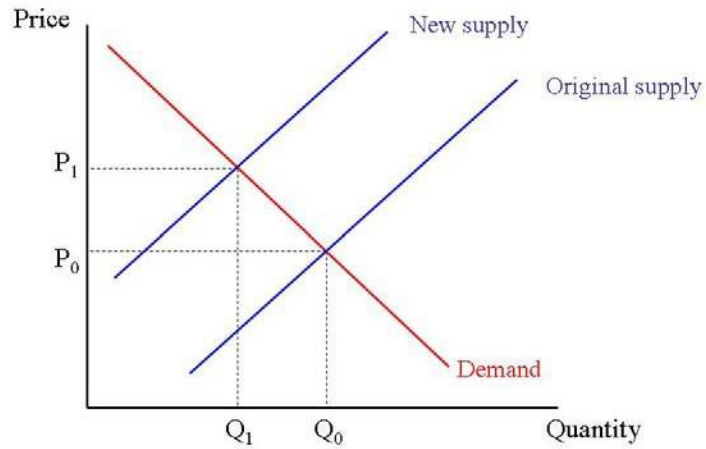


7. a. Demand increases, price and quantity rise. More people want engagement rings around this holiday.

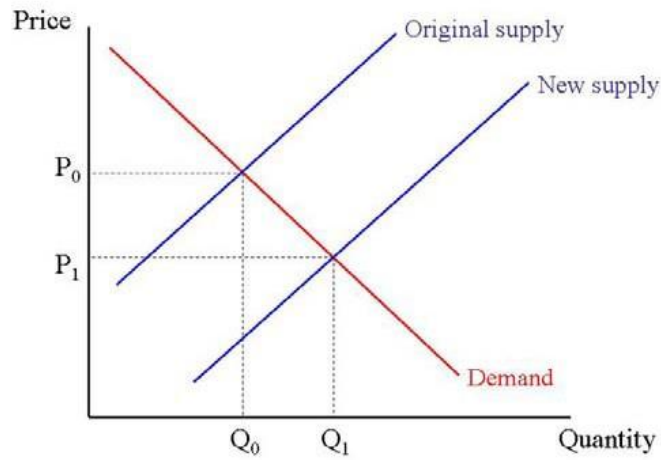


- b. Supply falls, price rises, and quantity falls. Rings become more expensive to

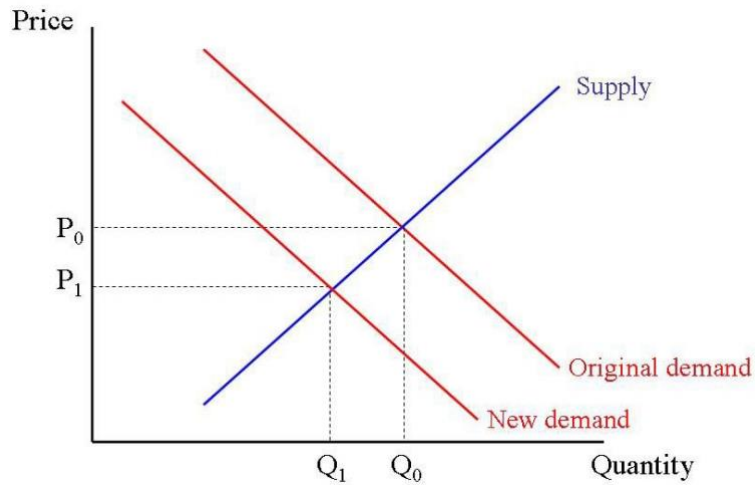
supply.



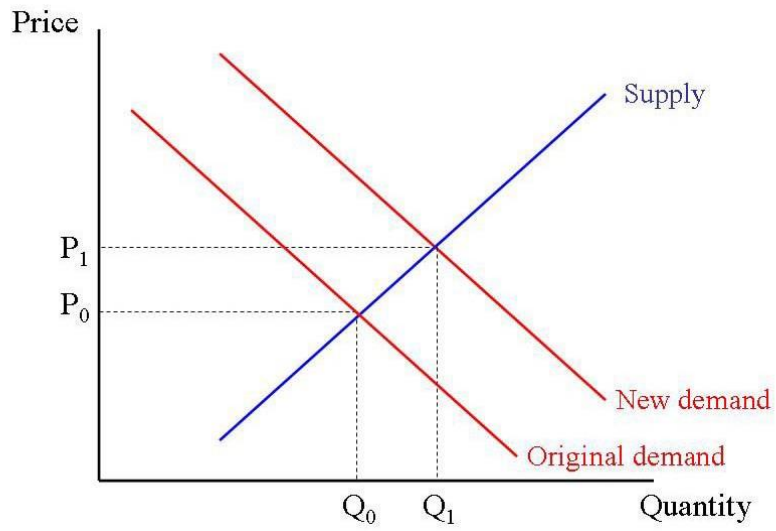
c. Supply rises, price falls, and quantity rises. Rings become cheaper to supply.



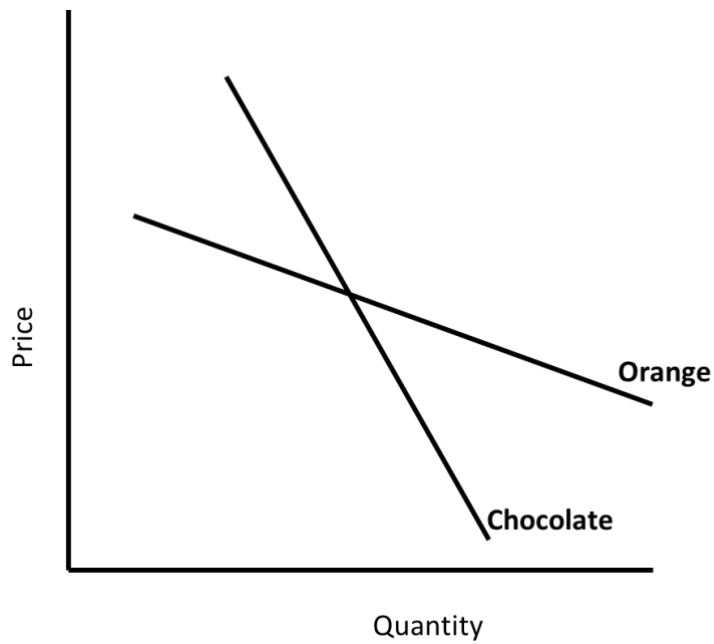
d. Demand falls, price falls, and quantity falls. Buyers consider cubic zirconium to be a substitute for a real diamond.



e. Demand rises, price rises, and quantity rises. The increase in wealth causes people to demand more diamonds (which are clearly a normal good).



8.



### Answers to Self Test Questions

- |                         |       |
|-------------------------|-------|
| 1. d                    | 11. e |
| 2. b                    | 12. a |
| 3. b                    | 13. d |
| 4. b                    | 14. d |
| 5. e                    | 15. e |
| 6. d                    | 16. e |
| 7. a                    | 17. e |
| 8. a                    | 18. c |
| 9. e (substitute goods) | 19. e |
| 10. e                   | 20. e |

## Chapter 4

# MACROECONOMIC MEASUREMENT: THE CURRENT APPROACH

*Macroeconomics in Context (Goodwin, et al.), 4<sup>th</sup> edition*

### Chapter Overview

In this chapter, you will be introduced to a standard examination of the National Income and Product Accounts (the NIPA), but with a “contextual” flavor. You will learn that the accounts have been created for specific purposes. The chapter highlights how the production and investment undertaken by household and communities have historically been deemphasized in national accounting. It explains what has been included in the measurement of the GDP, and you will learn about three different approaches to measuring GDP: product, spending, and income. The chapter also describes how economic growth, nominal GDP, real GDP, price indices, and national saving are commonly measured. You will also be introduced to the simple representations of the components of GDP that are deployed in the traditional macroeconomic model.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Understand when the U.S. system of national accounts was developed, in the context of the pressing problems of that time.
2. Identify the four sectoral classifications of the U.S. national accounts, and what is included in each sector.
3. Identify what capital stocks are included in the U.S. national accounts.
4. Define the Gross Domestic Product and identify what is included and excluded in its measurement.
5. Understand and apply the three approaches to measuring GDP.
6. Calculate GDP growth rates, nominal GDP, and real GDP.
7. Identify commonly used price indices, and construct a constant-weight price index, and differentiate between the GDP deflator and consumer price index (CPI).
8. Identify the saving identity in a closed economy; and define the Net Domestic Product (NDP) and Net Saving.
9. Understand the simplifying assumptions made by the traditional macroeconomic model, and identify the model’s basic identity (taken from the spending approach).
10. (Appendix) Understand the value and limitations of the chained dollar method in measuring real GDP.

## Key Terms

National Income and Product Accounts (NIPA)

Bureau of Economic Analysis (BEA)

national accounting conventions

fixed assets

inventories

consumer durable goods

gross investment

net investment

depreciation

gross domestic product (GDP)

final good

intermediate good

value-added

imputation

closed economy

open economy

net exports

national income (NI)

gross national income (GNI)

GDP growth

nominal (current dollar) GDP

real GDP

base year

index number

GDP deflator

consumer price index (CPI)

rule of 72

net domestic product (NDP)

From Appendix:

quantity index

Fisher quantity index

chain-type quantity index

## Active Review

### *Fill in the Blank*

1. The U.S. government agency that publishes statistics on production, income, spending, prices and employment is the \_\_\_\_\_.
2. The four sectors into which the U.S. national accounts are divided are the households and institutions sector, the business sector, the government sector, and the \_\_\_\_\_ sector.
3. The BEA puts non-profit institutions serving households in the \_\_\_\_\_ sector.
4. Equipment owned by businesses and governments, structures, residences, and software are all forms of \_\_\_\_\_.
5. Cars, washing machines, refrigerators and other equipment that are purchased by households and that typically lasts for longer than three years are called \_\_\_\_\_.
6. A newly produced automobile that remains unsold at the end of the year is included as \_\_\_\_\_ in the manufactured capital stocks.
7. The GDP measures the total \_\_\_\_\_ of \_\_\_\_\_ goods and services \_\_\_\_\_ produced in a \_\_\_\_\_ over a period of \_\_\_\_\_.



8. To estimate the value of services from owner-occupied houses, the BEA uses the method of \_\_\_\_\_ by taking data from the rental housing market.
9. The sum of all the production-related incomes (such as from wages, rents, and profits) earned by all people and organizations located inside the United States is called \_\_\_\_\_.
10. The measure of GDP that reflects the actual value of goods and service produced by removing the effect of changes in prices is called \_\_\_\_\_ GDP.

*True or False*

11. Often referred to as the “national accounts”, the National Income and Product Accounts (NIPA) includes statistics on production, income, and spending.
12. Catholic Hospital, a non-profit hospital, would be included in the national accounts in the households and institutions sector, whereas Hospital Corporation of America, a for-profit hospital chain, would be included in the business sector.
13. A government agency, like the U.S Postal Service, which produces goods and services for sale, would be included in the government sector.
14. The GDP deflator measures the average prices of goods consumed by households while the Consumer Price Index measures the average prices of goods produced in the economy.
15. Net saving adjusts for what a country must put aside to replace capital goods that are wearing out, by subtracting depreciation from gross saving.

*Short Answer*

16. When did the idea of creating a system of national accounts first take hold, and for what purpose? What were the concerns of that time? And who created them?
17. How much of GDP (in terms of share of the total) was produced by the different sectors (as defined by the BEA) in 2020? (That is, how much was produced by the business sector, the household and institutions sector, and the government sector?)
18. Where are non-profit organizations put in the BEA’s 4-way classification?

19. What kinds of non-financial capital stocks are included in the accounting of national non-financial assets?
  
20. What are the two components of manufactured capital stocks?
  
21. What are the three approaches to measuring GDP?
  
22. How does the government estimate the value of the services produced by government and nonprofit institutions that are not sold on the market? And the value of the services produced by households?
  
23. Why did the BEA switch to calculate real GDP using the “chained-dollar method” from the “constant-dollar method”?
  
24. When measuring price levels in the economy (such as when calculating the CPI index), why is a weighted average used?
  
25. Why does a price index based on constant weights tend to overstate inflation in periods after the base year when the price of one good is rising quickly compared to other goods?
  
26. What does the GDP deflator measure?
  
27. What simplifying assumptions does the traditional macroeconomic model make (in addition to those made in the NIPA)?

## Problems

1. Determine which of the following would be counted in the spending approach of GDP, and which would not be counted. Identify the category under which it would fall (C, I, G, NX, or not counted).
  - a. The housecleaning services of a stay-at-home mom.
  - b. The housecleaning services of the “Merry Maids” company.
  - c. The babysitting services of a babysitter whose earnings are kept “off the books” and not reported to the tax authorities.
  - d. A brand new house built and sold this year.
  - e. A new car made by Ford in the U.S., and sold to a household in the U.S.
  - f. A new car made by Ford in the U.S, and sold in Mexico.
  - g. Sale of a 2012 used Ford car.
  - h. 3 shares of Ford Motor Company stock
  - i. A new car made by Ford in the U.S. but not sold by the end of the year.
  - j. A new car added to the fleet of taxis of Mr. Taxi Company.
  - k. A new bridge to accommodate all the new and used cars and taxis on the road.

2. Use the following table to answer the next question:

<b>Stage of Production</b>	<b>Stage of production</b>	<b>Sales value of material</b>
Stage 1	Grapes produced in the vineyard	10
Stage 2	New wine produced at the winery, stored in oak barrels	15
Stage 3	Fermented wine stored in wine bottles	20
Stage 4	Wine bottles distributed by the wholesaler	25
Stage 5	Retail price of bottled wine sold to consumer	30

- a. Assuming that no intermediate inputs are used other than the ones named, what is the value added at each stage of production – Stage 1-5?
- b. Using the value added approach, what is the total contribution to the GDP of this chain of production?
- c. Using the expenditure approach, what is total contribution to the GDP of this good? Explain why the number you got in part c is (or is not) the same as that from part b.

3. The small economy of the United States of Sustainability has only three companies: a bicycle manufacturer, a wind energy producer, and an organic cheese company. The only costs these companies have are the cost of their inputs and wages. Assume there are no rents, no depreciation, and no net income payments from the foreign sector. Assume all the output is sold to consumers as final goods. The companies' profits = Value of output (total revenues) – total costs.

	Bicycle company	Wind energy company	Organic cheese company
Cost of inputs	\$0	\$0	\$0
Wages	\$50	\$75	\$25
Value of output (total revenues)	\$100	\$150	\$50

- a. Calculate the GDP of the United States of Sustainability using the income approach.
- b. Calculate the GDP of the United States of Sustainability using the spending approach.
- c. Calculate the GDP of the United States of Sustainability using the value-added approach.

4. Assume a simple economy produces only two goods, corn and wheat. In the first year 100 bushels of corn are produced, and sold for \$3 a bushel. Also in the first year, 50 bushels of wheat are produced, and sold for \$5 a bushel. In the second year, 110 bushels of corn are produced, and sold for \$3.50, while 55 bushels of wheat are produced, and sold for \$5.50.

- a. Calculate the nominal GDP in year 1 and 2.
- b. Using the constant-dollar approach, calculate the real GDP in year 1 and 2. Take year 1 as the base year.
- c. Calculate the growth in real GDP between years 1 and 2 (with year 1 as the base year).

- d. Calculate a constant weight price index for the second year, using the first year as the base.
- e. What is the growth rate of prices (inflation rate) from the first to the second year?

### Self Test

1. A non-profit charity which provides support to low-income families is included by the BEA in the
- A. household and institutions sector
  - B. business sector
  - C. government sector
  - D. foreign sector
  - E. both a and c
2. Which of the following would *not* be included in the households and institutions sector?
- A. A non-profit hospital
  - B. The University of Michigan
  - C. The National Manufacturers Alliance, a non-profit institution serving for-profit manufacturers.
  - D. The Museum of Fine Art
  - E. The United Autoworkers, a trade union for the employees of automobile manufacturers.
3. Which of the following non-financial capital stocks are included in GDP?
- A. Natural capital, manufactured capital, human capital, and social capital.
  - B. Natural capital, and manufactured capital.
  - C. Human capital, and social capital.
  - D. Manufactured capital and some intellectual capital.
  - E. None of the above.
4. Which of the following is *not* included as a fixed asset in the national accounts?
- A. Office equipment
  - B. Factories and office buildings
  - C. Houses and apartment buildings
  - D. Computer software
  - E. Inventories

5. Which of the following would *not* be included in the measure of U.S. GDP in the current year?
- A. A new machine, made in the U.S. and purchased that year for the Ford motor company assembly line.
  - B. A Ford automobile newly produced that year in the U.S.
  - C. A Ford automobile, newly produced that year in the U.S. but unsold and sitting in a warehouse.
  - D. Three shares of Ford motor company stock purchased that year in the U.S.
  - E. The steel produced and sold that year to make a new Ford automobile.
6. Which of the following would *not* be counted as an addition in the measure of the U.S. GDP in the current year?
- A. A car produced and sold in the U.S. by the Japanese-owned Toyota company.
  - B. A car produced in the U.S. by the U.S.-owned Ford motor company, and sold in Japan.
  - C. Restaurant meals in the U.S. sold to Canadian tourists visiting the U.S.
  - D. Restaurant meals in Canada sold to U.S. tourists visiting Canada.
  - E. A car produced in the U.S. by the Japanese-owned Toyota company, and sold in Canada.

Use the following table to answer the question #7, assuming that no intermediate inputs are used other than the ones named:

<b>Stage of production</b>	<b>Sales value of material</b>
Wheat grown by a farmer	\$0.50
Wheat milled by the miller	\$0.75
Bread made by the baker	\$1.00
Bread sold by a distributor	\$3.50
Retail price of bread to the consumer	\$4.00

7. What is the value added at all stages of the production process of the bread as described in the accompanying table?
- A. \$0.50
  - B. \$1.00
  - C. \$4.00
  - D. \$7.50
  - E. \$9.75

8. Assume the government is trying to measure the value of production of a non-profit institution providing non-market services in a community. The cost of office supplies used per year is \$5,000. The payroll expenses are \$150,000 per year. The institution owns its own building, which if it rented out would cost \$12,000 per year. The value of services production that would be imputed for this non-profit institution would be

- A. \$12,000
- B. 150,000
- C. \$155,000
- D. at least \$167,000
- E. It is impossible to calculate the value of services produced by this non-profit institution if its services are not sold on the market.

9. Assume the following for a particular owner-occupied household: The value of the services of the house, based on the imputed rental value, is estimated to be \$1500 per month. A gardener is hired for the upkeep of the grounds, and is paid \$200 a month. The cleaning, cooking, and childcare are all done by the mother, who also has a part-time paid job outside the home. If she were to hire a cleaning service she estimates she would have to pay \$500 a month, and if she were to hire a nanny or babysitter she would have to pay \$800 a month. What would be the value of the services produced in this household as currently measured by the BEA?

- A. \$200
- B. \$1,500
- C. \$1,700
- D. \$3,000
- E. None of the value of services produced in this household would be included.

10. In 2020, how much of GDP was produced by the business sector, according to the BEA?

- A. 33%
- B. 50%
- C. 65%
- D. 75%
- E. 90%

11. In order to measure GDP by the spending approach, to highlight the portions that are considered to be consumption vs. investment, which identity should be used?

- A.  $GDP = \text{Household and institution spending} + \text{Business spending} + \text{Net foreign sector spending} + \text{Government spending}$
- B.  $GDP = \text{Personal consumption} + \text{Private investment} + \text{Net exports} + \text{Government consumption}$
- C.  $GDP = \text{Personal consumption} + \text{Private investment} + \text{Net exports} + \text{Government consumption} + \text{Government investment}$
- D. a and c
- E. none of the above.

12. Which of the following would be included in the income approach to measure GDP?
- A. Wages and benefits, profits, rents
  - B. Wages and benefits, profits, investment spending
  - C. Wages and benefits, rents, investment spending, consumption spending
  - D. The value added in production
  - E. None of the above.
13. Which of the following would *not* be included in the U.S. GDP, as measured by the income approach?
- A. The wages earned by workers at a German company located in the U.S.
  - B. The profits earned by a German company from its plant located in the U.S.
  - C. The profits earned by a U.S. company from its plant located in China.
  - D. The rents earned by a U.S. landlord with rental properties.
  - E. The interest payments earned by a U.S. bank from its loans.
14. Which of the following is a price index?
- A. GPI
  - B. PPI
  - C. CPI
  - D. REI
  - E. Both b and c.
15. The price index that is most frequently reported in the news is the
- A. Consumer price index (CPI)
  - B. Producer price index (PPI)
  - C. Earnings index
  - D. The GDP deflator
  - E. Export price index
16. The GDP deflator is measured as:
- A. Nominal GDP divided by real GDP
  - B. Real GDP divided by nominal GDP
  - C. Real GDP multiplied by nominal GDP
  - D. The rate of change of nominal GDP
  - E. The rate of change of real GDP



17. The rule of 72 measures
- A. A country's annual growth rate of GDP.
  - B. A country's growth rate over a short period of time.
  - C. The number of years it will take for a country's GDP to grow by 72 percent.
  - D. The number of years it will take for a country's GDP to double if it grows at a constant rate.
  - E. How much a country's GDP will grow over a 72 year period.
18. In recent years, which of the following characterizes the U.S.'s economic situation?
- A. The U.S.'s net exports are positive.
  - B. The U.S. has high savings rate.
  - C. The U.S. imports more than it exports.
  - D. Both b and c.
  - E. None of the above.
19. (from Appendix) The chained dollar method in calculating the growth rate of real GDP uses a
- A. price index
  - B. Fisher price index
  - C. quality index
  - D. Fisher quantity index
  - E. none of the above.
20. (from Appendix) The Fisher quantity index and chain-type quantity index for measuring real GDP growth rates
- A. provide a unique average number for estimated growth
  - B. use a reference year equal to 100
  - C. involve complicated mathematical calculations
  - D. are not very accurate for years far away from the reference year
  - E. all of the above.

### **Answers to Active Review Questions**

1. Bureau of Economic Analysis (BEA)
  2. foreign
  3. households and institutions
  4. fixed assets (or fixed manufactured capital)
  5. consumer durables
  6. inventory
  7. value, final, newly, country, time.
  8. imputation
  9. national income (NI)
- Chapter 4 – Macroeconomic Measurement: The Current Approach

10. real (GDP)
11. True.
12. True.
13. False, such an agency would be included in the business sector.
14. False, the GDP deflator measures the average price of goods produced while the CPI measures the average price of goods consumed in the economy.
15. True.
16. The idea for the national accounts came during the Great Depression (1930s) in the U.S., when decision-makers wanted to get a better sense of by how much economic production had fallen. Economist Simon Kuznets was commissioned to produce the national accounts.
17. The business sector produced about 75% of GDP, whereas the household and institutions sector produced about 13.2%, and the government sector produced about 11.8% of the total GDP.
18. It depends on who the non-profit organizations serve. The non-profit organizations serving households are placed in the household and institutions sector. Those non-profit organizations serving business are put in the business sector.
19. National non-financial assets mainly include only manufactured capital. Recently some forms of intellectual capital, such as computer software and knowledge created through research and development, have been added.
20. Fixed assets and inventories.
21. The three approaches are: the production approach, the spending approach, and the income approach.
22. To measure the value of services produced by governments and non-profit institutions, the government usually uses a method of imputation, by measuring the value of inputs used (the cost of intermediate goods, payroll costs, etc.). It does not measure the value of the services produced by households (aside from the services of owner-occupied houses and any services that are paid).
23. The BEA made the switch from the constant-dollar method to the chained-dollar method, because the latter has increased the accuracy of the GDP growth calculations by yielding one unique estimated growth rate between any two years. With the constant-dollar method, the growth estimate depends on which year is used as the base year.
24. Because we want to give greater emphasis to prices at which many transactions are made, and less emphasis to the prices of relatively minor goods and services.
25. Because people tend to buy cheaper substitutes instead of the good whose price is quickly rising. But the constant-weight index includes the same quantities of the expensive goods.
26. The GDP deflator measures the average prices of goods and services produced in the economy. Mathematically, it is represented as:

$$GDP \text{ deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}$$

27. The simplifying assumptions are: 1) the household and institutions sector contains only households. 2) only the business sector invests; the household and institutions sector and the government sectors are assumed to only consume 3) only the business sector produces

## Answers to Problems

1.
  - a. Not counted
  - b. Consumption
  - c. Not counted
  - d. Investment
  - e. Consumption
  - f. Net Exports
  - g. Not counted
  - h. Not counted
  - i. Investment
  - j. Investment
  - k. Government investment
  
2.
  - a. Stage 1 = \$10  
Stage 2 =  $(\$15 - \$10) = \$5$   
Stage 3 =  $(\$20 - \$15) = \$5$   
Stage 4 =  $(\$25 - \$20) = \$5$   
Stage 5 =  $(\$30 - \$25) = \$5$
  - b. Total contribution to the GDP of this chain of production = value added at each of the five stages of production. Using part (a), we can add the value at each stage as:  $\$10 + 5 + 5 + 5 + 5 = \$30$
  - c. The expenditure approach also yields a value = \$30 (the retail price of the bottled wine sold to the consumer). In a simple economy, the value of GDP from the value added approach = value from the expenditure approach = value from the incomes approach.
  
3.
  - a. Using the income approach, where  $\text{GDP} = \text{wages} + \text{profits}$ . Calculating the profits for each company:  
Profits for the bicycle company =  $\$100 - 50 = \$50$   
Profits for the wind energy company =  $\$150 - 75 = \$75$   
Profits for the organic cheese company =  $\$50 - 25 = \$25$ .  
So  $\text{GDP} = (\$50 + \$75 + \$25) + (\$50 + \$75 + \$25) = \$300$ .
  - b. Using the spending approach,  $\text{GDP} = \$100 + \$150 + \$50 = \$300$ .
  - c. Using the value-added approach:  
The value added of the bicycle company =  $\$100 - 0 = \$100$   
The value added of the wind company =  $\$150 - 0 = \$150$   
The value added of the cheese company =  $\$50 - 0 = \$50$ .  
So  $\text{GDP} = \$100 + \$150 + \$50 = \$300$ .

4.

a. Nominal GDP in Year 1 =  $(100 \times \$3) + (50 \times \$5) = \$550$   
Nominal GDP in Year 2 =  $(110 \times \$3.50) + (55 \times \$5.50) = \$687.50$

b. The real GDP in year 1 = nominal GDP in year 1 = \$550  
The real GDP in year 2 =  $(110 \times \$3) + (55 \times \$5) = \$605$

c. Growth in real GDP = 10%

d. The constant weight price index =  
 $[(100 \times \$3.50) + (50 \times \$5.50)] / [(100 \times \$3) + (50 \times \$5)] \times 100 = 113.636$

e. The inflation rate =  $[(113.636 - 100) / 100] \times 100 = 13.636\%$

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. A  | 11. C |
| 2. C  | 12. A |
| 3. D  | 13. C |
| 4. E  | 14. E |
| 5. D  | 15. A |
| 6. D  | 16. A |
| 7. C  | 17. D |
| 8. D  | 18. C |
| 9. C  | 19. D |
| 10. D | 20. E |

## Chapter 5

# MACROECONOMIC MEASUREMENT: ENVIRONMENTAL AND SOCIAL DIMENSIONS

*Macroeconomics In Context (Goodwin, et al.)*

### Chapter Overview

This chapter provides an introduction to economic, social, and environmental accounting. It also offers a survey of several different measures of economic well-being and economic performance. You will learn about the economic functions of the environment, and how a measure of and a value for these environmental services could be incorporated into the national accounts. You will also learn about the exclusion of household production in the national accounts, and how this exclusion can be remedied.

### Objectives

After reading and reviewing this chapter, the student should be able to:

1. Explain why GDP should not be confused with national welfare.
2. Understand why GDP does not measure well-being.
3. Identify the dimensions of well-being as described by the Stiglitz-Sen-Fitoussi Commission.
4. Explain trends in subjective well-being data across countries and across time.
5. Describe alternative measures of economic well-being including the Genuine Progress Indicator, the Better Life Index, and the Human Development Index.
6. Explain and critique the historical exclusion of household production from the national accounts.
7. Understand the methods used to measure household production and impute a monetary value to it.
8. Identify and provide examples of the three economic functions of the environment.
8. Identify how, conceptually, the depreciation of natural capital can be included in measures of production and saving.
9. Understand the issues involved in assigning monetary values to environmental asset stocks, depreciation, and service flows.

### Key Terms

defensive expenditures

satellite accounts

subjective well-being

Better Life Index (BLI)

Human Development Index (HDI)

replacement-cost method

opportunity-cost method

green GDP

damage-cost approach

maintenance-cost approach

## Active Review

### *Fill in the Blank*

1. A measure of welfare based on survey questions asking people about their own degree of life satisfaction is called \_\_\_\_\_.
2. Additional or parallel accounting systems that provide measures of social and environmental factors in physical terms, without necessarily including monetary valuation, are called \_\_\_\_\_.
3. A town is spending money to raise their dikes and strengthen their levees in order to prevent the neighboring river from flooding the town. Such spending would be considered to be \_\_\_\_\_.
4. A measure of well-being expressed in monetary terms that has been transformed from the Index of Sustainable Economic Welfare (ISEW) is the \_\_\_\_\_.
5. The index of well-being developed by the UNDP in 1990 that combines measures of health, education, and income is called the \_\_\_\_\_.
6. Suppose a policy-maker estimates the value of household production by the expenditure it would take to pay someone else to do the same job. He or she would be using the \_\_\_\_\_ cost approach.
7. The three types of functions that the natural environment plays in economic life are \_\_\_\_\_ functions, \_\_\_\_\_ functions, and \_\_\_\_\_ functions.
8. The absorption and accumulation of mercury into the food chain would be an example of the \_\_\_\_\_ function of the environment.
9. The measure of national production that subtracts both the depreciation of manufactured capital and the depreciation of natural capital is called \_\_\_\_\_.
10. Suppose a policymaker estimates the value of a forested hillside in preventing floods by the expenditure that would be needed to repair flood damage in the neighboring town. He or she would be using the \_\_\_\_\_ cost approach.

### *True or False*

11. Satellite accounts are a helpful way of measuring the monetary value of changes in a country's environmental resources.
12. Average subjective well-being grows as rapidly as GDP per capita.

13. The Genuine Progress Indicator and the Gross Domestic Product both exhibit strong upward trends in the United States for the period 1950-2004.
14. The failure to subtract the lost household production as more women entered the paid labor force over the last century means that the GDP growth over this period of time is overstated.
15. The HDI has been modified in recent years to account for poverty and inequality.
16. Water filtration provided by wetlands is an example of a sink function of the environment.

*Short Answer*

17. Identify and describe five critiques of GDP presented in the chapter.
18. How is the market-based welfare component of GPI estimated?
19. Identify the categories that are added in, and those that are subtracted for, when calculating the GPI.
20. What might account for the deviations of the HDI rankings from the GDP? Why might a country like Sri Lanka have a lower level of GDP per capita than Namibia, and yet have a higher HDI ranking than Namibia?
21. Describe the three new indices developed by the UN to account for poverty, inequality, and gender inequality in 2010.
22. What are the three variables that are used to construct the Happy Planet Index?
23. What have been some justifications given for the historical exclusion of household production from the national accounts?

24. Is it easier or harder to incorporate household production into the national accounts, compared to incorporating environmental assets and services? Explain.
25. What measure has been developed in recent years that subtract for the depreciation of both manufactured capital and natural capital?
26. Why has it been difficult to produce a single estimate of an environmentally adjusted or “greened” GDP? What are the two approaches that can be used to put a value on environmental assets and services?

### **Problems**

1. Suppose Country A (the Ukraine) built a nuclear power plant that had a large accident and led to the release of radioactive iodine that damaged the population’s thyroids. It led to \$1 million in health costs. Country B (Poland) administered potassium iodide pills to the population, to protect the population’s thyroids in the case of an accident. The protection pills cost the country \$100,000. Country C (Germany) decided to ban the building of nuclear power plants. What is the value of the radioactivity-free air in Country C due to this ban of nuclear power plants:

a) measured in terms of the damage cost approach?

b) measured in terms of the maintenance cost approach?

2. According to the results of the 2021 U.S. time use survey, women spent an average of 2.7 hours per day on household activities such as housework, food preparation, yard work, or paying bills, while men spent 2.2 hours per day (when averaged over all responses). Suppose these findings reflect the hours spent in household production for a middle class professional couple, who can each make \$20 an hour in paid work. Suppose they can hire someone else to do these household activities for them for \$10 an hour. Estimate the daily value of these household production activities (assuming no one else in the household is contributing to household production) using:

a) the opportunity cost method

b) the replacement cost method



### 3. Counting the GPI

Suppose the economists in the country Greenland have been counting the GPI and currently have estimated Personal Consumption Expenditures to be \$1,000. They still need to account for the following entries. Finish the task for them, identifying whether the entries would be added or subtracted (or simply excluded) when measuring the GPI.

Personal Consumption Expenditures = \$1,000

		<b>Added (+)</b>	<b>Subtracted (-)</b>
National defense	\$100		
Spending on new bridges	\$25		
Net foreign borrowing	\$75		
Damage from crime	\$50		
Volunteer work in community centers	\$50		
Oil tanker accident	\$30		
Loss of wetlands	\$20		
Helping kids with homework	\$40		
Cooking of meals at home	\$30		
Cost of commuting	\$15		
Services of household washing machines	\$10		
You clean your own house	\$50		
Working overtime on Saturdays (in your paid job)	\$25		
Value of higher education	\$40		

Column Totals: \_\_\_\_\_

Total GPI: \_\_\_\_\_

## Self Test

1. According to the textbook, subjective well-being (SWB) tends to...
  - A. increase as GDP per capita decreases.
  - B. increases as GDP per capita increases, but at a diminishing rate.
  - C. does not show any relationship with regard to GDP per capita.
  - D. increase as GDP per capita increases, and does so at an accelerating rate.
  - E. is better understood when contrasted with GDP rather than with GDP per capita.
  
2. Jane buys a package of cigarettes. While her purchase would show up in the national accounts as an increase in GDP, it is actually an example of
  - A. a purchase of a well-being reducing product
  - B. a defensive expenditure
  - C. loss of leisure
  - D. loss of human and social capital formation
  - E. unequal distribution
  
3. Nancy has cut back her paid work hours to part-time and spends some of her extra time participating in her local community peace and justice group which engages in important community-building activities. While her decision to reduce her paid labor activities would show up as a decrease in GDP, it may actually increase well-being because it is an example of
  - A. a well-being reducing product
  - B. a defensive expenditure
  - C. loss of leisure
  - D. a gain in human and social capital formation
  - E. a well-being reducing production method
  
4. Which one of the following items is *not* subtracted when calculating the GPI?
  - A. cost of crime
  - B. lost leisure time
  - C. environmental costs
  - D. net foreign borrowing
  - E. government spending on highways and streets
  
5. Which one of the following items is added in when calculating the GPI?
  - A. net foreign borrowing
  - B. consumer durable assets
  - C. most government spending on goods and services
  - D. the services of consumer durables
  - E. paid domestic services

6. When tracking the trends in real GDP per capita and real GPI per capita from 1950 to 2004, what are the findings?
- A. Per capita GPI is lower than per capita GDP, and it has grown more slowly.
  - B. Per capita GPI is lower than per capita GDP, but it has grown more quickly.
  - C. Per capita GPI is higher than per capita GDP, and it has grown more quickly.
  - D. Per capita GPI is higher than per capita GDP, but it has grown more slowly.
  - E. Per capita GPI is about the same as per capita GDP, and they both have grown at about the same rate.
7. Which of the following is not accurate?
- A. The Better Life Index includes nearly a dozen dimensions of well-being.
  - B. The Better Life Index is more ambitious than the Genuine Progress Indicator.
  - C. The Better Life Index was launched by the Organization for Economic Cooperation and Development.
  - D. The Better Life Index combines life expectancy at birth, years of formal education, and real per-capita GDP as three key indicators.
  - E. All of these are accurate.
8. The HDI aggregates which three indicators in its index of well-being?
- A. GDP, adult literacy and education, life expectancy.
  - B. GDP, income inequality, and access to medical care.
  - C. GDP per capita, adult literacy and education, income inequality.
  - D. GDP per capita, adult literacy and education, life expectancy.
  - E. GDP per capita, access to medical care, life expectancy.
9. Which of the following best reflects the trends found in the HDI rankings?
- A. There is a strong correspondence between HDI and GDP per capita, as a high GDP per capita is always associated with a high HDI ranking, and vice versa
  - B. Although there is a rough correspondence between HDI and GDP per capita, some countries have low GDP per capita, yet high HDI rankings, and vice versa.
  - C. There is a weak correspondence between HDI and GDP per capita.
  - D. There is an inverse correspondence between HDI and GDP per capita, as countries with high GDP per capita have low HDI rankings, and vice versa.
  - E. There is no correspondence between HDI and GDP per capita.

