

PRINCIPLES OF  
**MACROECONOMICS**

EDITION **2**



FRED GOTTHEIL

**Prepared by David M. Wishart**

With the Assistance of Margaret Landman

# Principles of Macroeconomics

**Second Edition**

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## Preface

My first contact with Fred Gottheil came some 30 years ago when my Dad enlisted my aid typing a long, long book review as part of Professor Gottheil's graduate level History of Economic Thought course that he was taking at the University of Illinois. Typing was one of the more useful things I learned in junior high school, and my Dad, no slouch of an economist, knew how to exploit cheap labor. Fifty cents per page was the going rate. Either that or mow the yard. Never in my wildest 13-year-old imagination did I dream that I'd go on to major in economics after having taken Fred's Principles course in economics at Illinois (mainly to defend myself in arguments with my Dad), become good friends with Fred, write a Ph.D. thesis under his supervision, and be involved in this textbook/study guide project through two editions. Working with Fred has been one of the joys of my life. I owe him a debt of gratitude for teaching me about economics and much more. That Fred is a wonderful soul comes through in his text.

Writing this study guide has been fun and rewarding. I haven't done it alone. Hundreds of my students at Wittenberg University have been subjected to dozens of questions and problems, variants of which appear in this book. My students have been quick to point out flaws in the questions, doing a first round of editing for me. Especially helpful in this regard for the first edition were Deborah Goldstein, Ed Hasecke, Chris Murray, Kristen Neubaumer, Ryan Terry, Steve Valenti, and Bethany Young. Mojca Fink read the entire first edition and pointed to many corrections that were necessary. Mojca's eye for detail was a great help.

For this edition, Chris Taendler and Javier Herrera helped with editing and locating Web sites for the Economics Online segments in each chapter. Thanks guys. Javier read the entire manuscript, some of it twice, and checked answers carefully. He was a tireless worker, always willing to challenge me. Professor Gottheil offered feedback on many of the chapters. There was no shortage of red ink from Fred's pen, all of it constructive. Margaret Landman edited the entire manuscript and helped write some of the Chapter in a Nutshell and Graphing Tutorial/Pitfalls segments. Her help sharpening the questions and the prose throughout has been invaluable. Thanks also go to the editorial staff at South-Western — Jack Calhoun, Dennis Hanseman, and Rebecca Robey on the first edition. Thomas Sigel's editorial help on this edition has been terrific. Tom deserves credit for many of the new features in the second edition. The second edition is vastly improved as a result of Tom's many helpful suggestions. Peggy Buskey gave me quick feedback on the format of the book and kept the final copy editing rolling at a fast clip. Errors that remain are my responsibility. Any questions about the study guide can be addressed to me by e-mail — ([dwishart@wittenberg.edu](mailto:dwishart@wittenberg.edu)).

Finally, my wife Jo Wilson gets special thanks for her patient support over many months of writing. My sons Tony and Jacob have put up with a distracted parent for too long. We're overdue for a fishing trip.

David M. Wishart  
Wittenberg University  
June 1998

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# CHAPTER 1

## INTRODUCTION



### Chapter in a Nutshell

Economics is an important branch of the social sciences where study is focused on three critical areas of human behavior. First, economists study the problems that arise because **resources are scarce and people's wants are insatiable**. If resources are scarce and human wants are unlimited, then it makes sense that **choices have to be made**. It's the making of these choices that forms the other two areas of human behavior that economists study. Choices have to be made about **allocating scarce resources to produce goods and services to satisfy insatiable wants**. The third area of human behavior that economists study is **distribution**. Once goods and services are produced, they have to be distributed to people. The way goods and services are distributed is crucial to understanding how an economy performs. In our society, **consumer sovereignty** drives the production of most goods and services, meaning that consumers are free to decide what they want to purchase in the marketplace. Consumers form households that supply renewable and nonrenewable resources to firms that produce goods and services.

