

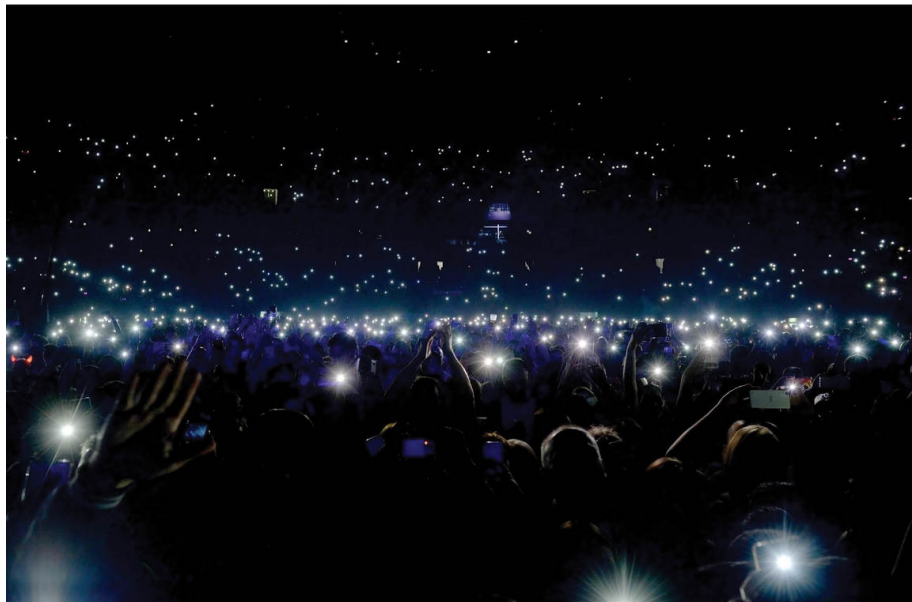
INSTRUCTOR'S SOLUTIONS MANUAL

to accompany

EIGHTH
CANADIAN
EDITION

PRINCIPLES OF MACRO ECONOMICS

MANKIW KNEEBONE McKENZIE



Prepared by Ron Kneebone and Ken McKenzie
University of Calgary

NELSON

NELSON

Principles of Macroeconomics, Eighth Canadian Edition
by N. Gregory Mankiw, Ronald D. Kneebone, and Kenneth J. McKenzie

Instructor's Solutions Manual by Ron Kneebone and Ken McKenzie
Technical Check: Racquel Lindsay
Copyeditor: Linda Szostak

COPYRIGHT © 2020 by Nelson Education Ltd. Nelson is a registered trademark used herein under license.

For more information, contact Nelson, 1120 Birchmount Road, Scarborough, Ontario M1K 5G4.
Or you can visit our Internet site at nelson.com.

ALL RIGHTS RESERVED. No part of this work covered by the copyright hereon may be reproduced or used in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, web distribution or information storage and retrieval systems—without the written permission of the publisher.

CONTENTS

PART 1: INTRODUCTION

CHAPTER 1	Ten Principles of Economics	1
CHAPTER 2	Thinking Like an Economist	9
CHAPTER 3	Interdependence and the Gains from Trade	21

PART 2: SUPPLY AND DEMAND: HOW MARKETS WORK

CHAPTER 4	The Market Forces of Supply and Demand	37
-----------	--	----

PART 3: THE DATA OF MACROECONOMICS

CHAPTER 5	Measuring a Nation's Income	65
CHAPTER 6	Measuring the Cost of Living	73

PART 4: THE REAL ECONOMY IN THE LONG RUN

CHAPTER 7	Production and Growth	81
CHAPTER 8	Saving, Investment, and the Financial System	89
CHAPTER 9	Unemployment and Its Natural Rate	101

PART 5: MONEY AND PRICES IN THE LONG RUN

CHAPTER 10	The Monetary System	113
CHAPTER 11	Money Growth and Inflation	121

PART 6: THE MACROECONOMICS OF OPEN ECONOMIES

CHAPTER 12	Open-Economy Macroeconomics: Basic Concepts	129
CHAPTER 13	A Macroeconomic Theory of the Small Open Economy	137

PART 7: SHORT-RUN ECONOMIC FLUCTUATIONS

CHAPTER 14	Aggregate Demand and Aggregate Supply	145
CHAPTER 15	The Influence of Monetary Policy on Aggregate Demand	165
CHAPTER 16	The Influence of Fiscal Policy on Aggregate Demand	173
CHAPTER 17	The Short-Run Tradeoff between Inflation and Unemployment	179