10. Which of the following statements is FALSE?
- A. The Multidimensional Poverty Index uses a broader set of indicators to measure living standards than the Human Development Index.
  - B. The HDI captures aspects of poverty more accurately than the MPI.
  - C. The Inequality-Adjusted HDI makes an adjustment for inequality for each of the three components of the HDI index.
  - D. The Gender Inequality Index focuses on highlighting the differences in achievements of men and women.
  - E. All of the above statements are true.
  - F.
11. Which of the following would *not* be an example of household production that is currently excluded from in GDP?
- A. childcare
  - B. housecleaning
  - C. meal preparation
  - D. landscaping by a paid gardener
  - E. taking kids to afterschool activities
12. According to the most conservative estimates, what is the total value of household production in the U.S.?
- A. about 5 - 10% of GDP
  - B. about 15 - 20% of GDP
  - C. about 25 - 35% of GDP
  - D. about 40 – 50% of GDP
  - E. about 100% of GDP
13. Approximately what percent of all U.S. workers were full time homemakers in the U.S. in 2000?
- A. about 5%
  - B. about 16%
  - C. about 35%
  - D. about 40%
  - E. about 56%
14. Which of the following is used to measure (or estimate) the quantity of unpaid, non-market core sector production?
- A. Satellite accounts
  - B. Time use surveys
  - C. Value added
  - D. The precautionary principle
  - E. The maintenance cost method

15. Which of the following best characterizes the shares of time women vs. men spent on the household production activities of housework, food preparation, yard work, or paying bills, when averaged over all responses, according to 2021 BLS survey?
- A. Women and men spent an equal amount of time per day on household activities.
  - B. Women spent on average 2.4 hours per day, while men spent 1.6 hours per day.
  - C. Women spent on average 2.4 hours per day, while men spent 3.3 hours per day.
  - D. Women spent on average 1.5 hours per day, while men spent 0.5 hours per day.
  - E. Women did all the household activities, while men did none.
16. A lawyer decides to scale back her hours to part-time, in order to raise her small children and care for her elderly parents. She takes a cut in her annual salary of \$40,000, and lays off her nanny who she was paying \$25,000 per year. Her unpaid caring labor would be valued at \_\_\_\_\_, according to the \_\_\_\_\_ approach.
- A. \$25,000, opportunity cost
  - B. \$40,000, replacement
  - C. \$40,000, damage cost
  - D. \$25,000, maintenance cost
  - E. \$25,000, replacement cost
17. Hiking on a beautiful mountain to enjoy nature is an example of what kind of function provided by the environment?
- A. resource function
  - B. environmental service function
  - C. sink function
  - D. maintenance function
  - E. all of the above
18. Which of the following is not an economic function of the natural world?
- A. Environmental service functions
  - B. Capital functions
  - C. Sink functions
  - D. Resource functions
  - E. All of these are economic functions of the natural world.

19. Suppose Town A has a factory that spews out heavy pollution and causes \$2 million in health costs to the population. Town B also has such a factory, but requires it to invest \$50,000 in a new scrubber on its smokestack that cleans up most of its pollution. The value of the unpolluted air would be \$2 million according to the ...
- maintenance cost approach.
  - damage cost approach.
  - replacement cost approach.
  - opportunity cost approach.
  - spending approach.
20. Suppose Town A does not chop down the forest on the hillside above it. Town B does chop down its forested hillside, and a flood results in \$1 million worth of damage to the town. Town C also chops down its forested hillside, but spends \$500,000 in raising and strengthening its dikes and levees to guard itself from flood-damage. The value of the forest's services to Town A would be \_\_\_\_\_ approach according to the \_\_\_\_\_ approach.
- \$500,000, maintenance cost
  - \$500,000, damage cost
  - \$1 million, maintenance cost
  - \$1 million, replacement cost
  - \$1 million, opportunity cost

### Answers to Active Review Questions

- Subjective well-being
- Satellite accounts
- defensive expenditures
- Genuine Progress Indicator (GPI)
- Human Development Index (HDI)
- replacement
- resource, environmental service, sink
- sink
- Green GDP
- damage
- False. Satellite accounts only measure changes in the *quantities* of environmental resources, not changes in their monetary *values*.
- False
- False
- True
- True
- False. It is an environmental service function.
- The text identifies the exclusion of household production, volunteer work, and human & social capital formation as some of the key limitations of GDP. GDP also neglects issues of inequality, the value of leisure time, and interactions with the natural world. Various components of the GDP, such

- as defensive expenditures and products that reduce well-being, show up as additions on GDP accounting. Also, consumption spending is counted as additions to GDP, even though some consumption may be financed by unsustainable levels of debt.
18. Starting with the category of Personal Consumption Expenditures (or Household Budget Expenditures), defensive and regrettable expenditures and long-term household investments are subtracted from HBE. Then, an adjustment is made for income inequality by subtracting the cost of inequality. Finally, the value of provision of public goods and services that households benefit from is added to estimate the total market-based welfare.
  19. The GPI adds in services from human, social, manufactured, and natural capital such as unpaid housework and parenting, higher education, volunteer work, the services of consumer durables, and net capital investment. It also adds the value of public goods and services such as the services of highways and streets. It subtracts defensive and regrettable expenditures and the social and environmental costs of economic activities including the cost of crime, lost leisure time, underemployment, commuting, automobile accidents, household pollution abatement, water pollution, air pollution, noise pollution, loss of wetlands, loss of farmland, loss of primary forests, resource depletion, carbon dioxide emissions damage, cost of ozone depletion, net foreign borrowing, and the cost of consumer durables.
  20. The deviations between the HDI and GDP rankings might be due to what is being produced in the country (e.g. spending on weapons that are used in wars rather than spending on health and education), and the unequal distribution of goods and services within a country. A country like Sri Lanka might have better social infrastructure and less of a gap between rich and poor than does Namibia.
  21. In order to account for poverty, the UN developed the Multidimensional Poverty Index (MPI) based on the same three dimensions as the HDI – living standards, education, and health – but using a broader set of indicators to measure each dimension. Living standards is measured by six composite variables, including cooking fuel, sanitation, drinking water, electricity, housing, and assets. Health is measured by nutrition and child mortality levels, and education is measured by years of schooling and school attendance rate. The UN also developed the Inequality-Adjusted HDI (IHDI) to account for inequality by making an adjustment for inequality for each of the three dimensions of the HDI measure. The third index developed by the UN is the Gender Inequality Index (GII) that includes measures of reproductive health, women’s empowerment, and gender disparities in the labor market to expose the differences in achievements between men and women.
  22. Average life expectancy, average subjective well-being, inequality of outcomes, and ecological footprint.
  23. Some reasons have included: a. households are not producing economic goods; b. it’s too difficult to distinguish household production from consumption; c. GDP measures just market production; d; including household production would make too big of a change in the accounts.
  24. It is easier, as one can follow the existing procedures already used to impute a value for government production. It does not require the development of new techniques.
  25. The Green GDP.
  26. Because there is more than one way to put a measure on the value of environmental services. The two approaches to measure environmental services are the damage cost approach and the maintenance cost approach.

### Answers to Problems

1. The value of the unpolluted air would be  
 a) \$1 million in terms of the damage cost approach  
 b) \$100,000 in terms of the maintenance cost approach

2. The couple spends a total of 4.9 hours per day on household activities. The value of these household activities using  
 a) the opportunity cost method would be \$98 per day  
 b) the replacement cost method would be \$49 per day

### 3. Counting the GPI

Personal Consumption Expenditures = \$1,000

		Added (+)	Subtracted (-)
National defense	\$100	Neither added nor subtracted. Excluded.	
Spending on new bridges	\$25	+25	
Net foreign borrowing	\$75		-75
Damage from crime	\$50		-50
Volunteer work in community centers	\$50	+50	
Oil tanker accident	\$30		-30
Loss of wetlands	\$20		-20
Helping kids with homework	\$40	+40	
Cooking of meals at home	\$30	+30	
Cost of commuting	\$15		-15
Services of household washing machines	\$10	+10	
You clean your own house	\$50	+50	
Working overtime on Saturdays (in your paid job)	\$25		-25 (loss of leisure)
Value of higher education	\$40	+40	

Column Totals:

+245

-215

**Total GPI = \$1000 + \$245 - \$215 = \$1030**



### Answers to Self-Test Questions

1. B
2. A
3. D
4. E
5. D
6. A
7. D
8. D
9. B
10. B
11. D
12. C
13. B
14. B
15. B
16. E
17. B
18. B
19. B
20. A

## Chapter 6

# THE STRUCTURE OF THE U.S. ECONOMY

*Macroeconomics in Context (Goodwin, et al.)*

### Chapter Overview

This chapter will help you put macroeconomics in its “real world” context. The chapter will provide you with some basic economic literacy, such as understanding the different sectors in the U.S. economy, and the major industries within those sectors. It examines the historical trends within these sectors, providing an overview of the changing economic landscape of the U.S. economy. It also investigates several economic debates, such as the loss of manufacturing jobs, the role of financialization in our economy, and the rising costs of health care and college education.

### Objectives

After reading and reviewing this chapter, the student should be able to:

1. Explain what is meant by the primary, secondary, and tertiary sectors of an economy.
2. Describe the relative magnitude of these sectors in the United States, and how this has changed over time.
3. Describe some major characteristics of agriculture, energy, and other primary sector industries in the United States.
4. Describe some major characteristics of construction, textile manufacturing, and automobile manufacturing industries in the United States.
5. Discuss various explanations given for the decline in manufacturing employment in the United States.
6. Describe some major characteristics of service industries in the United States, especially health care, education, finance, and retail services.

### Key Terms

output sectors

primary sector

secondary sector

tertiary sector

labor productivity

total factor productivity (in agriculture)

manufacturing productivity

financial assets

financial institution

financialization

## Active Review

### *Fill in the Blank*

1. The harvesting of forest products would be a component of the \_\_\_\_\_ sector.
2. Whereas the extraction of oil would fall under the \_\_\_\_\_ sector, the refining of petroleum would fall under the \_\_\_\_\_ sector.
3. Utilities, such as electricity production, are a component of the \_\_\_\_\_ sector.
4. Marketing and retailing are a component of the \_\_\_\_\_ sector.
5. The tertiary sector is also called the \_\_\_\_\_ sector.
6. The sector that dominates the U.S. economy, comprising over 68% of all output, is the \_\_\_\_\_ sector.
7. While the U.S. has less than \_\_\_\_\_ percent of the world's population, it uses about \_\_\_\_\_ percent of the world's energy.
8. \_\_\_\_\_ energy and \_\_\_\_\_ energy are the fastest-growing sources of renewable energy in the United States.
9. Stocks, bonds, and money mutual funds are examples of \_\_\_\_\_ assets.
10. Much of the non-monetized economic activity in the core sphere, if counted, would be part of the \_\_\_\_\_ sector.

### *True or False*

11. The rudimentary processing of raw materials would fall under manufacturing in the secondary sector.
12. The primary sector is no longer of great importance to the U.S. economy, given that it represents less than 2% of the U.S. private economy and employs only 1.3% of U.S. workers.
13. There has been evidence of adverse impacts of hydraulic fracturing on human health and the natural environment.
14. The absolute number of manufacturing jobs peaked years ago in virtually all industrial countries.

15. Over the last few decades, the share of corporate profits going to the financial sector has been declining.

*Short Answer*

16. Briefly define the primary, secondary, and tertiary sectors.

17. How have the shares of the U.S. private economy attributed to each of the three sectors in the U.S. changed over the last few decades of the 20<sup>th</sup> century?

18. How have employment patterns in these three sectors changed since the 1960s?

19. What factor(s) explains the relative decline of the primary sector in the U.S.?

20. What are the current threats to agricultural productivity in the U.S.?

21. How does agriculture, an activity primarily in the primary sector, spill over into the secondary and tertiary sectors?

22. The US energy output has increased significantly since 2012. What is one of the key factors contributing to this increase?

23. Why is the manufacturing sector in the U.S. losing jobs?

24. Critics of the service sector complain that service jobs pay poorly. Is this true?

25. What are the four categories of the tertiary sector in the alternative categorization developed by the authors of the textbook? What kinds of activities are included in each?

26. Why have services become such a significant part of the U.S. economy?

27. In what ways has the rise of financialization affected the U.S. economy?

28. What are some of the key issues in the healthcare sector in the U.S.?

### Problems

1. Suppose the table below represents the simple economy of Peaceland.

Industry	Value Added (in millions of dollars)	Percent of GDP
Agriculture	21	5.3
Transportation	34	8.5
Trade	50	12.5
Health care and social assistance	21	5.3
Education	20	5
Construction	44	11.0
Arts and Recreation	11	2.8
Diplomacy & peacekeeping	80	20
Textile manufacturing	65	16.3
Waste management and environmental stewardship	54	13.5
Economy Total	400	100%

- a. Determine the size of the primary sector (in terms of value added and percent of GDP).
  
  - b. Determine the size of the secondary (in terms of value added and percent of GDP).
  
  - c. Determine the size of the tertiary sector (in terms of value added and percent of GDP).
2. Suppose the simple economy of Peaceland, above, has decided to cut out some of the activities of the “middlemen” – the people and organizations that are involved in moving products from the producer to the final consumer. They have set up Fair Trade initiatives and have established local farmers’ markets, in order to encourage more of the value of the product to flow directly to the producer, rather than flowing into the pockets of the middlemen. Suppose the table below represents the simple economy of Peaceland after these changes.

Industry	Value Added (in millions of dollars)	Percent of GDP
Agriculture	21	5.6
Transportation	25	6.7
Trade	30	8
Health care and social assistance	21	5.6
Education	24	6.4
Construction	44	11.7
Arts and Recreation	11	2.9
Diplomacy & peacekeeping	80	21.3
Textile manufacturing	65	17.3
Waste management and environmental stewardship	54	14.4
Economy Total	375	100%

Determine the size of the primary, secondary, and tertiary sectors, in terms of percent of GDP. How have the respective sizes changed compared to your answer in problem 1?

3. The oil (petroleum) industry plays an important role in our economy. Using the supply and demand model from Chapter 3, determine how each of the following events would affect the price of oil on the world market. Identify if the event would cause a shift in supply or a shift in demand (*ceteris paribus*), in which direction, and whether the equilibrium price of oil would increase or decrease.
- OPEC engages in an oil embargo in 1973.
  - Consumers in the U.S. and Europe start driving more fuel-efficient cars in the late 1970s and early 1980s.
  - Saudi Arabia departs from the OPEC agreement and increases its supply of oil in the early 1980s.
  - Consumers in the U.S. start driving more fuel inefficient SUVs and light trucks with low gas mileage in the 1990s.
  - The economies of China and India grow more rapidly in the early 2000s and consumers buy and drive more cars
  - Oil production in Iraq, one of the three countries with the largest reserves of oil, is disrupted after the U.S.-led war, invasion and occupation.
  - Russia's invasion of Ukraine causes disruptions to crude oil supplies from Russia, which is one of the world's largest oil exporters.

### Self Test

- How large is the U.S. economy?
  - The largest in the world.
  - The second largest in the world, after China.
  - The third largest in the world, after China and India.
  - The fourth largest in the world, after China, India and Japan.
  - The fifth largest in the world, after China, India, Japan, and Germany.
- Which of the following would be a primary sector activity?
  - Utilities
  - Construction
  - The selling of houses
  - A household growing food in their garden
  - A household whose members clean their house

3. Which of the following would *not* be an activity in the primary sector?
- A. Agriculture
  - B. Commercial fishing
  - C. Mining
  - D. The timber industry
  - E. The food processing industry
4. Maria is a farmworker. Jose is a medical doctor. Robin is a construction worker. Which of them works in the secondary sector?
- A. Maria
  - B. Jose
  - C. Robin
  - D. All of them do.
  - E. Maria and Robin.
5. Which of the following would *not* be an activity of the secondary sector?
- A. Automobile manufacturing
  - B. Utilities
  - C. Construction
  - D. Food processing
  - E. Transportation of goods to market
6. Sami works on an oil rig. Luis works at an oil refinery. Indira works as a gas station attendant. Which of them works in the tertiary sector?
- A. Sami
  - B. Luis
  - C. Indira
  - D. All of them do
  - E. Luis and Indira
7. Which of the following would *not* be an activity of the tertiary sector?
- A. Cooking home-cooked meals
  - B. Home construction and renovation
  - C. Education
  - D. Services provided by the Red Cross
  - E. Firefighting services



8. Which of the following best characterizes the historical trends of the secondary sector and its share of the U.S. private economy?
- A. The share of the secondary sector continued to grow steadily throughout the 20<sup>th</sup> century.
  - B. The share of the secondary sector started to decline in the early 1980s with the growth of globalization.
  - C. The share of the secondary sector started to decline in the late 1960s.
  - D. The share of the secondary sector started to decline in the Great Depression of the 1930s.
  - E. None of the above.
9. Which of the following best captures how “value added” is distributed among the sectors?
- A. 1.7% in the primary sector, 68.8% in the secondary sector.
  - B. 68.8% in the secondary sector, 16.8% in the tertiary sector.
  - C. 68.8% in the primary sector, 16.8% in the tertiary sector.
  - D. 1.7% in the primary sector, 68.8% in the tertiary sector.
  - E. 68.8% in the primary sector, 16.8% in the secondary sector.
10. Which of the following is *not* one of the trends in agriculture in the U.S.?
- A. The total farm population has declined.
  - B. The total number of farms has decreased.
  - C. The average farm size has decreased.
  - D. Output per acre has increased.
  - E. Output per worker has increased.
11. Which of the following about energy in the U.S. is *false*?
- A. As of 2022, the U.S. is the world’s second largest consumer of energy.
  - B. As of 2022, the U.S. is the world’s second largest producer of energy.
  - C. The U.S. has one of the highest per capita energy usage rates in the world.
  - D. The U.S. has one of the highest energy efficiency rates (energy used per dollar of GDP) in the world.
  - E. Over 80% of energy consumed in the U.S. comes from fossil fuels.

12. “Fracking” is ...
- A. a non-toxic technique used to boost oil and gas production using water.
  - B. a relatively new technology that has the potential to dramatically boost biomass production.
  - C. a cutting-edge technology under development in places like France to reduce their dependence on foreign oil.
  - D. only useful for extracting oil and gas deposits relatively close to the surface.
  - E. none of the above.
13. What factor helped boost employment in U.S. automobile manufacturing, after the employment decline in the 1970s?
- A. Foreign producers have a cost disadvantage of shipping their products to the U.S.
  - B. The greater productivity of skilled workers enabled U.S. workers to compete against lower skilled low wage workers abroad.
  - C. Foreign companies increasingly located production facilities in the U.S.
  - D. Falling gas prices after the 1970s oil price shocks shifted demand back to larger U.S. made vehicles.
  - E. All of the above.
14. Which of the following about the service sector is *false*?
- A. The average pay of service sector jobs is less than the average pay of manufacturing jobs.
  - B. Trade in services is expanding rapidly, and increased more rapidly than trade in goods between 1995 and 2020.
  - C. Service sector jobs are more homogenous than jobs in manufacturing.
  - D. The U.S. currently exports more services than it imports.
  - E. None of the above.
15. Which of the following services is a U.S. export?
- A. A U.S. citizen uses the financial services of a bank in Switzerland.
  - B. A German tourist comes to Disneyland for summer entertainment.
  - C. An American student studies abroad at a British university.
  - D. An American obtains medical attention in Mexico for a lower price than attainable in the U.S.
  - E. None of the above.

16. Which of the following is not a financial asset as identified in the chapter?
- A. Stocks
  - B. Bonds
  - C. Foreign currencies
  - D. Certificates of deposit
  - E. All of these are identified as financial assets in the chapter.
17. Which of the following statements about the retail services sector is *false*?
- A. The retail sector is becoming a larger share of the national economy,
  - B. A small number of very large retailers have been dominating the retail sector.
  - C. Amazon and Walmart are two of the largest retailers in the world.
  - D. The four-firm concentration ratios for retailers, such as bookstores and discount department stores increased between 1992 and 2007.
  - E. None of the above are incorrect.
18. All of the following are key functions of the financial sector, except:
- A. To intermediate the movement of funds throughout the economy.
  - B. To facilitate investment in financial assets.
  - C. To provide loans to households and businesses.
  - D. To engage in speculative behavior and raise asset prices.
  - E. All of the above are functions of the financial sector.
19. Which of the following explains why healthcare costs in the U.S. are higher than that in other developed countries?
- A. Because of higher demand for better quality of healthcare in the U.S.
  - B. Because of the high expenses associated with the Affordable Care Act.
  - C. Because, unlike other developed countries, the U.S. does not have publicly funded universal health coverage.
  - D. Because the quality of healthcare in the U.S. is better than other developed countries.
  - E. All of the above.
20. Which of the following statements about the education system in the U.S. is *false*?
- A. Spending per student in the U.S. is higher than the average for other developed countries.
  - B. Access to federal grants in the form of loans has declined over the last decade, making it harder for students to attend college.
  - C. The cost of attending a public college in the U.S. has increased more rapidly than the overall inflation.
  - D. The federal student debt in the U.S. has increased over the last decade.
  - E. All of the above statements are true.

## Answers to Active Review Questions

1. primary
2. primary, secondary
3. secondary
4. tertiary
5. service
6. tertiary
7. five, twenty
8. solar, wind
9. financial
10. tertiary
11. False. It would fall under the primary sector.
12. False. The primary sector still plays an important role in the economy.
13. True.
14. True.
15. False. The rise in financialization means that the share of corporate profits going to the financial sector has been increasing.
16. The primary sector involves the extraction and simple processing of raw materials which are sold as inputs into the production process. The secondary sector transforms these inputs into final products to consumers. The tertiary sector involves the provision of services, rather than tangible goods.
17. While the tertiary sector's share of the private economy has grown over the last decades of the 20<sup>th</sup> century, both the primary and secondary sectors have declined.
18. Since the 1960s, employment in the secondary sector started to decline, as employment in the primary sector continued its decline. Employment in the tertiary sector increased.
19. Primarily it has been due to technological improvements and the rise in agricultural productivity, which has allowed the products of the primary sector to be obtained with fewer workers.
20. The threats include: the depletion of groundwater supplies, and soil depletion.
21. Much of the processing of food is a manufacturing activity in the secondary sector. The marketing, retailing, and provisioning of food in restaurants are service sector activities in the tertiary sector.
22. One of the key factors contributing to the increase in U.S. energy production since 2012 is the introduction of novel extraction techniques such as hydraulic fracturing (fracking).
23. The U.S. manufacturing sector is losing jobs for two reasons: manufactured products can be produced more cheaply abroad, and productivity advances (automation) are reducing the overall employment in manufacturing.
24. Yes, on average the pay of service sector jobs are lower than manufacturing, for instance. However, some service sector workers (such as doctors and lawyers) are paid very well.
25. The four categories are: ownership transactions (e.g. homeownership and activities

involved in ownership transfers such as: transportation, warehousing, wholesale and retail trade, and real-estate rental and leasing), information and management (information, finance and insurance, and professional, scientific, and technical services, administration, waste management and management of companies.), private social services (education, health care, and social services), and entertainment (which includes arts, entertainment, recreation, accommodation and food services).

26. As our economy has become so much more complex, the service sector has grown to organize and manage this huge complex system, e.g. making connections between buyers and sellers, collect and processing information, etc.
27. The financialization has affected the U.S. economy, as well as other advanced economies, in recent decades in two ways: (1) huge increases in debt and debt finance throughout the economy, and (2) inflation in the price of assets, not necessarily based on growth in the value of real goods and services.
28. The key issues in the healthcare sector in the U.S. include the high healthcare costs and rising drug prices, partly because of the dominance of private markets for healthcare. Despite the higher healthcare costs, the U.S. does not fare too well in terms of quality of care, as it ranks lower than most other developed countries in terms of the number of physicians per capita, life expectancy, child immunization, and infant mortality rates.

### Answers to Problems

1.

a. For the Primary sector:

Industry	Value Added (in millions of dollars)	Percent of GDP
Agriculture	21	5.3
<b>Primary Sector Total</b>	21	5.3%

b. For the Secondary sector:

Industry	Value Added (in millions of dollars)	Percent of GDP
Construction	44	11.0
Textile manufacturing	65	16.3
<b>Secondary Sector Total</b>	109	27.3%

c. For the Tertiary sector:

Industry	Value Added (in millions of dollars)	Percent of GDP
Transportation	34	8.5
Trade	50	12.5
Health care & social assistance	21	5.3
Education	20	5
Arts and Recreation	11	2.8
Diplomacy & peacekeeping	80	20

Waste management and environmental stewardship	54	13.5
<b>Tertiary Sector Total</b>	270	67.6%

2. Now the primary sector is 5.6% of GDP, the secondary sector is 29%, and the tertiary sector is 64.5%. The tertiary sector has declined while the primary and secondary sectors have increased in size (as percent of GDP).

- 3.
- Supply shifts left; the oil price rises.
  - Demand shifts left; the oil price falls.
  - Supply shifts right; the oil price falls.
  - Demand shifts right; the oil price rises.
  - Demand shifts right; the oil price rises.
  - Supply shifts left; the oil price rises.
  - Supply shifts left; the oil price rises.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. A  | 11. D |
| 2. D  | 12. E |
| 3. E  | 13. E |
| 4. C  | 14. C |
| 5. E  | 15. B |
| 6. C  | 16. E |
| 7. B  | 17. A |
| 8. C  | 18. D |
| 9. D  | 19. C |
| 10. C | 20. B |

## Chapter 7

# EMPLOYMENT, UNEMPLOYMENT, AND WAGES

*Macroeconomics in Context (Goodwin et al.), 4<sup>th</sup> edition*

### Chapter Overview

This chapter introduces you to standard macro labor topics such the definition of the unemployment rate, the different types of unemployment, and theories of the causes of unemployment. You will learn about labor market institutions, alternative theories on labor markets, and aggregate demand issues. The final section discusses the future of work based on the changing structure of the labor market due to technological advances, increased flexibility for workers and employers, and the rise of “dual labor markets” wherein the lucky few have well-paying jobs, while the rest are employed in jobs with lower wages, less benefits, and little security.

After reading and reviewing this chapter, the student should be able to:

1. Explain how employment and unemployment are officially measured.
2. Explain why some analysts prefer measures of labor force utilization that differ from the official unemployment rate.
3. Understand economists’ notions of frictional, structural, and cyclical unemployment.
4. Describe the classical theory of unemployment.
5. Describe alternative theories of labor market including “sticky-wage” theories, efficiency wage theory, and the dual labor market theory.
6. Describe the various policy responses to address unemployment.
7. Describe the role of technological change in determining the current and future employment levels.
8. Discuss the impacts of the changing labor market structures, such as the organization and management of work and increasing flexibility in the labor market, on the future of work.

### Key Terms

Bureau of Labor Statistics (BLS)  
civilian noninstitutional population  
employed person  
unemployed person  
labor force  
“not in the labor force”  
unemployment rate  
marginally attached workers  
discouraged workers  
underemployment  
labor force participation rate  
frictional unemployment  
cyclical unemployment

recession  
structural unemployment  
technological unemployment  
full employment  
“sticky wage” theories  
efficiency wage theory  
dual labor market theory  
aggregate demand  
universal basic income (UBI)

## Active Review

### *Fill in the Blank*

1. The U.S. agency that collects data on employment and unemployment is the \_\_\_\_\_.
2. Joe performed 15 hours of unpaid work on his family farm. He would be considered to be an \_\_\_\_\_ person, according to the BLS.
3. Bill lost his job as an airline mechanic, and has been sending out his resume to other potential employers. He would be willing to start working in a new job immediately. Bill would be counted as an \_\_\_\_\_ person, according to the BLS.
4. Rachael says she wants to work and is available for work. She has recently looked for work but is currently not doing so. The BLS would call Rachael a \_\_\_\_\_ worker. If she gives as her reason that she is no longer looking for work because there are no jobs for her, she would be considered a \_\_\_\_\_ worker.
5. The theories developed by Keynesian-oriented economists explaining why wages may remain above equilibrium even when there's a surplus of labor are called \_\_\_\_\_ theories.
6. People working at jobs that underutilize their abilities, as well as those who work fewer hours than they wish to, are said to be \_\_\_\_\_.
7. Paying your workers higher than the market wage rate in order to improve productivity is an example of \_\_\_\_\_ theory.
8. \_\_\_\_\_ is unemployment due to macroeconomic fluctuations.  
\_\_\_\_\_ theory, workers get slotted into a primary sector of good jobs, or a secondary sector where workers are taken on an "as needed" basis.
10. Possible responses to job displacement due to technological change could include \_\_\_\_\_.

### *True or False*

11. The unemployment rate is the percentage of the population that does not have paid employment, but is immediately available and actively looking for work.
12. The richest 1 percent of the population gets more than half of their income as wages and salaries.
13. Structural unemployment arises because people's skills, experience, education, or location do not match what employers need.



14. The peak level of unemployment in the 2020 recession was higher than the peak level of unemployment following the Great Recession of 2007-2009, but the duration of unemployment in 2020 was much shorter than that in 2007-2009.

15. Jake is applying for jobs in medical research, while also working as a bartender for 40 hours a week. The BLS counts him as being underemployed.

*Short Answer*

16. Why is high unemployment considered a bad thing?

17. Describe the two surveys the BLS uses to gather unemployment data.

18. How does the BLS classify people who are “not in the labor force,” and what people are often in this category?

19. Why is it often said that the official unemployment rate tends to underestimate the true extent of unemployment in the economy?

20. What are the three major types of unemployment? Which of these three types of unemployment tends to be spread broadly throughout the entire economy, as occurs as a result of a drop-off in aggregate demand?

21. What is the classical model’s explanation for involuntary unemployment?

22. Identify two theories that explain why wages might be “sticky” at a higher than market equilibrium level.

23. Describe Keynes's theory of aggregate demand, as it relates to wage levels and employment. Did Keynes believe that unemployment is caused by "sticky wages"?

24. The chapter describes flexibility in the labor market for the workers and for the employers. Explain these in detail. What kinds of flexibility might workers benefit from?

25. In what ways is a cooperative firm structure different from a traditional firm?

26. What are some of the advantages and limitations of the universal basic income programs?

### **Problems**

1. The U.S. labor force as of March 2021 was 160.6 million. There were 150.9 million employed, and 9.7 million unemployed. There were about 1.8 million in prison.

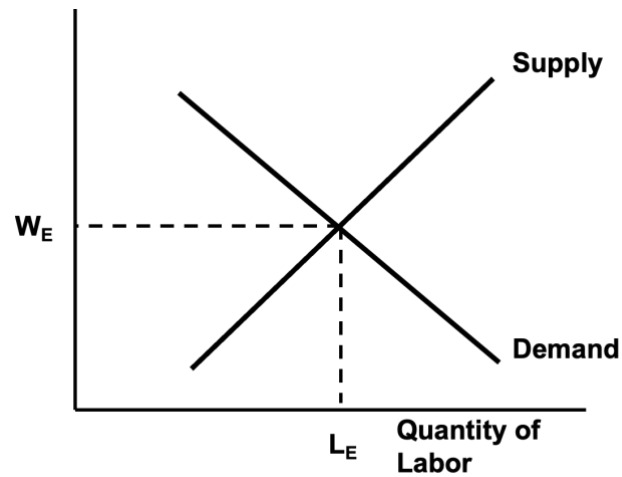
a. Calculate the official unemployment rate.

b. If those 1.8 million people were not in prison, but were in the labor force and unemployed, calculate what the unemployment rate would be.

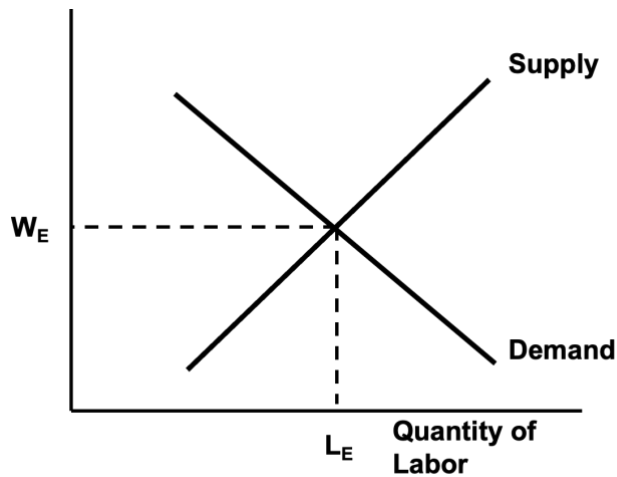
2. Assume the labor market is represented by the graphs below. Illustrate the following scenarios, showing the shift in supply or demand for labor, *ceteris paribus*. On your graph, identify the new wage, quantities of labor supplied and demanded, and any unemployment that exists.

Note: This question draws on more than the graphs actually shown in Chapter 7. You will need to draw on some concepts from Chapter 3 (Supply and Demand).

- a. As the economy goes into recession, the demand for labor falls. Illustrate according to the classical model with smoothly functioning labor markets.



- b. As the economy goes into recession, the demand for labor falls. Illustrate according to the Classical-Keynesian synthesis with sticky wages.



### Self Test

1. Which of the following is a problem associated with high unemployment?
  - A. underutilization of national resources
  - B. loss of income
  - C. depression, suicide, and domestic violence
  - D. social unrest and loss of social cohesion
  - E. All of the above

2. The labor force participation rate is
  - A. the number of people in the labor force divided by the population
  - B. the number of people in the labor force divided by the civilian, noninstitutionalized age 16 and over population
  - C. the number of people in the noninstitutionalized age 16 and over population divided by the labor force.
  - D. the number of unemployed divided by the labor force
  - E. the number of unemployed divided by the civilian, noninstitutionalized age 16 and over population
  
3. To be considered employed by the BLS, you need to
  - A. have worked for pay or profit at least 10 hours per week.
  - B. have worked for pay or profit at least 10 hours per week, or unpaid in a family-run business for at least 15 hours a week.
  - C. have worked for pay or profit for at least one hour per week.
  - D. have worked for pay or profit for at least one hour per week, or unpaid in a family-run business for at least 15 hours a week.
  - E. be registered at an employment agency.
  
4. Nabiha is currently not employed, but is thinking about getting a job and is browsing through the want ads to see what kinds of jobs are available. The BLS would consider Nabiha to be:
  - A. unemployed
  - B. in the labor force
  - C. not in the labor force
  - D. a discouraged worker
  - E. none of the above
  
5. Rebecca lost her real estate agent job after the housing bubble burst, and after several months of an unsuccessful job search, she has stopped looking and entered a job retraining program to become a nurse. The BLS would currently count Rebecca as:
  - A. employed
  - B. unemployed
  - C. in the labor force
  - D. not in the labor force
  - E. seasonally unemployed
  
6. Which of the following groups has historically and consistently experienced unemployment rates significantly higher than the average worker?
  - A. Older people
  - B. African Americans
  - C. People with college degree
  - D. Women
  - E. None of the above

7. Assume a very small economy comprised of the following people, all of whom are civilians, 16 years and older. Amir is happily employed. Bert does not have work, but is actively sending out his resume to employers. Miguel has not had work for quite a while, and occasionally flips through job ads to see what kinds of jobs are available. recently graduated from college and is actively applying for jobs. Marijka has left her job to care for her newborn child. The labor force participation rate in this economy would be:
- A. 20%
  - B. 40%
  - C. 60%
  - D. 80%
  - E. 100%
8. Suppose the population is 300 million. There are 146 million employed, and 7.2 million unemployed. Then the unemployment rate is:
- A. 2.4%
  - B. 4.7%
  - C. 4.9%
  - D. 5.3%
  - E. There's insufficient data to determine the unemployment rate.
9. Suppose the population is 300 million. There are 146 million employed, and 7.2 million unemployed. Suppose that 1 million of the 7.2 million unemployed become so discouraged that they drop out of the labor force. The unemployment rate is:
- A. 2.1%
  - B. 2.4%
  - C. 4.1%
  - D. 4.7%
  - E. There's insufficient data to determine the unemployment rate.
10. Khaled used to work as an autoworker, and due to the decline of the U.S. auto industry, is now unemployed and thinking about retraining as a bicycle assembler. What type of unemployment is he experiencing?
- A. frictional unemployment
  - B. structural unemployment
  - C. cyclical unemployment
  - D. natural unemployment
  - E. seasonal unemployment

11. Prasad lost his job during the last recession. What type of unemployment is he experiencing?
- A. frictional unemployment
  - B. structural unemployment
  - C. cyclical unemployment
  - D. natural unemployment
  - E. seasonal unemployment
12. After raising two children, Mona has started looking for a job and sent out a few job applications. What type of unemployment is she experiencing?
- A. frictional unemployment
  - B. structural unemployment
  - C. cyclical unemployment
  - D. natural unemployment
  - E. Mona would not be counted as unemployed as she is not in the labor force.
13. Kimberly has finally had enough of her supervisor's incompetence. She just left her job feeling confident that she will have little difficulty finding another paid position using her skills which are in great demand right now. What type of unemployment is she experiencing?
- A. frictional unemployment
  - B. structural unemployment
  - C. cyclical unemployment
  - D. natural unemployment
  - E. seasonal unemployment
14. According to the classical model of smoothly functioning labor markets, if the demand for labor falls, for instance due to a drop in aggregate demand,
- A. wages will fall and labor markets will return to full employment equilibrium, eliminating the surplus of labor.
  - B. wages will remain unchanged, leading to the persistence of unemployment.
  - C. wages will remain unchanged, and the supply of labor will drop and thereby eliminate the surplus of labor (unemployment).
  - D. wages and the quantity of labor will remain unchanged.
  - E. none of the above.
15. Which of the following have been proposed as explanations for sticky wages?
- A. psychological resistance to wage cuts
  - B. minimum wages and long term contracts
  - C. efficiency wages
  - D. people receiving higher wages holding out for a long time against other forces
  - E. all of the above

16. Bob is paying his workers a bit higher than the market going wage, because he wants them to put in more effort on the job, and to reduce employee turnover. His actions would be an example of which labor market theory?
- A. low-turnover theory
  - B. efficiency wage theory
  - C. classical theory
  - D. dual labor market theory
  - E. none of the above
17. The possible benefits of having more democratic work place include ...
- A. better working conditions and greater bargaining power for workers
  - B. more equal distribution of work and income levels among the workers
  - C. increased productivity and motivation for workers
  - D. All of the above
  - E. A and C only
18. Which of the following is not an element of the Keynesian critique of the classical model?
- A. unemployment is NOT due to wages being “too high.”
  - B. faith in market forces will be rewarded with a tendency towards full employment.
  - C. an emphasis on aggregate demand is important for macroeconomic analysis.
  - D. government policies can be an effective response to economic downturns.
  - E. Falling wages could worsen the unemployment problem during a recession.
19. Which of the following is a possible impact of technological change?
- A. Reduction in the need for labor
  - B. Increased wealth due to more efficient production
  - C. Decline in prices from more efficient production
  - D. Creation of jobs that might need a different set of skills
  - E. All of the above.
20. The Universal Basic Income:
- A. Involves providing a periodic cash payment to individuals below a specific poverty threshold.
  - B. Involves providing periodic cash payment to everyone regardless of work requirements.
  - C. Involves providing a job guarantee to everyone as a means of earning basic income.
  - D. Involves setting a minimum wage requirement that ensures that all workers get a basic minimum income.
  - E. None of the above.