Production and distribution are complicated social processes. Economists use **models to help simplify the study of real-world economic relationships**. These models help economists to understand cause-and-effect relationships in the economy. Economists use models to study microeconomic and macroeconomic relationships. **Microeconomics** focuses on **individual economic relationships**. **Macroeconomics** studies the **behavior of the economy as a whole**. Economists use **positive analysis — the study of the economic relationships that exist in the economy** and **normative analysis — the study of what ought to be in the economy**. Economists have made substantial progress toward a better understanding of the economy due to the collection of better economic data over the last 50 years and the use of new statistical methods to test the accuracy of economic models. **Econometrics** is the branch of economics that deals with the **use of statistical methods to analyze economic data**. Even though economists' predictions aren't perfect, they are improving as economic knowledge advances.

*After you study this chapter, you should be able to:*

- Describe the finite character of the earth's **resources**.
- Distinguish between **renewable and nonrenewable resources**.
- Discuss people's **insatiable wants**.
- Tell how **scarcity** and choice are related to each other.
- Explain why **economic models** are used.
- Define and contrast **microeconomics** and **macroeconomics**.
- Compare **positive** and **normative economics**.

**Concept Check** — See how you do on these multiple-choice questions.



1. The **finite character of resource supplies** combined with **insatiable wants** results in
  - a. normative economics
  - b. *ceteris paribus*
  - c. the problem of scarcity
  - d. the circular flow model
  - e. consumer sovereignty

All of our resource supplies are finite. And, for practical purposes, human wants can be described as insatiable. Do you see a problem here?

2. Economists who study **microeconomic questions** focus on
  - a. national saving and investment
  - b. unemployment and inflation
  - c. the economy as a whole
  - d. individual economic behavior
  - e. circular flows

Economic analysis can be carried on at the level of households and firms, or it can be done at the level of the economy as a whole.

3. Which of the following statements makes a **positive economics** statement?
  - a. Greenhouse gas emissions should be cut by 10 percent from 1990 levels
  - b. Carbon dioxide emissions contribute to global warming
  - c. A tax should be placed on gasoline to decrease carbon dioxide emissions
  - d. Developing countries ought to limit their greenhouse gas emissions
  - e. Slowing down global warming should be a top priority for the United States

Positive economics describes what exists in the economy.

4. A major advantage of using **economic models** is that they
  - a. allow us to focus on only the most important variables
  - b. are expressed algebraically and not in words
  - c. are able to capture all the elements in economic relationships
  - d. force us to use econometric methods
  - e. emphasize the role played by scarcity and insatiable wants

Economic models are used to simplify real-world economic relationships in order to understand them better.

5. The primary reason for using the ***ceteris paribus* assumption** is that it allows us to
  - a. examine a relationship where all variables change together
  - b. predict economic changes with nearly perfect accuracy
  - c. examine the impact of changes in variables one at a time
  - d. distinguish between microeconomics and macroeconomics
  - e. hold stocks of nonrenewable resources constant

Can cause-and-effect economic relationships be identified if all variables change simultaneously?



## Am I on the Right Track?



Your answers to the questions above should be **c, d, b, a, and c**. It's very important that by now you appreciate that scarcity forces people in a society to make choices about what is produced and how the output is distributed. Scarcity and choice are at the heart of economic analysis. You should also have an appreciation for the ways that economic analysis is conducted. For example, the distinction between microeconomics and macroeconomics should be clear. Positive economic analysis and normative economic analysis are also easily distinguishable. Try using the *ceteris paribus* assumption in a conversation with one of your friends. If you can explain it to them after they give you a strange look, then you are probably on the right track.

