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Chapter 1
Ten principles of economics

Contents

Learning objectives

In this chapter, students will:

- learn that economics is about the allocation of scarce resources
- examine some of the trade-offs that people face
- learn the meaning of opportunity cost
- see how to use marginal reasoning when making decisions
- discuss how incentives affect people's behaviour
- consider why trade among people or nations can be good for everyone
- discuss why markets are a good, but not perfect, way to allocate resources
- learn what determines some trends in the overall economy.

Key points

- The fundamental lessons about individual decision making are that people face trade-offs among alternative goals, that the cost of any action is measured in terms of forgone opportunities, that rational people make decisions by comparing marginal costs and marginal benefits, and that people change their behaviour in response to the incentives they face.
- The fundamental lessons about interactions among people are that trade can be mutually beneficial, that markets are usually a good way of coordinating trade among people and that the government can potentially improve market outcomes if there is some market failure or if the market outcome is inequitable.

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- The fundamental lessons about the economy as a whole are that productivity is the ultimate source of living standards, that money growth is the ultimate source of inflation and that society faces a short-term trade-off between inflation and unemployment.

Chapter outline

Introduction

> Begin by pointing out that economics is a subject that students must confront in their everyday lives. Point out that they already spend a great deal of their time thinking about economic issues: prices, buying decisions, use of their time, etc.

- The word 'economy' comes from the Greek word meaning 'one who manages a household'. This makes some sense, since in the economy we are faced with many decisions (just as a household is).
- The fundamental economic problem: resources are scarce.

> You will want to start the semester by explaining to students that economics is by and large a subject of logic; however, part of learning economics is understanding a new vocabulary. In order to have a productive discourse, economists generally use very precise (and sometimes different) definitions for words that are commonly used outside of the economics discipline. The use of such precise language is common to other disciplines. Therefore, it will be helpful to students if you follow the definitions provided in the text as much as possible.

- Definition: *scarcity* – the limited nature of society's resources.
- Definition: *economics* – the study of how society manages its scarce resources.

> Do not underestimate how challenging these principles will be for the student because most first-year university students have limited experience with viewing the world from a cause-and-effect perspective. This is a good time to emphasise that there are known reasons for why many things work the way they do in the real world. Although we cannot predict the behaviour of any one individual, centuries of observation and analysis have uncovered several general rules explaining the decisions and behaviours of large numbers of individuals.

How people make decisions

Lesson 1: People face trade-offs

- 'There is no such thing as a free lunch.' Making decisions requires trading off one goal for another. Examples include how a student spends their time, how a family decides to spend its income, how the Australian government spends tax dollars and how regulations may protect the environment at a cost to firm owners.
- A special example of a trade-off is the trade-off between efficiency and equity.
  - Definition: *efficiency* – the property of society getting the most it can from its scarce resources.
    Example: Wasting no resources when making a pie, so the pie becomes as large as possible.
  - Definition: *equity* – the property of distributing economic prosperity fairly among the members of society.
    Example: How should the pie be distributed, i.e. who will get a larger slice of the pie and who will get a smaller slice, or will slices be distributed equally?
  - While it is useful to strictly distinguish between efficiency and equity for analytical purposes, these two concepts are also linked. For example, tax dollars paid by wealthy Australians and then distributed to those less fortunate may improve equity but also may lower the incentive to work hard and therefore reduce the level of output produced by our resources.
  - This implies that the cost of increased equity is a reduction in the efficient use of resources.

Lesson 2: The cost of something is what you give up to get it

- Making decisions requires individuals to consider the benefits and costs of alternative actions.
- Example: What are the costs of going to university?

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  - We cannot count the complete cost of room and board because the student would have to pay for food and shelter even if they were not in school. These are part of the cost of living and not part of the cost of studying.
  - We would want to count the value of the student's time since she could be working for pay instead of attending classes and studying. Also on a very nice sunny day some students might value the cost of attending classes much higher than on a rainy day.
- Definition: *opportunity cost* – whatever must be given up to obtain some item.

> One of the hardest ideas for students to grasp is that 'free' things are not truly free. So you will need to provide students with numerous examples of 'free' things with hidden costs, especially considering the value of time. The relevant opportunity cost is the next best alternative, which might differ for each individual.

Lesson 3: Rational people think at the margin

- Many decisions in life are incremental in nature: Should I remain in school this semester? Should I take another course this semester?
- Definition: *marginal change* – a small incremental adjustment to a plan of action.
- Example: You are trying to decide on how many years to stay in school. Comparing the lifestyle of an individual with a PhD to one of an individual who has dropped out of secondary school would be inappropriate, because the choice is not really to drop out versus a PhD. Instead the decision is whether or not to remain in school for an additional year. Thus, you need to compare the additional benefits of another year in school (the marginal benefit) with the additional cost of staying in school for another year (the marginal cost).
- Another example: Suppose that flying a 200-seat plane from Brisbane to Perth costs the airline $100,000, which means that the average cost of each seat is $500. Suppose that the plane is minutes from departure, there are several vacant seats and a passenger is willing to pay $300 for a seat. Should the airline sell the seat for $300? As long as the marginal revenue exceeds the marginal cost, selling the ticket is profitable.