## Answers to Active Review Questions

1. Bureau of Labor Statistics (BLS)
2. employed
3. unemployed
4. marginally attached, discouraged
5. sticky wage
6. underemployed
7. efficiency wage
8. cyclical unemployment
9. dual labor market
10. more leisure time, flexible work arrangements, or universal basic income
11. False. It is not the percentage of the population, but the percentage of the *labor force* who do not have paid jobs but are immediately available and actively looking for work.
12. False. The richest 1 percent of the population get about 40 percent of their income as wages and salaries and the remaining 60 percent from capital income.
13. True.
14. True.
15. False. While Jake is underemployed because of underutilization of his skills, he is counted as being employed by the BLS.
16. High unemployment means that a nation's resources are being underutilized. It also poses great economic, psychological, and social costs on unemployed individuals, as well as their families and their communities. It is associated with higher rates of depression, suicide, domestic violence, and lack of social cohesion.
17. The household survey questions 60,000 households on a monthly basis, asking whether the individual household members are working or not, and if not, if they are looking for work. The employer survey collects employment data from 400,000 employers.
18. If an individual surveyed (that is, who is age 16 or over and not institutionalized) is neither employed nor unemployed, that individual is considered "not in the labor force" according to the BLS. Often people in this category are in school, retired, disabled, or taking care of people in their households and communities.
19. Because discouraged workers and underemployed workers (involuntary part-time or workers not making use of their skills) are not counted among the unemployed in the official unemployment statistic.
20. Frictional, structural, and cyclical unemployment. Cyclical unemployment is broadly spread through an economy during a downturn.
21. According to the classical model, involuntary unemployment only arises when there is something impeding market forces, like a minimum wage law, public safety net policies, regulations on business, or union activity.



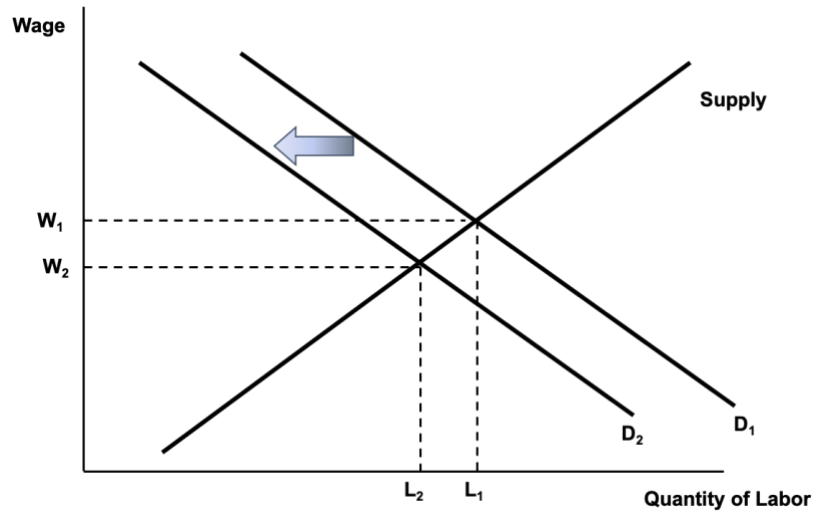
22. Efficiency wage theory and dual labor market theory.
23. For Keynes, the problem with a drop in the demand for labor was not that wages would get stuck at a rate too high and fail to drop to a lower equilibrium rate, but that a drop in the wage would make the unemployment problem even worse. As workers experienced lower wages, they would cut back on spending, which lead to a drop in aggregate demand and output.
24. Flexibility for workers includes job sharing, having more flexible work hours or being able to work remotely. Workers could benefit from such work arrangements. Participating in the gig economy, where workers work under short-term contracts or work when they want to and are needed, also provides some flexibility to the workers—though many workers may be taking up such work only because they cannot find “regular” jobs. Flexibility for employers involves firms having greater power over hiring and firing workers and being able to hire workers on “as needed” basis and with little job protection.
25. Cooperatives are for-profit businesses that are owned and run by workers. Hence, workers are able to influence decisions relating to their working conditions, job security, as well as distribution of profits. As opposed to this, in a traditional firm profits are distributed among stockholders who may have little connection or knowledge of business and decisions on distribution of profits. Also, working conditions and hiring decisions are controlled by a small group of individuals (such as, owner(s) of a small business, or executives at a large corporation).
26. The key advantage of a universal basic income policy is that it provides a basic social safety net, so that people can afford basic necessities, such as housing, food, and healthcare. Key limitations include the cost of funding UBI and concerns about whether receiving periodic cash payments with no conditions attached might discourage people from working.

### Answers to Problems

1.
  - a.
 
$$\begin{aligned} \text{Unemployment rate} &= [\text{Unemployed population} / \text{Labor force}] * 100\% \\ &= [9.7/160.6]*100\% = 6.04\% \end{aligned}$$
  - b.
 
$$\begin{aligned} \text{Unemployed population} &= 9.7 \text{ million} + 1.8 \text{ million} = 11.5 \text{ million} \\ \text{New labor force} &= 160.6 \text{ million} + 1.8 \text{ million} = 162.4 \text{ million} \end{aligned}$$

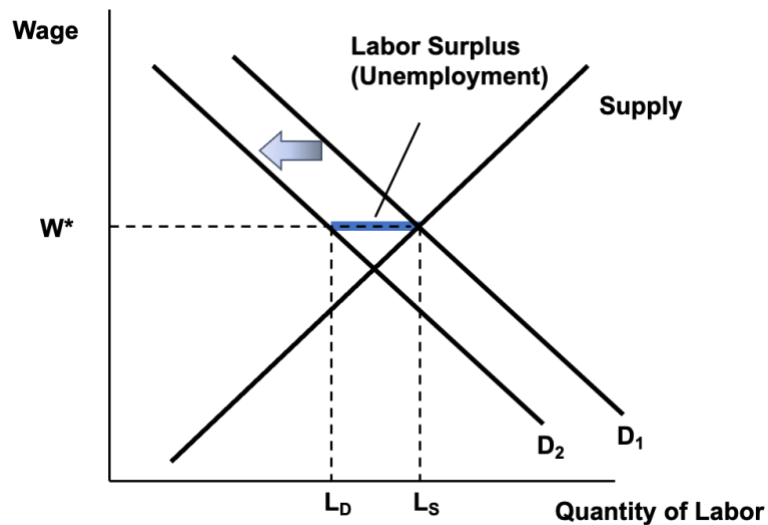
$$\begin{aligned} \text{Unemployment rate} &= [\text{Unemployed population} / \text{Labor force}] * 100\% \\ &= [11.5/162.4]*100\% = 7.08\% \end{aligned}$$

2. a.



The equilibrium wage drops to  $W_2$ . The new quantity supplied and quantity demanded are equal, at  $L_2$ . There is an equilibrium situation, with no unemployment.

b.



The wage, being “sticky,” stays at  $W^*$ , its original level. The quantity of labor demanded drops to  $L_D$ , while the quantity of labor supplied remains at  $L_S$ . There is unemployment, as shown by the shaded difference between  $L_S$  and  $L_D$  on the graph.

**Answers to Self Test Questions**

- |       |       |
|-------|-------|
| 1. E  | 11. C |
| 2. B  | 12. A |
| 3. D  | 13. A |
| 4. C  | 14. A |
| 5. D  | 15. E |
| 6. B  | 16. B |
| 7. C  | 17. D |
| 8. B  | 18. B |
| 9. C  | 19. E |
| 10. B | 20. B |

## Chapter 8

# AGGREGATE DEMAND AND ECONOMIC FLUCTUATIONS

*Macroeconomics in Context (Goodwin, et al.)*

### Chapter Overview

This chapter first presents the analysis of business cycles, and introduces you to the two stylized facts of the business cycle. The chapter then presents the Classical theory of savings-investment balance through the market for loanable funds. Next, the Keynesian aggregate demand analysis in the form of the traditional "Keynesian Cross" diagram is developed. You will learn what happens when there is an unexpected fall in spending, and the role of the multiplier in moving to a new equilibrium.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Describe how unemployment and inflation are thought to normally behave over the business cycle.
2. Model consumption and investment, the components of aggregate demand in the simple model.
3. Describe the problem that "leakages" present for maintaining aggregate demand, and the classical and Keynesian approaches to leakages.
4. Understand how the equilibrium levels of income, consumption, investment, and savings are determined in the Keynesian model, as presented in equations and graphs.
5. Explain how, in the Keynesian model, the macroeconomy can equilibrate at a less-than-full-employment output level.
6. Describe the workings of "the multiplier," in words and equations.

### Key Terms

Okun's "law"

"full-employment output" ( $Y^*$ )

aggregate expenditure ( $AE$ )

accounting identity

behavioral equation

marginal propensity to consume

marginal propensity to save

paradox of thrift

## Active Review

### Fill in the Blank

1. The macroeconomic goal that involves keeping the rate of unemployment and inflation at acceptable levels over the business cycle is the goal of \_\_\_\_\_.
2. The \_\_\_\_\_ economists believe that aggregate expenditure needs active guidance, whereas the \_\_\_\_\_ economists believe that aggregate expenditure can take care of itself.
3. The recurrent fluctuations in the level of national production is called the \_\_\_\_\_.
4. When economic activity declines, usually measured by a fall of real GDP for two consecutive quarters, the economy is said to be in a \_\_\_\_\_.
5. The equation that expresses the inverse relationship between the unemployment rate and the rapid growth of real GDP is known as \_\_\_\_\_.
6. The level of output that occurs when the economy is not suffering from an unemployment problem (that is, when any unemployment that exists is just transitory), is called \_\_\_\_\_ output.
7. In the traditional macro model (with no government or foreign sector), what households and firms intend to spend on consumption and investment is called \_\_\_\_\_.
8. The equation  $AE = C + I$  is a(n) \_\_\_\_\_, because it reflects a theory about the behavior of one or more economic agents or sectors. The equation  $Y = C + I$  is a(n) \_\_\_\_\_, because it represents the actual level of aggregate spending that in fact occurs.
9. In the Keynesian consumption function,  $C = \bar{C} + mpc Y$ ,  $\bar{C}$  represents \_\_\_\_\_, the  $mpc$  is the \_\_\_\_\_, and  $Y$  represents \_\_\_\_\_.
10. The \_\_\_\_\_ is the portion of every dollar of aggregate income that is saved, and can be expressed as  $\Delta S/\Delta Y$ .
11. The formula  $1/(1-mpc)$  is the formula for the “income/spending \_\_\_\_\_” in a simple closed economy with no government.

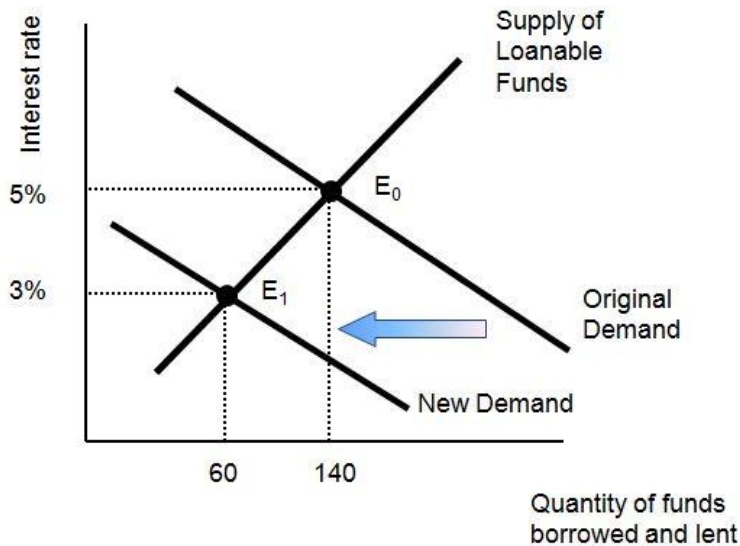
### True or False

12. The two “stylized facts” of the business cycle are always corroborated by the historical evidence.
13. According to Okun’s Law, as originally formulated in the early 1960s, a 1% drop in the unemployment rate is associated with an approximately 3% increase in real GDP.

14.  $Y = AE$  only when actual investment equals intended investment.
15. In a situation with insufficient aggregate expenditure,  $C + I_t < C + I$
16. According to the classical economists, a sudden fall in investment spending would cause a fall in the interest rate, and the lower interest rate would then stimulate investment spending again and return it to its original level.

*Short Answer*

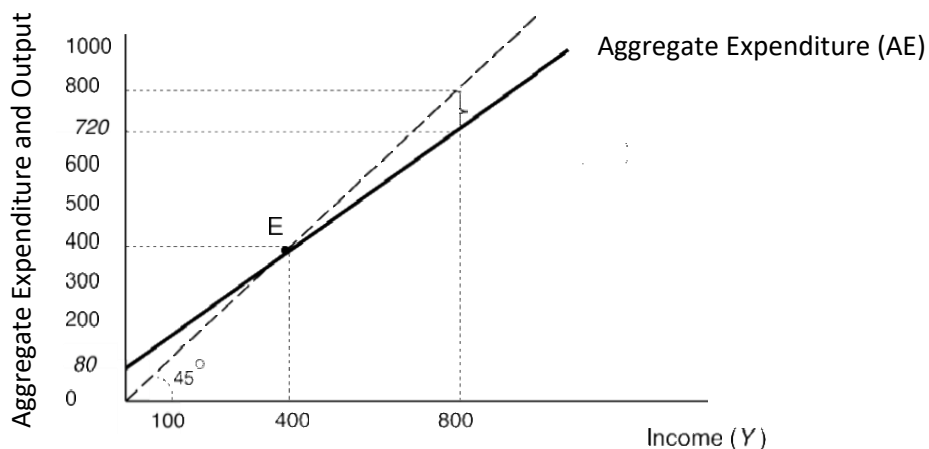
17. Explain the two “stylized facts” of the business cycle.
18. What was the response to the Great Depression of economists trained in the classical school?
19. Explain the difference between the behavioral equation  $AE = C + I_t$ , and the accounting identity  $Y = C + I$  (in a simplified economy with no government or foreign sector).
20. Given the following Figure below (Figure 8.8 in your textbook), explain what the classical school predicts will happen when there is a sudden drop in intended investment spending.



21. What are the determinants of investment spending in the Keynesian model, and which factor plays the most important role (especially in a recession)?

22. In the Keynesian model, what happens to investment and inventories when there is insufficient aggregate expenditure?

23. In the figure below:



- a. What is this diagram called?
- b. What does the 45 degree line represent?
- c. At an income level of 800, what is the level of spending? Is there any unintended investment? If so, what will be the response of producers?

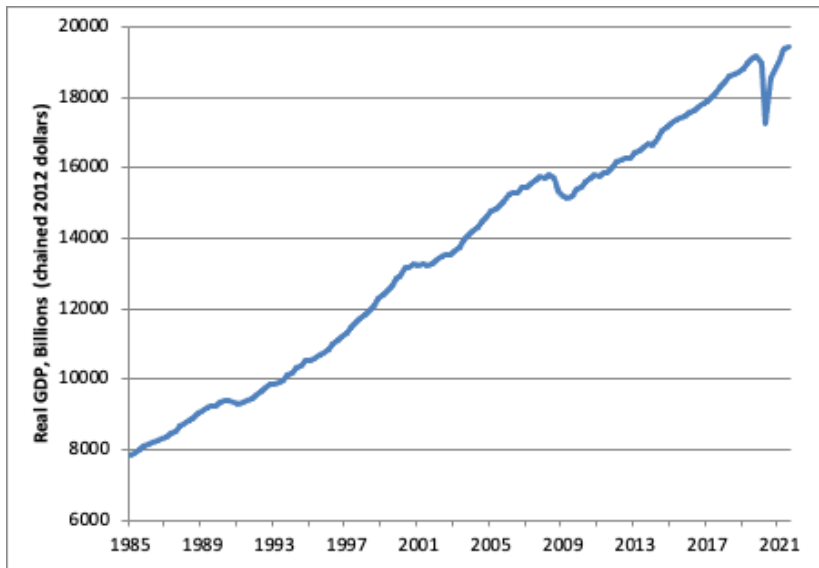
24. In the figure in the above question, if 800 represents full employment output, would the equilibrium where income = 400 be desirable? Is there unemployment at this equilibrium? And according to Keynes, would there be forces automatically moving the economy back to the full employment output level?

25. Explain what is meant by “the multiplier,” and describe it in words.

26. (In appendix): What are the basic steps to deriving the multiplier algebraically?

### Problems

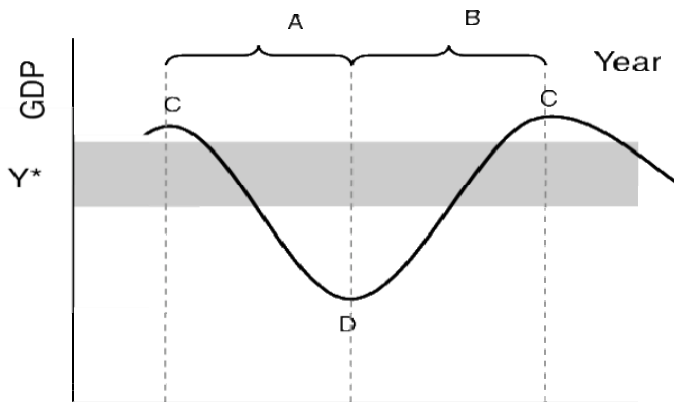
1. Given this graph of real GDP for the U.S. in the years 1960 – 2021:



Source: [www.bea.gov](http://www.bea.gov)

Identify approximately what years the economy went into a recession.

2. Use the graph below to answer the following questions:





a. Label the phases of the “stylized” business cycle graph.

- A: \_\_\_\_\_  
 B: \_\_\_\_\_  
 C: \_\_\_\_\_  
 D: \_\_\_\_\_

b. What does  $Y^*$  refer to?

3. Use the table below (for a simple economy with no foreign sector or government) to answer the questions that follow.

(1) Income ( $Y$ )	(2) Consumption ( $C$ )	(3) Intended Investment ( $I_I$ )	(4) Aggregate Expenditure $AE = C + I_I$ $= \text{column (2)} + \text{column (3)}$
0	30	<b>(a)</b>	50
300	300	20	<b>(b)</b>
400	<b>(c)</b>	20	410
500	480	20	500
600	<b>(d)</b>	20	<b>(e)</b>

Fill in the missing numbers in the spaces marked (a)-(c).

Determine the consumption function, and use the result to fill in the remaining missing numbers (d)-(e).

(f) Determine the equilibrium output level.

4. Use the Keynesian cross diagram, and illustrate how the  $AE$  would shift in each scenario. Indicate whether the economy would end up at a higher or lower equilibrium output.

a. Households experience a decline in wealth as the value of housing drops when the housing bubble bursts.

b. The nation’s leaders tell consumers it is their patriotic duty to save the economy by consuming more, and consumers do so

c. The same national leaders pass policies favoring the wealthy, which leads to a more unequal distribution of income.

5.

a. Assume a simple, closed economy with no government. The marginal propensity to consume ( $mpc$ ) = 0.8. Assume that firms expect the future sales and profits to fall, and they suddenly cut back (unintended) investment spending ( $I$ ) by 50 million. By how much will output eventually fall?

b. Now assume the same as above, except that now the  $mpc = 0.9$ . How much will output fall when unintended investment spending drops by 50 million?

### Self Test

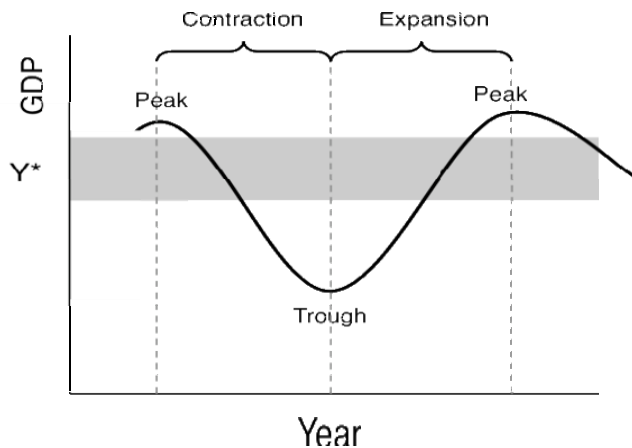
1. Keeping the economy balanced with acceptable levels of unemployment and inflation is the key aspect of the goal of:

- A. growth in living standards
- B. stabilization
- C. sustainability
- D. trade expansion
- E. equal income distribution

2. Two stylized facts of the business cycle are that:

- A. during an economic contraction, unemployment falls and inflation rises, while during an expansion, unemployment rises and inflation falls.
- B. during an economic contraction, unemployment rises and inflation falls, while during an expansion, unemployment falls and inflation rises.
- C. during an economic contraction, both unemployment and inflation fall, while during an expansion, both unemployment and inflation rise.
- D. during an economic contraction, both unemployment and inflation rise, while during an expansion, both unemployment and inflation fall.
- E. none of the above

Refer to the Figure below for the next two questions.

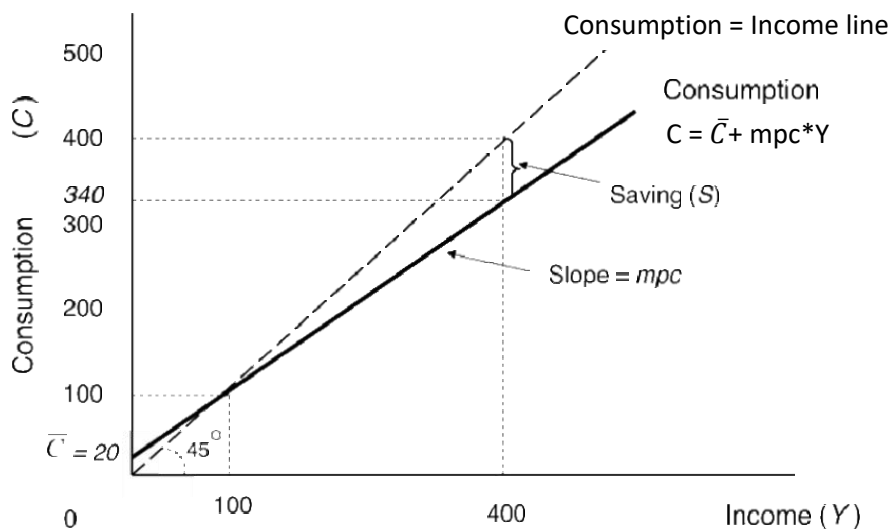


3. When is inflation and unemployment most likely to be a problem?
- A. Inflation and unemployment will be a problem in the grey area representing the range of full employment output.
  - B. Inflation will be a problem during the peak of an expansion, and unemployment will be a problem during the trough of the contraction.
  - C. Inflation will be a problem during the trough of the contraction, and unemployment will be a problem during the peak of the expansion.
  - D. Inflation will be a problem during both the peak and the trough of the business cycle.
  - E. Unemployment will be a problem during both the peak and trough of the business cycle.
4. What is the goal of stabilization policy?
- A. To keep the economy as close to the peak as possible, where unemployment remains very low.
  - B. To keep the economy as close to the trough as possible, where inflation remains low.
  - C. To keep the economy in the grey area, to avoid the threats of both excessive unemployment and inflation.
  - D. To enable the economy to move freely from peak to trough.
  - E. None of the above.

5. Which of the following best describes the meaning of aggregate expenditure in the traditional macro model (with no government and a closed economy)?
- The amount firms and households intend to spend on consumption and investment.
  - The actual level of spending done in the economy by firms and households on consumption and investment.
  - The summing up of all the spending on goods and services in the economy by firms and households.
  - The average level of demand for all goods and services in the economy by firms and households.
  - The actual level of savings and investment by households and firms.
6. According to the simplified macro model (with no government and no foreign sector), which of the following characterizes an economy in equilibrium?
- When leakages = injections
  - When saving ( $S$ ) = intended investment ( $I_i$ )
  - When  $Y = AE$
  - When actual consumption and investment spending equals the intended consumption and investment spending.
  - All of the above
7. In the classical model:
- flexible markets will keep the economy at a full-employment level of spending and output.
  - both households' saving activity and firms' investment activity are quite sensitive to changes in the interest rate.
  - adjustments in the interest rates quickly correct any imbalances between saving and investment.
  - a sudden fall in investment spending would cause a fall in the interest rate, which would dampen saving and stimulate consumption, quickly returning the economy to full employment.
  - all of the above.
8. Which of the following can describe the meaning of autonomous consumption?
- The part of consumption that is not related to income.
  - That which, when it changes, shifts the consumption schedule up or down.
  - A minimum level of income that people feel required to spend for survival.
  - The amount of consumption spending people will undertake no matter what their current incomes are, reflecting their long-term plans, their commitments and habits, and their place in the community.
  - All of the above.

9. The marginal propensity to consume ( $mpc$ ):
- A. stands for the portion of every additional dollar of aggregate income that goes to consumption spending.
  - B. is equal to the change in consumption ( $C$ ) divided by the change in aggregate income ( $Y$ ).
  - C. is equal to  $1 - mps$ .
  - D. theoretically should be less than 1
  - E. all of the above.

Use the Figure below to answer the next two questions:



10. In the figure above, what is the level of autonomous consumption?
- A. 0
  - B. 20
  - C. 100
  - D. 340
  - E. 400
11. In the figure above, when income = 400, what is the level of saving?
- A. 400
  - B. 340
  - C. 60
  - D. 20
  - E. 0

12. Which of the following factors will *not* cause a shift in the consumption function (or schedule)?

- A. Wealth
- B. Consumer confidence
- C. Cultural attitudes toward spending and saving
- D. A change in income
- E. Changes in the distribution of income

13. In the Keynesian model:

- A. Households only save and lend, and do not borrow.
- B. Consumption spending is more sensitive to the interest rate than to income.
- C. Investment spending is highly sensitive to the interest rate, especially in a recession,.
- D. Investment spending is highly sensitive to investors' confidence and expectations of future sales and profits (or "animal spirits").
- E. All of the above

14. Which of the following will not cause a shift in the investment function (or schedule) in the Keynesian model?

- A. A change in investors' confidence and expectations of the future
- B. A change in the interest rate
- C. A change in household disposable income
- D. A change in prices of investment goods
- E. A change in the willingness of lenders to lend

15. If aggregate expenditure falls below aggregate output ( $AE < Y$ ), according to the Keynesian model, what happens to unintended inventories?

- A. There is a depletion of unintended inventories.
- B. There is an accumulation of unintended inventories.
- C. Unintended inventories remain unchanged.
- D. Unintended inventories fall to zero (0).
- E. None of the above.

16. Unlike the Classical economists, Keynes thought that after a sudden fall in investment spending:

- A. the economy would quickly return to full-employment equilibrium.
- B. the economy could contract by even more than the initial fall in spending, and get stuck there.
- C. the market forces would automatically pull an economy out of a recession.
- D. a rise in consumption spending would counteract the fall in investment spending, keeping the economy at full employment.

- E. None of the above.
17. Which of the following expresses the value of the income/spending multiplier (in a simple closed economy with no government)?
- A.  $1/mpc$
  - B.  $1/(1+mpc)$
  - C.  $1/(1-mpc)$
  - D.  $1+mpc$
  - E.  $1-mpc$
18. Assume a simple, closed economy with no government. The marginal propensity to consume ( $mpc$ ) = 0.75. Then the value of the multiplier is:
- A. 1.34
  - B. 0.57
  - C. 4
  - D. 1.75
  - E. 0.25
19. Which of the following best describes the relationship between the  $mpc$  and the multiplier?
- A. The higher the  $mpc$ , the higher the multiplier.
  - B. The higher the  $mpc$ , the lower the multiplier.
  - C. The lower the  $mpc$ , the higher the multiplier.
  - D. There is no relationship between the  $mpc$  and the multiplier.
  - E. There is a one to one relationship between the  $mpc$  and the multiplier – the multiplier will increase by the same amount as the increase in the  $mpc$ .
20. Assume a simple, closed economy with no government. The marginal propensity to consume ( $mpc$ ) = 0.8. Assume there's a sudden drop in investment spending by 100 million. By how much will output eventually fall?
- A. 20 million
  - B. 100 million
  - C. 125 million
  - D. 500 million
  - E. None of the above.

## Answers to Active Review Questions

1. stabilization
2. Keynesian, classical
3. business cycle
4. recession
5. Okun's "Law"
6. full employment output
7. aggregate expenditure
8. behavioral equation, accounting identity
9. autonomous consumption, the marginal propensity to consume, aggregate income.
10. the marginal propensity to save
11. multiplier
12. False. The two stylized facts are not always true. There are periods when the economy has gone into recession and the inflation rate has increased. And there are periods when the economy has gone into an expansion, and the inflation rate has not increased.
13. True.
14. True.
15. True
16. False. The lower interest rate would primarily dampen saving and stimulate consumption spending, and the economy would return to equilibrium with a higher composition of consumption spending and less investment spending than before.
17. As GDP falls during a contraction, unemployment rises because producers are producing less goods and services and need fewer workers. And during an expansion, producers need more workers as they increase production, so the unemployment rate falls (stylized fact #1). As producers increase their production, however, there is more competition for the limited supply of workers and other inputs, which bids up wages and prices and results in an increase in the rate of inflation. Whereas during an economic contraction, there is less pressure on wages and prices and the rate of inflation slows down or becomes negative (stylized fact #2).
18. Classical economists thought that the economy would recover by itself, so there was no need for the government to intervene.
19. The behavioral equation  $AE = C + I_i$  expresses the spending intentions by firms and households. They may not actually spend the amount that they intended to. The accounting identity  $Y = C + I$  expresses the actually spending that has occurred (which can be tallied up in the national accounts and is theoretically equal to GDP – at least in the simplified economy with no government or foreign sector).
20. A sudden fall in investment spending would cause a fall in the interest rate, which would dampen saving and stimulate consumption, quickly returning the economy to full employment. The full employment level will now have somewhat more consumption spending and less investment spending.
21. The determinants of investment spending are: the interest rate, prices of investment goods, accumulated assets and debt, the willingness of lenders to lend, but most important for Keynes was the level of confidence and expectations about the future.
22. When there's insufficient aggregate expenditure, there will be unintended investment and excess inventory accumulation.



23. a. The diagram is called the Keynesian cross diagram.  
 b. The 45 degree line represents the situation of equilibrium where output = income.  
 c. At an income of 800, spending equals 720, so spending is less than income ( $AE < Y$ ), and there's unintended investment (i.e. inventory accumulation) of 80. Producers will cut back production, so income, consumption and saving all drop, and the economy will eventually move to the equilibrium at 400, where  $AE = Y$ .
24. The equilibrium would not be a desirable one, as there is persistent unemployment there (of the cyclical kind). Unlike the classical economists, Keynes thought the economy could get stuck at an equilibrium below the full employment output, and there would be no forces that would automatically move the economy back to full employment output.
25. When spending drops by a certain amount, output drops by *more* than that amount, i.e. by a multiplied amount. This is because the drop in spending has a feedback or echo effect on the economy. As firms cut back production and lay off workers, those workers now have a lower income, and cut back their own consumption. This affects additional firms, who see their inventories pile up and cut back production. Thus more workers are laid off and incomes fall further, leading to a vicious circle of higher unemployment, lower income, and lower investment.
26. To solve the multiplier algebraically, first substitute the consumption function into the equation for  $AE$  ( $AE = C + I_I$ ). Then set  $Y = AE$ , and solve for  $Y$ .  
 $AE = C + I_I$  and  $C = \bar{C} + mpc * Y$   
 So,  $AE = \bar{C} + mpc * Y + I_I$   
 At equilibrium,  $Y = AE$   
 $Y = \bar{C} + mpc * Y + I_I$   
 $Y - mpc * Y = \bar{C} + I_I$   
 $Y (1 - mpc) = \bar{C} + I_I$   
 $Y = (\bar{C} + I_I) / (1 - mpc)$

### Answers to Problems

1. It appears the U.S. economy went into recession in the years 1973-75, 1979-80, 1981-82, 1990-91, 2007-9, and 2020 because these are the periods when it the level of real GDP actually goes down. (There was also a relatively mild recession during 2001, which is not apparent except as a slight flattening on the GDP per capita graph, since it occurred entirely within 2001; by 2002 GDP was growing once again). The recession in 2020 was the deepest one during this period but the recovery from this was rather swift because the recession was mainly caused by the COVID-19 pandemic related shutdowns, and the economy rebounded quickly as businesses re-opened.

2.

a.

A: contraction

B: expansion

C: peak

D: trough

b.  $Y^*$ : full employment output

3.

(1) Income (Y)	(2) Consumption (C)	(3) Intended Investment (I <sub>I</sub> )	(4) Aggregate Expenditure $AE = C + I_I$ $= \text{column (2)} + \text{column (3)}$
0	30	<b>20</b>	50
300	300	20	<b>320</b>
400	<b>390</b>	20	410
500	480	20	500
600	<b>570</b>	20	<b>590</b>

Using  $AE = C + I_I$ ,

(a)  $50 = 30 + \mathbf{20}$

(b)  $\mathbf{320} = 300 + 20$

(c)  $410 = \mathbf{390} + 20$

Deriving the consumption function:

Autonomous consumption = 30 (from the first row where  $Y = 0$ ).

To find the *mpc*, calculate a change in  $C$  (e.g.  $390 - 300 = 90$ ), and divide by the corresponding change in  $Y$  ( $400 - 300 = 100$ ). So the  $mpc = \Delta C / \Delta Y = 90 / 100 = 0.9$

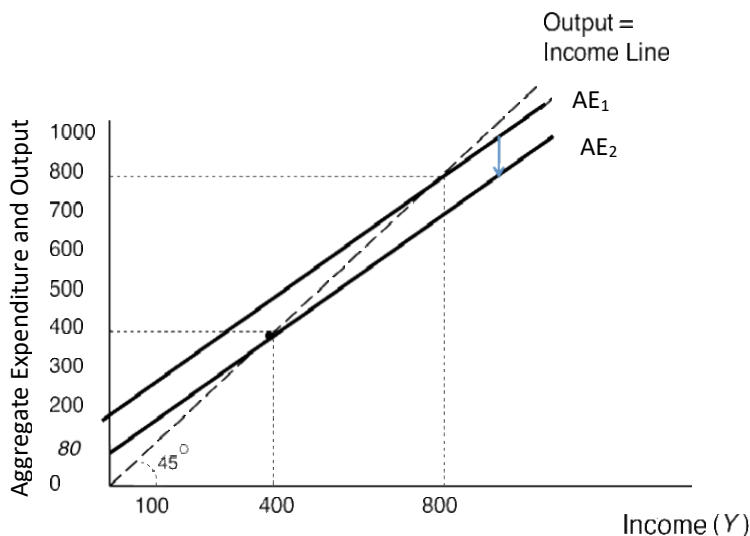
Hence, the consumption function is  $C = \mathbf{30 + 0.9Y}$

To fill in (d),  $C = 30 + .9(600) = 30 + 540 = \mathbf{570}$ .

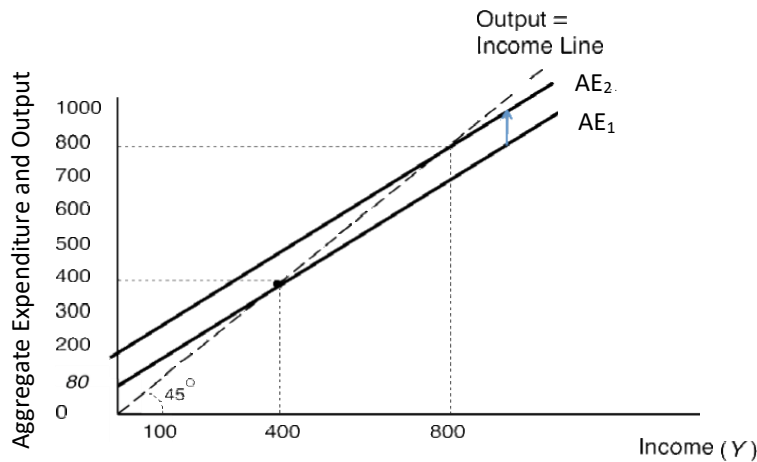
(e) follows from  $\mathbf{590} = 570 + 20$ .

f. Equilibrium is where  $Y = AE$ , which is at **500** (see shaded row).

4. a. Households experience a decline in wealth as the value of housing drops when the housing bubble bursts:  $AE$  would shift down, and the new equilibrium would be at a lower level of output.



b. The nation's leaders tell consumers it is their patriotic duty to save the economy by consuming more: If consumers act on this, AE would shift up, and the new equilibrium would be at a higher level of output.



c. The same national leaders pass policies favoring the wealthy, which leads to a more unequal distribution of income: Since the rich tend to have much lower marginal propensity to consume than the poor, a greater share of income going to the rich would lower overall consumption levels and increase savings. Hence, AE would shift down and the new equilibrium would be at a lower level of output. The graph would look like the one in part a above.

5 a. Since the marginal propensity to consume ( $mpc$ ) = 0.8, the multiplier = 5. With a  $\Delta I$  of 50 million, using the formula:

$$\Delta Y = mult \Delta I$$

$$\Delta Y = 5 \times 50 \text{ million} = 250 \text{ million}$$

b. Now with an  $mpc$  = 0.9, the multiplier = 10. With a  $\Delta I$  of 50 million,

$$\Delta Y = mult \Delta I$$

$$\Delta Y = 10 \times 50 \text{ million} = 500 \text{ million.}$$

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. B  | 11. C |
| 2. B  | 12. D |
| 3. B  | 13. D |
| 4. C  | 14. C |
| 5. A  | 15. B |
| 6. E  | 16. B |
| 7. E  | 17. C |
| 8. E  | 18. C |
| 9. E  | 19. A |
| 10. B | 20. D |

## Chapter 9

# FISCAL POLICY

*Macroeconomics in Context, 4th edition (Goodwin, et al.)*

### Chapter Overview

This chapter introduces you to a formal analysis of fiscal policy, and puts it in context with real-world data and examples. The basic analysis you will be presented here follows the Keynesian model, although you will also learn about the “classical” or “supply-side” perspectives. You will gain an understanding of the federal budgets and how it affects the economy. The chapter clarifies the difference between automatic stabilizers and discretionary policy, and discusses recent fiscal policies in terms of their economic impact. Finally, the chapter introduces policy issues, including concepts of "crowding out" and "crowding in", different multiplier effects, and infrastructure and social investment, presenting examples from the Obama, Trump, and Biden administrations’ fiscal policy initiatives.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Understand the impact of changes in government spending, taxes, and transfers on aggregate expenditure and output.
2. Carry out calculations using “multipliers.”
3. Describe the major types of government outlays, and major government revenue sources.
4. Distinguish between government deficits and government debt.
5. Describe the recent history of U.S. debt and deficits, and the controversies surrounding them.
6. Discuss the issue of lags in fiscal policy, and the relative advantages and disadvantages of automatic and discretionary policies.
7. Distinguish between cyclical deficits and structural deficits.
8. Explain the macroeconomic policy implications of both crowding out and crowding in.