**Key Terms Quiz** — Match the terms on the left with the definitions in the column on the right.

- |                            |       |   |
|----------------------------|-------|---|
| 1. natural resources       | _____ | a. social science that studies scarcity and choice              |
| 2. macroeconomics          | _____ | b. statistical methods for testing economic models              |
| 3. insatiable wants        | _____ | c. what ought to be   |
| 4. positive economics      | _____ | d. free choice in the market on what to buy                     |
| 5. scarcity                | _____ | e. simplification of real-world economic relationships          |
| 6. normative economics     | _____ | f. unlimited desires for goods                                  |
| 7. economics               | _____ | g. the study of individual economic behavior                    |
| 8. econometrics            | _____ | h. the study of human behavior generally                        |
| 9. consumer sovereignty    | _____ | i. other things being equal                                     |
| 10. social sciences        | _____ | j. exchange relationships between households and firms.         |
| 11. economic model         | _____ | k. what is  |
| 12. <i>ceteris paribus</i> | _____ | l. people living under one roof with a source of income         |
| 13. circular flow model    | _____ | m. an enterprise that produces goods and/or services for market |
| 14. household              | _____ | n. renewable and nonrenewable gifts of nature                   |
| 15. firm                   | _____ | o. the study of the economy as a whole                          |
| 16. microeconomics         | _____ | p. finiteness of resources relative to unlimited wants          |

**True-False Questions** — If a statement is false, explain why.



1. Economists regard natural resources as gifts of nature. (T/F)
2. Scarcity is created only through the advertisements in the marketplace. (T/F)
3. If resources are limited and people's wants are insatiable, then scarcity exists. (T/F)
4. Economics is the study of how people make money in the stock market. (T/F)
5. Economists use graphs and models to simplify complex economic problems. (T/F)
6. An economic model is an exact representation of an economy. (T/F)
7. The circular flow model would better represent the real world if flows of money, resources, goods, and services to and from government were included. (T/F)



8. The *ceteris paribus* assumption is often used to simplify economic analysis. (T/F)
9. Economics is considered to be a social science because it examines individual and social behavior. (T/F)
10. Microeconomics is more useful than macroeconomics because it gives a more detailed picture of the economy. (T/F)
11. Macroeconomic analysis focuses on economic activity at the level of the whole economy rather than at the level of the individual. (T/F)
12. Positive economics is involved in policy formation, stating positively what ought to be. (T/F)
13. Normative economics involves value judgments. (T/F)
14. An economist hired to plan economic policies for a presidential candidate would never engage in positive economic analysis. (T/F)
15. Because social scientists work with models that are 100 percent precise, they can develop policies that will solve any social problems we face. (T/F)

### Multiple-Choice Questions

1. The difference between a renewable resource and a nonrenewable resource is that
  - a. a renewable resource can never be depleted while a nonrenewable resource is depleted as it is used
  - b. a nonrenewable resource can never be depleted while a renewable resource is depleted as it is used
  - c. the stock of a renewable resource can be maintained forever
  - d. conservation efforts cannot save renewable resources
  - e. renewable resources are liquids and nonrenewable resources are solids
2. Economics is a social science that explores the problem of
  - a. how society transforms scarce resources into goods and services
  - b. persuading people to reduce their insatiable wants
  - c. scarcity in poor countries but not rich countries
  - d. what ought to be done to make the world a better place
  - e. circular flows within the family unit
3. Economists use the *ceteris paribus* assumption in their analysis because it
  - a. converts positive economic statements to normative ones
  - b. converts normative economic statements to positive ones
  - c. is the only way to move from theoretical model building to the real world
  - d. allows us to develop one-to-one, cause-and-effect relationships
  - e. broadens the scope of analysis, creating a social science approach to the subject

4. Positive economics deals with \_\_\_\_\_ while normative economics considers \_\_\_\_\_.
- what ought to be; what is
  - what is; what ought to be
  - good policies; policies for normal times
  - improvements in living standards; how to keep the economy steady over time
  - a positive approach to economic problems; a normal approach to problems
5. Microeconomics is the branch of economics that analyzes \_\_\_\_\_ while macroeconomics is the branch of economics that analyzes \_\_\_\_\_.
- the behavior of individual economic units; how national economies work
  - how national economies work; the behavior of individual economic units
  - positive questions; normative questions
  - historical issues on a micro scale; contemporary issues on a large scale
  - economic details; broader aspects of economic issues
6. In the circular flow model, households furnish labor, capital, land, and entrepreneurship to businesses for which they are paid \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_, respectively.
- profit, interest, rent, wages
  - wages, interest, rent, profit
  - wages, interest, profit, rent
  - wages, profit, interest, rent
  - wages, rent, interest, profit
7. If we accept the assumption that people have insatiable wants and that the resources available to satisfy these wants are finite, then
- misery is guaranteed for all
  - the economy is easy to model
  - because of scarcity, people are forced to make choices
  - consumer sovereignty can be invoked to eliminate scarcity
  - firms and households will cooperate to decrease wants and increase resource supplies
8. An economist who is attempting to accurately estimate the unemployment rate for a national economy is practicing
- microeconomics
  - normative economics
  - positive economics
  - consumer sovereignty
  - sociology
9. The branch of economics that deals with individual economic behavior is
- microeconomics
  - macroeconomics
  - normative economics
  - positive economics
  - econometrics

