

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 offered to you in an effort to influence your behaviour. (pg. 9)*

Usually students are able to come up with standard examples of tradeoffs, such as: buy a textbook or 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. An example is the invention of the seatbelt, discussed in the text. Examples of actions that have both monetary and non-monetary opportunity costs are watching a movie (time + money) and driving a car (money + pollution + traffic congestion). Parents 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? (pg. 13)*

Countries are both competitors and trade partners in the world markets. More precisely, some countries compete in some markets. Overall, however, international trade provides consumers with access to more diverse and cheap products. Thus, countries benefit from international trade.

Markets play a fundamental role in allocating resources to their most efficient use. Prices convey information about how scarce resources are, so that consumers and producers make the most efficient use of the resources. In economies where the prices are distorted by government interventions, overall well-being has proved to be lower.

Governments can improve market outcomes by providing public goods such as property rights, security, equity, and guaranteeing fair market competition.

3. *List and briefly explain the three principles that describe how the economy as a whole works. (pg. 16)*

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. *Give three examples of important tradeoffs that you face in your life.*

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 ten dollars on pizza or on a 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 example of seat belts shows 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. In addition, a market economy also leads to an unequal distribution of income.

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.

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 were worth the psychological cost of working.

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, which includes 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 are 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 the existence of the welfare system affect people's incentive to save money for the future?

b. How does the reduction in welfare payments associated with higher earnings affect welfare recipients' incentive to work?

- a. The provision of welfare benefits lowers an individual's incentive to save for retirement. The benefits provide some level of income to the individual when he or she retires. This means that the individual is not entirely dependent on savings to support consumption through the years in retirement.
- b. Since a person gets fewer after-tax welfare benefits the greater is his or her earnings, there is an incentive not to work (or not work as much) after age 65. The more you work, the lower your after-tax welfare benefits will be. Thus the taxation of welfare benefits discourages work effort after age 65.

7. *In 1997, the Government of Ontario reformed that province's welfare system. The reform reduced the amount of welfare payments to a person with no income, but also allowed welfare recipients to keep a larger part of their welfare payments if they did earn some income.*

a. How does this reform affect the incentive to work?

b. How might this reform represent a tradeoff between equity and efficiency?

- a. The loss of benefits means that someone who can't find a job will get no income at all, so the distribution of income will become less equal. But the economy will be more efficient, since welfare recipients have a greater incentive to find jobs.

- b. The change in the law is one that increases efficiency but reduces equity.
8. *Your roommate is a better 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.

9. *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.

10. *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 monopoly by the cable TV firm.
- b. Equity
- c. Efficiency: An externality arises because secondhand smoke harms nonsmokers.
- d. Efficiency: The market failure from the monopoly occurring from the merger.
- e. Equity
- f. Efficiency: There is an externality because of accidents caused by drunk drivers.

11. *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 medical care than is now the case. Would that be efficient? If you think that currently doctors form a monopoly 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 equity, 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 even slice of the economic pie, though the pie would consist of more health care and less of other goods.

- b. When workers are laid off, equity 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's an efficiency problem—why work if you can get income for doing nothing? The economy isn't operating efficiently if people remain unemployed for a long time, and unemployment benefits encourage unemployment. Thus, there's a tradeoff between equity and efficiency. The more generous are unemployment benefits, the less income is lost by an unemployed person, but the more that person is encouraged to remain unemployed. So, greater equity reduces efficiency.

12. *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.

13. *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 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 at the cost of buying fewer goods.

14. *Imagine that you are a policymaker trying to decide whether to reduce the rate of inflation. To make an intelligent decision, what would you need to know about inflation, unemployment, and the tradeoff between them?*

To make an intelligent decision about whether to reduce inflation, a policymaker would need to know what causes inflation and unemployment, as well as what determines the tradeoff between them. Any attempt to reduce inflation will likely lead to higher unemployment in the short run. A policymaker thus faces a tradeoff between the benefits of lower inflation compared to the cost of higher unemployment.