### Key Terms

fiscal policy  
government spending (G)  
transfer payments  
disposable income  
tax multiplier  
proportional income tax  
progressive income tax  
balanced budget multiplier  
net taxes  
expansionary fiscal policy  
contractionary fiscal policy

on-budget expenditures  
appropriation (of federal funds)  
budget surplus  
budget deficit  
deficit spending  
countercyclical policy  
procyclical policy  
automatic stabilizers  
cyclical deficit (surplus)  
discretionary fiscal policy  
time lags

government outlays  
government bond  
off-budget expenditures

structural deficit (surplus)  
supply-side economics  
crowding out  
crowding in

### Active Review

#### *Fill in the Blank*

1. If the government uses tax cuts to expand the economy, it would be using \_\_\_\_\_ policy.
2. Social security payments that are paid by the government to households are an example of a \_\_\_\_\_.
3. Suppose a household receives a wage income of \$4,000 a month, and receives \$400 in transfers and pays \$800 in taxes per month. Then the household's \_\_\_\_\_ income (the income after paying taxes and receiving transfers) would be equal to \$3,600 per month.
4. To determine the impact on a change in lump sum taxes on equilibrium output, one would use the tax multiplier, which equals \_\_\_\_\_.
5. If one were to increase government spending by \$50 million, and simultaneously raise taxes by \$50 million in order to keep the government budget in balance, one would discover that the \_\_\_\_\_ multiplier is equal to positive one.
6. Government spending on goods and services (such as new bridges and mass transit) and government transfer payments (such as unemployment compensation and food stamps) are two categories of government \_\_\_\_\_.
7. The government can finance its deficits by selling \_\_\_\_\_, which are essentially promises to pay back, with interest, the amount borrowed at a specific time in the future.
8. The progressive income tax and transfer payments such as unemployment compensation are examples of \_\_\_\_\_, because these tax and spending institutions increase government revenues and lower government outlays during an expansion (and decrease government revenues and raise government outlays during a contraction) thereby smoothing out the business cycle.
9. Suppose the Congress passes a stimulus package, but it takes time for recipients of the stimulus payments to spend the money. The effect may not be seen on the wider economy for a period of time, due to the presence of \_\_\_\_\_.
10. The policies that use tax cuts and other incentives in an attempt to increase work, saving and investment, and thereby overall economic output, are called \_\_\_\_\_ economics.

*True or False*

11. There is no way to expand an economy using fiscal policy without incurring (or increasing) a budget deficit.
12. With an *mpc* of 0.8, the multiplier for U.S. government spending is equal to a value of 5, and this value is a fairly accurate reflection of the multiplier in the real world.
13. A policy tool that can be used to fight inflation (brought about by excessive aggregate expenditure) is contractionary fiscal policy.
14. If  $T - (G + TR)$  is positive, there is a government budget surplus. If  $T - (G + TR)$  is negative, there is a government budget deficit.
15. The existence of budget deficits must mean that the government is conducting an expansionary fiscal policy.
16. The equation for aggregate expenditure with government in an open economy is:  $AE = C + I + G + NX$

*Short Answer*

17. What multiplier is used for calculating the change in output resulting from a change in government spending?
18. What are the three expansionary fiscal policy tools the government can use to expand an economy that is in a recession?
19. What are the three ways the government can finance its expenditures?
20. What are the largest two sources of federal revenues? What are the largest three categories of federal outlays?
21. What role does the size of the economy (GDP) have to play in whether or not a government deficit is burdensome to the economy?

22. What role did automatic stabilizers and discretionary fiscal policies have in the emergence of budget surpluses during the late 1990s?
23. Are tax cuts always directed at stimulating aggregate expenditure? Explain why some supply-siders think tax cuts may actually increase tax revenues.
24. Identify and describe the four types of inside lags as presented in the chapter.
25. Explain the difference between a cyclical deficit and a structural deficit.
26. Explain the difference between "crowding out" and "crowding in."

### **Problems**

1. Suppose in a simple economy with no foreign sector, the  $mpc$  equals 0.8. Intended investment spending has suddenly fallen, reducing  $AE$  and output to a level that is 100 million below  $Y^*$ .
  - a. If the government decided to try to get the economy back to full employment using only an increase in government spending ( $\Delta G$ ), by how much would  $G$  need to be increased?
  - b. If the government, instead, decided to try to get the economy back to full employment using only a lump-sum tax cut ( $\Delta T$ ), how big of a tax cut would be needed?
  - c. Alternatively, if the government decided to try to get the economy back to full employment using only an increase in transfers ( $\Delta TR$ ), how large would this increase need to be?

d. Which fiscal policy--increasing G, decreasing T, or increasing TR--would do the least amount of damage to the government budget deficit?

2. Suppose it was found that the *mpc* varied by income level in the following manner, with lower income households spending a greater portion of every dollar of income than higher income households.

Household income	<i>mpc</i>	<i>Income/spending multiplier</i>	<i>Tax multiplier</i>
0-\$30,000	0.9		
\$31,000 – 50,000	0.8		
\$51,000 – 80,000	0.75		
\$80,000 and above	0.6		

a. Calculate the government spending and tax multipliers for each income bracket, considered separately.

b. Suppose the government decided to use tax cuts to expand the economy, and was debating whether to direct tax cuts to high income households or low income households. Which choice would provide a greater stimulus? Thus, which would do the least amount of damage to the government budget deficit to achieve a given amount of stimulus?

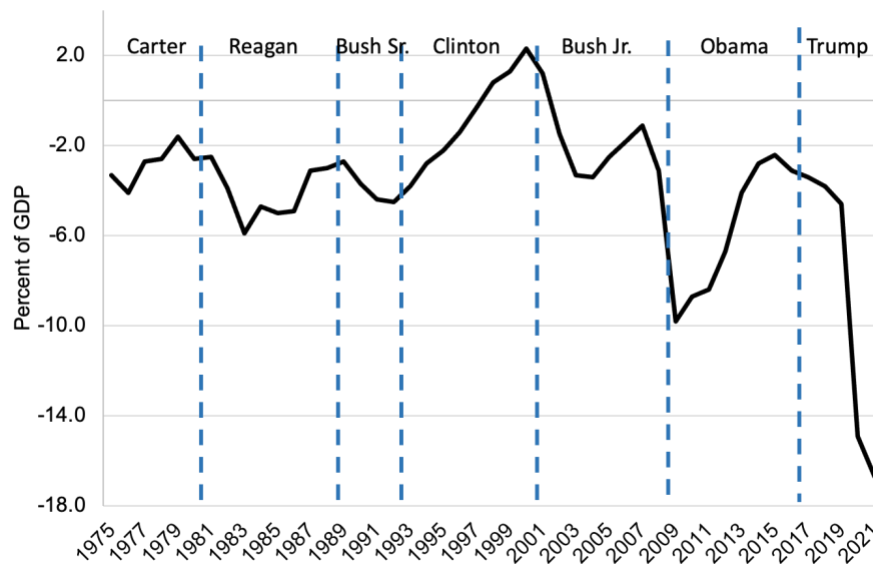
(Note: Technically, while tax cuts can, by design of the policy, be targeted so that their initial impact is on the incomes of a particular group, the feedback effects represented by the multiplier probably in general depend on the *economy-wide average* value of the *mpc*. We abstract from this issue in this question.)



3. Assume a simple closed economy, with an  $mpc$  equal to 0.75. The government has passed a balanced budget amendment. The economy goes into a recession, so the government increases government spending by 40 million to try to expand the economy.
  - a. Calculate the change in output ( $\Delta Y$ ) from the increase in government spending ( $\Delta G$ ).
  - b. The balanced budget amendment requires the government to also raise taxes by 40 million. Calculate the change in output ( $\Delta Y$ ) from the tax hike.
  - c. What is the net effect on output from these two policies? Was there any expansionary effect?
  - d. Why is a balanced budget amendment problematic or undesirable?

4. Use the Figure below to answer the following questions:

**Federal Surplus or Deficit (as Percentage of GDP), 1975-2021**



- a. It is sometimes said that Republicans are the party of “small government,” whereas Democrats are the “big spenders” and the party of “big government.” Is this confirmed by the historical evidence of the 1975-2021 period?
- b. What changes in discretionary Government outlays ( $G$ ,  $TR$ ) and Tax revenues ( $T$ ) might explain the emergence of the huge deficits under Reagan, G. Bush Sr., G.W. Bush Jr, Obama and Trump years? And what might explain the surpluses under Clinton?
- c. Are changes in discretionary fiscal policy sufficient in explaining the emergence of deficits and surpluses? What role do automatic stabilizers play? Consider in your answer the figure of the U.S. real GDP growth rate, below.



- d. When Clinton came into office, he increased taxes (the top income bracket was raised somewhat) and cut government spending. These are both considered to be contractionary fiscal policies. And yet the economy boomed. What could explain this? Could the surpluses under his administration come about only from his discretionary fiscal policies?

- e. The G.W. Bush Jr. administration increased government spending and passed sizeable tax cuts, primarily benefitting the rich. Critics argue that these tax cuts will only lead to deficits and do little to stimulate the economy. Explain their point of view.
  
- f. The Obama Stimulus package consisted of tax cuts and increased government spending on education, health care, unemployment benefits, and job creation. What was the impact of this large expansionary fiscal policy on the economy?
  
- g. What factors explain the sharp increase in deficits during the Trump years?

### Self Test

1. Fiscal policy refers to ...
  - A. control of the money supply
  - B. decisions to alter market interest rates
  - C. government spending and taxation decisions
  - D. control of inflation rate
  - E. none of these
  
2. Which of the following is *not* a component of aggregate expenditure?
  - A. consumption
  - B. unsold inventories
  - C. intended investment
  - D. government spending
  - E. all of these are components of aggregate expenditure
  
3. Suppose in a simple economy with no foreign sector, the *mpc* is equal to 0.75. How much government spending ( $\Delta G$ ) would be needed to raise output by 100 million?
  - A. 25 million
  - B. 133.3 million
  - C. 75 million
  - D. 400 million
  - E. None of the above

4. Which of the following is *not* an example of a transfer payment?
- A. Welfare payments to firms or individuals
  - B. Social Security payments
  - C. Unemployment compensation
  - D. A corporate tax cut
  - E. Payments of interest to holders of government bonds.
5. Suppose in a simple economy with no foreign sector, the *mpc* is equal to 0.9. How much of a lump sum tax ( $\Delta T$ ) would be needed to raise output by 100 million?
- A. 10 million
  - B. 11.1 million
  - C. 111.1 million
  - D. 900 million
  - E. None of the above
6. Suppose in a simple economy with no foreign sector, the *mpc* is equal to 0.8. If the government increased government spending by \$30 million, and it simultaneously raised taxes by \$30 million, how much will be the change in output ( $\Delta Y$ )?
- A. Output will increase by \$15 million
  - B. Output will increase by \$30 million
  - C. There will be no change in output
  - D. Output will decrease by \$30 million
  - E. None of the above
7. Government outlays ...
- A. are the sum of government spending and government transfer payments.
  - B. are always greater than government revenues
  - C. must, by law, exactly equal government revenues
  - D. are generally less than government revenues
  - E. none of these
8. Which of the following is *not* an example of a government outlay?
- A. Government spending on a national health care system
  - B. Government spending on light rail systems and bicycle paths
  - C. Housing subsidies for low-income households
  - D. Tax cuts for wind and solar energy producers
  - E. Child care vouchers for working single parents

9. Which of the following was one of the major sources of federal revenues in 2021?
- A. Personal income taxes
  - B. Corporate income taxes
  - C. Excise and estate taxes
  - D. Both A and B
  - E. None of the above
10. Which of the following was among the largest category of government spending in 2021?
- A. Income security, social services, housing and community development
  - B. Defense spending
  - C. Social security and Medicare
  - D. Net interest on the debt
  - E. Both A. and C.
11. Procyclical policy ...
- A. refers to the use of fiscal policy to improve the performance of the U.S. economy
  - B. refers to state/local governments tendency to exacerbate the business cycle.
  - C. refers to Federal Reserve policy designed to minimize economic downturns
  - D. refers to Chamber of Commerce efforts to encourage households to shop locally
  - E. none of these are descriptions of procyclical policy
12. During what period of time did the U.S. experience federal government budget surpluses?
- A. 1993 – 1997
  - B. 1998 – 2001
  - C. 2002 – 2008
  - D. 2009 – 2017
  - E. 2018 - 2021
13. Which of the following was responsible for the huge deficit between 2017 and 2021?
- A. The COVID-19 related recession
  - B. The 2017 Trump tax cuts
  - C. The increased government spending of the Trump administration
  - D. The CARES Act adopted in March 2020
  - E. All of the above.

14. The President drafts a budget proposal with new tax cuts and increases in government spending, and has it passed by Congress. This would be an example of:
- A. Automatic stabilizers
  - B. Discretionary policy
  - C. Contractionary fiscal policy
  - D. Supply side policy
  - E. None of the above.
15. Which of the following is *not* an example of an inside time lag?
- A. data lag
  - B. recognition lag
  - C. legislative lag
  - D. transmission lag
  - E. response lag
16. The Obama Stimulus Program ...
- A. is also known as the "American Recovery and Reinvestment Act."
  - B. added more than three million jobs according to the Congressional Budget Office
  - C. probably averted a 21<sup>st</sup> century "Great Depression" according to some economists
  - D. amounted to a major expansionary fiscal policy
  - E. all of these statements are accurate
17. The historical evidence of the supply side tax cuts (of the Reagan administration in the 1980s and Bush in the 2000s) is that:
- A. they were successful in increasing output, increasing tax revenues, and lowering deficits.
  - B. they led to lower tax revenues and higher deficits.
  - C. they left output, tax revenues, and deficits unchanged.
  - D. while the Reagan tax cuts were successful in increasing tax revenues and lowering deficits, those of the Bush administration were not.
  - E. None of the above.
18. Crowding out refers to ...
- A. intended investment squeezing unsold inventories
  - B. excess consumer spending competing with foreign demand for U.S. goods
  - C. the demand for exports making U.S. goods for expensive for consumers
  - D. government borrowing reducing the availability of private capital
  - E. none of these

19. Table 9.2 (Different Multiplier Effects) suggests that ...
- A. making the Bush income tax cuts permanent would have the biggest tax cut impact
  - B. a payroll tax holiday is not a very effective tax cut strategy
  - C. temporarily increasing food stamps is more effective than any permanent tax cut
  - D. cutting the corporate tax rate has a bigger impact than ANY other tax cut
  - E. none of these statements are accurate
20. Which of the following statements about the Biden administration's fiscal policy initiatives is FALSE?
- A. It focuses on improving the nation's infrastructure, such as broadband, and water and energy systems
  - B. It focuses on improving social conditions including childcare and housing.
  - C. Reduces taxes for large corporations with an incentive to encourage business investment.
  - D. Climate policy is a major component of the initiative with specific focus on reducing greenhouse gas emissions.
  - E. Includes incentives to switch to renewable energy sources and driving electric cars.

## Answers to Active Review Questions

1. fiscal
2. transfer payment
3. disposable
4.  $-(mult)(mpc)$
5. balanced budget
6. outlays
7. government bonds
8. automatic stabilizers
9. outside lag
10. supply side
11. False. It is still possible to expand an economy with a balanced budget. The balanced budget multiplier equals 1.
12. False. In the real world the multiplier is rarely this large. Econometric studies of the U.S. economy have suggested the multiplier is 2.0 or lower.
13. True.
14. True.
15. False. The existence of deficits does not necessarily mean an expansionary fiscal policy is being implemented. It could be that the economy is going through a downturn, so the automatic stabilizers are kicking in, with government outlays increasing and tax revenues declining.
16. False. It is:  $AE = C + I_r + G + NX$
17. The multiplier used in this case is the same as the multiplier introduced in chapter 8:  
multiplier =  $1/(1-mpc)$
18. The government could increase government spending, increase transfer payments, or cut taxes.
19. It can either raise taxes, borrow, or print money.
20. The two largest sources of federal revenues are: personal income taxes and social security taxes. The three largest categories of federal outlays are: Social security and Medicare, social programs, and defense spending.
21. The larger the economy, the easier it is to handle a deficit. A larger economy means higher incomes, and a greater ability for the government to collect tax revenues or sell government bonds to finance its deficit.
22. As the economy boomed, the automatic stabilizers kicked in and tax revenues rose. The Clinton administration also used discretionary policy, by raising taxes and thereby raising revenues that helped turn deficits into surpluses.
23. No, tax cuts have also been a component of supply-side policy, which attempts to use tax cuts to stimulate work, saving, investment, and thereby output. Some supply-siders think that the growth in output can actually lead to an increase of tax revenues into the government coffers.
24. The four types of inside lags presented in the chapter include: data lags, recognition lags, legislative lags, and transmission lags.
25. A cyclical deficit is caused by fluctuations in the business cycle while a structural deficit is the result of tax and spending policy decisions.
26. "Crowding out" is a reduction in the availability of private capital resulting from federal



borrowing. “Crowding in” occurs when government spending boosts expectations and therefore induces intended investment.

### Answers to Problems

1.

a. the income/spending multiplier =  $1/(1 - 0.8) = 5$

So solving for  $\Delta Y = \text{mult} \times \Delta G$ ,

100 million =  $5 \times \Delta G$

$\Delta G = 20$  million

b. now we need to use the tax multiplier, - *mpc (mult)*

So solving for  $\Delta Y = -\text{mpc (mult)} \times \Delta T$

100 million =  $-0.8 \times 5 \times \Delta T$

$\Delta T = 100 \text{ million} / -4$

$\Delta T = -25$  million (a tax cut of 25 million would be needed)

c. the calculation is like part b, above, except instead of  $\Delta T$  we have  $\Delta TR$ . Thus, transfers of +25 million would be needed.

d. Increasing  $G$  (government spending) would do the least damage to the deficit, raising it by 20 million, rather than 25 million.

2.

a.

Household income	<i>mpc</i>	<i>Income/spending multiplier</i>	<i>Tax multiplier</i>
0-\$30,000	0.9	10	9
\$31,000 – 50,000	0.8	5	4
\$51,000 – 80,000	0.75	4	3
\$80,000 and above	0.6	2.5	1.5

b. Directing the spending increase or tax cuts to the lower income households would provide a greater stimulus, because it has a higher tax multiplier. Thus, it would do less damage to the budget deficit to achieve a given amount of stimulus. In other words, if the government directed tax cuts to the low-income households, it would need a smaller tax cut to expand the economy by a given amount, and this would do less damage to the deficit.

(Note: If one takes into account that *mult* may depend on an economy-wide average *mpc*, this answer would still be correct, but the difference would not be as large.)

3.
  - a. the income/spending multiplier =  $1/(1-0.75) = 4$   
 $\Delta Y = \text{mult} \times \Delta G$   
 $\Delta Y = 4 \times 40 \text{ million}$   
 $\Delta Y = 160 \text{ million}$
  - b. the tax multiplier =  $-0.75 (4) = -3$   
 $\Delta Y = -3 \times \Delta T$   
 $\Delta Y = -3 \times 40 \text{ million} = -120 \text{ million}$
  - c. The net effect of the two policies is:  
 $\Delta Y (a + b) = 160 \text{ million} - 120 \text{ million}$   
 $\Delta Y (a + b) = 40 \text{ million}$   
 Yes, it expanded output by 40 million
  - d. A balanced budget rule means that one can't respond to severe emergencies, such as a natural disaster, war, or deal with a severe recession. Because the multiplier is only equal to one, it provides a fairly weak stimulus.
  
4.
  - a. A large deficit was created during the Obama years, when the government responded to the deep economic crisis of 2008 with large increase in spending and tax cuts; this raised the government deficit. An even larger deficit was created during the Trump years, with the implementation of the Tax Cut and Jobs Act followed by the stimulus package (CARES Act) for relief from the COVID-19 pandemic related recession. Even in the years before 2008, the Republicans (Reagan, G. Bush Sr., G.W. Bush Jr.) appear to be the big spenders, with their accumulation large deficits. The only period with some surplus and relatively low deficits occurred during the Clinton administration.
  - b. The emergence of the huge deficits under Reagan, G. Bush Sr., G.W. Bush Jr., Obama, and Trump could be from increasing government outlays ( $G$  and  $TR$ ), and/or cutting taxes ( $T$ ). The surpluses under Clinton could be from cutting government outlays ( $G$  and  $TR$ ), and/or raising taxes ( $T$ ).
  - c. No, changes in discretionary fiscal policy are not sufficient in explaining the emergence of deficits and surpluses, because a recessionary economy could trigger automatic stabilizers (increases in  $G$  and  $TR$ , and falling tax revenues), whereas a booming economy could bring forth increases in tax revenues and cuts in government outlays. Indeed, the figure of the U.S. real GDP growth shows a deep recession in 1981-82, 2008 and 2020 which could help explain the emergence of deficits in the early Reagan period as well as during the Obama and Trump years. And the figure shows strong growth rates in the late 1990s, which could help explain the emergence of surpluses under Clinton.

- d. The economy under Clinton could have boomed for other reasons, such as the increased investor and consumer confidence, leading to increases in investment and consumption spending. There is also evidence that the easy availability of credit and low interest rates during this period encouraged a lot of spending that was based on borrowing under risky conditions. These could have outweighed the contractionary effect of his fiscal policies. The surpluses came about not only from the tax increases of his discretionary policies, but also from the booming economy, which brought in increases in tax revenues as the automatic stabilizers kicked in.
- e. The tax cuts for the rich will do little to stimulate the economy because they are directed to households with relatively lower *mpcs*, and thus have a smaller multiplier effect.
- f. The large expansionary fiscal policy during the Obama years added to the overall government debt and the immediate impact was not clear as the 2008 recession was severe, but empirical evidence shows that the stimulus prevented the economy from going into a deep recession created millions of jobs.
- g. The increase in deficits during the Trump years is partly explained by the 2017 Trump tax cuts that largely benefitted corporations and wealthy individuals. The high levels of government spending as well as the stimulus package passed in 2020 to address the COVID-19 pandemic all added to the deficit during Trump years.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. C  | 11. B |
| 2. B  | 12. B |
| 3. A  | 13. E |
| 4. D  | 14. B |
| 5. B  | 15. E |
| 6. B  | 16. E |
| 7. A  | 17. B |
| 8. D  | 18. D |
| 9. A  | 19. C |
| 10. E | 20. C |

## Chapter 10

# MONEY, BANKING, AND FINANCE

*Macroeconomics in Context* (Goodwin, et al.)

### Chapter Overview

In this chapter, you will be introduced to a standard treatment of money and the banking system as well as the role that banks play in our financial system. You will get an overview of the relationship between money and the average price level, and will learn about the role and functions of money, different types of money, and the concept of liquidity as it applies to money. The chapter explores various types of banks and the role they play in money creation. The functions of finance are introduced along with nonbank financial institutions, financialization, and speculative bubbles. The final section of the chapter presents the theory of financial instability. The appendix provides a brief overview of the 2008 financial crisis and regulatory reforms to prevent future crises.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Describe the consequences of inflation and deflation.
2. Describe the functions and types of money.
3. Describe the measures of the money supply and explain the liquidity continuum.
4. Explain the basic workings of private banks including the use of balance sheets.
5. Explain how banks create money.
6. Describe the categories and functions of nonbank financial institutions.
7. Explain the concept of “financialization” and provide examples.
8. Explain the concept of “speculative bubble” and illustrate it with concrete examples.
9. Describe Minsky’s theory of financial instability to explain the occurrence of financial crisis and understand the role of regulation in managing instability.

### Key Terms

monetary policy

barter

deflation

liquidity

credit money

commodity money

exchange value

intrinsic value

gold standard

fiat money

M1

M2

financial intermediary

economic liability

bank reserves

fractional reserve system

required reserves

excess reserves

portfolio investment

leverage

non-bank financial institution

collective investment vehicle

hedge fund

pension fund  
insurance company  
securities broker  
mortgage broker

shadow banking  
subprime mortgage  
securitization  
moral hazard

## Active Review

### *Fill in the Blank*

1. The fact that money can be immediately used in exchange, whereas valuable jewelry cannot, illustrates the fact that money is very \_\_\_\_\_.
2. The measure of the money supply that includes currency in circulation, checking accounts, saving accounts, share accounts, and money market accounts is called \_\_\_\_\_.
3. When the aggregate price level falls economists use the term \_\_\_\_\_ to describe the situation.
4. When something contains *intrinsic value* and also serves as a medium of exchange it is known as \_\_\_\_\_.
5. The \_\_\_\_\_ definition of the money supply is broad enough to include retail money market funds, certificates of deposit, savings and share accounts, as well as checkable deposits and currency.
6. A medium of exchange that is valuable because a government says that it has value is known as \_\_\_\_\_.
7. Institutions that accept funds and provide loans are known as \_\_\_\_\_.
8. Vault cash and deposits at the Federal Reserve both count towards \_\_\_\_\_, a term that describes funds not lent out or invested by a private bank.
9. When banks are only required to hold a fraction of their deposits on reserve they are part of \_\_\_\_\_.
10. The portion of bank reserves that a bank must keep on reserve are known as \_\_\_\_\_.
11. The portion of bank reserves that banks are permitted to lend or invest are known as \_\_\_\_\_.

12. The use of debt to increase the potential rate of return on one's own investment is called \_\_\_\_\_.
13. One alternative to saving money in a bank is to use a \_\_\_\_\_, which is a category of pooled funds.
14. A \_\_\_\_\_ is a type of pooled fund that often engages in highly speculative investments and is generally restricted to wealthy clients.
15. An agent responsible for finding a buyer for sellers of different securities is known as a \_\_\_\_\_.
16. The theory that unregulated markets will always produce instability and crisis is referred to as the \_\_\_\_\_.
17. In Minsky's theory, the three financial profiles that account for the different margins of safety are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
18. (Appendix) The process of pooling various kinds of loans, slicing and sorting them according to their risk levels, and repackaging them into financial instruments is known as \_\_\_\_\_.
19. (Appendix) Mortgages given to people with poor credit are known as \_\_\_\_\_.
20. (Appendix) The availability of government bailouts for large firms can encourage excessive risk-taking, a phenomenon known as \_\_\_\_\_.
21. (Appendix) The major financial reform passed in the wake of the 2007-9 crisis was the \_\_\_\_\_ bill.

*True or False*

22. When a government finances its expenditures by printing money rather than collecting taxes, this can lead to "too much money chasing too few goods" and hyperinflation.
23. Coins and paper money have in some periods been commodity money and in other periods fiat money.
24. Nelson takes a \$100 bill he had in his wallet and deposits it into his checking account. Thus, M1 increases by \$100.
25. (Appendix) High mortgage rates contributed to the development of the housing bubble.

*Short Answer*

26. Why is inflation harmful to an economy?
27. Why is deflation harmful to an economy?
28. What are the three roles of money? And what are two types of money?
29. Identify the components of M1 and M2.
30. Explain the difference between *required reserves* and *excess reserves*.
31. Explain the difference between a *commercial bank* and an *investment bank*.
32. What was the Glass-Steagall Act? Why was it originally passed? Why have some economists argued that elements of the Act should be restored?
33. How does Minsky's theory explain the occurrence of financial instability in the economic system?
34. (Appendix) What were some of the factors leading to the housing bubble?
35. (Appendix) What were the major fiscal and monetary policy responses to the crisis?

## Problems

1. Jane Doe has the following assets.

\$100 in her wallet

\$800 in her checking account

\$1,000 in her savings account

A \$300 outstanding credit card bill.

\$3,000 in a small certificate of deposit

A car worth \$5,000.

A house, worth \$200,000.

- a. Identify which are in M1, which are in M2, or in neither M1 nor M2.
- b. Suppose she takes the \$100 in her wallet and deposits it in her checking account. What is the change in M1 and M2?
- c. Suppose she takes \$400 from her checking account and purchases a certificate of deposit. What is the change in M1 and M2?

2. Assume a required reserve ratio of 0.10 to complete the following.

Assets		Liabilities & Net Worth	
Reserves	\$ 150 million	Deposits	\$ 500 million
Loans	\$ 250 million	Bank Capital	\$ 25 million
Bonds	\$ 125 million		
<b>TOTAL:</b>	<b>525 Million</b>	<b>TOTAL:</b>	<b>\$ 525 Million</b>

- a) Calculate the initial *required reserves* for this bank.
- b) Calculate the initial *excess reserves* for this bank.
- c) Convert all of the excess reserves into loans. Construct the new balance sheet.



## Self Test

1. Which of the following is *not* a reason why an unexpected episode of inflation is harmful to an economy?
  - A. It wipes out the value of people's savings.
  - B. It hurts people on fixed incomes, such as retired people who receive non-indexed pensions.
  - C. It redistributes wealth from debtors to creditors.
  - D. It creates menu costs.
  - E. It creates uncertainty, which makes financial planning for the future more difficult.
2. Hyperinflation ...
  - A. is often defined as any annual inflation rate higher than 10 percent.
  - B. describes the German economy after World War II.
  - C. can be become so severe that people resort to barter.
  - D. means that people tend to save money much more aggressively.
  - E. none of these statements is accurate.
3. According to the textbook, why is deflation harmful to an economy?
  - A. It redistributes wealth from debtors to creditors.
  - B. creates menu costs.
  - C. It creates uncertainty, which makes financial planning for the future more difficult.
  - D. It can lead to cutbacks in borrowing and spending, which can slow down the economy.
  - E. All of the above.
4. Which of the following is NOT a function of money?
  - A. A hedge against inflation.
  - B. A unit of account.
  - C. A store of value.
  - D. A medium of exchange.
  - E. All of these are functions of money.
5. Which of the following is NOT a type of money described in the textbook?
  - A. Fishhooks as money.
  - B. Fiat money.
  - C. Commodity money.
  - D. Silver coins as money.
  - E. All of these are types described in the text.

6. "Fiat money" refers to ...
- A. Older U.S. coins that contain a high (90%) silver content.
  - B. A creative alternative to modern money (such as cigarettes in a prisoner of war camp.)
  - C. Money that is valuable because a government says it has value.
  - D. Paper money backed by gold or other precious metals.
  - E. None of these is fiat money.
7. Which of the following is the most liquid?
- A. A \$20 bill in your pocket
  - B. A gold necklace
  - C. Three shares of Microsoft stock
  - D. A certificate of deposit (CD) in your bank.
  - E. A new Toyota Prius automobile
8. Which of these sequences best captures the liquidity continuum?
- A. Checking accounts, precious metal, real estate, share of stock
  - B. Checking accounts, precious metal, share of stock, real estate
  - C. Checking accounts, share of stock, precious metal, real estate
  - D. Checking accounts, share of stock, real estate, precious metal
  - E. Precious metal, checking accounts, share of stock, real estate
9. Which of the following is *not* one of the characteristics necessary for commodity money to be used as money?
- A. It must be durable.
  - B. It must be portable.
  - C. It must be generally acceptable.
  - D. It must be differentiated.
  - E. It must be scarce.
10. Which of the following is *not* included as "money" in M1?
- A. Currency in circulation
  - B. Checkable deposits
  - C. Money in savings account
  - D. The use of a credit card
  - E. The use of debit cards that take funds from a checking account

11. Which of the following is NOT a component of the M2 definition of the money supply?
- A. Certificates of deposit
  - B. Checking account deposits
  - C. Retail money market funds
  - D. Savings account
  - E. All of these are components of the M2 definition of the money supply.
12. Which of these would be an INCORRECT use a balance sheet for a private bank?
- A. A “government bonds” entry listed as an asset.
  - B. A “deposits” entry listed as a liability.
  - C. A “loans” entry listed as an asset.
  - D. Both (b) and (c) are incorrect.
  - E. All three of (a), (b), AND (c) are correct entries.
13. Which of these is NOT an example of a bank type described in the textbook?
- A. Goldman Sachs investment bank
  - B. Washington Mutual Savings and Loan
  - C. Service Federal Credit Union
  - D. The Federal Reserve
  - E. All of these are examples of bank types described in the textbook.
14. The Glass-Steagall Act ...
- A. was passed in 2009 to prevent future financial crises.
  - B. was strengthened in 1999 to increase financial regulation.
  - C. was passed in the late 1980s in response to the Savings & Loan crisis.
  - D. was passed in the 1930s to increase financial regulation.
  - E. None of these is correct.
15. Which of these is NOT an example of leverage?
- A. An investment bank increases its liabilities to speculate on derivatives.
  - B. A local entrepreneur borrows heavily to finance the cost of starting a new business.
  - C. General Motors issues new stock to raise funds for a new factory.
  - D. Microsoft issues commercial bonds to finance production of a new product.
  - E. All of these are examples of leverage.
16. A hedge fund is an example of ...
- A. a financial intermediary
  - B. a nonbank financial institution
  - C. an investment bank
  - D. a pension fund
  - E. None of these.

17. Nonbank institutions ...

- A. have been growing in importance in our financial system.
- B. often provide much more attractive alternatives to traditional savings accounts.
- C. are typically subject to less government regulation than traditional banks.
- D. include pension funds and insurance companies.
- E. All of these statements are accurate.

18. Speculative bubbles ...

- A. generally form for psychological and economic reasons.
- B. are an important source of economic growth.
- C. generally occur due to a general lack of liquidity.
- D. are generally associated with tight credit conditions.
- E. None of these statements is true.

19. The 'efficient market hypothesis is based on all the following assumptions *except*:

- A. Individuals are rational decision-makers.
- B. Markets are perfectly competitive.
- C. Individual decision-making is influenced by their expectations.
- D. Individuals possess complete information about the market price of assets.
- E. (a) and (c)

20. According to Minsky, during an economic expansion

- A. financial firms move from speculative financing to hedge financing.
- B. financial firms become more confident and take higher risks.
- C. financial firms move from hedge financing to Ponzi financing.
- D. financial firms become stronger.
- E. Both (b) and (c).

## Answers to Active Review Questions

1. liquid
2. M1
3. deflation
4. commodity money
5. M2
6. fiat money
7. financial intermediaries
8. bank reserves
9. fractional reserve system
10. required reserves
11. excess reserves
12. leverage
13. collective investment vehicle
14. hedge fund
15. securities broker
16. financial instability hypothesis
17. hedge, speculative, and Ponzi
18. securitization
19. sub-prime mortgages
20. moral hazard
21. Dodd-Frank
22. True.
23. True.
24. False, M1 remains unchanged. There has just been a change in the composition of M1, but the size of M1 remains the same.
25. False. It was *low* mortgage rates that feed the growth of the housing bubble.
26. Inflation is harmful because: it wipes out the value of people's savings; it hurts people on fixed incomes; it redistributes wealth from creditors to debtors; it creates menu costs; and it creates uncertainty, making financial planning for the future more difficult.
27. Deflation is a problem because: it redistributes wealth from debtors to creditors, it creates menu costs; it creates uncertainty, making financial planning for the future more difficult; and it can lead to cutbacks in borrowing and spending, which can slow down the economy.
28. The three roles of money are: medium of exchange, store of value, and unit of account. Two types of money are commodity money and fiat money. Commodity money is a good that is used as money that is also valuable in itself. Fiat money is a medium of exchange used as money because the government declares it as such and people accept it.
29. M1 consists of currency in circulation, checkable deposits, and other liquid accounts, such as savings, shares, and money market.  
M2 consists of all of M1, plus savings accounts, and other funds such as small certificates of deposit and retail money market funds.
30. Banks generate much of their profit from the use of other peoples' money. Checking account deposits entrusted to banks are also known as "demand deposits" because the depositors have access to their money whenever they want. Consequently banks

are obligated to hold a minimal portion of these deposits in liquid reserves. This portion is a percentage (set by the Federal Reserve in the U.S.) of total deposits and is known as **required reserves**. All of the reserves a bank has beyond this category of required reserves are referred to as **excess reserves**.

31. **Commercial banks** provide retail services to individuals and businesses. These are the institutions that we typically associate with checking accounts and lending. **Investment banks** are institutions that focus on underwriting and issuing securities. They do not provide traditional banking functions.
32. The Glass-Steagall Act was a 1933 legislative attempt to provide greater stability for the banking system through increased government regulation. It contained a number of provisions including the separation of commercial banking from investment banking. Some economists have argued that a “firewall” such as the one provided by Glass-Steagall should be restored between institutions that are federally insured (by the FDIC) and investment banks because of differences in risk-taking across the two types of banks.
33. Minsky’s theory argues that uncertainty about the future and expectations of market participants play a key role in determining the value of assets. When the economy is just recovering from a crisis investors will be cautious and maintain large safety margins. However, as the economy gains strength, investors will become more optimistic and pursue risky activities, which weakens the financial system and makes it more credit-dependent and vulnerable to crisis.
34. Factors leading to the housing bubble included a period of low interest rates, unprecedented expansion of credit including sub-prime mortgages, and speculation in the housing market driving prices even higher.
35. After the immediate responses of bailouts for endangered financial institutions, the Federal government instituted large-scale stimulus spending to prevent a collapse in aggregate demand and to promote economic recovery. At the same time, the Federal Reserve engaged in an extraordinarily expansionary monetary policy, purchasing hundreds of billions of dollars’ worth both of Treasury bonds (traditional expansionary policy) and other financial assets (“quantitative easing”).

### Answers to Problems

1.
  - a. The following are in M1, M2, or neither:
    - \$100 in her wallet = M1
    - \$800 in her checking account = M1
    - \$1,000 in her savings account = M2
    - A \$300 outstanding credit card bill = Neither
    - \$3,000 in a small certificate of deposit = M2
    - A car worth \$5,000 = Neither
    - A house, worth \$200,000 = Neither

b. M1 and M2 remain unchanged, since both cash and checking account deposits are counted in both M1 and M2.

c. M1 decreases by \$400, and M2 remains unchanged.

2.

a. Required Reserves = reserve ratio \* deposits  
 = (0.10) \* 500 million  
 = \$ 50 million

b. Excess Reserves = total reserves – required reserves  
 = 150 million – 50 million  
 = \$ 100 million

c.