10. Models that economists use are
  - a. perfect representations of the real world
  - b. typically useless oversimplifications of the real world
  - c. abstractions of an economic reality
  - d. exempt from *ceteris paribus*
  - e. applicable only to macroeconomics
11. Money flows in resource markets represent payments to \_\_\_\_\_ whereas, money flows in product markets represent payments to \_\_\_\_\_.
  - a. business firms; workers
  - b. natural resource owners; banks
  - c. the government; private businesses
  - d. property owners; only the most productive individuals
  - e. households; firms producing goods and services
12. Scarcity is a term used by economists to describe the fact that
  - a. people's wants are limited
  - b. natural resources are available to us in fixed amounts
  - c. there will always be poverty in the world
  - d. abundance and affluence are never permanent
  - e. people's wants are insatiable relative to the availability of resources
13. Which of the following statements is **not** a normative statement?
  - a. Low-income individuals ought to be exempt from income taxes
  - b. Unemployment and inflation should be minimized
  - c. The unemployment rate is 10 percent
  - d. The government should cut funding for the arts
  - e. The money supply should grow at a constant rate
14. Which of the following statements is **not** a positive statement?
  - a. Prices of essential goods and services should be set by the government
  - b. The economy is extremely complex
  - c. People's wants are insatiable
  - d. Payments for resources are made in factor markets
  - e. Unemployment last year was 7.3 percent of the labor force
15. Economists use abstractions in their analysis of the economy because
  - a. information is insufficient to allow for detailed consideration of any economic problem
  - b. abstractions are useful when economic model building is inappropriate
  - c. they want to reduce the complexity of the world to more manageable dimensions
  - d. abstractions are used by all social scientists
  - e. the real world they want to understand is itself an abstraction
16. All of the following are examples of nonrenewable resources **except**
  - a. forests
  - b. iron ore
  - c. coal
  - d. oil
  - e. natural gas

17. All of the following are examples of renewable resources **except**
- a. the sea
  - b. fish in the sea
  - c. gold used to make earrings
  - d. labor used to grow corn
  - e. corn used to feed hogs
18. Although scarcity exists today, it is not nearly as severe as it was in ancient times. Looking to the future, economists believe that societies will better cope with scarcity
- a. by developing new technologies that create greater supply to satisfy human wants
  - b. by producing enough to completely satisfy human wants
  - c. by doing better positive economic analysis
  - d. by doing better normative economic analysis
  - e. with more accurate economic models
19. Using the *ceteris paribus* assumption to study the effect of an increase in the price of mustard on the amount of ketchup that is purchased requires that
- a. the price of mustard be held constant
  - b. both the price of mustard and the amount of ketchup purchased be held constant
  - c. everything except the price of mustard and the amount of ketchup purchased be held constant
  - d. nothing should be held constant
  - e. econometrics be used
20. The circular flow model presented in the text includes which participants?
- a. firms and the government
  - b. households, banks, and firms
  - c. households and the government
  - d. firms, households, and the government
  - e. firms and households

### Fill in the Blanks

1. Resources that are \_\_\_\_\_ can be maintained forever with properly managed conservation.
2. Examples of disciplines that are part of the social sciences include \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
3. In order for an economist to make the statement that as its price increases, the quantity demanded for filet mignon will decrease, the \_\_\_\_\_ assumption will have to be introduced.
4. Households \_\_\_\_\_ land, labor, capital, and entrepreneurship to firms in return for \_\_\_\_\_ that they use to \_\_\_\_\_ goods and services produced by firms.
5. Economists who make normative statements concerning economic issues apply their own personal and social \_\_\_\_\_ to make these statements.