15. *A policymaker is deciding how to finance the construction of a new airport. He can either pay for it by increasing citizens' taxes or by printing more money. What are some of the short-run and long-run consequences of each option?*

Increasing taxes to finance a planned increase in government spending leaves less money for people to spend, thus reducing their demand for goods and services, which may increase unemployment in the short run. In the long run, however, this solution avoids a surge in inflation. Printing money, on the other hand, reduces unemployment in the short run while increasing inflation. Which solution is better depends whether the economy is in a period of rapid growth (when taxes are the better option) or in recession (when printing money may be a better choice).

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. (pg. 29)*

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).

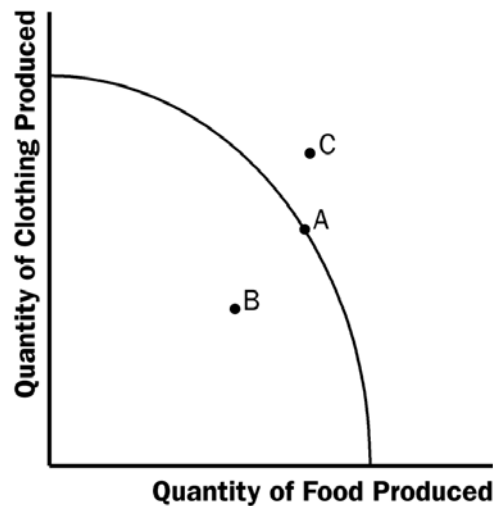


Figure 1

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.

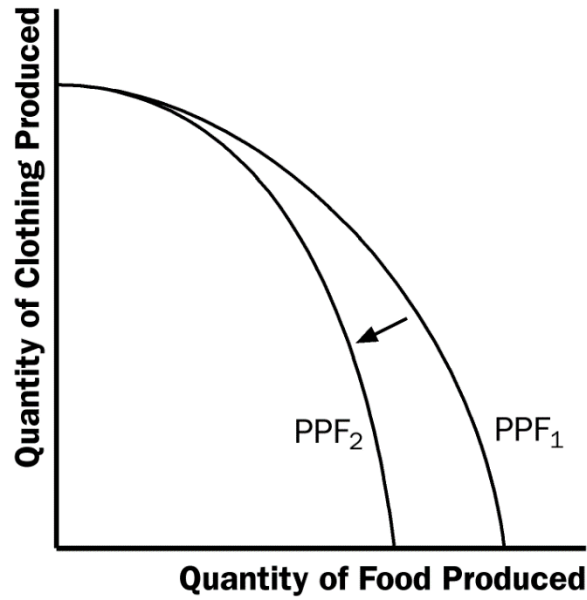


Figure 2

Microeconomics is the study of how households and firms make decisions and how they interact in markets. Macroeconomics is the study of economy-wide phenomena, including inflation, unemployment, and economic growth.

2. *Give an example of a positive statement and an example of a normative statement. Name three parts of government that regularly rely on advice from economists. (pg. 32)*

An example of a positive statement is "higher taxes discourage work effort" (many other answers are possible). That's a positive statement because it describes the effects of higher taxes, describing the world as it is. An example of a normative statement is "the government should reduce tax rates." That is a normative statement because it's a claim about how the world should be.

Parts of the government that regularly rely on advice from economists are Finance Canada in designing tax policy, Industry Canada in designing and enforcing Canada's antimonopoly laws, and International Trade Canada in helping to negotiate trade agreements with other countries.

3. *Why might economic advisers to the Prime Minister disagree about a question of policy? (pg. 35)*

Economic advisers to the prime minister might disagree about a question of policy because of differing scientific judgments or differences in values.