Assets		Liabilities & Net Worth	
Reserves	\$ 50 million	Deposits	\$ 500 million
Loans	\$ 350 million	Bank Capital	\$ 25 million
Bonds	\$ 125 million		
<b>TOTAL:</b>	<b>525 Million</b>	<b>TOTAL:</b>	<b>\$ 525 Million</b>

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. C  | 11. E |
| 2. C  | 12. B |
| 3. E  | 13. E |
| 4. A  | 14. D |
| 5. E  | 15. C |
| 6. C  | 16. B |
| 7. A  | 17. E |
| 8. C  | 18. A |
| 9. D  | 19. C |
| 10. D | 20. E |

(note on #1: Inflation redistributes wealth from creditors to debtors)

## Chapter 11

# THE FEDERAL RESERVE AND MONETARY POLICY

*Macroeconomics in Context (Goodwin, et al.)*

### Chapter Overview

In this chapter, you will learn about the role of the Federal Reserve and how the decisions made at the Fed impact the macroeconomy. You will be introduced to the market for federal funds, and learn how the Federal Reserve attempts to expand or cool off the economy using monetary policy. You will also be introduced to theories of money, prices, and inflation, including the quantity equation, the quantity theory of money, monetarism, the liquidity trap, and the “modern monetary theory”. The chapter also discusses monetary policies used to respond to inflation and recession from the 1970s to the 2020s, with a focus on the return of significant inflation in 2021-2022. In the appendixes you will be introduced to bonds and different ways of thinking about interest rates.

### Chapter Objectives

After reading and reviewing this chapter, the student should be able to:

1. Understand the basic workings of central banks.
2. Describe the tools the Federal Reserve can use to carry out monetary policy.
3. Understand how the Fed uses open market operations to influence the federal funds rate.
4. Explain how monetary policy is expected to affect investment and aggregate expenditure.
5. Explain the U.S. monetary policy experience of the 2000-2022 period in the context of Federal Reserve priorities and monetary policy actions.
6. Understand the quantity equation, the quantity theory of money, and monetarism.
7. Describe possible sources of inflation.
8. Describe the transactions demand model of money.
9. Become familiar with the notions of “liquidity trap” and “credit rationing.”
10. Understand the controversy over rules versus activism in monetary policy.

*If the Appendix is included:*

11. Understand the use of bonds and the relation of bond prices to interest rates
12. Understand the difference between real and nominal interest rates, and their impact on the economy.

### Key Terms

open market operations	federal funds rate
Federal Open Market Committee (FOMC)	prime rate
monetary base (or high-powered money)	accelerator principle
money multiplier	expansionary monetary policy
discount rate	accommodative monetary policy



contractionary monetary policy  
quantitative easing (QE)  
liquidity trap  
credit rationing  
quantity equation  
velocity of money  
quantity theory of money  
monetary neutrality  
money supply rule  
monetarism  
monetizing the deficit

modern monetary theory

*Appendix:*

bond  
real interest rate  
expected real interest rate  
transactions demand  
precautionary demand  
speculative demand

## Active Review

*Fill in the Blank*

1. When the Federal Open Market Committee (FOMC) directs the Federal Reserve Bank in New York to buy or sell government bonds on the open market, it is conducting \_\_\_\_\_.
2. Suppose the Fed buys bonds on the open market. By doing so, it is increasing the \_\_\_\_\_ (also known as \_\_\_\_\_), which is the currency in circulation plus bank reserves.
3. The ratio of the money supply to the monetary base is called the \_\_\_\_\_, and in the U.S. is empirically estimated to have a value close to \_\_\_\_\_.
4. The interest rate that the Fed charges banks on loans it makes to banks so they can to meet their reserve requirements is called the \_\_\_\_\_.
5. The interest rate that banks pay one another when they borrow on an overnight basis is called the \_\_\_\_\_.
6. The \_\_\_\_\_ is the interest rate that banks charge their most creditworthy commercial borrowers.
7. The idea that high GDP growth has a bigger impact on intended investment spending than do interest rates, and thus leads to high investment growth is called the \_\_\_\_\_.
8. The central bank process of buying diverse financial assets with the goal of creating more monetary reserves is known as \_\_\_\_\_.
9. The three reasons that people choose to hold some of their assets as money include \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

10. When interest rates are so low that the Central Bank finds it impossible to lower them any further, the economy is in a \_\_\_\_\_.
11. In cases where inflation is a significant problem and the banking system is unstable, it is useful to use the \_\_\_\_\_, which analyzes the relationships between the money supply, the velocity of money, the price level, and real output.
12. The theory that assumes that the velocity of money is constant in the equation  $M \times V = P \times Y$  is the \_\_\_\_\_.
13. \_\_\_\_\_ is the idea that changes in the money supply may affect only prices, while leaving output unchanged.
14. When a central bank buys government debt as it is issued and thereby injects new money into the economy it is said to be \_\_\_\_\_, which can trigger hyperinflation.
15. (Appendix) A financial instrument that commits its seller to pay a fixed amount every year, in addition to repaying the amount of the principal on a particular date in the future, in return for the loan of funds, is called a \_\_\_\_\_.
16. (Appendix) The nominal interest rate minus inflation is the \_\_\_\_\_.

*True or False*

17. The most common monetary policy tool used by the Fed is changing the discount rate.
18. A contractionary or “tight” money policy entails a decrease (or fall in the growth rate of) the money supply, M1, leading to a lower interest rate.
19. When the Fed conducts open market operations, it is either trying to keep the federal funds rate at its existing level, or trying to push the federal funds rate up or down.
20. Quantitative easing refers to the purchase of a diverse collection of financial assets to increase the money supply.
21. The quantity theory of money is an important component of Keynesian thinking.

*Short Answer*

22. Describe the structure of the Federal Reserve. How many governors are on the board, and how long is each governor's term? Who appoints them? How many regional banks does the Fed have?

23. Is the role (or function) of the Fed only to conduct monetary policy (e.g. raise or lower interest rates)?

24. Identify the three tools of monetary policy, and what the Fed would do to increase (or decrease) the (growth of the) money supply.

25. Explain the sequence of links connecting an expansionary monetary policy with interest rates, intended investment, aggregate expenditure, and output.

26. Suppose the economy is characterized by inflation problems and an unstable banking system. Use the quantity equation,  $M \times V = P \times Y$ , to answer the following questions:

- a. What assumptions does the classical theory make about the variables in the quantity equation?
- b. What assumptions does monetarist theory make about the variables?
- c. What assumptions do Keynesian-oriented theories make?
- d. How does monetarist theory use the quantity equation to explain the deflation and fall in output in the U.S. during the Great Depression?
- e. How might a Keynesian-oriented theorist use the quantity equation to explain the cause of hyperinflation?
- f. Provide two cases where inflation is caused by some factor other than an increase in the money supply.

## Problems

1. Suppose the Fed buys \$5 million worth of government bonds from TrustMe bank.
  - a) Show the changes in the Fed's Balance sheet, and the changes in TrustMe bank's balance sheet.
  - b) How much in new loans can TrustMe Bank make, given this change in its balance sheet? (Assume the borrowers deposit the amount they borrow in other banks.)
  - c) Assume that when the new loans are deposited in other banks in the banking system, all these banks loan out all of their excess reserves. Assume further that the money multiplier equals 2. By how much has the money supply increased from the Fed's bond purchase?
  
2. Suppose the Fed conducts an expansionary monetary policy. (Assume an economy with low inflation and a stable banking system). Illustrate graphically the effects of this expansionary monetary policy on:
  - a) The market for federal funds
  
  - b) Intended investment spending
  
  - c) Aggregate Expenditure and output
  
  - d) Suppose now that firms become pessimistic as they expect a fall in GDP and a fall in sales, such that the expansionary policy leaves no effect on aggregate expenditure and output. Illustrate graphically by re-doing the graphs in a-c above.

### Self Test

1. Which of the following is *not* one of the functions of the Federal Reserve?
  - A. Performing banking functions for private banks
  - B. Issuing Treasury bills and bonds
  - C. Regulating banks
  - D. Promoting confidence and stability in the financial sector
  - E. Conducting monetary policy.
  
2. An open market purchase by the Fed
  - A. increases bank reserves, loans, and deposits, and thus increases the money supply.
  - B. decreases bank reserves, loans, and deposits, and thus decreases the money supply.
  - C. increases bank reserves, loans, and deposits, and thus decreases the money supply.
  - D. decreases bank reserves, loans, and deposits, and thus increases the money supply.
  - E. None of the above.
  
3. Suppose the Fed buys \$15 million worth of government bonds from Richland bank. Which of the following is Richland Bank most likely to do?
  - A. Reduce its outstanding loans by \$15 million.
  - B. Borrow more reserves at the “discount window”
  - C. Borrow more reserves from other banks.
  - D. Make new loans totaling about \$15 million.
  - E. None of the above
  
4. Suppose the Fed makes an open market purchase of \$3 million. Assume that the money multiplier equals 2. What is the change in the money supply?
  - A. The money supply has increased by \$1.5 million.
  - B. The money supply has increased by \$6 million.
  - C. The money supply had decreased by \$1.5 million.
  - D. The money supply has decreased by \$6 million.
  - E. None of the above.
  
5. Suppose the Fed makes an open market sale of \$8 million in bonds. Assume the money multiplier is equal to 2. What is the change in the money supply?
  - A. The money supply has increased by \$4 million.
  - B. The money supply has decreased by \$4 million.
  - C. The money supply has increased by \$16 million.
  - D. The money supply has decreased by \$16 million.
  - E. None of the above.

6. Which of the following is *not* one of the Fed's monetary policy tools?
- A. Buying bonds on the open market
  - B. Selling bonds on the open market
  - C. Raising or lowering taxes
  - D. Raising or lowering the reserve requirement ratio
  - E. Raising or lowering the discount rate
7. Suppose the Fed wanted to engage in an expansionary monetary policy. Which of the following should it do?
- A. Sell bonds on the open market.
  - B. Increase the reserve requirement ratio.
  - C. Increase the discount rate.
  - D. Buy bonds on the open market.
  - E. Lower taxes.
8. The rate determined in the private market for overnight loans of reserves among banks is called the
- A. federal funds rate
  - B. discount rate
  - C. prime rate
  - D. interest rate
  - E. None of the above.
9. Which of the following best describes the sequence of events in the conduct of contractionary monetary policy using open market operations (in an economy with low inflation and a stable banking system)?
- A. The Fed raises the interest rate, which leads to a decrease in intended investment spending and a decrease in the supply of federal funds, which decreases aggregate expenditure and output.
  - B. The Fed decreases intended investment spending, which leads to a decrease in aggregate expenditure and output, and a decrease in the supply of federal funds and the interest rate.
  - C. The Fed sells bonds, which decreases the supply of federal funds, which raises the interest rate, which leads to a decrease in intended investment spending, aggregate expenditure and output.
  - D. The Fed buys bonds, which increases the supply of federal funds, which lowers the interest rate, and leads to a decrease in intended investment spending and aggregate expenditure and output.
  - E. The Fed lowers the interest rate, which leads to an increase in intended investment spending and an increase in the supply of federal funds, which decreases aggregate expenditure and output.

10. What did the Federal Reserve do to expand the economy after the 2008 financial crisis?
- A. It pushed down the federal funds rate.
  - B. It raised the reserve requirement ratio.
  - C. It introduced a new policy tool called quantitative easing, where it bought diverse financial assets with the goal of creating more monetary reserves.
  - D. A. and C. only
  - E. A, B, and C.
11. What did the Federal Reserve do to respond to the high inflation rates in 2021-2022?
- A. It lowered the reserve requirement to 0%.
  - B. It implemented price controls on essential goods.
  - C. It raised the federal funds rate.
  - D. It introduced a new round of quantitative easing.
  - E. All of the above.
12. During a liquidity trap,
- A. as the Fed increases the money supply, the interest rate falls significantly.
  - B. increases in the money supply have no effect on the interest rate, because the money demand curve has become perfectly horizontal.
  - C. as the Fed increases the money supply, the interest rate rises substantially.
  - D. once the Fed increases the money supply, it can no longer control it, which leads to hyperinflation.
  - E. monetary policy is highly effective in expanding the economy
13. When credit rationing occurs,
- A. banks keep their interest rates below what the market would bear, and deny loans to some potential borrowers.
  - B. Banks lend to only those customers deemed to be creditworthy and less risky.
  - C. Smaller and less well-known firms may be more disadvantaged than bigger firms with well-established reputations.
  - D. The Fed's intended monetary policy actions may be limited or ineffective.
  - E. All of the above.
14. Which theory (or theories) assumes that the velocity of money is *not* constant, in the quantity equation  $M \times V = P \times Y$ ?
- A. Classical theory
  - B. Monetarist theory
  - C. Keynesian-influenced theories
  - D. The theory expounded by Milton Friedman and Anna Jacobson Schwartz
  - E. None of the above

15. Which of the following characterizes classical monetary theory?
- A. Output is assumed to be always constant at its full-employment level.
  - B. Changes in the money supply have no effect on the level of real output, and thus money is assumed to be neutral.
  - C. An increase in the money supply can only lead to inflation.
  - D. The Fed should adopt a money supply rule, allowing the money supply to grow only at the same rate as real GDP.
  - E. All of the above.

**For the next two questions, consider the following choices:**

- I. the Classical theory**
- II. Monetarism**
- III. Keynesian-oriented theories**

16. Which of the above theories would be in agreement with the following statement?  
“The Fed should not use interventionist monetary policy, but should adopt a money supply rule such that the money supply is only allowed to grow at a steady rate -- the same rate as real GDP.”
- A. I
  - B. II
  - C. III
  - D. I and II
  - E. I, II, and III
17. Which of the above theories would be in agreement with the following statement?  
“Inflation is always and everywhere a monetary phenomenon.”
- A. I
  - B. II
  - C. III
  - D. I and II
  - E. I, II, and III
18. Which of the following is not one of the potential problems of monetary policy?
- A. long “outside lags”
  - B. long “inside lags”
  - C. disagreement over inflation and unemployment targets
  - D. liquidity traps
  - E. reluctant lenders and reluctant borrowers



**From Appendix:**

19. What happens to bond prices and their interest rate when the Fed makes a sizeable open market purchase?
- A. The price of bonds rises and their interest rate falls.
  - B. The price of bonds falls and their interest rate rises.
  - C. The price of bonds rises and their interest rate rises.
  - D. The price of bonds falls and their interest rate falls.
  - E. The price of bonds and their interest rate remain unchanged.
20. What is the difference between the nominal and real interest rate?
- A. The nominal interest rate is the real interest rate minus the rate of inflation.
  - B. The real interest rate is the nominal rate plus the rate of inflation.
  - C. The real interest rate is the nominal rate minus the rate of inflation.
  - D. The nominal interest rate is the real interest rate plus the rate of inflation.
  - E. There is no difference between real and nominal interest rates.

## Answers to Active Review Questions

1. open market operations
  2. monetary base, high-powered money
  3. money multiplier, two
  4. discount rate
  5. federal funds rate
  6. prime rate
  7. accelerator principle
  8. quantitative easing
  9. transactions demand, precautionary demand, and speculative demand
  10. liquidity trap
  11. quantity equation
  12. quantity theory of money
  13. monetary neutrality
  14. monetizing the deficit
  15. (Appendix) bond
  16. (Appendix) real interest rate
  17. False. It is open market operations.
  18. False. With “tight” policy, the interest rate *rises*.
  19. True.
  20. True.
  21. False. It is an important component of the classical theory and monetarism.
  22. The Fed’s board of governors has seven members who serve fourteen-year terms. They are nominated by the president and approved by the Senate, and one member of the board is named as chair. There are also 12 regional Federal Reserve banks.
  23. No, the Fed is supposed to do more than that. Its roles include: performing banking functions for private banks; determining reserve requirements; stabilizing exchange rates; regulating banks; promoting confidence and stability in the banking sector; as well as conducting monetary policy.
  24. The three tools of monetary policy are: open market operations (buying and selling of bonds), discount rate, and reserve requirement. To increase the (growth of the) money supply, the Fed could either buy bonds, lower the reserve requirement ratio, or lower the discount rate. To decrease the (growth of the) money supply, the Fed could either sell bonds, raise the reserve requirement ratio, or raise the discount rate.
  25. An expansionary monetary policy will lower interest rates, which tends to encourage intended investment, leading to an increase in aggregate expenditure and output (GDP).
  26. a. Classical theory assumes that velocity is constant, and that the economy is always constant at the full employment level of income.
    - b. Monetarism also assumes that velocity is constant, but relaxes the assumption that the economy is always constant at full employment, and believes that output can fall with bad monetary policy.
    - c. Keynesian-oriented theories assume none of the variables (in particular neither velocity or output) are constant.
    - d. The monetarists thought that the bad monetary policy of decreasing the money supply caused both a drop in the price level (deflation) and a fall in output during the Great Depression.
    - e. A dramatic rise in the money supply (especially if the central bank is monetizing
- Chapter 11 – The Federal Reserve and Monetary Policy

- deficits) and/or the velocity of money could trigger hyperinflation.
- f. Inflation could be caused by an increase in the velocity of money, or by rise in prices of imports.

### Answers to Problems

1. Suppose the Fed buys \$5 million worth of government bonds from TrustMe bank. a. The changes in the Fed's Balance sheet are:

Assets		Liabilities	
Government bonds	+\$ 5 million	Bank reserves	+\$ 5 million

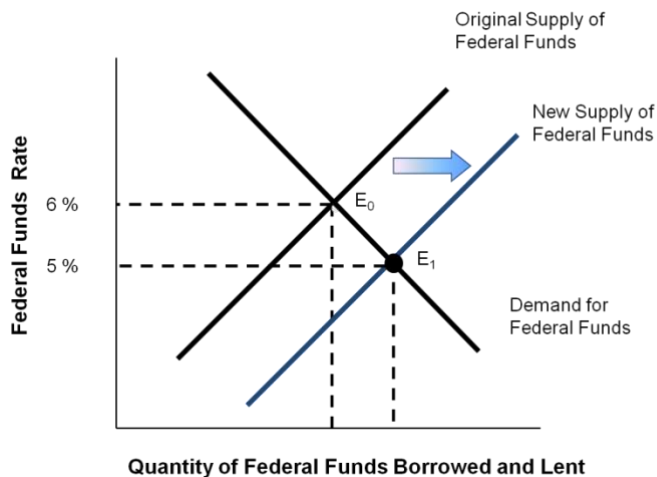
(b) The changes in TrustMe bank's balance sheet are:

Assets		Liabilities	
Government bonds	-\$ 5 million		
Reserves	+\$ 5 million		

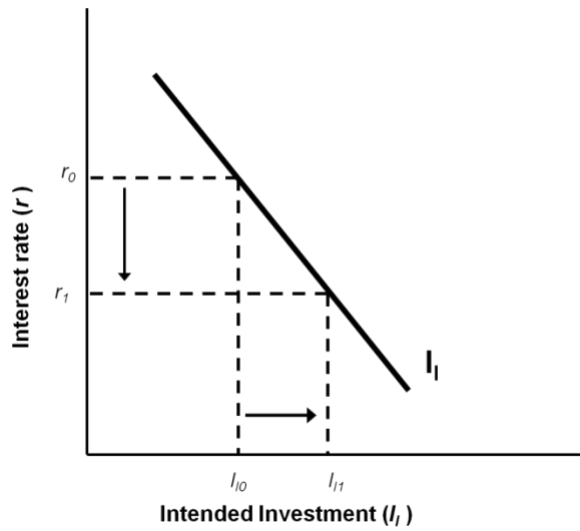
- b. \$5 million  
 c.  $\$5 \text{ million} \times 2 = \$10 \text{ million}$

2. Effects of an expansionary monetary policy:

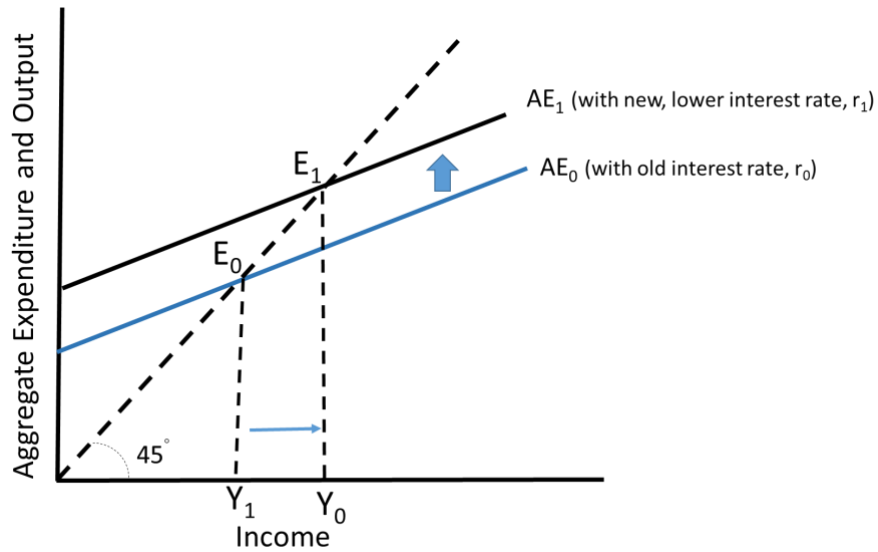
a.



b.



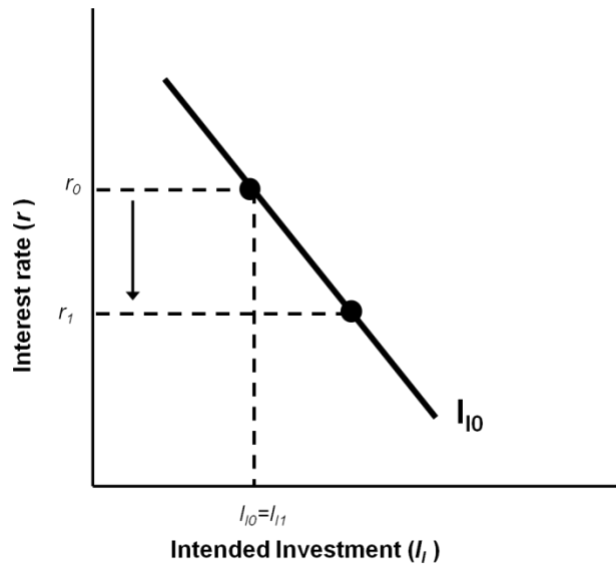
c.



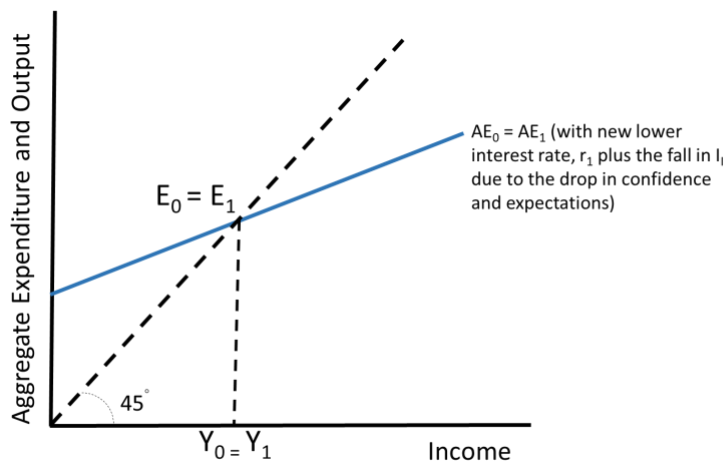
d. If firms become pessimistic as they expect a fall in GDP and a fall in sales:

Graph a would remain the same, as above.

Graph b would now look as follows, as the drop in confidence leads to a fall in  $I_{i0}$  to  $I_{i1}$ , so intended investment spending remains at its original level:



Graph c would now look like as follows, where AE remains unchanged, but at the lower interest rate:



### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. B  | 11. C |
| 2. A  | 12. B |
| 3. D  | 13. E |
| 4. B  | 14. C |
| 5. D  | 15. E |
| 6. C  | 16. D |
| 7. D  | 17. D |
| 8. A  | 18. B |
| 9. C  | 19. A |
| 10. A | 20. C |

## Chapter 12

# **AGGREGATE SUPPLY, AGGREGATE DEMAND, AND INFLATION: PUTTING IT ALL TOGETHER**

*Macroeconomics in Context (Goodwin, et al.)*

### **Chapter Overview**

This chapter introduces you to the "Aggregate Supply /Aggregate Demand" (or "AS/AD") model. This model builds on the model for Aggregate Expenditure (AE) presented in Chapter 8, using the broader term "aggregate demand" to include explicit attention to the potential problem of inflation. The chapter also adds in the role of aggregate supply by presenting an Aggregate Supply curve. The AS/AD model is then deployed to analyze various current and past events (such as changes in fiscal and monetary policy, supply shocks, and other changes) and examine their effects on the rate of inflation and output. The chapter reviews real-life examples of U.S. macroeconomic performance seen through the lens of the AS/AD model. It also compares the classical school, with their view of a stable full employment equilibrium, to the Keynesians with their view of a dynamically evolving economy.

### **Chapter Objectives**

After reading and reviewing this chapter, you should be able to:

1. Explain the derivation of the Aggregate Demand curve relating inflation and output levels, and how it shifts.
2. Explain the derivation of the Aggregate Supply curve relating inflation and output levels, and how it shifts.
3. Use the AS/AD model to describe the consequences of changes in fiscal policy, monetary policy, supply shocks, and investor and consumer confidence, depending on whether an economic is in a recession or at full employment.
4. Apply the AS/AD model to understanding major U.S. macroeconomic developments of the last several decades.
5. Discuss how classical and Keynesian economic theories differ in how they understand the macroeconomy.

## Key Terms

aggregate demand (AD) curve  
real wealth effect  
real money supply  
aggregate supply (AS) curve  
maximum capacity output  
wage-price spiral  
wage and price controls  
disinflation  
supply shock  
stagflation

demand-pull inflation  
cost-push inflation

### *Appendix:*

real business cycle theory  
rational expectations theory  
neoclassical synthesis  
New Keynesian macroeconomics  
post-Keynesian macroeconomics  
path dependence

## Active Review

### *Fill in the Blank*

1. The curve that shows how inflation is related to total demand, and indicates an inverse relationship between inflation and output, is called the \_\_\_\_\_ curve.
2. The tendency for consumers to increase or decrease their consumption based on their perceived level of wealth is described as the \_\_\_\_\_ effect.
3. The nominal money supply divided by the general price level is known as the \_\_\_\_\_.
4. The curve that shows the combination of output and inflation that can occur in an economy, given the country's capacity constraints, is called the \_\_\_\_\_ curve.
5. Assume that a nation is fully using every last one of its available resources in production. Then that nation would be operating at \_\_\_\_\_ output.
6. When demand for labor and other resources is high, and that bids up wages, which in turn bids up prices as producers try to cover their higher cost of production, which then puts further upward pressure on wages as workers demand compensation for higher prices, etc., the result is what is called a \_\_\_\_\_.
7. During WWII, the government established \_\_\_\_\_ to keep inflation from spiraling out of control.
8. Something that changes the ability of an economy to produce goods and services (such as a natural disaster, a war, change in productivity, or change in the price of a key input like oil) is called a \_\_\_\_\_.

9. The presence of both economic stagnation (with rising unemployment) and rising inflation is known as \_\_\_\_\_.
10. Suppose people experience a higher level of inflation for a period of time, and begin to build in that higher rate of inflation into their contracts. This would be characterized as an increase in \_\_\_\_\_.
11. Inflation caused by excessive aggregate demand is referred to as \_\_\_\_\_.
12. (In appendix) The theory that changes in employment levels are caused by change in technological capacities or people's preferences concerning work is a theory associated with \_\_\_\_\_.
13. (In appendix). The theory that said that people will use all available information, including rational anticipation of the Fed's monetary policy movements, and will immediately incorporate changes in inflationary expectations into their contracts, is associated with the \_\_\_\_\_ school.
14. (In appendix) A combination of classical and Keynesian views, with Keynesian theory applied to the short and medium run, but the classical view prevailing in the long run, is known as the \_\_\_\_\_.
15. (In appendix) The school of thought which bases their analysis on rational, optimizing individuals and micro-level market behavior, but believes that the adjustment to full employment equilibrium could take a relatively long time, is called \_\_\_\_\_.
16. (In appendix) The school of thought that believes that economies are unstable, that history matters, and that the future is often unpredictable, is called \_\_\_\_\_.

*True or False*

17. According to the AS curve, at the "full employment" range of output the unemployment rate is 0%.
18. According to classical theory, any shifts in the AD curve will only lead to changes in inflation, and leave output unchanged.
19. There is a clear relationship between unemployment and inflation: inflation is low during periods of high unemployment and as unemployment declines inflation rate increases.
20. Stagflation is the combination of stagnation and deflation.



21. An oil price shock (assuming all else remains the same) can lead to stagflation.

*Short Answer*

22. Why is the AD curve downward sloping?

23. What variables would cause a shift in the AD curve?

24. What are the five regions of the aggregate supply curve diagram?

25. Why is the AS curve gently rising in the full employment range?

26. Why is the AS curve flat, rather than upward sloping, in the recession range?

27. Why is there no immediate response in the AS curve to an increase in inflation?

28. What factors would cause a shift in the AS curve (and in some cases, the maximum output)?

29. What is the classical school's rationale for the slope of the AS curve?

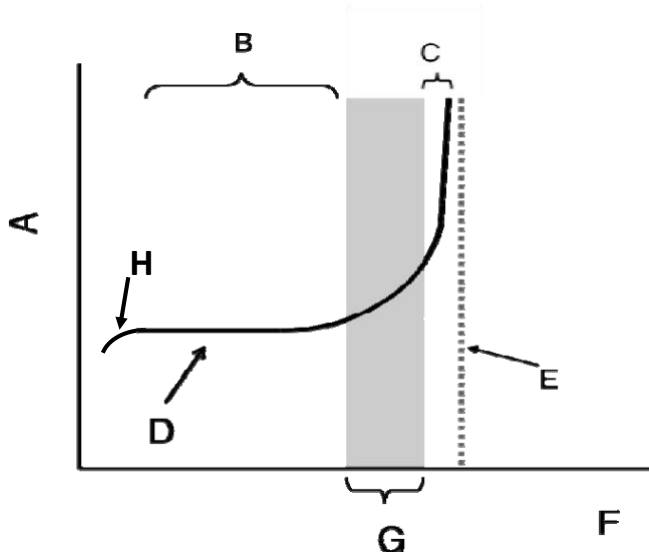
30. One of the simplifying assumptions in the macroeconomic AD/AS model is that only the level of spending is important, not its composition. What does the "composition of spending" entail?

31. How would you explain the high inflation during 2021-2022 based on the AS/AD model?

32. (In appendix) Is the difference between the classical school and the Keynesians only a matter of time (i.e. the time of the adjustment to the long run full employment equilibrium), or is there a more fundamental difference in world view between the two approaches?

**Problems**

1. Fill in the missing labels on the graph below:



- A: \_\_\_\_\_
- B: \_\_\_\_\_
- C: \_\_\_\_\_
- D: \_\_\_\_\_
- E: \_\_\_\_\_
- F: \_\_\_\_\_
- G: \_\_\_\_\_
- H: \_\_\_\_\_

2. For each of the following, illustrate the shift of one of the curves in the AS/AD model:
- a. Business confidence rises as firms expect an increase in GDP, sales, and profits.
  - b. A rise in inflation increases people's expectations of inflation in the medium run.
  - c. The distribution of high-speed internet to rural areas boosts productivity.
3. Illustrate the following periods of history with the AS/AD model:
- a. Government spending for the Vietnam War during the late 1960s pushed up the rate of inflation from about 1% to 5%.
  - b. In 1973-74, OPEC engaged in an oil embargo, causing an increase in oil prices. Inflation rose to above 9% in 1975, and the unemployment rate rose above 8%. (Illustrate the immediate effect.)
  - c. After another oil price shock in 1979, the Fed conducted a contractionary monetary policy (choosing a lower target inflation rate). Inflationary expectations fell. The unemployment rate rose to almost 10%, but inflation fell from 9% to 4%.
  - d. The 1990s brought an era of innovation, increasing global competition, and weakened unions from years of anti-union government policies. By 1998, the unemployment rate was 4.4% and inflation was 1.6%.

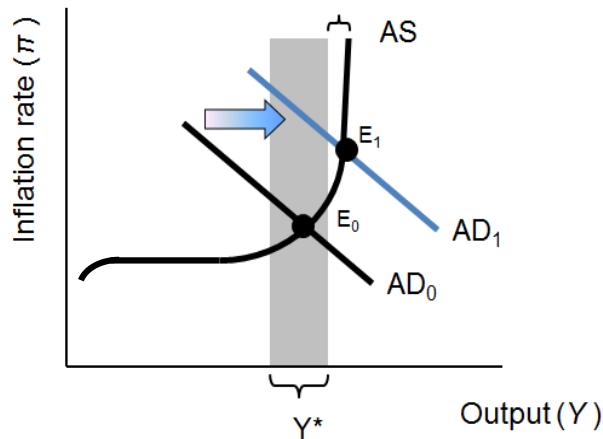
### Self Test

1. Which of these factors explain why the AD curve is downward-sloping?
- A. With higher inflation, consumers real income and wealth is less and they consume less, resulting in lower output.
  - B. With higher inflation, the real money supply will be lower, resulting in lower output.
  - C. Because with higher inflation, exports will be more expensive, resulting in less net exports and lower output.
  - D. As inflation increases, the Fed will raise interest rates and slow down the economy, resulting in lower output.
  - E. All of the above.

2. Which of the following would *not* cause a shift in the aggregate demand (AD) curve?
- A. The government cuts taxes.
  - B. Expectations of a growing economy lift business confidence and investment.
  - C. The Fed chooses a more expansionary monetary policy.
  - D. Technological progress improves productivity.
  - E. Consumers increase autonomous spending.
3. Which of the following is *not* one of the five regions of the aggregate supply curve diagram?
- A. Maximum capacity output
  - B. Wage-price spiral
  - C. Full employment range of output
  - D. Unemployment
  - E. Net exports
4. What is the shape of the AS curve in the full employment range?
- A. Flat and horizontal
  - B. Gently rising upwards
  - C. Steeply rising upwards
  - D. Completely vertical
  - E. Downward sloping
5. Which of the following would *not* cause a shift in the AS curve?
- A. A natural occurrence, such as a bumper crop in agriculture.
  - B. An increase in labor productivity.
  - C. An increase in a key input of production, such as oil prices.
  - D. A change in investment spending.
  - E. A change in inflation that changes people's expectations of inflation in the medium run.
6. Which of the following would *not* cause a shift in both the AS curve *and* maximum capacity output?
- A. A natural occurrence, such as a bumper crop in agriculture.
  - B. An increase in labor productivity.
  - C. An increase in the price of a key input of production, such as oil.
  - D. A change in inflation that changes people's expectations of inflation in the medium run.
  - E. None of the above.

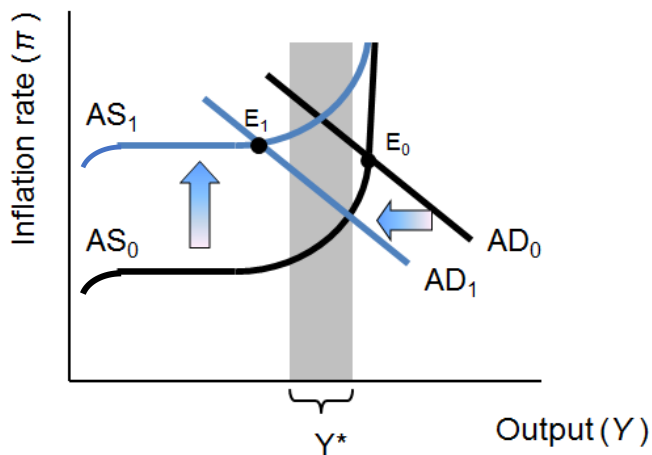
7. Which of the following would cause the AD curve to shift to the right?
- A. The government raises income taxes.
  - B. Firms become pessimistic about the future growth of GDP, sales, and profits.
  - C. The Fed shifts to a more expansionary monetary policy.
  - D. Workers build expectations of higher inflation into their contracts.
  - E. None of the above.
8. What could cause both the AS curve and maximum capacity to shift to the right?
- A. A decrease in labor productivity.
  - B. A decrease in inflationary expectations.
  - C. A cut in income taxes.
  - D. The distribution of high-speed internet access to rural areas in the U.S.
  - E. None of the above.
9. Suppose a war destroys much of a nation's infrastructure. Assume everything else remains unchanged. How would the impact be illustrated with the AS/AD model?
- A. AD shifts right/up.
  - B. AD shifts left/down.
  - C. AS and maximum capacity shift right.
  - D. AS and maximum capacity shift left.
  - E. AS, AD and maximum capacity remain unchanged.
10. Suppose the U.S. Congress passes a stimulus package with tax rebates for all qualifying U.S. households. Assume everything else remains unchanged. How would the impact be illustrated with the AS/AD model?
- A. AD shifts right.
  - B. AD shifts left.
  - C. AS and maximum capacity shift right/down.
  - D. AS and maximum capacity shift left/up.
  - E. AS, AD and maximum capacity both shift left.
11. Suppose we observe an increase in inflation and a decrease in output. Which of the following could be the cause?
- A. The Fed has chosen a lower inflation target.
  - B. Good weather has produced a bumper harvest.
  - C. An increase in consumer confidence has boosted consumption spending.
  - D. The price of a key input, oil, has increased.
  - E. None of the above.

12. In the figure below, which of the following events could explain the shift of the AD curve to the right?



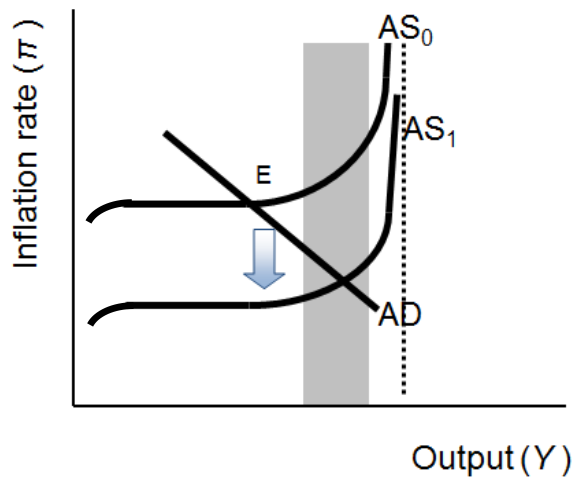
- A. An increase in government spending.
- B. A tax increase.
- C. An increase in consumer and investor confidence.
- D. (a) and (c) only.
- E. (b) and (c) only.