## Discussion Questions



1. What do economists study? Identify the main branches of economics and the types of analysis that are used.
2. How do social values and responsibilities influence economic behavior?
3. Can you imagine scarcity becoming a thing of the past? Think about what was available to your grandparents compared to what you have at your disposal. What does it tell you?
4. Why aren't economists' predictions perfect?

5. Suppose that you were to make the circular flow model more detailed by including banks and the government. How would the addition of these groups change the model?

## Everyday Applications

1. Go to the business pages of a newspaper and survey the content of the articles there. How many of the articles are about microeconomic topics? How many are about macroeconomics? Can you pick out any predictions that economists or business analysts are making in these articles? What sort of economic models seem to be the basis for their predictions?
2. Watch the Jim Lehrer News Hour on PBS some evening and analyze the discussions between interviewers and guests for positive and normative content. How do the people being interviewed use positive analysis to support their normative arguments? Can you see how the two types of analysis can work together?

## Economics Online



For a peek into the wild and wonderful world of econometrics, visit the SHAZAM homepage (<http://shazam.econ.ubc.ca/>). SHAZAM is an econometrics computer program. You probably won't understand many of the technical terms on this homepage, but if you continue with your study of economics, you'll come to appreciate how useful econometrics can be. Better yet, it can be fun, especially with the computer technologies now available.

## Answers to Questions

### Key Terms Quiz

- |       |       |       |      |
|-------|-------|-------|------|
| a. 7  | f. 3  | k. 4  | p. 5 |
| b. 8  | g. 16 | l. 14 |      |
| c. 6  | h. 10 | m. 15 |      |
| d. 9  | i. 12 | n. 1  |      |
| e. 11 | j. 13 | o. 2  |      |

### True-False Questions

1. True
2. False. People don't need to be convinced to want more than they have. That is why economists say wants are insatiable.
3. True

4. False. Economics is the study of how we work together to transform scarce resources into goods and services to satisfy the most pressing of our infinite needs, and how we distribute those goods and services among ourselves.
5. True
6. False. An economic model is an abstraction of our economic reality, focusing on just a few principal features of the way an economy operates.
7. True
8. True
9. True
10. False. Whether micro or macroeconomics is more useful depends on what problems are under consideration.
11. True
12. False. Positive economics examines the economic relationships that exist in an economy.
13. True
14. False. The economist would certainly want to understand how the economy works to draw cause-and-effect conclusions.
15. False. The social sciences use models that are not perfect representations of the world.

### Multiple-Choice Questions

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

### Fill in the Blanks

1. renewable
2. economics, sociology, anthropology, political science, psychology
3. *ceteris paribus*
4. supply, payments, purchase
5. values

### Discussion Questions

1. Economists study how societies cope with the problem of scarcity. For example, economists study the allocation of scarce resources for production of goods and services. Distribution of these goods and services is also a focus of analysis. Economists develop theoretical models to help them sort out the core issues in economic questions. It is possible to test these theoretical models against real-world data. The main branches of economics are microeconomics and macroeconomics, while econometrics is also an important field. Economists pursue both positive and normative analysis in their work.
2. Even though consumer sovereignty guides what we buy and, therefore, what we produce for the market, our economic choices are nonetheless constrained by social values and responsibilities. For example, most cultures find extremely excessive and wasteful behavior to be inappropriate. Certain types of drugs are illegal in most cultures, though this varies from society to society. We feel a responsibility to pay taxes even though we would prefer not to. So, even though the consumer is mostly sovereign, limits are placed on economic behavior by our shared cultural values and responsibilities.