PART 8: FINAL THOUGHTS

CHAPTER 18	Five Debates over Macroeconomic Policy	193
------------	--	-----

Chapter 1

Ten Principles of Economics

SOLUTIONS TO TEXTBOOK PROBLEMS

Quick Quizzes

1. *Describe an important tradeoff you recently faced. • Give an example of some action that has both a monetary and nonmonetary opportunity cost. • Describe an incentive your parents and/or guardians offered to you in an effort to influence your behaviour.*

Usually students are able to come up with standard examples of tradeoffs: buy a textbook instead of a ticket to a favourite performance, go to a group study session instead of a birthday party, etc. Instructors may wish to point out less straightforward instances of how the principles work. For instance, when discussing incentives instructors may point out perverse effects of incentives. Other examples include the invention of the seat belt, or crosswalk countdown signals, discussed in the text. Examples of actions that have both monetary and nonmonetary opportunity costs are watching a movie (time + money) and driving a car (money + pollution + traffic congestion). Parents and/or guardians may offer their children gifts conditional on good results in school.

2. *Why is a country better off not isolating itself from all other countries? • Why do we have markets and, according to economists, what roles should government play in them?*

A country is better off not isolating itself from other countries for the simple reason that doing so would prevent it from engaging in mutually beneficial trade, which gives consumers access to more diverse and cheaper products.

Markets are usually a good way of organizing economic activity because they allocate resources to their most efficient use, maximizing the size of the economic pie. This is because market prices convey information about the scarcity of various resources, which provides important signals to consumers and producers when making their decisions.

A fundamental role of government is to define and enforce property rights for scarce resources, to allow markets to work in an efficient manner. In some cases, however, markets may nonetheless fail to allocate resources in an efficient manner, and governments can intervene to improve market outcomes. This is the case when market failures exist, such as externalities and market power.

Another role for government can be to address concerns about the equitable distribution of the economic pie. While in the absence of market failures markets will lead to an efficient outcome (maximizing the size of the economic pie), there is no guarantee that the outcome will be equitable (result in a fair distribution of the pie). Governments can therefore play a role in pursuing equity objectives. However, this often requires interventions that may impinge upon efficiency, shrinking the overall size of the economic pie; thus the notion of the efficiency-equity tradeoff.

3. *List and briefly explain the three principles that describe how the economy as a whole works.*

The three principles that describe how the economy as a whole works are: (1) a country's standard of living depends on its ability to produce goods and services; (2) prices rise when the government prints too much money; and (3) society faces a short-run tradeoff between inflation and unemployment. A country's standard of living depends on its ability to produce goods and services, which in turn depends on its productivity, which is a function of the education of workers and the access workers have to the necessary tools and technology. Prices rise when the government prints too much money because more money in circulation reduces the value of money, causing inflation. Society faces a short-run tradeoff between inflation and unemployment that is only temporary, and policymakers have some ability to exploit this relationship using various policy instruments.

Questions for Review

1. *What is a tradeoff? Give two examples of tradeoffs that you face in your life.*

A tradeoff is what you give up in order to get something else. Examples of tradeoffs include time tradeoffs (such as studying one subject over another, or studying at all compared to engaging in social activities), and spending tradeoffs (such as whether to use your last \$15 to purchase a pizza or to buy an online study guide for that tough economics course).

2. *What is the opportunity cost of seeing a movie?*

The opportunity cost of seeing a movie includes the monetary cost of admission plus the time cost of going to the theatre and attending the show. The time cost depends on what else you might do with that time; if it's staying home and watching TV, the time cost may be small, but if it's working an extra three hours at your job, the time cost is the money you could have earned.

3. *Water is necessary for life. Is the marginal benefit of a glass of water large or small?*

The marginal benefit of a glass of water depends on your circumstances. If you've just run a marathon, or you've been walking in the desert sun for three hours, the marginal benefit is very high. But if you've been drinking a lot of liquids recently, the marginal benefit is quite low. The point is that even the necessities of life, like water, don't always have large marginal benefits.

4. *Why should policymakers think about incentives?*

Policymakers need to think about incentives so they can understand how people will respond to the policies they put in place. The text's examples of seat belts and crosswalk countdown signals show that policy actions can have quite unintended consequences. If incentives matter a lot, they may lead to a very different type of policy; for example, some economists have suggested putting knives in steering columns so that people will drive much more carefully! While this suggestion is silly, it highlights the importance of incentives.