Questions for Review

1. *How is economics like a science?*

Economics is like a science because economists use the scientific method. They devise theories, collect data, and then analyze these data in an attempt to verify or refute their theories about how the world works. Economists use theory and observation like other scientists, but they are limited in their ability to run controlled experiments. Instead, they must rely on natural experiments.

2. *Why do economists make assumptions?*

Economists make assumptions to simplify problems without substantially affecting the answer. Assumptions can make the world easier to understand.

3. *Should an economic model describe reality exactly?*

An economic model cannot describe reality exactly because it would be too complicated to understand. A model is a simplification that allows the economist to see what is truly important.

4. *Draw and explain a production possibilities frontier for an economy that produces milk and cookies. What happens to this frontier if disease kills half of the economy's cow population?*

Figure 3 shows a production possibilities frontier between milk and cookies (PPF_1). If a disease kills half of the economy's cow population, less milk production is possible, so the PPF shifts inward (PPF_2). Note that if the economy produces all cookies, so it doesn't need any cows, then production is unaffected. But if the economy produces any milk at all, then there will be less production possible after the disease hits.

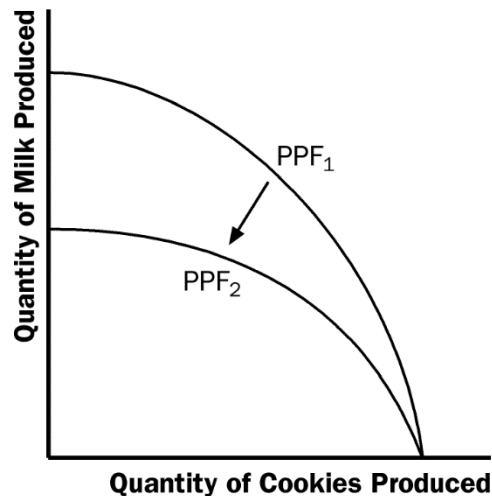


Figure 3

5. *Use a production possibilities frontier to describe the idea of "efficiency."*

The idea of efficiency is that an outcome is efficient if the economy is getting all it can from the scarce resources it has available. In terms of the production possibilities frontier, an efficient point is a point on the frontier, such as point A in Figure 4. A point inside the frontier, such as point B, is inefficient since more of one good could be produced without reducing the production of another good.



Figure 4

6. *What are the two subfields into which economics is divided? Explain what each subfield studies.*

The two subfields in economics are microeconomics and macroeconomics. Microeconomics is the study of how households and firms make decisions and how they interact in specific markets. Macroeconomics is the study of economy-wide phenomena.

7. *What is the difference between a positive and a normative statement? Give an example of each.*

Positive statements are descriptive and make a claim about how the world is, while normative statements are prescriptive and make a claim about how the world ought to be. Here is an example. Positive: A rapid growth rate of money is the cause of inflation. Normative: The government should keep the growth rate of money low.

8. *What is the Bank of Canada?*

The Bank of Canada sets Canada's monetary policy. It employs more than 200 economists to analyze financial markets and macroeconomic developments.

9. *Why do economists sometimes offer conflicting advice to policymakers?*

Economists sometimes offer conflicting advice to policymakers for two reasons: (1) economists may disagree about the validity of alternative positive theories about how the world works; and (2) economists may have different values and, therefore, different normative views about what public policy should try to accomplish.

Problems and Applications

1. *Draw a circular-flow diagram. Identify the parts of the model that correspond to the flow of goods and services and the flow of dollars for each of the following activities.*
- Sam pays a storekeeper \$1 for a litre of milk.*
 - Sally earns \$7 per hour working at a fastfood restaurant.*
 - Serena spends \$10 to see a movie.*

d. Stuart earns \$10 000 from his 10 percent ownership of Acme Industrial.

See Figure 5, where the four transactions are shown.