3. We will always have scarcity because of unlimited wants. However, the advances of the industrial revolution in recent history have helped to diminish the severity of scarcity. Pick up a 1950s Sears catalog and look at the mix of goods that was available to American consumers then. Or read the opening pages of Dickens's *A Tale of Two Cities*. Imagine yourself using these goods to satisfy your wants. Would you trade places with these earlier consumers?
4. Economists' predictions aren't perfect because it is impossible to control for changes in the myriad variables that may affect the variable being predicted. Sometimes the data used by economists turn out to be flawed.
5. Households contribute savings to banks, which, in turn make loans to firms and to households. Households also furnish resources to banks, as they do to other firms, and banks make payments to households for supplying resources. Households pay taxes to the government and, in return, receive payments such as Social Security from the government. Moreover, government makes payments to business firms for products that they supply to government. Also, households supply resources to government and the government makes payments for these resources in return.

## APPENDIX

### ON READING GRAPHS



#### Appendix in a Nutshell

The appendix acquaints you with some of the techniques that economists use in translating economic concepts to mathematical and graphical forms. Remember, anything that is expressed mathematically or graphically can also be expressed in words. The reason we use math and graphs in economics is because they simplify discussions. The intention is not to make life more difficult for those trying to do economics but, rather, to make concepts that would be difficult to express in prose more easily understandable. Graphs in economics are a classic case of pictures being worth a thousand words. None of the mathematics and graphs in this text are terribly difficult. So, relax, graphing can be fun.

*After you study this appendix, you should be able to:*

- Find the **origin** of a graph.
- Measure distances on graphs.
- Graph relationships between **independent and dependent variables**.
- Connect points representing data from a table to form a graph.
- Explain what is meant by the **slope of a curve**.
- Describe various shaped curves by their slopes.
- Measure the **slope at a point on a curve**.

**Concept Check** — See how you do on these multiple-choice questions.



1. The **origin** of a graph is
  - a. the end of the line that describes the independent variable
  - b. the slope of the curve
  - c. the graph's point of reference
  - d. the sum of the horizontal and vertical distances on the graph
  - e. where one starts to connect points to form a curve

What are the x and y coordinates that we associate with the origin?

2. The **independent variable** and the **dependent variable** in a relationship reflect a linkage between them such that
  - a. changes in the dependent variable depend on changes in the value of the independent variable
  - b. the dependent variable always has a larger value than the independent variable
  - c. the dependent variable is always some multiple of the independent variable
  - d. as the independent variable increases, so does the dependent variable
  - e. as the independent variable increases, the dependent variable decreases

Typically, economists work with **relationships that express dependence**. For example, the amount of a good that people are willing to buy depends on its price.

3. The **slope** of a curve measures the
  - a. ratio of the change in the variable on the horizontal axis to the change in the variable on the vertical axis
  - b. ratio of the change in the variable on the vertical axis to the change in the variable on the horizontal axis
  - c. rate of decrease in the dependent variable
  - d. rate of increase in the independent variable
  - e. percentage change in the dependent variable divided by the percentage change in the independent variable

Slopes can be either positive or negative, and they can be either constant or changing.

4. Curves that are **U-shaped** have slopes that are first \_\_\_\_\_ and then turn \_\_\_\_\_, while curves that are **hill-shaped** have slopes that are first \_\_\_\_\_ and then turn \_\_\_\_\_.
  - a. decreasing; increasing; increasing; decreasing
  - b. negative; positive; positive; negative
  - c. positive; negative; negative; positive
  - d. rising; falling; falling; rising
  - e. zero; infinite; infinite; zero

Sketch a U-shaped curve and a hill-shaped curve and use the definition of slope to determine the correct answer.

5. In order to measure the **slope at a point on a curve**, one should
  - a. find the x and y values of the point
  - b. divide the x value of the point by the y value
  - c. draw a line from the origin to the point and find the slope of the line
  - d. divide the y value of the point by the x value
  - e. draw a tangent through the point and find the slope of the tangent

Measuring the slope at a point on a curve is necessary if the slope is not constant. If the slope of a curve is