5. *Why isn't trade among countries like a game, with some winners and some losers?*

Trade among countries isn't a game with some losers and some winners because trade can make everyone better off. By allowing specialization, trade between people and trade between countries can improve everyone's welfare.

6. *What does the "invisible hand" of the marketplace do?*

The "invisible hand" of the marketplace represents the idea that even though individuals and firms are all acting in their own self-interest, prices and the marketplace guide them to do what is good for society as a whole.

7. *Explain the two main causes of market failure and give an example of each.*

The two main causes of market failure are externalities and market power. An externality is the impact of one person's actions on the well-being of a bystander, such as from pollution or the creation of knowledge. Market power refers to the ability of a single person (or small group of people) to unduly influence market prices, such as in a town with only one well or only one cable television company.

8. *Why is productivity important?*

Productivity is important because a country's standard of living depends on its ability to produce goods and services. The greater a country's productivity (the amount of goods and services produced from each hour of a worker's time), the greater will be its standard of living.

9. *What is inflation, and what causes it?*

Inflation is an increase in the overall level of prices in the economy. Inflation is caused by increases in the quantity of a nation's money.

10. *How are inflation and unemployment related in the short run?*

Inflation and unemployment are negatively related in the short run. Reducing inflation entails costs to society in the form of higher unemployment in the short run.

Quick Check Multiple Choice

1. *Economics is best defined as the study of which of the following?*

- a. *how society manages its scarce resources*
- b. *how to run a business most profitably*
- c. *how to predict inflation, unemployment, and stock prices*
- d. *how the government can stop the harm from unchecked self-interest*

2. *What is your opportunity cost of going to a movie?*

- a. *the price of the ticket*
- b. *the price of the ticket plus the cost of any soda and popcorn you buy at the theatre*
- c. *the total cash expenditure needed to go to the movie plus the value of your time*
- d. *zero, as long as you enjoy the movie and consider it a worthwhile use of time and money*

3. *Which of the following describes a marginal change?*

- a. *one that is NOT important for public policy*
- b. *one that incrementally alters an existing plan*
- c. *one that makes an outcome inefficient*
- d. *one that does NOT influence incentives*

4. *What is Adam Smith's "invisible hand"?*
 - a. *the subtle and often hidden methods that businesses use to profit at consumers' expense*
 - b. *the ability of free markets to reach desirable outcomes despite the self-interest of market participants*
 - c. *the ability of government regulation to benefit consumers even if the consumers are unaware of the regulations*
 - d. *the way in which producers or consumers in unregulated markets impose costs on innocent bystanders*
5. *When policymakers make policies that change the costs and benefits that people face, what is the result for society?*
 - a. *people's behaviours are altered*
 - b. *people ignore incentives*
 - c. *inflation occurs*
 - d. *government revenue is reduced*
6. *If a nation has high and persistent inflation, what is the most likely explanation?*
 - a. *the central bank is creating excessive amounts of money*
 - b. *unions bargaining for excessively high wages*
 - c. *the government is imposing excessive levels of taxation*
 - d. *firms are using their monopoly power to enforce excessive price hikes*

1. a
2. c
3. b
4. b
5. a
6. a

Problems and Applications

1. *Describe some of the tradeoffs faced by each of the following.*
 - a. *a family deciding whether to buy a new car*
 - b. *a member of Parliament deciding how much to spend on national parks*
 - c. *a company president deciding whether to open a new factory*
 - d. *a professor deciding how much to prepare for class*
 - a. A family deciding whether to buy a new car faces a tradeoff between the cost of the car and other things they might want to buy. For example, buying the car might mean they must give up going on vacation for the next two years. So the real cost of the car is the family's opportunity cost in terms of what they must give up.
 - b. For a member of Parliament deciding whether to increase spending on national parks, the tradeoff is between parks and other spending items or tax cuts. If more money goes into the park system, that may mean less spending on national defence or on the police force. Or, instead of spending more money on the park system, taxes could be reduced.
 - c. When a company president decides whether to open a new factory, the decision is based on whether the new factory will increase the firm's profits compared to other alternatives. For example, the company could upgrade existing equipment or expand existing factories. The bottom line is: Which method of expanding production will increase profit the most?