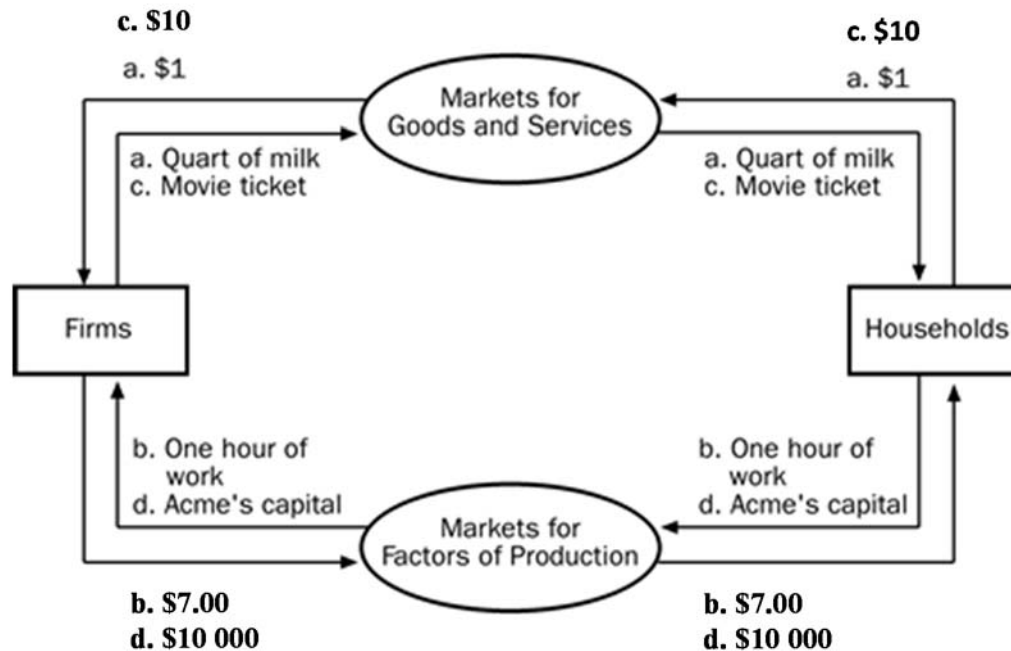


Figure 5

2. *Imagine a society that produces military goods and consumer goods, which we'll call "guns" and "butter."*
 - a. Draw a production possibilities frontier for guns and butter. Explain why it most likely has a bowed-out shape.*
 - b. Show a point that is impossible for the economy to achieve. Show a point that is feasible but inefficient.*
 - c. Imagine that the society has two political parties, called the Hawks (who want a strong military) and the Doves (who want a smaller military). Show a point on your production possibilities frontier that the Hawks might choose and a point the Doves might choose.*
 - d. Imagine that an aggressive neighbouring country reduces the size of its military. As a result, both the Hawks and the Doves reduce their desired production of guns by the same amount. Which party would get the bigger "peace dividend," measured by the increase in butter production? Explain.*

- a. Figure 6 shows a production possibilities frontier between guns and butter. It is bowed out because when most of the economy's resources are being used to produce butter, the frontier is steep and when most of the economy's resources are being used to produce guns, the frontier is very flat. When the economy is producing a lot of guns, workers and machines best suited to making butter are being used to make guns, so each unit of guns given up yields a large increase in the production of butter. Thus, the production possibilities frontier is flat. When the economy is producing a lot of butter, workers and machines best suited to making guns are being used to make butter, so each unit of guns given up yields a small increase in the production of butter. Thus, the production possibilities frontier is steep.
- b. Point A is impossible for the economy to achieve; it is outside the production possibilities frontier. Point B is feasible but inefficient because it's inside the production possibilities frontier.