13. In the figure below, which of the following events could explain the upward shift of the AS curve, and the leftward shift of the AD curve?



- A. A tax cut.
- B. An increase in government spending.
- C. An increase in inflationary expectations, followed by a contractionary fiscal policy.
- D. A decrease in inflationary expectations, followed by an expansionary fiscal policy.
- E. None of the above.

14. In the figure below, which of the following could explain the shift downwards of the AS curve?



- A. An increase in inflationary expectations.
  - B. An increase in oil prices.
  - C. A fall in inflationary expectations.
  - D. An increase in government spending.
  - E. None of the above.
15. If the Fed pursues contractionary monetary policy, what are the effects in the medium run (once people's inflation expectations have had time to adapt)?
- A. AD shifts down/left.
  - B. AD shifts down/left and AS shifts down.
  - C. AD shifts up/right.
  - D. AD shifts up/right and AS shifts up.
  - E. AD shifts down/left and AS shifts up.
16. According to classical theory, the aggregate supply (AS) curve is:
- A. perfectly horizontal
  - B. gently upward sloping
  - C. flat at first, and then rises steeply
  - D. perfectly vertical
  - E. downward sloping

17. Which of the following statements does *not* characterize classical theory?
- A. Markets are self-adjusting, and the economy tends to function smoothly.
  - B. Individuals are rational, optimizing agents, who quickly respond to market conditions.
  - C. Output always remains at its full employment level.
  - D. Fiscal and monetary expansion tends to lead to higher inflation.
  - E. The government should intervene to keep market conditions favorable for corporations to maximize profits.
18. Which of the following statements characterizes Keynesian theory?
- A. Individuals are not always rational, optimizing agents, but instead are subject to waves of optimism or pessimism.
  - B. The “animal spirits” of investors can lead to big fluctuations in the business cycle.
  - C. The AD curve is perpetually on the move over the peaks and troughs of the business cycle.
  - D. Governments should intervene to smooth out the peaks and troughs of the business cycle and keep the AD curve more stable.
  - E. All of the above.
19. The macroeconomic AS/AD model illustrates the following points about the economy:
- A. Expansionary fiscal and monetary policies tend to push the economy toward higher output.
  - B. Contractionary fiscal and monetary policies tend to push the economy toward higher output.
  - C. Adverse supply shocks lower output and raise inflation.
  - D. (a) and (c) only.
  - E. (b) and (c) only.
20. Which of the following are current schools of macroeconomics (see Appendix)?
- A. rational expectations school
  - B. neoclassical synthesis
  - C. New Keynesian macroeconomics
  - D. post-Keynesian macroeconomics
  - E. All of the above are current schools of macroeconomics

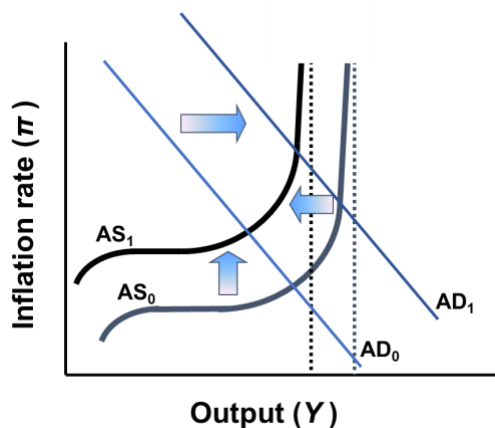


## Answers to Active Review Questions

1. aggregate demand
2. real wealth
3. real money supply
4. aggregate supply curve
5. maximum capacity
6. wage-price spiral
7. wage and price controls
8. supply shock
9. stagflation
10. inflationary expectations
11. demand-push inflation
12. (In Appendix) real business cycle theory
13. (In Appendix) rational expectations school
14. (In Appendix) neoclassical synthesis
15. (In Appendix) New Keynesian macroeconomics
16. (In Appendix) Post-Keynesian macroeconomics
17. False. There will be some unemployment (transitory unemployment) at the full employment range of output, but not enough unemployment to be considered a problem.
18. True.
19. False. Though there seems to be an inverse relationship between unemployment rate and inflation rate as suggested by the Phillips curve, this is not always true. During the 1970s, the United States experienced both high inflation and high unemployment (stagflation).
20. False. It is the combination of stagnation and inflation.
21. True.
22. The AD curve is downward sloping due to the Fed reaction rule: when inflation is rising, the Fed will raise interest rates, thereby lowering output, and vice versa when inflation is falling. Thus higher rates of inflation lead to lower rates of output, and vice versa. Other explanations for the downward sloping AD curve include real wealth effect (lower consumption due to a decline in the value of people's savings and wealth caused by inflation), real money supply effect (decline in real money supply, increase in interest rates and a decline in investment caused by inflation), and a decline in net exports due to an increase in the price of domestic goods.

23. The AD curve would shift with changes in: levels of government spending, taxation, autonomous consumption, autonomous investment, and net exports, and with a change in the Fed inflation rate target.
24. The five regions are: maximum capacity output, the wage price spiral, the full employment range of output, recession or recovering from recession, and deep recession where output is far below the full employment level and inflation starts to drop or may even be negative.
25. Because producers start to encounter bottlenecks in the supply of some of resources as they increase production, prices will rise in some sectors, leading to some aggregate increase in inflation.
26. The AS curve is flat in the recession range because the existence of unemployed resources produces no pressure for inflation to rise, and the stickiness of wages and prices (their tendency to be slow in adjusting downwards) produces little pressure for inflation to fall.
27. There is no immediate response to inflation in the short run, because it takes time for people to notice the higher inflation and to incorporate it into their contracts.
28. Shifts in the AS curve are caused by: changes in inflationary expectations, and supply shocks (whether beneficial or harmful) such as changes in the price of a key input, or changes in productivity.
29. The classical AS curve is perfectly vertical because the economy is always at its full employment equilibrium. If output falls below full employment equilibrium, unemployed workers would bid down wages, and the economy would thereby return to full employment. Likewise, if output were to rise above full employment equilibrium, workers would bid up wages, and the economy would again return to full employment.
30. The composition of spending entails both the types of goods and services produced, as well as the production methods used in generating GDP. Remember from our discussion in Chapter 1 that ‘what’ is produced and ‘how’ it is produced are central to understanding how the production process affects well-being.

31. The high inflation in 2021-2022 is likely to have been caused by the high government spending during the COVID-19 pandemic (outward shift in the AD curve) as well as the supply bottlenecks due to supply-chain problems (left and upward shift of the AS curve). This is shown in the figure below, where AD moves to the right from  $AD_0$  to  $AD_1$ , while AS shifts left from  $AS_0$  to  $AS_1$ , resulting in an equilibrium where inflation is high.

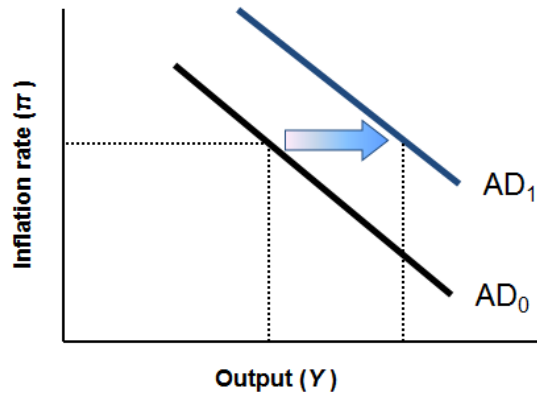


32. Some economists operating with a classical/Keynesian synthesis would see the differences merely as a matter of time. The New Keynesians would be among them, who would argue that it could take a significant amount of time to reach the long run full employment equilibrium. Post-Keynesians, on the other hand, would see a much more fundamental difference between the two approaches. Their starting point is not the rational, optimizing behavior of individuals and markets that are smoothly functioning. Rather, they see the economy as unstable and unpredictable, with individuals influenced by waves of optimism or pessimism.

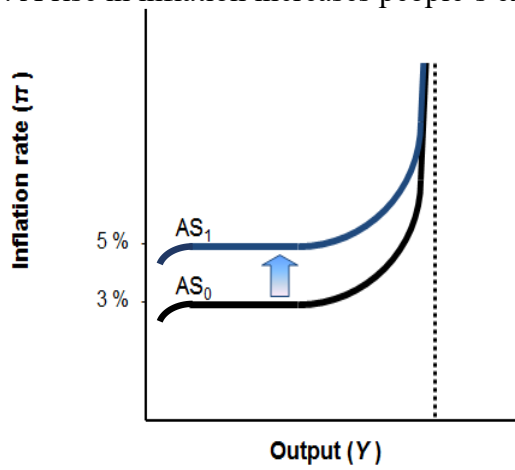
### Answers to Problems

1.
  - A: Inflation rate
  - B: Recession
  - C: Wage-Price Spiral
  - D: Aggregate Supply
  - E: Maximum Capacity
  - F: Output ( $Y$ )
  - G:  $Y^*$  (Full employment output range)
  - H: deep recession and decline in inflation

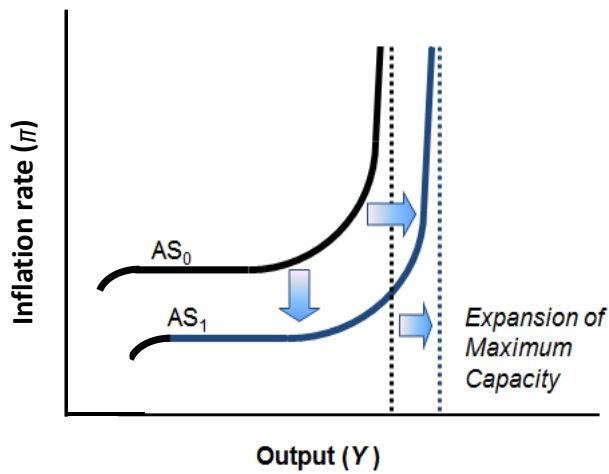
2.  
 a. Business confidence rises as firms expect an increase in GDP, sales, and profits.



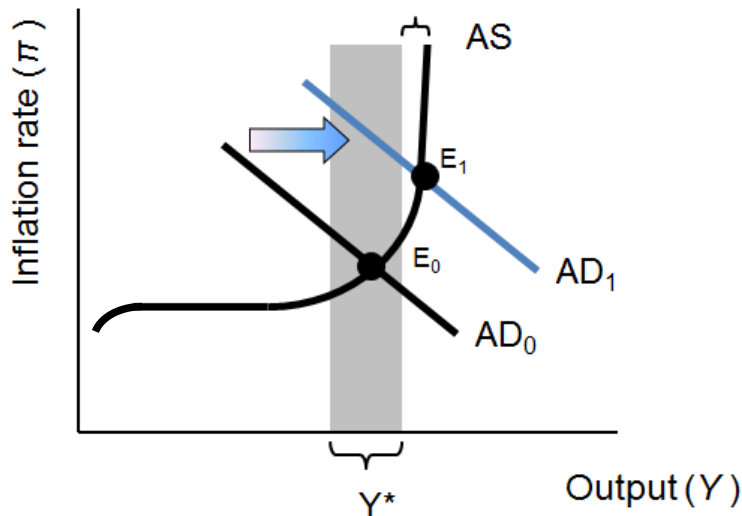
- 2b. A rise in inflation increases people's expectations of inflation in the medium run.



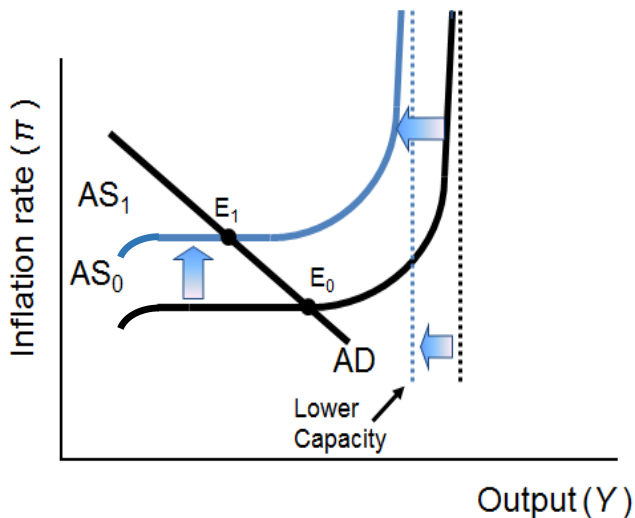
- 2c. The distribution of high speed internet to rural areas boosts productivity.



3a. Government spending for the Vietnam War during 1964-69 pushed up the rate of inflation from about 1% to 5% -- shown by an upward shift in the AD curve.



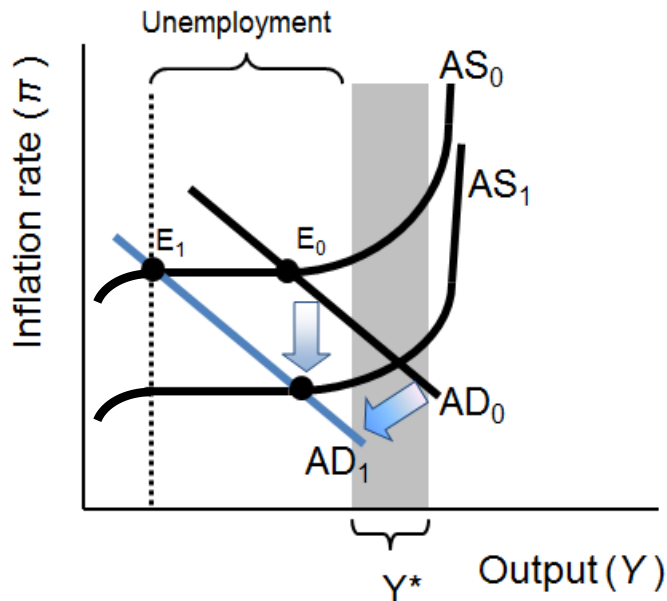
3b. In 1973-74, OPEC engaged in an oil embargo, causing an increase in oil prices. Inflation rose to above 9% in 1975, and the unemployment rate rose above 8% -- shown by an upward shift in the AS curve.



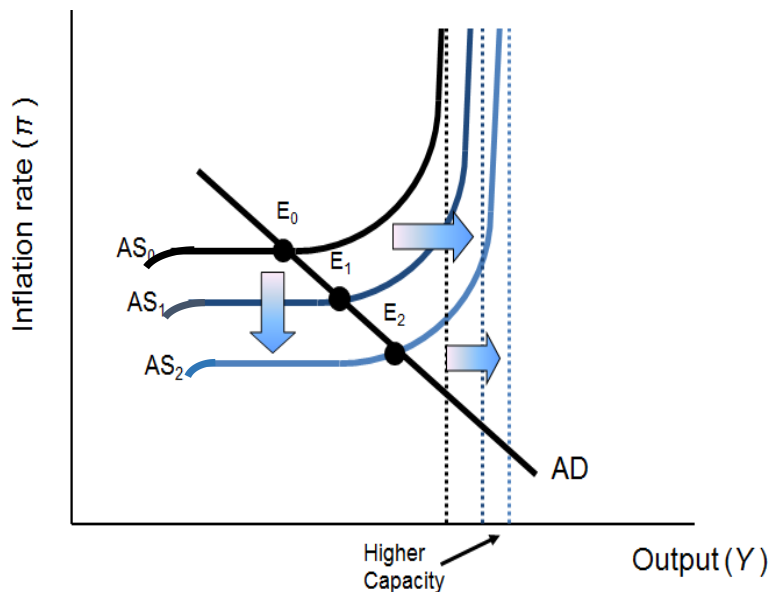
c. After another oil price shock in 1979, the Fed conducted a contractionary monetary policy (choosing a lower target inflation rate). Inflationary expectations fell. The

Chapter 12 – Aggregate Supply, Aggregate Demand, and Inflation: Putting It All Together 16

unemployment rate rose to almost 10%, but inflation fell from 9% to 4% -- shown by a leftward shift in the AD curve combined with a downward shift in the AS curve.



d. The 1990s brought an era of innovation, increasing global competition, and weakened unions from years of anti-union government policies. By 1998, the unemployment rate was 4.4% and inflation was 1.6% -- continual beneficial supply shocks leading to a downward and rightward shift of the AS curve and the economy's maximum capacity.



## Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. E  | 11. D |
| 2. D  | 12. D |
| 3. E  | 13. C |
| 4. B  | 14. C |
| 5. D  | 15. B |
| 6. D  | 16. D |
| 7. C  | 17. E |
| 8. D  | 18. E |
| 9. D  | 19. D |
| 10. A | 20. E |

## Chapter 13

# THE GLOBAL ECONOMY AND POLICY

*Macroeconomics in Context* (Goodwin, et al.)

### Chapter Overview

This chapter will take you through the basics of international trade and finance. It introduces you to recent trends in the flows of trade and finance, as well as to the controversies over globalization. Imports and exports are added to the circular flow diagram that was introduced in Chapters 8 and 9. The chapter analyzes the increasingly important links between fiscal and monetary policy and the global economy, with discussion of supply chain issues, capital flight, impacts of the pandemic, international financial inequities, and debt crises in developing nations. You will learn about the workings of exchange rates as well as different exchange rate systems, purchasing power parity, and balance of payments accounts. The chapter also describes the functions of international financial institutions and examines the real world political economy of international economic relations.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Describe various ways in which national economies are economically interconnected.
2. Understand the major policy tools countries have used to manage the degree of “openness” of their economies.
3. Describe major recent developments in the volume of international trade and financial flows.
4. Explain the macroeconomic impact of imports and exports using the circular flow model.
5. Understand basic principles of international finance.
6. Understand the implications of “openness” for monetary and fiscal policies.
7. Identify important international institutions concerned with trade and finance.

### Key Terms

global supply chain

protectionism

trade quota

tariffs

non-tariff barriers to trade

trade-related subsidies

import substitution

capital controls

domestic content requirements

foreign trade zone

migration controls

World Trade Organization (WTO)

free trade area

customs union

common market

economic union

economic and monetary union



transnational corporation  
trade deficit  
trade surplus  
exchange rate  
currency depreciation  
currency appreciation  
real exchange rate  
foreign exchange  
purchasing power parity (PPP)  
purchasing power parity (PPP) adjustments  
balance of payments (BOP) account  
current account (in the BOP account)  
trade account (part of current account)  
capital account (in the BOP account)

portfolio investment  
foreign direct investment (FDI)  
capital flight  
official reserve account  
flexible (floating) exchange rate system  
fixed exchange rate system  
Bretton Woods system  
devaluation  
revaluation  
foreign exchange market intervention  
balance of payments crisis  
World Bank  
International Monetary Fund (IMF)  
Washington Consensus

### **Active Review**

*Fill in the Blank*

1. Suppose the U.S. government puts a tax on the imports of steel produced abroad. Such taxes charged on imports or exports are called \_\_\_\_\_.
2. \_\_\_\_\_ refer to a network of countries directed at transforming resource inputs into finished products for delivery to the consumer.
3. Policies that provide subsidies to domestic producers to encourage the production of goods for domestic market and reduce the quantity of imports are called \_\_\_\_\_ policies.
4. Countries sometimes set up \_\_\_\_\_ within their borders, where foreign-owned manufacturers can operate free of many taxes, tariffs, and regulations.
5. \_\_\_\_\_ refer to the regulation or taxation of international transactions involving financial assets.
6. A group of countries forming a common market and adopting a common set of economic policies, such as the MERCOSUR (Argentina, Brazil, Paraguay, and Uruguay), is referred to as \_\_\_\_\_.
7. The exchange rate between two currencies, when adjusted for inflation in each country, is known as the \_\_\_\_\_.
8. A \_\_\_\_\_ can occur when a country gets precariously close to running out of foreign exchange and is therefore unable to purchase imports or service its existing debt.

9. The notion that, under certain idealized conditions, the exchange rate between the currencies of two countries should be such that the purchasing power of currencies is equalized is called \_\_\_\_\_.
10. The national account that tracks inflows and outflows arising from international trade, earnings, transfers, and transactions in assets is called the \_\_\_\_\_.
11. The account that tracks flows arising from international transactions in assets is called the \_\_\_\_\_.
12. Under a fixed exchange system, if a government lowers the value at which it fixes its exchange rate, the currency will undergo a \_\_\_\_\_.

*True or False*

13. Both quotas and tariffs provide a monetary revenue benefit to the government that has imposed them.
14. When a currency becomes less valuable in a flexible (floating) exchange rate system the correct term to use is “devaluation.”
15. When foreigners buy U.S. bonds or invest in a U.S. business, these are capital outflows in the balance of payments account.
16. The fixed exchange rate system of Bretton Woods broke apart in 1972, when the U.S. dollar came under too much selling pressure.
17. Under a fixed exchange rate system, it becomes impossible for an individual country to conduct independent monetary policy (as exemplified by the case of the EU countries that have adopted the euro).
18. One of the key advantages of transnational corporations is that they are able to increase efficiency and profits by arranging each production stage in a country where resource inputs are cheapest.

*Short Answer*

19. List three policy tools to regulate trade in goods and services.
20. Identify and describe each of the three leakages and the three injections in the open economy version of the circular flow model.
21. Explain the difference between “depreciation” and “devaluation.”

22. Explain how a foreign exchange market intervention could be used to protect a currency that market forces are pushing toward a potential devaluation. Under what circumstances would this intervention potentially turn into a balance of payments crisis?
23. Explain what is meant by purchasing power parity (PPP), and purchasing power parity (PPP) adjustments.
24. Explain what happens to the value of the currency when there's an increase (or decrease) in the supply (or demand) of the currency in a foreign exchange market with flexible exchange rates.
25. Explain what is meant by the balance of payments account, the current account (in the BOP account), and the capital account (in the BOP account).
26. Describe the impact of an expansionary monetary policy in an open economy.
27. Why do some countries try to control the value of their currencies through a fixed exchange rate system? And how can they do so?
28. How has the adoption of the euro affected monetary policymaking in the Eurozone countries?
29. What are the international institutions of the "Washington Consensus", and what were the policy prescriptions they imposed on many developing countries in the 1980s and 1990s?
30. Why have the impacts of the economic stimulus in response to the pandemic been uneven across countries?

## Problems

1. Identify whether each of the following represents an *inflow* or an *outflow* from either the *current account* or the *capital account*:
  - a. A Mexican banker purchases a United States government bond.
  - b. A U.S. corporation invests in a Chinese facility.
  - c. A U.S. corporation collects profits earned in Mexico and sends the money back to United States.
  - d. An exporter in the U.S. receives payment for goods shipped to France.
  - e. The U.S. government pays interest to bondholders in China
  
2. Exchange rates
  - a. Suppose under a flexible exchange system, there is a drop in the demand for the U.S. dollar, as investors find higher returns in countries that use the Euro. Use a graph of the foreign exchange market, with the price of dollars expressed as “Euros per dollar” to illustrate the impact on the value of the dollar.
  
  - b. Suppose that under a fixed (or managed) exchange system, China strives to keep the value of its Yuan artificially low. Illustrate with a graph of the foreign exchange market, how China’s Central Bank can do this.

## Self Test

1. Which of the following is *not* one of the policy tools to regulate trade in goods and services?
  - A. Import quotas
  - B. Tariffs
  - C. Licensing requirements on imports
  - D. Capital controls
  - E. Trade-related subsidies
2. Suppose Hereland puts a quota on imports of oranges from Thereland. Which of the following groups is most likely to reap financial benefits from the imposition of the quota?
  - A. Hereland's orange producers
  - B. Hereland's government
  - C. Thereland's government
  - D. Hereland's consumers
  - E. None of the above
3. Which of the following characterizes the trends in trade flows for the U.S. in recent years?
  - A. The volume of trade in goods and services (as a % of GDP) has increased over time, from about 10% in 1970 to almost 25% in 2020.
  - B. China has emerged as a major source of U.S. imports.
  - C. Historically, Canada and Mexico have been the most important trading partners for the U.S.
  - D. Since the early 1980s, the U.S. has been running current account deficits, mostly due to the trade deficits.
  - E. All of the above.
4. Which of the following is *not* one of the top buyers of U.S. exports?
  - A. Canada
  - B. Mexico
  - C. China
  - D. Japan
  - E. France
5. Which of the following is *not* one of the top sellers of imports to the United States?
  - A. Canada
  - B. Mexico
  - C. Brazil
  - D. China
  - E. Japan

6. The circular flow model in this chapter frames aggregate expenditure as:
- A.  $AE = \text{Consumption} + \text{Intended Investment} + \text{Taxes} + \text{Exports}$
  - B.  $AE = \text{Consumption} + \text{Actual Investment} + \text{Government Spending} + \text{Exports} - \text{Imports}$
  - C.  $AE = \text{Consumption} + \text{Actual Investment} + \text{Government Spending} - \text{Taxes} + \text{Exports}$
  - D.  $AE = \text{Consumption} + \text{Intended Investment} + \text{Government Spending} + \text{Net Exports}$
  - E. None of these accurately describes aggregate expenditure.
7. Which of the following best describes trends in trade expressed as a percentage of production from 1970-2020?
- A. both the worldwide volume of trade grew and the U.S. volume of trade grew
  - B. the worldwide volume of trade grew while the U.S. volume of trade fell
  - C. the U.S. volume of trade grew while the worldwide volume of trade fell
  - D. both the worldwide volume of trade fell and the U.S. volume of trade fell
  - E. None of the above.
8. Suppose that the exchange rate between U.S. dollars and currency in France, the euro, is 1.25 dollars per euro. If purchasing parity holds, how much would we expect a bottle of perfume that costs €100 in France to sell for in the United States?
- A. 80 dollars
  - B. 100 dollars
  - C. 120 dollars
  - D. 125 dollars
  - E. 150 dollars
9. Suppose that the exchange rate between U.S. dollars and currency in Mexico, the peso, is 0.10 dollars per peso. If purchasing parity holds, how much would we expect a scooter that costs \$10,000 in the United States to sell for in Mexico?
- A. 1,000 pesos
  - B. 10,000 pesos
  - C. 20,000 pesos
  - D. 50,000 pesos
  - E. 100,000 pesos

10. Suppose the German demand for United States stocks increases due to a stock market boom in the U.S. What would we expect to happen in the foreign exchange market, holding all other factors constant?

- A. The dollar will depreciate and more dollars will be traded.
- B. The dollar will depreciate and fewer dollars will be traded.
- C. The dollar will appreciate and more dollars will be traded.
- D. The dollar will appreciate and fewer dollars will be traded.
- E. The dollar could appreciate or depreciate, but fewer dollars will be traded.

11. Suppose the Chinese demand for United States government bonds decreases due to concerns about political battles in Washington D.C. What would we expect to happen in the foreign exchange market, holding all other factors constant?

- A. The dollar will depreciate and more dollars will be traded.
- B. The dollar will depreciate and fewer dollars will be traded.
- C. The dollar will appreciate and more dollars will be traded.
- D. The dollar will appreciate and fewer dollars will be traded.
- E. The dollar could appreciate or depreciate, but fewer dollars will be traded.

12. In 2012, brokers selling Miami real estate found that some of their best clients were from Argentina. What concept does this story from the chapter provide an example of?

- A. foreign exchange market intervention
- B. portfolio investment
- C. capital flight
- D. foreign direct investment
- E. None of the above.

13. Assume a foreign exchange market with a flexible exchange system. Suppose the demand for a country's currency decreases. This results in a \_\_\_\_\_ in its currency.

- A. depreciation
- B. appreciation
- C. devaluation
- D. revaluation
- E. The value of the currency will remain unchanged.

14. If the value of a country's currency falls, what is the effect on exports and imports, assuming all else remains unchanged?

- A. Exports will fall, and imports will rise.
- B. Exports and imports will both fall.
- C. Exports will rise, and imports will fall.
- D. Exports and imports will both rise.
- E. Exports and imports will remain unchanged.

15. How would payments from the sale of fighter jets to Saudi Arabia be registered in the U.S. balance of payments?

- A. As an inflow in the current account.
- B. As an outflow in the current account.
- C. As an inflow in the capital account.
- D. As an outflow in the capital account.
- E. None of the above.

16. Suppose a Kuwaiti company invests in a U.S. bank. How would this transaction be registered in the balance of payments?

- A. As an inflow in the current account.
- B. As an outflow in the current account.
- C. As an inflow in the capital account.
- D. As an outflow in the capital account.
- E. None of the above.

17. Which of the following best describes the impact of an expansionary monetary policy in an open economy?

- A. The rise in the interest rate dampens investment spending. It also raises capital inflows, raises the demand for and value of the currency, thereby dampening net exports.
- B. The fall in the interest rate stimulates investment spending. It also raises capital inflows, raises the demand for and value of the currency, thereby dampening net exports.
- C. The fall in the interest rate stimulates investment spending. It also reduces capital inflows, reduces the demand for and value of the currency, thereby boosting net exports.
- D. The fall in the interest rate stimulates investment spending. It also reduces capital inflows, reduces the money supply, which raises interest rates, cancelling out the effects of the initial fall in the interest rate.
- E. None of the above.



18. How can a Central Bank prop up the value of its currency?
- A. It could create more demand for the domestic currency by buying more of it.
  - B. It could increase the supply of the domestic currency.
  - C. It could create less demand for the domestic currency by buying less of it.
  - D. It could declare the currency to have a greater value, by fiat.
  - E. None of the above.
19. Which of the following is *not* one of the international institutions established in the late 1940s?
- A. The Bretton Woods system of fixed exchange rates.
  - B. The World Bank
  - C. The International Monetary Fund (IMF)
  - D. The General Agreement on Tariffs and Trade (GATT)
  - E. The World Trade Organization
20. Which of the following was *not* one of the policy prescriptions advocated by the “Washington Consensus” in the 1980s and 1990s?
- A. Trade liberalization
  - B. Privatization
  - C. Deregulation
  - D. Reduce the size of government
  - E. Government spending to reduce poverty

## Answers to Active Review Questions

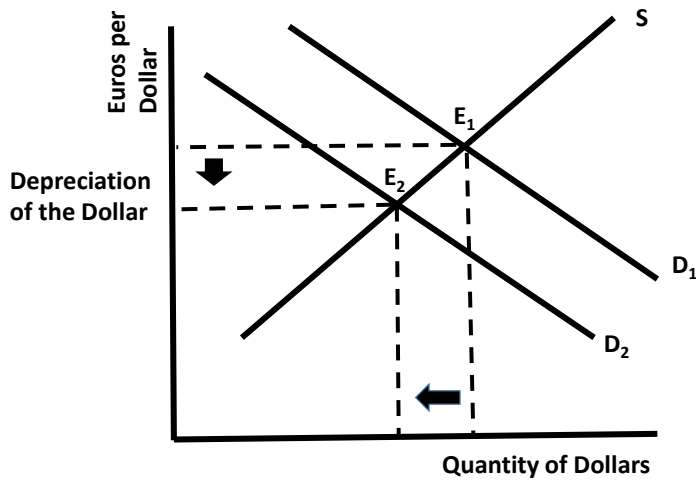
1. Tariffs
2. global supply chains
3. import substitution
4. foreign trade zones
5. capital controls
6. economic union
7. real exchange rate
8. balance of payments crisis
9. purchasing power parity (PPP)
10. balance of payments (BOP) account
11. capital account (in the BOP account)
12. devaluation
13. False. Only tariffs provide a monetary revenue benefit to the government.
14. False. “Depreciation” is the correct term.
15. False. They are capital inflows.
16. True.
17. True.
18. True.
19. Three policy tools to regulate trade are: a trade quota, a tariff, or a trade- related subsidy.
20. The leakages in the open economy circular flow model include savings, taxes, and imports. The injections in the open economy version of this model include intended investment, government spending, and exports.
21. “Depreciation” refers to the reduction in a currency’s value in a flexible exchange rate system, while “devaluation” refers to a reduction in a currency’s value in a fixed exchange rate system.
22. A foreign exchange market intervention to protect a currency threatened with potential devaluation would involve the central bank buying the threatened currency and depleting foreign exchange reserves. If the central bank is in danger of running out of foreign exchange then a balance of payments crisis is a distinct possibility.
23. Purchasing power parity is the theory that exchange rates should reflect the difference in purchasing power among countries, under certain idealized conditions (such as the free trade of currencies and goods, and the absence of transportation costs). However, in reality these conditions often do not exist. Thus purchasing power parity (PPP) adjustments are made to take account of differences in the cost of living between countries.
24. If the supply of the currency increases, the value of the currency will fall. If the demand of the currency increases, the value of the currency will rise. (And vice versa for the decrease.)
25. The balance of payment account tracks the inflows and outflows arising from international trade, earnings, transfers, and transactions in assets. It’s divided into two subsections: the current account and the capital account. The current account tracks the inflows and outflows from trade in goods and services, as well as earnings and transfers. The capital account tracks inflows and outflows from transactions in assets.

26. In an expansionary monetary policy, interest rates fall, which stimulates investment spending. But the lower interest rates also lead to capital outflows, a fall in the demand for the currency, and thereby a depreciation in the currency and an increase in net exports. The increase in investment spending and net exports both boost aggregate expenditure and GDP.
27. Because a wildly fluctuating currency can be very destabilizing in conducting economic activities (particularly for producers, or people with financial assets). Their central bank can either buy up domestic currency (to prop up its value). Or if it wants to artificially keep the value of its currency low, it can increase the supply of its domestic currency on the market.
28. By adopting a common currency, the Eurozone countries have given up having separate monetary policies and put the European Central Bank in control of their monetary policy-making. Since the different Eurozone countries have different objectives and requirements, it is complicated to design a monetary policy that fits the interest of all member countries. For example, the low interest policies of the ECB after the 2008-09 financial crisis was not sufficient to boost the economies of countries like Greece and Spain where the impacts of the crisis was much more adverse than in countries like Germany and Austria.
29. The “Washington Consensus” consists primarily of the World Bank and IMF, both located in Washington D.C. As a condition for assistance, they required developing countries to engage in trade liberalization, privatization, deregulation, and decreasing the size of government through spending cuts (budget austerity).
30. Some countries that implemented large spending increases also experienced higher inflation, higher interest rates, increased debt, and currency depreciation thus cancelling out some of the positive impacts (in terms of growth) from large expansionary fiscal policies.

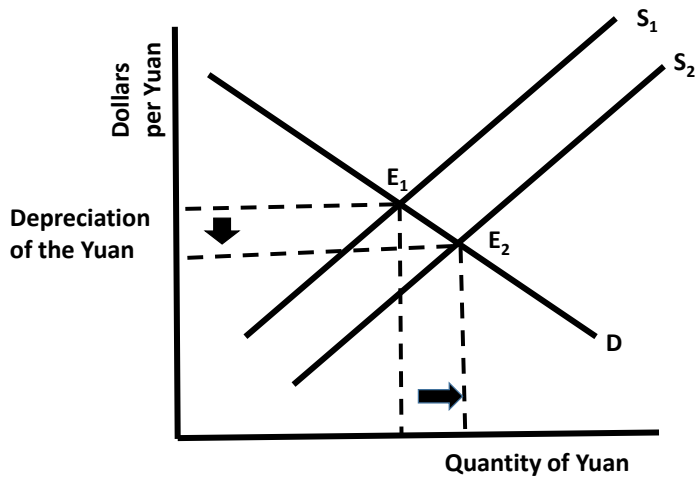
### **Answers to Problems**

1.
  - a. Inflow, capital account. This is “borrowing from abroad”.
  - b. Outflow, capital account. This is “FDI abroad”.
  - c. Inflow, current account. This is “income receipts”.
  - d. Inflow, current account. This is “payments for exports of goods”.
  - e. Outflow, current account. This is “income payments”.

2. a. A drop in demand for the U.S. dollar results in a depreciation in the value of the dollar.



b. The Chinese Central Bank can increase the supply of the Yuan to keep its value low.



### Answers to Self Test Questions

- 1. D
- 2. A
- 3. E
- 4. E
- 5. C
- 6. D
- 7. A
- 8. D
- 9. E
- 10. C

- 11. B
- 12. C
- 13. A
- 14. C
- 15. A
- 16. C
- 17. C
- 18. A
- 19. E
- 20. E

## Chapter 14

# INEQUALITY: ECONOMIC AND SOCIAL PERSPECTIVES

*Macroeconomics in Context* (Goodwin, et al.)

### Chapter Overview

This chapter provides an overview of key issues on economic and social inequality, looking beyond income measures to explore inequalities based on demographic factors, such as race, ethnicity, and education. Empirical data on inequality in the U.S. and global inequality between and within countries is presented along with discussion on the impacts of the pandemic in increasing existing inequality. An analysis of some of the key factors contributing to the rising economic inequality in the United States in recent decades is presented next. The final section presents a detailed examination of impacts of macroeconomic policies on inequality and possible policy solutions. The debate over policy responses continues, and this chapter provides you with the background you need to assess the current state of macroeconomic policy.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Interpret the Lorenz curve and construct one based on income distribution data.
2. Explain how a Gini coefficient is derived.
3. Describe the trends in inequality in the United States in the past few decades.
4. State how the United States compares to other countries in terms of economic inequality.
5. Discuss recent trends in global inequality
6. Identify the underlying causes of rising wage inequality and the role of financialization and macroeconomic policies in contributing to the rise in inequality.
7. Discuss policy measures that might help reduce inequality.