- d. In deciding how much to prepare for class, a professor faces a tradeoff between the value of improving the quality of the lecture compared to other things she could do with her time, such as working on additional research.
2. *You are trying to decide whether to take a vacation. Most of the costs of the vacation (airfare, hotel, forgone wages) are measured in dollars, but the benefits of the vacation are psychological. How can you compare the benefits to the costs?*

When the benefits of something are psychological, such as going on a vacation, it isn't easy to compare benefits to costs to determine if it's worth doing. But there are two ways to think about the benefits. One is to compare the vacation with what you would do in its place. If you didn't go on vacation, would you buy something like a new set of golf clubs? Then you can decide if you'd rather have the new clubs or the vacation. A second way is to think about how much work you had to do to earn the money to pay for the vacation; then you can decide if the psychological benefits of the vacation are worth the psychological costs incurred to earn the money to pay for the vacation.

3. *You were planning to spend Saturday working at your part-time job, but a friend asks you to go skiing. What is the true cost of going skiing? Now suppose that you had been planning to spend the day studying at the library. What is the cost of going skiing in this case? Explain.*

If you are thinking of going skiing instead of working at your part-time job, the cost of skiing includes its monetary and time costs, including the opportunity cost of the wages you are giving up by not working. If the choice is between skiing and going to the library to study, then the cost of skiing is its monetary and time costs, including the cost to you of getting a lower grade in your course.

4. *You win \$100 in a hockey pool. You have a choice between spending the money now or putting it away for a year in a bank account that pays 5 percent interest. What is the opportunity cost of spending the \$100 now?*

If you spend \$100 now instead of saving it for a year and earning 5 percent interest, you are giving up the opportunity to spend \$105 a year from now. The idea that money has a time value is the basis for the field of finance, the subfield of economics that has to do with prices of financial instruments like stocks and bonds.

5. *The company that you manage has invested \$5 million in developing a new product, but the development is not quite finished. At a recent meeting, your salespeople report that the introduction of competing products has reduced the expected sales of your new product to \$3 million. If it would cost \$1 million to finish development and make the product, should you go ahead and do so? What is the most that you should pay to complete development?*

The fact that you've already sunk \$5 million isn't relevant to your decision anymore, since that money is gone. What matters now is the chance to earn profits at the margin. If you spend another \$1 million and can generate sales of \$3 million, you'll earn \$2 million in marginal profit, so you should do so. You're right to think that the project has lost a total of \$3 million (\$6 million in costs and only \$3 million in revenue), and you shouldn't have started it. That's true, but if you don't spend the additional \$1 million, you won't have any sales and your losses will be \$5 million. So what matters is not the total profit, but the profit you can earn at the margin. In fact, you'd pay up to \$3 million to complete development; any more than that and you won't be increasing profit at the margin.

6. *The welfare system provides income for people who are very poor, with low incomes and few assets. If a recipient of welfare payments decides to work and earn some money, the amount he or she receives in welfare payments is reduced.*

- a. *How does this affect the incentive to work?*
- b. *How does this feature of the welfare system represent the tradeoff between equality and efficiency?*

- a. The provision of welfare payments lowers an individual's incentive to work by imposing an implicit tax on labour earnings. For example, if an individual who receives \$100 in welfare payments loses 50 percent of those payments for each dollar in extra income earned, this is like a tax on labour earnings, which will discourage work.
- b. By targeting welfare payments at low-income people and reducing payments as their earned income increases, the system is addressing equity concerns. However, this comes at the cost of efficiency due to the decrease in work effort discussed in part a.

7. *Your roommate is a better and faster cook than you are, but you can clean more quickly than your roommate can. If your roommate did all of the cooking and you did all of the cleaning, would your chores take you more or less time than if you divided each task evenly? Give a similar example of how specialization and trade can make two countries both better off.*

By specializing in each task, you and your roommate can finish the chores more quickly. If you divided each task equally, it would take you more time to cook than it would take your roommate, and it would take him more time to clean than it would take you. By specializing, you reduce the total time spent on chores.

Similarly, countries can specialize and trade, making both better off. For example, suppose it takes Spanish workers less time to make clothes than French workers, and French workers can make wine more efficiently than Spanish workers. Then Spain and France can both benefit if Spanish workers produce all the clothes and French workers produce all the wine, and they exchange some wine for some clothes.

8. *Nations with corrupt police and court systems typically have lower standards of living than nations with less corruption. Why might that be the case?*

These activities tend to lessen the efficiency of an economic system, hence reducing the economic productivity of a nation. Lower productivity means lower standards of living.