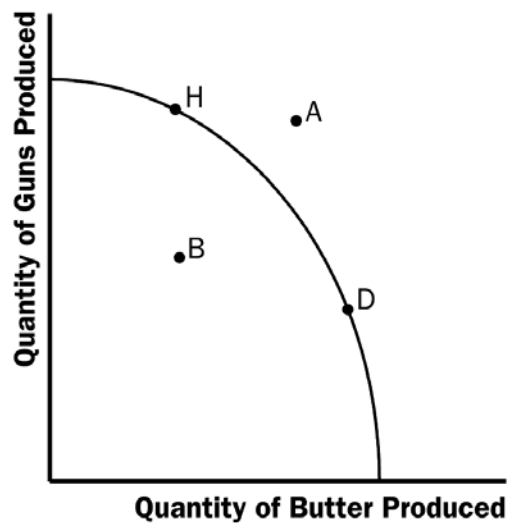


Figure 6

- c. The Hawks might choose a point like H, with many guns and not much butter. The Doves might choose a point like D, with a lot of butter and few guns.
- d. If both Hawks and Doves reduced their desired quantity of guns by the same amount, the Hawks would get a bigger peace dividend because the production possibilities frontier is much flatter at point H than at point D. As a result, the reduction of a given number of guns, starting at point H, leads to a much larger increase in the quantity of butter produced than when starting at point D.
3. *The first principle of economics discussed in Chapter 1 is that people face tradeoffs. Use a production possibilities frontier to illustrate society's tradeoff between a clean environment and the quantity of industrial output. What do you suppose determines the shape and position of the frontier? Show what happens to the frontier if engineers develop an automobile engine with almost no emissions.*

See Figure 7. The shape and position of the frontier depend on how costly it is to maintain a clean environment—the productivity of the environmental industry. Gains in environmental productivity, such as the development of a no-emission auto engine, lead to shifts of the

production-possibilities frontier, like the shift from PPF_1 to PPF_2 shown in the figure.

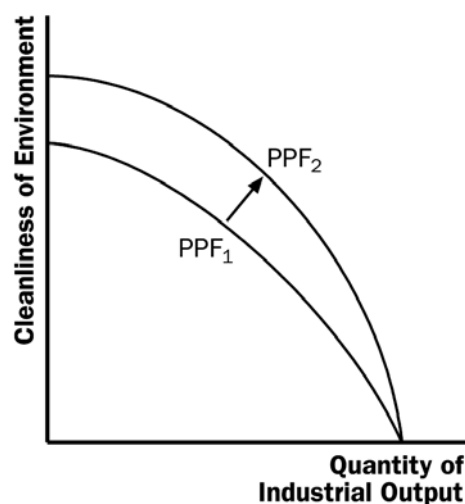


Figure 7

4. *Classify the following topics as relating to microeconomics or macroeconomics.*
 - a. a family's decision about how much income to save
 - b. the effect of government regulations on auto emissions
 - c. the impact of higher national saving on economic growth
 - d. a firm's decision about how many workers to hire
 - e. the relationship between the inflation rate and changes in the quantity of money
 - a. A family's decision about how much income to save is microeconomics.
 - b. The effect of government regulations on auto emissions is microeconomics.
 - c. The impact of higher national saving on economic growth is macroeconomics.
 - d. A firm's decision about how many workers to hire is microeconomics.
 - e. The relationship between the inflation rate and changes in the quantity of money is macroeconomics.
5. *Classify each of the following statements as positive or normative. Explain.*
 - a. Society faces a short-run tradeoff between inflation and unemployment.
 - b. A reduction in the rate of growth of money will reduce the rate of inflation.
 - c. The Bank of Canada should reduce the rate of growth of money.
 - d. Society ought to require welfare recipients to look for jobs.
 - e. Lower tax rates encourage more work and more saving.
 - a. The statement that society faces a short-run tradeoff between inflation and unemployment is a positive statement. It deals with how the economy *is*, not how it should be. Since economists have examined data and found that there is a short-run negative relationship between inflation and unemployment, the statement is a fact, thus it is a positive statement.
 - b. The statement that a reduction in the rate of growth of money will reduce the rate of inflation is a positive statement. Economists have found that money growth and inflation