### Key Terms

Lorenz curve

Gini ratio (or Gini coefficient)

capital gain

labor market discrimination

gender wage gap

occupational segregation

Kuznets curve hypothesis

labor income

capital income

rent

wage-productivity gap

skill-biased technical change

## Active Review

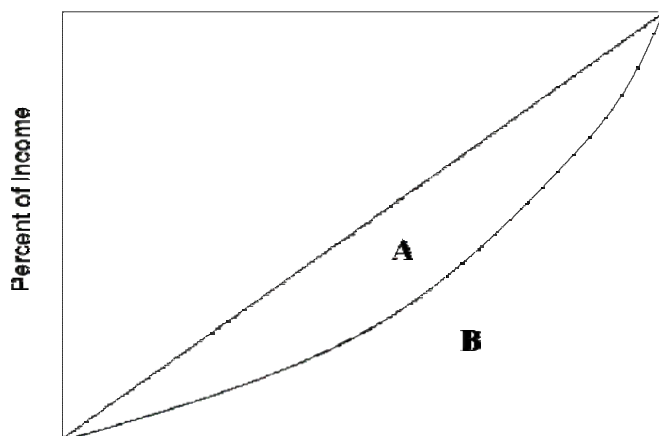
### *Fill in the Blank*

1. The graph that is used to depict income inequality, showing the percent of households along one axis and the percent of income along the other, is known as the \_\_\_\_\_ curve.
2. If income were perfectly equally distributed within a country, the value of the Gini ratio for that country would be \_\_\_\_\_.
3. The distribution of wealth tends to be \_\_\_\_\_ (more/less) unequal than the distribution of income.
4. Economists refer to payments for the direct or indirect use of any capital asset as \_\_\_\_\_.
5. The increase in the value of an asset at the time it is sold compared to the price at which it was originally purchased is referred to as \_\_\_\_\_.
6. In the U.S. historically unemployment rates for blacks and Hispanics have been \_\_\_\_\_ than that for whites and Asian.
7. Part of the gender wage gap is associated with \_\_\_\_\_, which refers to the tendency of men and women to be employed in different occupations.
8. While global inequality has \_\_\_\_\_, inequality within countries has \_\_\_\_\_ in most cases over the last few decades.
9. The \_\_\_\_\_ hypothesis states that inequality increases during the initial stages of economic development, but eventually declines with further growth.
10. Union membership in the United States has \_\_\_\_\_ since 1950s.
11. Since the 1980s, the difference in effective tax rates paid by the rich and the poor has \_\_\_\_\_ with the decline in corporate taxes and an increase in payroll taxes.
12. Transfers designed to help people with insufficient resources are referred to as \_\_\_\_\_.

### *True or False*

13. The richest fifth of American households receive more than half of all income.

14. The closer a Lorenz curve is to a 45-degree straight line, the more unequal the distribution of income.
15. The income Gini coefficient for the United States is currently around 0.85.
16. The top 1% of American households own about the same amount of wealth as the bottom 90% combined.
17. Older displaced workers are more likely to find a job easily because of their higher experience level.
18. Labor market discrimination refers to differences in employment outcomes due to difference in educational background.
19. The global income Gini coefficient is around 0.90.
20. Most economists view technological change as a factor which increases levels of economic inequality.
21. The main reason the income Gini coefficient for the United States is higher than other developed countries is that the U.S. has a high Gini coefficient based on market income.
22. The empirical evidence shows that smaller phased increases in minimum wage have little impact on overall employment.
23. The expansionary monetary policies implemented by the Federal Reserve since the 1980s have contributed to the rising income inequality in the U.S..
24. Referring to the graph below, the Gini ratio is equal to  $A/(A+B)$ .

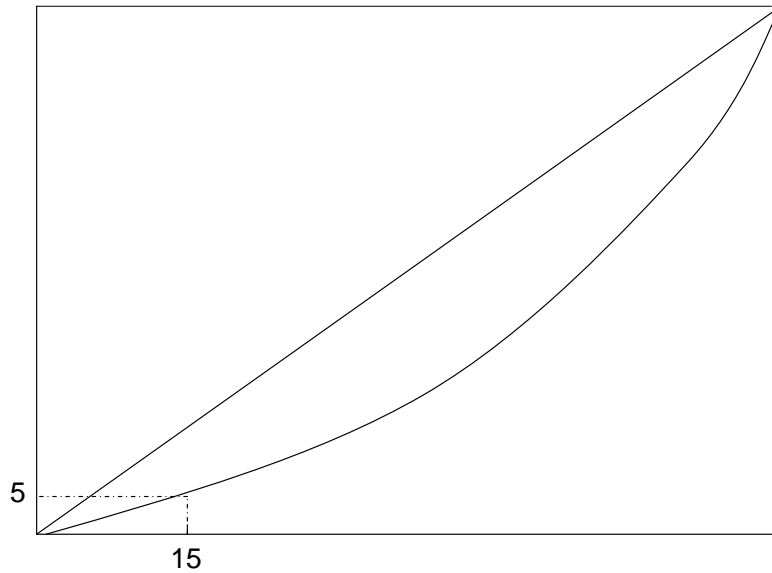


*Short Answer*

25. What is a Lorenz curve? Explain how the Gini ratio uses the Lorenz curve to measure the level of inequality in a nation's income distribution.
  
  
  
  
  
  
  
  
  
  
26. Briefly describe the trends in income inequality in the United States over the last 100 years.
  
  
  
  
  
  
  
  
  
  
27. What are the two types of government cash transfer programs in the U.S., used to help households achieve income security? Provide examples of each.
  
  
  
  
  
  
  
  
  
  
28. What are some of the factors explaining the rise of inequality in the United States in the past few decades?
  
  
  
  
  
  
  
  
  
  
29. How was globalization related to increasing inequality?
  
  
  
  
  
  
  
  
  
  
30. Discuss some policies for addressing inequality.



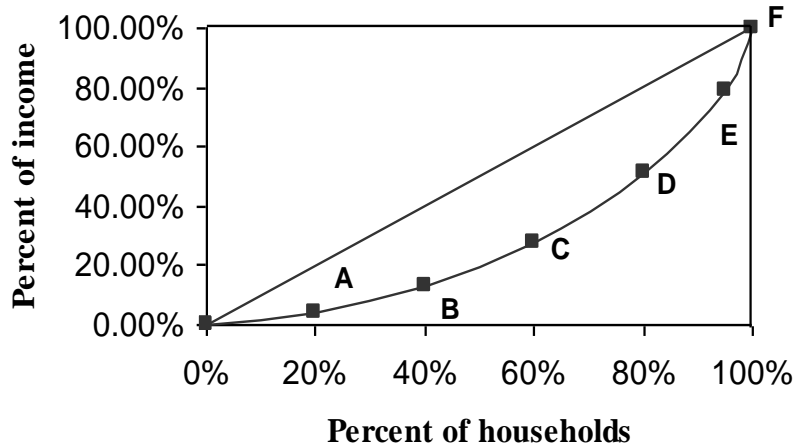
## Problems



1. The graph above shows a Lorenz curve for income distribution in the country of Utopia.
  - a. Label the horizontal and vertical axes on this graph.
  - b. In words, explain what information is communicated by the numbers shown on this graph.
  - c. Suppose that the government of Utopia introduces a new tax on the richest 10% of society, and uses the proceeds to supplement the income of the poorest members of society. On the graph, show the direction in which the Lorenz curve will change as a result of the new policy.

## Self Test

Question #1 refers to the graph below.



1. According to the Lorenz curve above, which of the following statements is true?
  - A. The bottom 40% of households earn less than 20% of all income
  - B. The bottom 20% of households earn 20% of all income
  - C. The society shown here has complete income equality
  - D. The more the curve sags downward, the greater income equality
  - E. Both A and D are true
2. In the year 2015, suppose the Gini ratio for Canada was 0.30 and the Gini ratio for the US was 0.50. In the year 2020, suppose the Gini ratio for Canada rises to 0.35 while that for the US rises to 0.55. Which of the following statements is true?
  - A. Canada has greater inequality than the US.
  - B. Canada has greater inequality in 2020 than it did in 2015.
  - C. The Lorenz curve for the US is closer to the diagonal than the Lorenz curve for Canada.
  - D. Between 2015 and 2020, Canada's Lorenz curve has become straighter (closer to the diagonal).
  - E. Both C and D are true.
3. The top 1% of households in the United States own about what percent of all wealth?
  - A. 26%
  - B. 31%
  - C. 45%
  - D. 52%
  - E. 63%

4. Which of the following statements is true?
- A. The U.S. has the lowest Gini ratio of all major industrialized countries.
  - B. The U.K. has a higher Gini ratio than the U.S.
  - C. The U.S. has the highest Gini ratio of all major industrialized countries.
  - D. Countries with high levels of equality have high Gini ratios.
  - E. The U.S. has a straighter Lorenz curve (closer to the diagonal) than any other major industrialized country.
5. Which of the following statements about income inequality in the U.S. is true?
- A. Income distribution was most equal in 1968.
  - B. Income distribution was most equal in 1947.
  - C. Income inequality has declined steadily from 1947 to the present.
  - D. Income inequality has risen steadily from 1947 to the present.
  - E. The U.S. has greater income equality than most industrialized countries.
6. Which of the following statements is TRUE?
- A. Median weekly earnings for workers with high school degree are lower than that for workers with a college degree.
  - B. In general, unemployment rate is higher among workers without a college degree than for workers with a college degree or higher.
  - C. Median weekly earnings for workers generally increases with increases in educational qualification.
  - D. Workers with a college degree earn higher wages than the median wages for all workers.
  - E. All of the above.
7. Which of the following statements about the impact of the COVID-19 pandemic in the U.S. is TRUE?
- A. Income inequality did not change as both the rich and poor faced similar impacts of the pandemic.
  - B. Fewer older workers went into retirement.
  - C. The impact of the pandemic was more severe for workers without a college degree.
  - D. The stock market surge after the pandemic resulted in huge gains for the richest 1% of the population, exacerbating inequality.
  - E. Both C. and D. are true.

8. Which of the following countries has the lowest Gini coefficient?
- A. The United States
  - B. China
  - C. The United Kingdom
  - D. Norway
  - E. Brazil
9. What is the Kuznets curve hypothesis?
- A. That economic inequality increases with economic development.
  - B. That economic inequality decreases with economic development.
  - C. That economic inequality first increases, then decreases, with economic development.
  - D. That economic inequality first decreases, then increases, with economic development.
  - E. None of the above.
10. Which one of the following statements is FALSE?
- A. The global income Gini coefficient is likely higher than the Gini coefficient for any individual country.
  - B. Global income inequality has been increasing, while the Gini coefficient in most individual countries is decreasing.
  - C. The growth of the global middle class is largely responsible for the decline in global income inequality.
  - D. Median wealth in the United States is less than in Japan, the United Kingdom, and France.
  - E. The global wealth Gini coefficient is around 0.89.
11. Occupational segregation refers to:
- A. Discrimination in wages based on race or ethnicity.
  - B. Tendency of older workers and younger workers to be employed in different industries.
  - C. Tendency of men and women to be employed in different industries.
  - D. Discrimination in wages based on differences in educational background.
  - E. Discrimination in wages based on age.

12. A regressive income tax refers to:
- A. Middle- and lower-income families paying a higher proportion of their income in payroll tax than higher-income families.
  - B. Middle- and lower-income families paying a higher level of taxes in dollar values than higher-income families.
  - C. Middle- and lower-income families paying a lower proportion of their income in payroll tax than higher-income families.
  - D. Middle- and lower-income families paying a lower level of taxes in dollar values than higher-income families.
  - E. Middle- and lower-income families paying the same proportion of their income in payroll taxes as higher-income families.
13. Which of the following statements is FALSE?
- A. Data from 1948 to 2017 shows that corporate profits have always grown faster than wages.
  - B. Over time, the labor productivity in the U.S. has declined.
  - C. The wage-productivity gap has narrowed in the last three decades.
  - D. Union membership rate in the U.S. has gradually increased since the 1970s.
  - E. All of the above.
14. The theory of skill-biased technological change proposes that:
- A. relative wage gains will be the greatest for workers who possess the education and skills to use modern technologies
  - B. technological change leads to a decline in wages
  - C. technological change increases worker productivity and their wages
  - D. as technology replaces workers, the bargaining power of workers declines
  - E. technological change could increase unemployment rates
15. Since the 1980s,
- A. top marginal tax rates have increased.
  - B. payroll tax rates have declined.
  - C. effective tax rates paid by the rich and poor has narrowed.
  - D. spending on welfare has increased.
  - E. All of the above.

16. Which of the following explains financialization as a factor in rising inequality in the U.S. economy?

- A. Wages in the financial sector has grown much faster than wages in other sectors.
- B. A greater share of income has gone to those who own assets, most of whom tend to be wealthier individuals.
- C. Executive pay has increased sharply due to a change in corporate pay structure, where a larger proportion of executive pay has come in the form of stock options and bonuses.
- D. Workers' bargaining power has declined as corporations have shifted their reliance on earnings through financial channels.
- E. All of the above.

17. An expansionary monetary policy could increase inequality because:

- A. low interest rates increase asset prices which are mostly owned by the rich
- B. low interest rates increase labor income faster than business income
- C. middle-income savers lose returns on savings when rates are low
- D. (a) and (c) only.
- E. (a), (b), and (c).

18. Which of the following statements about the impact of macroeconomic policy on inequality is TRUE?

- A. The impact of fiscal policies of the last few decades on inequality is ambiguous.
- B. Fiscal policies of the last few decades have contributed to a rise in inequality.
- C. Monetary policies of the last few decades have contributed to a rise in inequality.
- D. The impact of fiscal policy on increasing inequality is less clear than the impact of monetary policies.
- E. There is clear evidence that the equalizing effects of monetary policy is greater than its disequalizing effects.

19. Policies to reduce inequality include all the following, *except*:

- A. Lowering corporate taxes.
- B. Increasing minimum wages.
- C. Strengthening labor unions.
- D. Increasing investment in human capital.
- E. Providing support to low-income workers.

20. Which one of the following policy proposals would NOT be expected to reduce inequality?
- A. More powerful labor unions
  - B. A higher minimum wage
  - C. Fewer job protections for part-time employees
  - D. An increase in public education spending
  - E. An increase in the tax rates on high-income households

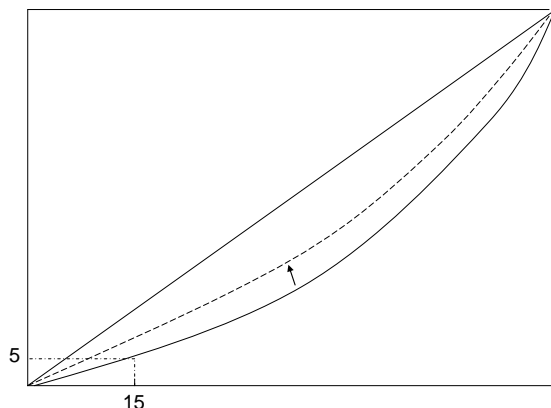
### Answers to Active Review Questions

1. Lorenz
2. zero
3. more
4. rents
5. capital gains
6. higher
7. occupational segregation
8. declined; increased
9. Kuznets curve
10. declined
11. narrowed
12. means-tested program.
13. True.
14. False. Closer the Lorenz curve is to the 45-degree straight line, the more equal the distribution of income
15. False. Income Gini for the U.S. is around 0.49.
16. True.
17. False. They are less likely to find a job.
18. False. Labor market discrimination exists when similarly qualified people are treated disadvantageously in employment based on their race, sex, age, sexual preference, physical appearance or disability.
19. False. Global income Gini ranges around 0.63-0.67.
20. True.
21. False. Less progressive tax policies along with decline in workers bargaining power are some of the reasons.
22. True.
23. False. The impact of monetary policy on inequality is not clear.
24. True.
25. A Lorenz curve is a line that portrays a nation's income distribution, by dividing up households by into quintiles from poor to rich, and then plotting the cumulative percent of income flowing each quintile of households. The Gini ratio measures the level of income inequality by taking the area between the Lorenz curve and line of perfect equality (A), divided by the total area under the line of perfect equality (A+B). The higher the Gini, the more inequality there is in the income distribution.

26. Income inequality was relatively high leading up to the Great Depression. Then inequality decreased for several decades, until the late 1960s. Since then, inequality has generally increased. Current levels of inequality are similar to, or greater than, the levels observed in the early 20<sup>th</sup> century.
27. The two types of government cash transfer programs in the U.S., used to help households achieve income security are social insurance programs (like Social Security and Medicare) and means-tested programs (like welfare, food stamps, housing subsidies).
28. Rising wage-productivity gap due to decline of unions, globalization and trade, and technological change. The financialization of the economy and the fiscal policies of the past few decades have also contributed to the rise in inequality.
29. Globalization has lowered the bargaining power of workers as corporations have had to ability to look around the world and also relocate their production facilities to hire low-cost workers (mostly in developing countries). Additionally, competition from low-priced imports has also eliminated many jobs, especially in the industrial sector, and pushed many middle-income workers to move to lower-income jobs.
30. More progressive tax policies, increasing minimum wages, strengthening of unions, increased investment in infrastructure, expansion of transfer programs, income support to low-income households as well as encouraging cooperative-based organizations are policies that would help lower inequality

### Answers to Problems

1. a. The horizontal axis should be labeled as “Cumulative Percent of Households,” and the vertical axis should be labeled as “Cumulative Percent of Income.”
1. b. Based on this graph, we can see that the poorest 15% of households in Utopia receive 5% of total household income.
1. c. The curve will shift upward, toward the diagonal:





### **Answers to Self Test Questions**

- |       |       |
|-------|-------|
| 1. A  | 11. C |
| 2. B  | 12. A |
| 3. B  | 13. E |
| 4. C  | 14. A |
| 5. A  | 15. E |
| 6. E  | 16. C |
| 7. E  | 17. D |
| 8. D  | 18. B |
| 9. C  | 19. A |
| 10. B | 20. C |

## Chapter 15

# DEFICITS AND DEBT

*Macroeconomics in Context* (Goodwin, et al.)

### Chapter Overview

This chapter expands on the material from Chapter 9, from a less theoretical and more applied perspective. It focuses on the implications of deficits and debt, including issues of internal and external debt, sovereign debt, debt refinance, and debt monetization. The chapter begins by describing the difference between deficits and debts, and reviewing the history of U.S. indebtedness. Included in this is a discussion of New Deal and war-time spending, “supply-side” economics, stimulus spending, and tax cuts and how these policies have been instrumental to altering the fiscal position of the United States. The chapter also goes into significant detail explaining the differences among different debt “terminologies”, such as “external debt” or “public debt,” that are often confused. It then reviews some of the basic problems with excessive borrowing, and reviews evaluations of debt impacts, balanced budget proposals, and issues related to the foreign holding of government debt. The chapter discusses recent issues in debt, including the role of Trump tax cuts and pandemic-related spending. It concludes with future projections of deficits and debt in the United States and policy responses, including consideration of budgetary and tax policy for managing deficits and debt.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Understand the difference between a deficit and a debt, and how the two are related.
2. Explain how the national debt in the United States has evolved over the years.
3. Have a basic understanding of how “supply side” economics changed the debt situation in the United States.
4. State the differences among the different debt classifications
5. Understand the main problems with excessive borrowing
6. Explain the different ways in which a country’s debt infiltrates its politics, both domestic and international.
7. Explain what future projections are, both for U.S. deficits and debt.
8. Discuss the revenue and spending side policies for reducing future deficits.

### Key Terms

gross federal debt  
debt held by the public  
internal debt  
external debt  
monetizing the debt

twin deficit hypothesis  
deficit ceiling  
debt ceiling  
functional finance

## Active Review

### *Fill in the Blank*

1. We say that whereas the government deficit is a flow variable, the debt is a \_\_\_\_\_ variable.
2. The gross federal debt results from an accumulation of \_\_\_\_\_ over the years.
3. The Department of the Treasury issues \_\_\_\_\_ in order to pay for its budget deficits.
4. President Reagan favored policies based on \_\_\_\_\_ economics, which presumed that offering more benefits to the rich would help the economy.
5. The \_\_\_\_\_ debt refers to the total amount owed by the federal government to *all* claimants.
6. When the Federal Reserve buys the government debt as it is issued, it is referred to as \_\_\_\_\_ the debt.
7. Were it not for low \_\_\_\_\_ in recent years, the growing debt would have been a greater burden on the annual federal budget.
8. The two countries that hold the greatest share of the U.S. gross federal debt are \_\_\_\_\_ and \_\_\_\_\_.
9. The \_\_\_\_\_ hypothesis states that the government's budget deficit and the trade deficit usually move in the same direction.
10. A congressionally mandated limit on the size of the gross federal budget deficit is known as the \_\_\_\_\_.

### *True or False*

11. An accumulation of government debts will ultimately lead to a deficit.
12. Alexander Hamilton believed that the national debt had the potential to strengthen the country.
13. The debt held by the public refers to the portion of the debt not held by foreign countries.
14. China and Japan hold over 30 percent of the external debt of the United States.

15. The United States recently passed a balanced budget amendment to the Constitution.

16. United States policy has, over the past 10 years, preferred deficit spending to austerity.

*Short Answer*

17. Explain the difference between deficits and debt, and discuss how they are related.

18. Has the federal debt increased over the past century in absolute terms? How about as a percentage of GDP? Discuss.

19. Explain how supply-side economic policies have impacted the U.S. federal budget.

20. Discuss in detail how ‘gross federal debt’ is different from ‘total U.S. indebtedness.’

21. What are some of the main problems associated with too much borrowing by the federal government?

22. Many believe that most of our government debt is owed to foreigners, especially to the Chinese. Is this true? Discuss.

23. Should the United States “balance its budget?”

24. What does the future hold for the U.S. federal budget? Why, according to the Congressional Budget Office, are deficits likely to increase significantly in the next few years?

25. Do taxes on carbon or other greenhouse make sense from the standpoint of reducing U.S. deficits? Explain.

**Problems**

1. Given the following hypothetical budget data for “Budgetland,” fill in the “total spending” column (which, for the time being, is just military and civilian spending). Then calculate the surplus/deficit for each year and, based on this calculation, the existing debt at the start of the next year. Comment.

<u>Year</u>	<u>Tax Revenue</u>	<u>Military Spending</u>	<u>Civilian Spending</u>	<u>Total Spending</u>	<u>Surplus or Deficit</u>	<u>Existing Debt</u>
2015	7.0	4.0	4.0			100.0
2016	7.2	4.0	4.1			
2017	7.2	4.2	4.3			
2018	7.3	4.0	4.5			
2019	7.0	3.7	4.7			
2020	7.1	3.5	4.9			
2021	6.8	3.6	5.1			
2022	7.0	3.7	5.3			
2023	7.2	3.8	5.5			
2024	7.3	3.9	5.7			
2025	7.4	4.0	5.9			

2. Now expand this problem by adding a column that includes Budgetland’s interest payments (another component of total spending). For now, assume a constant interest rate of 2 percent, so that interest payment for the first year equals .02 times the existing debt of 100.0. (Interest payments for subsequent years will be based on updated debt numbers). Notice that the debt numbers will themselves change now since the interest payments will add to the annual deficit. Comment on what you observe.

3. Now let's compare Budgetland's debt to its GDP. Add two columns—GDP, and “debt-GDP ratio.” Let GDP in the year 2015 equal 200.0, and assume that it grows by 3 percent annually. Then calculate the debt-GDP ratio for each year. What trend do you notice?

4. Finally, redo the entire exercise assuming an interest rate of 5 percent instead of 2 percent. Then try it assuming an interest rate of 10 percent. What differences do you notice? Prepare a graph that shows the Budgetland's debt-GDP ratio under each of the three interest rate assumptions over the period.

### Self Test

1. A deficit in a given year signifies...
  - A. a shrinking surplus.
  - B. a growing debt.
  - C. a surplus in the year to follow.
  - D. higher taxes.
  - E. Both (a) and (b)
  
2. Which of the following is NOT an argument for not worrying about the size of the debt?
  - A. Every country's government is indebted.
  - B. Half of government debt is owed to U.S. citizens.
  - C. The U.S. government pays interest in dollars, a desirable currency internationally.
  - D. Government debt never even has to be paid off.
  - E. All of the above are valid arguments.
  
3. Our national debt as a percentage of GDP reached its highest point during...
  - A. the Viet Nam war.
  - B. the Great Depression.
  - C. the Reagan Administration.
  - D. World War II.
  - E. the Obama Administration.

4. What was the importance of the Great Depression in relation to the history of the U.S. federal debt?
  - A. It thereafter became more manageable than it had been previously.
  - B. Higher taxes since then have wreaked havoc with the federal budget.
  - C. Social spending started to make a meaningful impact on the overall debt.
  - D. It was from this point forward that the Treasury Department would start borrowing at lower interest rates.
  - E. None of the above is true.
  
5. Reagan's 1981 Economic Recovery Act...
  - A. substantially reduced income and corporate tax rates.
  - B. was in keeping with his preferred supply-side policies.
  - C. contributed to a sizable increases in federal budget deficits.
  - D. coincided with an increased in military spending.
  - E. All of the above are true.
  
6. Which of the following was NOT a factor in the record deficits seen during President Obama's first term in office?
  - A. The Great Recession
  - B. Automatic stabilizers
  - C. Wars in Iraq and Afghanistan
  - D. Tax increases
  - E. All of the above were factors.
  
7. The "debt held by the public" refers to...
  - A. the gross federal debt minus the debt held by the Federal Reserve.
  - B. the gross federal debt minus the debt owed to other government accounts.
  - C. the gross federal debt plus the debt held in credit cards and household mortgages.
  - D. the portion of the federal debt held by U.S. citizens.
  - E. household credit card and mortgage debt.
  
8. Total U.S. indebtedness, including both public and private debt, reached \_\_\_\_\_ percent of GDP in the aftermath of the financial crisis of 2007-08.
  - A. 500
  - B. 140
  - C. 350
  - D. 57
  - E. 18

9. Monetizing the debt means that...
- A. the Fed buys new government debt as it is issued.
  - B. the Treasury Department issues new bonds to finance the federal budget deficits.
  - C. the Defense Department sells some of its aircraft for cash in order to help finance the deficit.
  - D. the Fed “cashes in” its debt holdings.
  - E. None of the above.
10. The Federal Reserve and Federal government accounts hold approximately \_\_\_\_\_ percent of the gross federal debt.
- A. 36
  - B. 26
  - C. 10
  - D. 50
  - E. 2
11. After China and Japan, the three single greatest foreign holders of U.S. federal debt are...
- A. Brazil, United Kingdom, and Russia.
  - B. Russia, India, and Saudi Arabia.
  - C. Brazil, Switzerland, and the Cayman Islands.
  - D. Brazil, Russia, and Kenya.
  - E. Ireland, United Kingdom, and Luxembourg.
12. Which of the following countries has the highest debt to GDP ratio?
- A. United States
  - B. Japan
  - C. Russia
  - D. Mexico
  - E. Germany
13. The Congressional Budget expects U.S. deficits to...
- A. decline until 2030 and rise steeply thereafter.
  - B. rise until 2030 and then decline steeply thereafter.
  - C. decline until the debt is fully paid off by 2055.
  - D. more or less stabilize by 2030.
  - E. remain in the double digits for 2021 then drop to 3 to 5 percent for the remainder of the decade.



14. The debt ceiling refers to...
- A. the debt level at which the U.S. government runs out of money.
  - B. the congressionally mandated limit on the size of the federal debt.
  - C. the point at which the federal debt reaches 100 percent of GDP.
  - D. a limit on federal debt imposed by the Treasury Department.
  - E. the point at which interest payments on the debt fully exhaust next year's budget.
15. A balanced budget amendment to the Constitution...
- A. would likely increase the annual inflation rate.
  - B. would probably make fiscal policy a more powerful tool.
  - C. was passed in 2013 but awaits ratification.
  - D. All of the above are true.
  - E. None of the above is true.
16. The principle of functional finance requires that:
- A. National governments raise taxes to maintain a balanced budget
  - B. National governments set absolute limits on deficit and debt levels
  - C. National governments ensure that aggregate demand remain at a reasonable level to achieve full employment
  - D. National governments ensure low interest rates to promote borrowing
  - E. National governments ensure stability in the financial markets
17. Which of the following is NOT a reason given by the CBO for its expectation that deficits in the United States will remain high in the near future?
- A. An increase in healthcare costs.
  - B. An aging population.
  - C. An increase in interest payments on the federal debt.
  - D. The 2017 tax cuts by the Trump administration.
  - E. All of the above are reasons given by the CBO.
18. The reduction in "mandatory" spending would require the federal government to cut spending on ...
- A. the military.
  - B. retirement programs and unemployment.
  - C. education and research and development.
  - D. the environment.
  - E. All of the above.

19. Which of the following is a revenue side policy for reducing future deficits?
- A. lowering payroll taxes
  - B. imposing new, possibly environmentally-oriented, taxes
  - C. reducing spending on military.
  - D. repealing tax cuts for high-income individuals and corporations
  - E. Both b. and d.
20. The spending side policies on reducing deficits include all the following, *except*:
- A. increasing taxes for high-income individuals
  - B. reducing spending on social welfare programs
  - C. reducing discretionary spending on military and infrastructure
  - D. increase efficiency of spending on healthcare
  - E. reduce spending on scientific research

### Answers to Active Review Questions

1. stock
2. deficits
3. bonds
4. supply-side
5. gross federal
6. monetizing
7. interest rates
8. Japan. China
9. twin deficit
10. deficit spending
11. False, it is the other way round—an accumulation of deficits results in a debt.
12. True
13. False, that would be the internal debt. The public debt refers to the gross federal debt minus the debt owed to other government accounts such as Social Security and Medicare.
14. True
15. False, only a minority of Congress members believes that the United States should do so.
16. True
17. A deficit occurs whenever available tax revenue is insufficient to finance government spending for that year. The money borrowed by the government to make up the difference adds to the existing debt. Hence, debt is the accumulation of deficit over many years.
18. In terms of dollars, yes, the debt has more or less risen throughout the 20<sup>th</sup> century, to its present level of over \$31 trillion. But in relation to the size of the economy

(GDP)—which is what we care more about—it has fluctuated considerably. It reached its highest point, more than 100 percent of GDP, during World War II, but declined gradually to under 40 percent by the late 1970s. Since then it has again been on the rise, recently reaching over 100 percent of GDP with the Trump tax cuts and the pandemic era spending.

19. In short, supply-side economics involves tax cuts—and starting in the 1980s these were substantial. Reduced tax revenue results in budget deficits (unless spending declines commensurately, which was far from the case), and with deficits a perennial phenomenon the debt can become very large indeed.
20. The gross federal debt refers to the total amount of money owed by the federal government—what is often referred to as the national debt. Total indebtedness is a much broader concept, which includes the national debt, but also all corporate debt from financial and non-financial businesses, all debt from state and local governments, and all debt from households (including credit card and mortgage debt) and non-profits.
21. One problem is that borrowing sometimes is for “low-multiplier” activities, such as tax cuts for the wealthy, or spending on projects that might disproportionately benefit the wealthy, who spend a much smaller share of their income than the poor. Another problem is that if debt grew too large, creditors might begin to doubt the U.S. government’s continued ability to finance its debt. Thus far there is not much evidence of this, but it is not inconceivable. Third, mounting debt requires either that taxes be raised or that more money be borrowed to finance existing debt. Often this leads to monetizing the debt—which means that the Fed stands ready to buy the new bonds—which has monetary policy impacts that might not always be desirable.
22. This is not true. As of 2021, foreigners held less than one-third (28.9%) of the debt, of which the Chinese and the Japanese held over 30 percent. This is not to say that it is not a problem. Foreign ownership of U.S. debt has increased substantially over the past 30-40 years, and seems likely to continue increasing. Interest payments on this portion of the debt must be made to those outside the country.
23. Balancing the budget and, ultimately, paying off the debt would likely create more problems than it solves. There is nothing inherently wrong with a national government having a debt, as long as it is “manageable.” What this means is that the cost of servicing the debt (i.e., paying interest on it) is not too burdensome on the next budget (in that it requires cuts in other types of spending or an increase in the amount of borrowing). The problem with balancing the budget is that doing so would require tax increases, spending cuts, or both. And such policies may have to be implemented at times when the economy is in a downturn (which might worsen the crisis), or when there is severe need for government funds for recovery from a natural disaster. So, while reducing the deficit is probably a good idea, caution is required so that doing so does not produce too contractionary an effect on the economy.
24. The 2017 tax cuts by the Trump administration that includes tax cuts for everyone, with greater and more permanent tax cuts going to the high-income individuals and corporations, is likely to increase the deficits in the coming years significantly. Moreover, the CBO finds that deficits are likely to remain high—for four other reasons. First, an aging U.S. population means that more funds than earlier will be needed to finance retirement programs like Social Security and Medicare, and the tax

base is likely to shrink as the retired become a greater percentage of the overall population. Second, and related, with health care costs rising much more rapidly than the general inflation rate, Medicare expenditures will only increase even more rapidly. Expenditures on Medicaid, a program that provides medical coverage for poor families, would also increase significantly. Third, federal subsidies for health care are likely to rise commensurately. Finally, as interest rates are not expected to remain at historical lows forever, any modest rise in the interest rate would translate to much larger annual interest payments, also worsening budget deficits.

25. They do make sense, at least potentially. Such taxes increase revenue for the government, so if nothing else changed, deficits would be smaller, possibly by \$100 billion or more. And if such taxes raised sufficient revenue, they could even carry the additional benefit of allowing a reduction in the income tax, which would likely increase overall economic efficiency (since instead of taxing income, a “desirable,” we would tax pollution, an “undesirable.”)

### Answers to Problems

1.

<u>Year</u>	<u>Tax Revenue</u>	<u>Military Spending</u>	<u>Civilian Spending</u>	<u>Total Spending</u>	<u>Surplus or Deficit</u>	<u>Existing Debt</u>
2015	7.0	4.0	4.0	8.0	-1.0	100.0
2016	7.2	4.0	4.1	8.1	-0.9	101.0
2017	7.2	4.2	4.3	8.5	-1.3	101.9
2018	7.3	4.0	4.5	8.5	-1.2	103.2
2019	7.0	3.7	4.7	8.4	-1.4	104.4
2020	7.1	3.5	4.9	8.4	-1.3	105.8
2021	6.8	3.6	5.1	8.7	-1.9	107.1
2022	7.0	3.7	5.3	9.0	-2.0	109.0
2023	7.2	3.8	5.5	9.3	-2.1	111.0
2024	7.3	3.9	5.7	9.6	-2.3	113.1
2025	7.4	4.0	5.9	9.9	-2.5	115.4

Budgetland runs a deficit every year, so its debt gradually increases over the period, from 100.0 to 115.4.

2.

<u>Year</u>	<u>Interest Payment</u>	<u>Total Spending</u>	<u>Surplus or Deficit</u>	<u>Existing Debt</u>
2015	2.0	10.0	-3.0	100.0
2016	2.1	10.2	-3.0	103.0
2017	2.1	10.6	-3.4	106.0
2018	2.2	10.7	-3.4	109.4
2019	2.3	10.7	-3.7	112.8
2020	2.3	10.7	-3.6	116.4

2021	2.4	11.1	-4.3	120.1
2022	2.5	11.5	-4.5	124.4
2023	2.6	11.9	-4.7	128.8
2024	2.7	12.3	-5.0	133.5
2025	2.8	12.7	-5.3	138.5

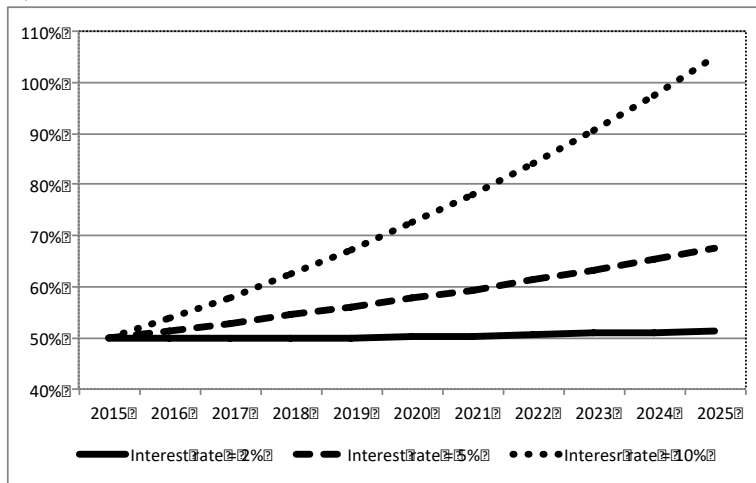
Including interest payments increase spending each year, which increases the size of the deficit, and the size of the existing debt for each year.

3.

<u>Year</u>	<u>Existing Debt</u>	<u>GDP</u>	<u>Debt-GDP Ratio</u>
2015	100.0	200.0	50.0%
2016	103.0	206.0	50.0%
2017	106.0	212.2	49.9%
2018	109.4	218.5	50.0%
2019	112.8	225.1	50.1%
2020	116.4	231.9	50.2%
2021	120.1	238.8	50.3%
2022	124.4	246.0	50.6%
2023	128.8	253.4	50.9%
2024	133.5	261.0	51.2%
2025	138.5	268.8	51.5%

The earlier drop in military spending results in the debt increase not keeping pace with the 3 percent rate of growth in GDP. This makes the debt-GDP ratio decline slightly and remain mostly flat until about 2021. After this, continued increased in the interest payment cause debt to rise more rapidly than GDP, so the debt-GDP ratio increases to 51.5% by 2025.

4.



Increasing the annual interest rate changes matters substantially. Assuming a rate of 5 percent, the debt-GDP ratio is at about two-thirds by 2025, and assuming a rate of 10 percent, debt actually *exceeds* GDP by the year 2025. This clearly illustrates how the burden of having to pay interest on existing debt could make it even more difficult to keep from running deficits (hence borrowing more!) in the future.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. B  | 11. E |
| 2. A  | 12. B |
| 3. D  | 13. E |
| 4. C  | 14. B |
| 5. E  | 15. E |
| 6. D  | 16. C |
| 7. B  | 17. E |
| 8. C  | 18. B |
| 9. A  | 19. E |
| 10. A | 20. A |

## Chapter 16

# HOW ECONOMIES GROW AND DEVELOP

*Macroeconomics In Context (Goodwin, et al.)*

### Chapter Overview

This chapter presents material on economic development and growth, including the theory behind these concepts, their measurements, and the historical context for understanding why some countries are successful at promoting development, while others seem to be “stuck” at low levels of development. The chapter discusses issues of poverty, inequality, and human development, and explores the question of whether less developed countries are, over time, “catching up” to the rich countries (“convergence”). You will also learn about various institutional factors that economists consider important in achieving economic development. Country diversity is a central theme; the chapter emphasizes that the “one size fits all” approach to economic development emphasizing structural reforms—such as those embodied in the Washington Consensus—has produced disappointing results and that different approaches are required to meet sustainable development goals.. In the final section, you will learn about the different kinds of economies and the role of the government in influencing economic outcomes.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Explain the difference between “economic growth” and “economic development.”
2. Discuss the relevance of GDP measures and poverty indices in evaluating the economic progress of countries and regions.
3. Describe general patterns of economic growth over time and across different regions and countries.
4. Understand the relevance to economics—and to economic growth in particular—of the Industrial Revolution.
5. Explain the different theories on economic development and understand their historical context.
6. Describe the various sources of economic growth and development.
7. Describe the recent perspectives on development including the Millennium Development Goals and the Sustainable Development Goals.
8. List the different kinds of economies and their relevance for understanding the process of economic development and well-being.