9. *Explain whether each of the following government activities is motivated by a concern about equity or a concern about efficiency. In the case of efficiency, discuss the type of market failure involved.*

- a. *regulating cable TV prices*
- b. *providing some poor people with free prescription drugs*
- c. *prohibiting smoking in public places*
- d. *preventing mergers between major banks*
- e. *imposing higher personal income tax rates on people with higher incomes*
- f. *instituting laws against driving while intoxicated*

- a. Efficiency: The market failure comes from the market power of a small number of cable TV firms.
- b. Equity

- c. Efficiency: An externality arises because secondhand smoke harms nonsmokers in public places.
 - d. Efficiency: The market failure comes from the market power that might occur from potential mergers.
 - e. Equity
 - f. Efficiency: An externality exists because of accidents caused by drunk drivers.
10. *Discuss each of the following statements from the standpoints of equity and efficiency.*
- a. *"Everyone in society should be guaranteed the best health care possible."*
 - b. *"When workers are laid off, they should be able to collect unemployment benefits until they find a new job."*
- a. If everyone were guaranteed the best health care possible, much more of our nation's output would be devoted to health care than is now the case. Would that be efficient? If you believe that doctors have market power and restrict health care to keep their incomes high, you might think efficiency would increase by providing more health care. But more likely, if the government mandated increased spending on health care, the economy would be less efficient because it would give people more health care than they would choose to pay for. From the point of view of equality, if poor people are less likely to have adequate health care, providing more health care would represent an improvement. Each person would have a more equal slice of the economic pie, though the pie would consist of more health care and fewer other goods.
 - b. When workers are laid off, equality considerations argue for the unemployment benefits system to provide them with some income until they can find new jobs. After all, no one plans to be laid off, so unemployment benefits are a form of insurance. But there is an efficiency problem—why work if you can get income for doing nothing? The economy is not operating efficiently if people remain unemployed for a long time, and unemployment benefits encourage unemployment. Thus, there is a tradeoff between equality and efficiency. The more generous unemployment benefits are, the less income is lost by an unemployed person, but the more that person is encouraged to remain unemployed. So greater equality reduces efficiency.
11. *In what ways is your standard of living different from that of your parents or grandparents when they were your age? Why have these changes occurred?*
- Since average income in Canada has roughly doubled every 35 years, we are likely to have a better standard of living than our parents, and a much better standard of living than our grandparents. This is mainly the result of increased productivity, so that an hour of work produces more goods and services than it used to. Thus, incomes have continuously risen over time, as has the standard of living.
12. *Suppose Canadians decide to save more of their incomes. If banks lend this extra saving to businesses, which use the funds to build new factories, how might this lead to faster growth in productivity? Who do you suppose benefits from the higher productivity? Is society getting a free lunch?*
- If Canadians save more and it leads to more spending on factories, there will usually be an increase in production and productivity, since the same number of workers will have more equipment to work with. The benefits from higher productivity will go to both the workers, who will get paid more since they're producing more, and the factory owners, who will get a return on their investments. There is no such thing as a free lunch, however, because when people save more, they are giving up spending. They get higher incomes in the future at the cost of buying fewer goods today.

Chapter 2

Thinking Like an Economist

SOLUTIONS TO TEXTBOOK PROBLEMS

Quick Quizzes

1. *In what sense is economics like a science?* • Draw a production possibilities frontier for a society that produces food and clothing. Show an efficient point, an inefficient point, and an infeasible point. Show the effects of a drought. • Define microeconomics and macroeconomics.

Economics is like a science because economists devise theories, collect data, and analyze the data in an attempt to verify or refute their theories. In other words, economics is based on the scientific method.

Figure 1 shows the production possibilities frontier for a society that produces food and clothing. Point A is an efficient point (on the frontier), point B is an inefficient point (inside the frontier), and point C is an infeasible point (outside the frontier).

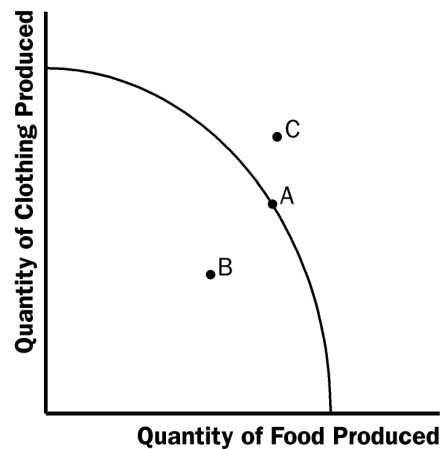


Figure 1

The effects of a drought are shown in Figure 2. The drought reduces the amount of food that can be produced, shifting the production possibilities frontier inward.