## Key Terms

human development capabilities	industrial policy
convergence (in reference to economic growth)	infant industry
participatory rural assessment	appropriate technology
poverty line	bilateral development assistance
Industrial Revolution	multilateral development assistance
dependency theory	conditional cash transfer (CCT)
primary goods	unconditional cash transfer (UCT)
terms of trade	Millennium Development Goals (MDGs)
virtuous cycles (in development)	Sustainable Development Goals (SDGs)
capital intensive	laissez-faire capitalism
labor intensive	administrative capitalism
	administrative socialism
	market socialism

## Active Review

### *Fill in the Blank*

1. When an economy has experienced increases in aggregate levels of production and income, and its real GDP has risen by some percentage from one year to the next, it has experienced economic \_\_\_\_\_.
2. When an economy has moved people from a situation of poverty to material plenty through investments in productive capacity and changes in the organization of work, it has experienced economic \_\_\_\_\_.
3. The \_\_\_\_\_ approach defines development in terms of the opportunities that people have to pursue important aspects of well-being, such as being healthy and having access to education.
4. The process of social and economic change that began in 18<sup>th</sup> century England and resulted in a huge increase in output per worker is called the \_\_\_\_\_.
5. The theory that under-development in developing countries is caused by unequal trade relations between developing and developed countries is called \_\_\_\_\_.



6. Self-reinforcing patterns of high savings, investment, productivity growth, and economic expansion, such as experienced by Japan and other “Asian tigers,” are called \_\_\_\_\_.
7. The idea that poor countries are on a path to “catch up” with the rich countries due to underlying economic forces, is called \_\_\_\_\_.
8. Aid or loans given by the government of a rich country like the U.S. to a poor country like Ethiopia is called \_\_\_\_\_ development assistance.
9. Aid or loans given by international institutions such as the World Bank, IMF, or United Nations Development Program (UNDP) is called \_\_\_\_\_ development assistance.
10. Suppose a U.S. company builds a factory in China to produce electronic goods. When such a private company acquires or creates assets for their own business operations in a foreign country, it is engaging in \_\_\_\_\_ investment.

*True or False*

11. Economic growth will always lead to inflation.
12. The income threshold below which members of a population are classified as poor is called poverty line.
13. Additions to a nation’s capital stock will automatically lead to economic growth.
14. History shows that having plentiful resources of arable land, energy, and/or minerals is a requirement for a country to have strong economic growth and development.
15. A system of private property rights is essential for economic growth.
16. Economic growth is a necessary condition for human development.
17. The system of administrative capitalism is characterized by private corporate ownership and a substantial reliance on public administration as a mode of coordination.

*Short Answer*

18. Explain the difference between economic growth and economic development.
  
19. Given data on growth of real GDP and the growth of population, how can growth in real GDP per capita be calculated?
  
20. What is the difference between the headcount poverty measure and the multidimensional poverty index?
  
21. List seven factors that can promote economic growth and development. Are these factors requirements for achieving economic growth?
  
22. Explain the idea of convergence.
  
23. Explain how inflow of remittances has affected development prospects for migrant-sending countries.
  
24. What kinds of institutions are beneficial for promoting economic growth and development?
  
25. Is China more “developed” than India? Explain.

## Problems

1. Draw a graph with shifts in the AD/AS curves to illustrate each of the following:

a. Economic growth with inflation rising.

b. Economic growth with inflation falling.

2. Whether worldwide inequality is increasing or decreasing much debated in the press and popular writings. Some commentators claim that the world is getting much more equal—“just look at the progress of India and China!” Others claim that the world is getting much more unequal—“just look at the problems in Sub-Saharan Africa!” This exercise has you explore data regarding such claims.

a. Using the data in the following table, create a graph showing real GDP per capita on the horizontal axis and the rate of real GDP per capita growth for 1990-2021 on the vertical axis. Plot the data for each country.

<b>Country</b>	<b>GDP per Capita, 2021 (PPP 2017 international \$)</b>	<b>Percent Growth in GDP Per Capita (PPP, Annual Average, 1990-2016)</b>
United States	63,069	1.4
Hong Kong	60,051	3.0
Japan	40,770	1.0
France	45,187	1.0
China	17,603	8.3
India	6,675	4.1
Bangladesh	6,020	4.1

*Source: World Bank, World Development Indicators Database, 2022*

b. Examining just these selected countries, is there evidence that convergence is occurring?

c. Now re-do your diagram for the following countries:

<b>Country</b>	<b>GDP per Capita, 2021 (PPP 2017 international \$)</b>	<b>Percent Growth in GDP Per Capita (PPP, Annual Average, 1990-2021)</b>
United States	63,069	1.4
Japan	40,770	1.0
France	45,187	1.0
Turkey	31,252	3.4
Brazil	14,615	0.8
Haiti	2,847	-1.0
Ethiopia	2,366	3.5
Congo, Dem. Rep.	1,109	-1.7

Source: World Bank, World Development Indicators Database, 2022

d. Now is there evidence that convergence is occurring?

e. What criticism can you make about basing generalizations about world inequality on studies such as these?

## Self Test

1. Suppose in a given year, a country's real GDP growth rate was 5 percent and its population grew at 2 percent. Then its per capita real GDP growth rate was:
  - A. 7%
  - B. 5%
  - C. 3%
  - D. 2%
  - E. 2.5%
  
2. If an economy is experiencing economic growth, this is usually shown in the AD/AS model with
  - A. a shift to the left of the AS and maximum capacity
  - B. a shift to the left of the AD curve.
  - C. a shift to the right of the AD curve.
  - D. a shift to the right of the AS and maximum capacity
  - E. a shift to the right of the AS and maximum capacity, together with a shift to the right of the AD curve.
  
3. Which of the following is *not* one of the stages of development in Rostow's thesis on how countries progress from "underdevelopment" to "development"?
  - A. take-off into self-sustaining growth
  - B. age of high mass consumption
  - C. drive to maturity
  - D. unbalanced terms of trade
  - E. traditional agrarian society
  
4. The process of social and economic change that began in 18<sup>th</sup> century England and led to huge increases in output per worker is called
  - A. the Democratic Revolution
  - B. the Communist Revolution
  - C. the Industrial Revolution
  - D. the Gender Revolution
  - E. the Environmental Revolution

5. Which of the following was *not* one of the factors that contributed to the Industrial Revolution?
- A. New agricultural techniques, new tools and machines that boosted agricultural productivity.
  - B. New technologies adopted in factory production that boosted output in manufacturing.
  - C. New communication technologies that boosted output in the service sector.
  - D. Supplies of cheap raw materials from other countries.
  - E. Access to markets in other countries in which to sell finished products.
6. Which of the following was *not* one of the main policies promoted in the “Washington Consensus”?
- A. Fiscal discipline
  - B. Development of infrastructure, health, and education
  - C. Market liberalization
  - D. Privatization
  - E. Trade liberalization
7. Which of the following best characterizes the record of the policies of the “Washington Consensus”?
- A. The countries that most strictly followed the World Bank’s market-oriented development path suffered the most severe crises.
  - B. Some countries in Africa were forced to make cutbacks in desperately needed health and education.
  - C. Countries were barred from using fiscal policy for macroeconomic stabilization.
  - D. Some countries that did not follow the Washington Consensus experienced notable success.
  - E. All of the above.
8. Which of the following is one of the trends of global economic growth in the 20<sup>th</sup> century?
- A. World per capita economic output grew about fivefold.
  - B. The use of energy more than tripled.
  - C. Per capita incomes steadily increased.
  - D. Most of the growth came in the second half of the 20<sup>th</sup> century.
  - E. All of the above.

9. Which of the following factors were key to Japan's rapid economic growth in the 1950-1980 period?
- A. High savings rates.
  - B. The investment of savings in machines and equipment to boost productivity rates.
  - C. Investment in human capital.
  - D. Promotion of exports.
  - E. All of the above.
10. The term appropriate technology refers to...
- A. increasing government spending on technological development
  - B. directing government spending towards technologies that are appropriate to the existing and wished-for mix of skills in workforce and to existing resources.
  - C. Directing foreign direct investments towards the technology sector
  - D. Transfer of technology from a foreign country
  - E. None of the above.
11. Which of the following characterizes the global distribution of per capita GDP across countries?
- A. Income per person is highest in the industrialized countries.
  - B. Income per person is lowest in many African and Asian countries.
  - C. The income per person in many industrialized countries such as U.S., Canada, Europe, and Japan is more than \$25,000.
  - D. Many of the low-income countries in sub-Saharan Africa have income per capita lower than \$2,500.
  - E. All of the above.
12. Which of the following has clearly NOT been converging to rich country income levels since 1990?
- A. Democratic Republic of Congo
  - B. South Korea
  - C. Ethiopia
  - D. China
  - E. India

13. Which of the following is NOT considered by economists to be a source of economic growth?

- A. Natural resources
- B. Consumption
- C. Savings and investment
- D. Foreign sources of capital
- E. Financial, legal, and regulatory institutions

14. A national system combining private ownership of capital with substantial reliance on government as a mode of coordination is known as

- A. market socialism
- B. administrative capitalism
- C. impure communism
- D. market capitalism
- E. administrative socialism

15. Among variables NOT considered in the multidimensional poverty index are

- A. income inequality
- B. child mortality
- C. school attendance
- D. cooking fuel
- E. drinking water

16. The Sustainable Development Goals

- A. have already largely been achieved
- B. were introduced to the public by the World Bank
- C. place greatest emphasis on reversing climate change
- D. can be achieved indirectly with global GDP growth
- E. None of the above.



17. The participatory rural assessment approach to measuring poverty involves:
- A. identifying population below a certain income threshold
  - B. estimating the average income shortfall from the poverty line
  - C. including various elements that are critical for a decent life, in areas of physical living standards, health and education to measure poverty.
  - D. collecting survey data on housing conditions, income levels, and access to basic resources from local population
  - E. None of the above.
18. Which of the following is *not* one of the ingredients that can stimulate economic growth?
- A. Savings and investment.
  - B. Technological innovation and entrepreneurship.
  - C. Access to domestic and international markets.
  - D. Contractionary macroeconomic policies to slow down aggregate demand.
  - E. Access to foreign capital.
19. From what sources can a developing country acquire funds to finance investments?
- A. From domestic savings.
  - B. From bilateral assistance.
  - C. From multilateral assistance.
  - D. From private foreign banks.
  - E. All of the above.
20. Approximately how much in development assistance (as a % of GDP) do the rich countries give to poor developing countries?
- A. Less than 1%
  - B. About 1%
  - C. About 3%
  - D. About 5%
  - E. About 10%

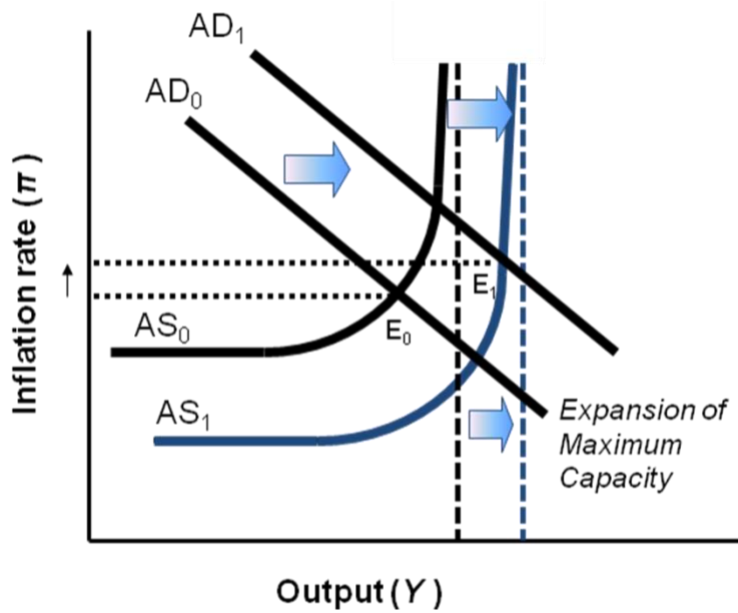
## Answers to Active Review Questions

1. growth
2. development
3. capabilities
4. Industrial Revolution
5. dependency theory
6. virtuous cycles (in development)
7. convergence
8. bilateral
9. multilateral
10. foreign direct (investment)
11. False. The effect of economic growth on inflation is ambiguous. If the AS curve shifts further to the right than the AD curve, the inflation rate may decline. If the AD curve shifts further to the right than the AS curve, the inflation rate may rise.
12. True.
13. False. Poorly planned or misguided development projects may lead to waste or even harm.
14. False. While natural resources are generally very important, there are some economies with few natural resources that have done very well (e.g. Hong Kong and Singapore, which are natural ports but have little energy or mineral resources or arable land).
15. False. Some countries, like China and Vietnam, have been successful in achieving economic growth without a system of private property rights.
16. False. Economic growth often helps, but it is not required. Human development has many dimensions, and it could be achieved through progress in many different areas unrelated to income.
17. True.
18. Economic growth is the growth in production of output (or income), and can be measured as the percent change in real GDP. Economic development is the movement of the population from poverty into a situation of material plenty or well-being. Development is a much broader concept than growth, as it includes improvement in the quality of living through changes in non-income aspects such as access to better nutrition and housing, progress in quality of education and healthcare, decline in crime rates, and improvement in environmental quality.
19.  $\text{Growth in real GDP per capita} = \text{growth in real GDP} - \text{growth in population}$ .
20. The headcount poverty measure defines poverty as the percentage of population below a certain income threshold, whereas the multidimensional poverty index (MPI) is based on the capabilities approach. Unlike the headcount measure that only focuses on the income dimension, the MPI measure considers several elements that are critical for a decent life, in areas of physical living standards, education, and health.

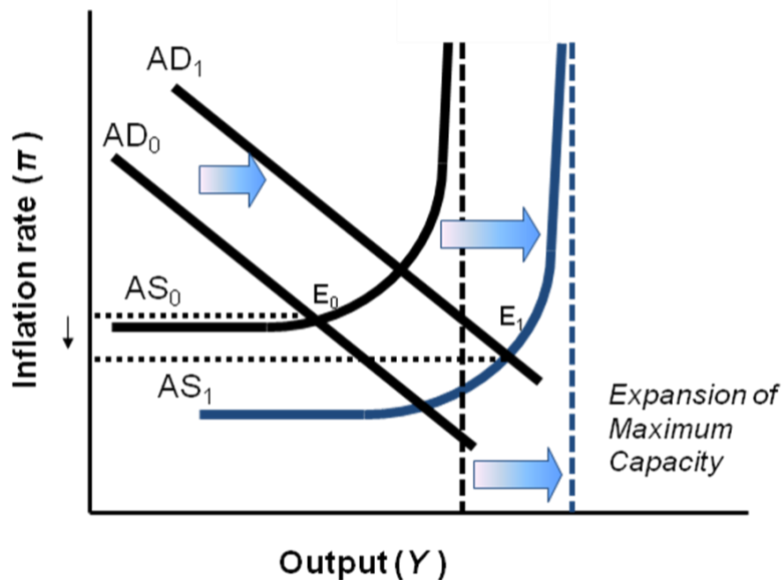
21. The factors that can promote economic growth include: savings and investment, technological innovation and entrepreneurship, good macroeconomic policies that stabilize aggregate demand, access to international markets, availability of natural resources, access to foreign capital, and good institutions. These factors are not requirements for economic growth, however, as there are many examples of countries that have achieved growth without one or more of these factors.
22. The idea of convergence is that the poor countries are on a path to “catch up” with the rich countries, because they are starting off with little capital. So as they experience increases in their manufactured capital stock, their output will grow at a faster rate than that of rich countries that are already rich in manufactured capital.
23. Remittances are a significant source of financial capital (much greater than aid) for many of the poor migrant-sending countries. Research on the impacts of remittances show gains in income and improvement in other aspects of well-being such as access to healthcare and education.
24. The beneficial institutions include: a good banking system; a good legal system with private property rights and contract enforcement; and the absence of corruption, internal conflict, and political instability.
25. Despite rapid economic growth in both countries in recent decades, China has made significantly more progress in improving the capabilities of its people. It has placed a greater priority in eliminating hunger, illiteracy, and medical neglect, and developing the economic potential of its population. However, India is ahead of China in terms of human freedom as it is a democracy, while China’s government is authoritarian. Most of the development efforts in China has come from its leaders without much pressure from the public. In India, on the other hand, public protests and court decisions play a central role in influencing the process of development.

## Answers to Problems

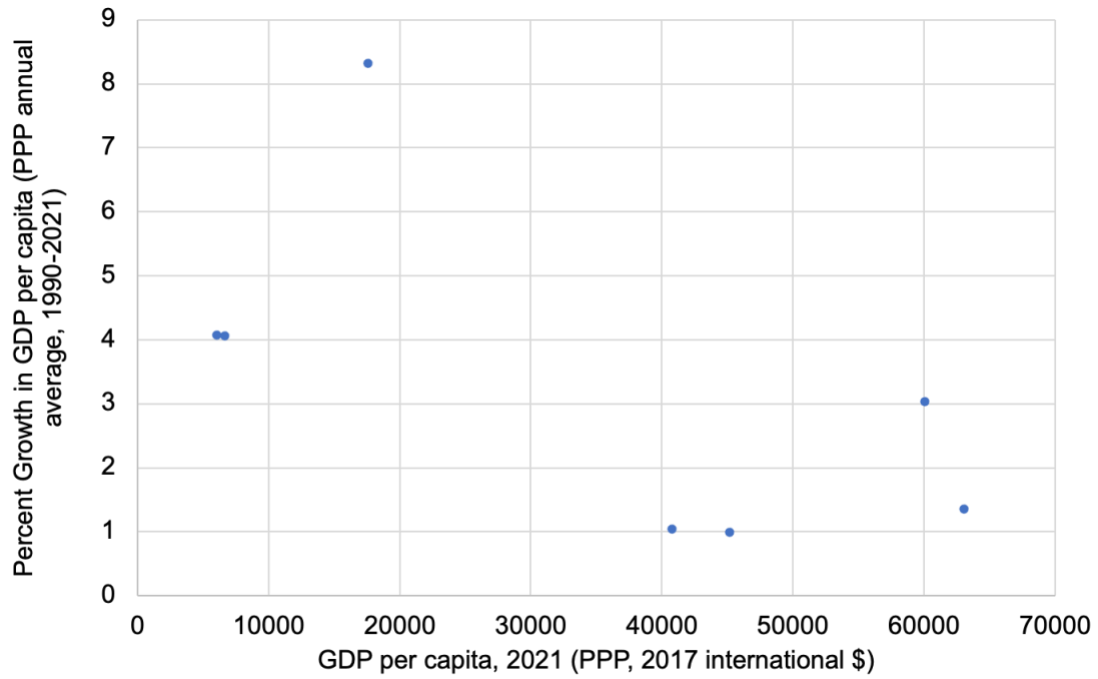
1. a. Economic growth with inflation rising.



b. Economic growth with inflation falling.

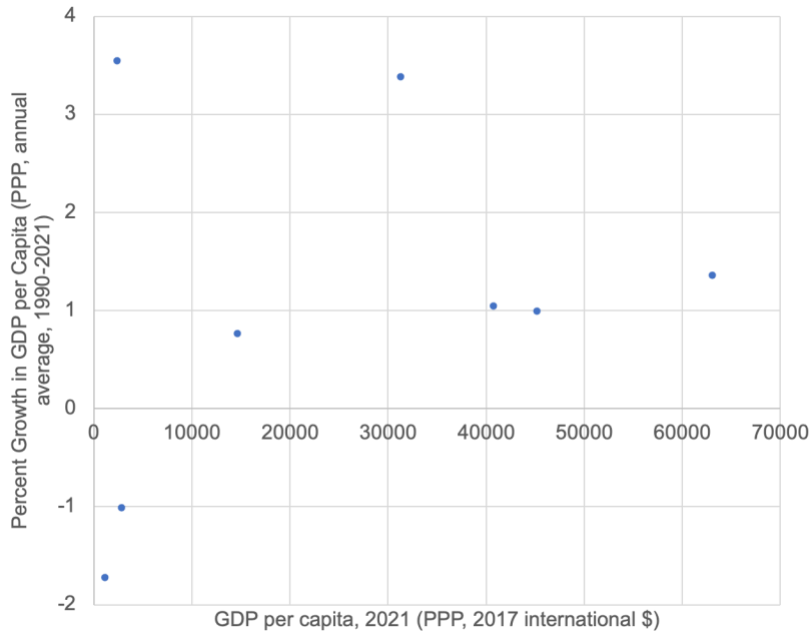


2. a.



- b. Yes, looking only at this evidence, it would appear that convergence may be occurring. The poorer countries tend, on balance, to have faster growth rates than the richer countries, and are on the path to “catch up” to them.

c.



d. Now it does *not* appear that convergence is occurring, because the poor countries are growing at rates generally less than those of the developed countries.

e. Neither “study” looks at the whole picture.

### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. C  | 11. E |
| 2. E  | 12. A |
| 3. D  | 13. B |
| 4. C  | 14. B |
| 5. C  | 15. A |
| 6. B  | 16. E |
| 7. E  | 17. D |
| 8. E  | 18. D |
| 9. E  | 19. E |
| 10. B | 20. A |

## Chapter 17

# GROWTH AND SUSTAINABILITY IN THE TWENTY-FIRST CENTURY

*Macroeconomics in Context* (Goodwin et al.)

### Chapter Overview

This chapter examines ecological challenges and their implications for macroeconomic growth. It considers the problems of population, resource depletion, climate change, and possible limits to economic growth, putting earlier analysis of aggregate demand and economic growth into a new framework emphasizing sustainability. The chapter discusses theories of the relationship between economic growth and the environment, such as the Environmental Kuznets Curve (EKC). It looks at possible alternatives to indefinite economic growth, including theories of and policies related to “green Keynesianism,” limits to growth, steady-state, and degrowth. Analyses of resource limits and environmental impacts raise serious challenges to the belief that economic growth and markets, on their own, will solve the social and environmental problems of the coming century. The chapter concludes with a discussion of specific economic policies for sustainability including green infrastructure investment and promoting climate resilience.

### Chapter Objectives

After reading and reviewing this chapter, you should be able to:

1. Recognize ecological sustainability as a major economic issue for the 21<sup>st</sup> century.
2. Identify major environmental challenges.
3. Understand the relationship of climate change to economic growth.
4. Be familiar with the Environmental Kuznets Curve and its limitations.
5. Understand the concepts of limits to growth, “green” growth, steady-state, and degrowth economy
6. Describe several policies directed towards sustainable development.

### Key Terms

weak sustainability  
strong sustainability  
ecological footprint  
nonrenewable resources  
social cost of carbon  
social discount rate

environmental Kuznets curve (EKC)  
hypothesis  
steady-state economy  
carrying capacity  
throughput

## Active Review

### *Fill in the Blank*

1. The \_\_\_\_\_ approach measures the human impacts on the environment in terms of the land area required to supply a society's resources and assimilate its wastes and pollution.
2. Major environmental issues for the twenty-first century include \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
3. Resources that do not regenerate through natural processes, at least on a human time scale, such as oil, coal, and mineral ores are called \_\_\_\_\_.
4. Emissions of \_\_\_\_\_ lead to global warming and climate change.
5. The \_\_\_\_\_ agreement allowed each country set their own emissions targets on a voluntary basis and enact national policies to meet these targets.
6. The two most prominent market-based policies for addressing climate change are \_\_\_\_\_ and \_\_\_\_\_.
7. The \_\_\_\_\_ curve posits an inverted U-shaped relationship between economic development and environmental damages, suggesting that as nations develop their damage to the environment decreases.
8. Taxes that are used as a means to internalize the negative externalities from pollution are called \_\_\_\_\_.
9. A discount rate that reflects social rather than market valuation of future costs and benefits, and is usually lower than the market discount rate, is called a \_\_\_\_\_.
10. An economy with no increase in population, or in the rate of use of raw-materials and energy is termed \_\_\_\_\_.

### *True or False*

11. The world population reached 7.9 billion in 2022, and the United Nations high range projections show global population of 16 billion people in 2100.
12. As of 2016, the OECD nations comprise the majority of global emissions of carbon dioxide.



13. According to leading scientists, global emissions of greenhouse gases will eventually need to be reduced by about 25 percent lower than current levels by 2050—if we are to avoid the most dangerous effects of climate change.

14. Environmental damage per capita tends to decline with increasing income for all major pollutants.

15. One of the limitations of green taxes is that they are regressive, likely falling disproportionately on lower-income households.

16. Tradable permit systems allow overall pollution to increase since businesses can purchase permits to pollute.

*Short Answer*

17. Distinguish between the “weak” and “strong” perspectives on sustainability. What are some of the indicators that can be used to measure each of these?

18. Identify three environmental issues that are closely related to economic growth.

19. What kinds of environmental problems are associated with the increasing global human population?

20. What are some of the problems predicted to occur with rising levels of greenhouse gas emissions?

21. What is the Environmental Kuznets Curve (EKC) hypothesis? And what is the evidence for this hypothesis?

22. Identify at least three policies for sustainable development.

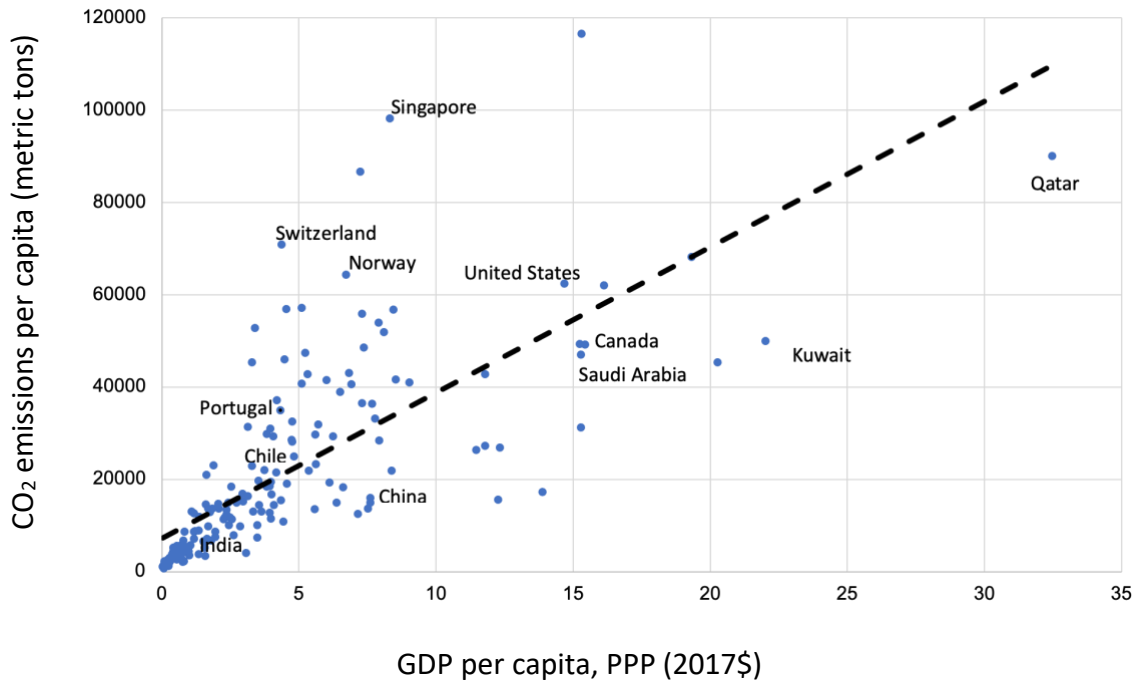
## Self Test

1. Which of the following statements describes the “strong” version of sustainability?
  - A. Two trees are planted to replace each tree cut in the production of timber.
  - B. Trees are cut for the production of timber, and the value of timber produced is estimated to be higher than the value of tree lost.
  - C. Trees are cut for producing timber, and the value of timber produced is estimated to be lower than the value of tree lost.
  - D. Both (B) and (C)
  - E. None of the above.
2. According to United Nations median projections published in 2019, global population is expected to:
  - A. Increase to 9 billion by 2060
  - B. Decrease to 7 billion by 2060
  - C. Remain approximately constant
  - D. Increase to nearly 10 billion by 2060
  - E. Increase to 16 billion by 2060
3. Which of the following resources are currently being depleted or at risk of depletion?
  - A. Fisheries
  - B. Forests
  - C. Clean water for drinking and agriculture
  - D. Minerals and fossil fuels
  - E. All of the above.
4. Which of the following statements about the level of air pollution is FALSE?
  - A. Air pollution has mostly increased in both developing countries and developed countries in recent years.
  - B. Air pollution in most major cities in developing countries exceed the World Health Organization’s recommended levels.
  - C. The most common air pollutants in the U.S. have declined by 78% since the 1970s.
  - D. Efforts to reduce pollution levels have generally been found to be cost-effective.
  - E. None of the above.

5. Which of the following are *not* among the adverse effects of greenhouse gas emissions?
- A. Rising temperatures.
  - B. Rising sea-levels.
  - C. Ecological disruptions such as species extinction.
  - D. Increased frequency of severe weather events such as hurricanes, floods, and droughts.
  - E. Depletion of mineral resources.
6. Which of the following countries is the world's top emitter of carbon dioxide?
- A. India
  - B. United States
  - C. Russia
  - D. Saudi Arabia
  - E. China
7. Which of the following was the conclusion of the 2006 British government report written by former World Bank chief economist Nicholas Stern?
- A. The costs of climate change in the twenty-first century are estimated as equivalent to 5–20 percent of global GDP, while the most severe effects of climate change could be avoided at a cost of around only 1 percent of global GDP.
  - B. The costs of climate change in the twenty-first century are estimated as equivalent to 1 percent of global GDP, while the most severe effects of climate change could only be avoided at a cost of around 5 - 20 percent of global GDP.
  - C. It now appears that the benefits of current actions to minimize climate change significantly exceed the costs.
  - D. (A) and (C)
  - E. None of the above.
8. If nothing is done now to stem the effects of climate change, what group will face the most dangerous impacts from climate change?
- A. Current generations
  - B. Future generations living several decades from now or later
  - C. Developed countries
  - D. Developing countries
  - E. (B) and (D)

9. Why do some researchers suggest that when economic development increases, environmental damage (per capita) will decrease?
- A. Because the greater availability of wealth and technology allows nations to adopt cleaner production methods.
  - B. Because as countries develop, they move to a service-based economy which does less harm to the environment.
  - C. Because as people become wealthier, they demand higher environmental quality standards.
  - D. All of the above.
  - E. None of the above.
10. The Environmental Kuznets Curve (EKC) hypothesis posits that:
- A. Environmental damage per capita increases in the early stages of economic development, reaches a maximum, and then diminishes as a nation attains higher levels of income.
  - B. Environmental damage per capita falls in the early stages of economic development, reaches a minimum, and then rises as a nation attains higher levels of income.
  - C. Environmental damage per capita steadily rises during all stages of economic development.
  - D. Environmental damage per capita steadily falls during all stages of economic development.
  - E. There is no clear relationship between environmental damage per capita and economic development, as it depends on the country, the pollutant, and other contingencies.
11. The evidence for the Environmental Kuznets Curve (EKC) suggests that:
- A. The EKC relationship does seem to hold for all pollutants.
  - B. The EKC relationship does not seem to hold for any pollutants.
  - C. The EKC relationship does seem to hold for some pollutants, such as per capita sulfur dioxide emissions and other air pollutants, but not for CO<sub>2</sub> emissions.
  - D. The EKC relationship does seem to hold for the environmental impacts of CO<sub>2</sub> emissions, but not for per capita sulfur dioxide emissions and other air pollutants.
  - E. The EKC relationship does seem to hold for some countries, but not others.

For the following question, refer to the figure below.



12. The figure above, showing the relationship between GDP per capita and CO<sub>2</sub> emissions for the year 2019:
- Indicates that developing countries typically have high per capita CO<sub>2</sub> emissions.
  - Show that there is no relationship between GDP and CO<sub>2</sub> emissions.
  - Provides evidence that confirms the Environmental Kuznets Curve hypothesis.
  - Provides evidence that does not support the Environmental Kuznets Curve hypothesis.
  - None of the above.
13. Which of the following is *not* a consequence of instituting carbon taxes on large emitters of CO<sub>2</sub>?
- reduction in overall levels of CO<sub>2</sub> emission
  - effective control on the overall level of emissions by the government
  - increase in tax revenue for the government
  - increased investment in renewable technology
  - higher utility bills for consumers

14. Which of the following statements about the 2015 Paris Climate Agreement is FALSE?
- A. Each country is allowed set their own targets and participation is voluntary.
  - B. There are no enforceable penalties for failing to meet targets.
  - C. Most countries are on track to achieve the treaty's objective of limiting global warming to no more than 1.5°C above preindustrial levels.
  - D. An overall evaluation of the treaty shows that it has resulted in a reduction in the expected increase in temperature levels.
  - E. None of the above.
15. Which of the following is *not* a policy to promote environmental sustainability?
- A. Green taxes.
  - B. Grants, subsidies and tax breaks to support recycling, renewable energy, and efficient transportation systems.
  - C. Tax cuts to stimulate consumption spending.
  - D. Elimination of subsidies for environmental degrading activities.
  - E. Tradable pollution permits.
16. According to the macroeconomic model developed by the United Nations, an annual investment of 2% of the global GDP over 2010-2050 to fund sustainable technologies relative to the business-as-usual (BAU) scenario will:
- A. initially reduce the global GDP per capita by about 1 percent.
  - B. increase the global GDP per capita by 2% by 2030.
  - C. increase the global GDP per capita by 14% by 2050.
  - D. Reduce global energy demand by 40%.
  - E. All of the above
17. Which of the following is *not* among the recommendations proposed by Tim Jackson in transitioning to a sustainable economy?
- A. structural transition towards service-based activities
  - B. investment in infrastructure development
  - C. investment in ecological assets
  - D. a decline in working hours per week
  - E. Both (b) and (d)

18. Which of the following statements is FALSE?
- A. Green taxes discourage energy-intensive economic activities.
  - B. Environmental taxes in industrial countries range from less than 3% to around 10%.
  - C. Green taxes are strongly supported by economic theory as a means of internalizing negative externalities.
  - D. Environmental taxes as a percentage of overall taxes is higher in United States than it is in Spain, Germany, Sweden or United Kingdom.
  - E. None of the above.
19. Which of the following policies is not favorable for transitioning to a more sustainable economy?
- A. Increase subsidies to the fossil fuel industry.
  - B. Increase investment in agriculture systems to encourage crop diversification.
  - C. Impose taxes on large emitters of CO<sub>2</sub>.
  - D. Invest in renewable energy.
  - E. Institute a system of tradable permits.
20. How can macroeconomic policy deal with environmental considerations?
- A. Seek to modify both the level and composition of consumption spending.
  - B. Promote forms of investment that do not increase the “throughput” of natural resources and the creation of wastes.
  - C. Direct government spending towards promoting environmental sustainability.
  - D. Promote investments that are more future-oriented than those concerned with short-term considerations.
  - E. All of the above.

## Answers to Active Review Questions

1. ecological footprint
2. population, resource depletion, pollution and wastes, and climate change
3. nonrenewable resources
4. greenhouse gases including CO<sub>2</sub>
5. 2015 Paris Climate (Agreement)
6. carbon taxes; a system of tradable permits
7. Environmental Kuznets (Curve)
8. green taxes
9. social discount rate
10. steady-state economy
11. True.
12. False – OECD nations comprised the majority of global emissions of CO<sub>2</sub> until 2003, but by 2016 over 60% of the world’s CO<sub>2</sub> was emitted by non-OECD nations.
13. False – scientific research indicates that the reduction in greenhouse gases needs to be 70 percent or more by 2050 to avoid major destructive impacts.
14. False – a declining trend is noted for some pollutants above about \$5,000 in per capita income, but other pollutants continue to increase as incomes rise.
15. True.
16. False. Tradable permit systems allow individual business to purchase permits for pollution, but set an overall limit on the total amount of pollution emitted.
17. The “weak sustainability” perspective asserts that the depreciation of natural capital is justified as long as there is an adequate increase in any other types of capital, while the “strong sustainability” perspective argues that the depreciation of natural capital is only justified if there is an adequate increase in some form of natural capital. Indicators such as GPI and Green GDP can be used for “weak sustainability” and satellite accounts such as forested area, waste generation, and greenhouse gas emissions can be used for “strong sustainability”.
18. Global population, depletion of renewable and non-renewable resources, and pollution and wastes.
19. The increasing global human population necessitates increasing food supplies, which has led to environmental problems such as: land degradation, pollution from fertilizers and pesticides, and overdraft of water supplies.
20. The problems include: rising temperatures, rising sea-levels and coastal flooding, decrease in water supplies, declines in crop yields, increase in food insecurity, ecological disruptions such as species extinction, spread of malaria and other tropical diseases, and increased frequency of severe weather events such as hurricanes, floods, and droughts.
21. The Environmental Kuznets Curve (EKC) hypothesis says that environmental damage per capita increases in the early stages of economic development, reaches a maximum, and then diminishes as a nation attains higher levels of income. The EKC relationship does seem to hold for some pollutants, such as per capita sulfur dioxide emissions and other air pollutants, but not for the environmental impacts of municipal waste, energy use, and CO<sub>2</sub> emissions.



22. Green taxes and tradable pollution permits; Grants, subsidies and tax breaks to support recycling, renewable energy, and efficient transportation systems; Elimination of subsidies for environmental degrading activities.

**Answers to Self Test Questions**

- |       |       |
|-------|-------|
| 1. A  | 11. C |
| 2. D  | 12. D |
| 3. E  | 13. B |
| 4. A  | 14. C |
| 5. E  | 15. C |
| 6. E  | 16. E |
| 7. D  | 17. B |
| 8. E  | 18. D |
| 9. D  | 19. A |
| 10. A | 20. E |