Lesson 4: People respond to incentives

- Because people make decisions by comparing costs and benefits, their decisions may change in response to changes in costs and benefits.
- Sometimes policymakers fail to understand how policies may alter incentives and behaviour.
- Example: Seat belt laws increase the use of seat belts, increasing the probability of surviving a crash. However, before the law people chose not to use seat belts because it was consistent with their individual optimal risk choice. With the seat belt law these people can achieve their old optimal risk by driving more adventurously. This leads to an increase in the number of car accidents. The net effect for society is ambiguous.
- Case Study: Choosing when the stork comes. See text, pages 10–11.
  - The Australian government's 'baby bonus' was introduced on 1 July 2004 – parents of children born on or after that date would receive a payment of $3000. This created an incentive for parents whose baby was due at the end of June 2004 to delay the birth of their child (by scheduling planned caesareans and inducements a little later) so that they would qualify for the payment.
  - Indeed, the births data show that an estimated 1167 births were shifted from June to July that year. Later in 2006 an increase of $834 prompted about 700 births to be shifted from June to July.

How people interact

Lesson 5: Trade can make everyone better off

- Consider trade that takes place inside your home. Most families are involved in trade with other families on a daily basis. Most families do not build their own homes, make their own clothes, or grow their own food.

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- Countries benefit from trading with one another like families do.
- This occurs because it allows for countries (or families) to specialise in what they do best.

Lesson 6: Markets are usually a good way to organise economic activity

- Definition: *market economy* – an economy that allocates resources through the decentralised decisions of many firms and households as they interact in markets for goods and services.
- Market prices reflect both the value of a product to consumers and the cost of the resources used to produce it. Decisions to buy or to produce goods and services are based on the marginal cost and marginal benefit to each individual. All individuals interact via the market and their choices determine the market price. Therefore, the production costs as well as the benefits from consumption are reflected by the market price.

> Explain to students that when households and firms do what is best for themselves, they often end up doing what is best for society, as if guided by market forces – or by an 'invisible hand'. Spend some time and emphasise the magic of the market. Use numerous examples to show students that the market most often allocates resources to their highest valued use.

- Definition: *invisible hand* – The idea that buyers and sellers freely interacting in a market economy will create an outcome that allocates goods and services to those people who value them most highly and makes the best use of our scarce resources.
- When a government interferes in a market and restricts prices from adjusting freely, decisions are not based on the proper information and may be inefficient.
- This helps to explain why centrally planned economies have failed (such as the former USSR).
- FYI: Adam Smith and the role of markets. See text, pages 14–15.
  - Adam Smith's 1776 work suggested that although individuals are motivated by self-interest, an invisible hand guides this self-interest into promoting society's economic wellbeing.
  - Smith's astute perceptions will be discussed more fully in the chapters to come.

Lesson 7: Governments can sometimes improve market outcomes

- Economic reasons for government interventions are the promotion of efficiency and/or equity.
- Government policy can improve efficiency when there is market failure.
  - Definition: *market failure* – a situation in which a market left on its own fails to allocate resources efficiently.
- Examples of market failure:
  - Definition: *externality* – the uncompensated impact of one person's actions on the wellbeing of a bystander. A positive externality makes the bystander better off. A negative externality makes the bystander worse off.
  - Definition: *market power* – the ability of a single economic actor (or small group of actors) to have a substantial influence on market prices.
- Note that this lesson states that the government can improve market outcomes. This is not saying that the government will always improve market outcomes.

How the economy as a whole works

Lesson 8: A country's standard of living depends on its ability to produce goods and services

- Differences in living standards between one country and another can be quite large. Changes in living standards over time are also great. The explanation is productivity.
- Definition: *productivity* – the quantity of goods and services produced from each hour of a worker's time.
- High productivity implies a high standard of living. Thus, policymakers must understand the impact of any policy on our ability to produce goods and services.
  - During the last decade, much debate has centred on federal government budget deficits.

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- When the government borrows, it lowers the quantity of funds available for other borrowers, including funds that could have been used to finance a student's education or to build new factories.
- Therefore, budget deficits are generally believed to lower growth in a country's standard of living.

Lesson 9: Prices rise when the government prints too much money

- Definition: *inflation* – an increase in the overall level of prices in the economy.
- When the government creates an excessive amount of money, the value of money falls. A severe example was Germany in the early 1920s. Less extreme examples include the United States and Australia and New Zealand in the 1970s.
- A recent extreme example is Zimbabwe. See *NY Times* link http://www.nytimes.com/2006/05/02/world/africa/02zimbabwe.html?pagewanted=all&_r=0 This gives some insights into the social costs of inflation.

Lesson 10: Society faces a short-term trade-off between inflation and unemployment

- Definition: *Phillips curve* – the short-term trade-off between inflation and unemployment.
- This is a controversial topic among economists.
- This trade-off exists if some prices are slow to adjust to market changes.
- Example: The government reduces the amount of money in the economy to reduce inflation. People respond by spending less on goods with prices stuck too high, lowering the quantity of goods that firms sell. Firms respond to lower sales by laying off workers, increasing the unemployment rate.
- This trade-off is only temporary but is often used as an argument for government policy to control inflation or unemployment.

Conclusion

- Students now have a taste of what economics is all about.

Adjunct teaching tips and warm-up activities

1 Make sure that students understand that this is just an introduction to these 10 principles. Students should not feel as if they must understand each of these 10 principles completely at this time. Instead, point out that the students will be seeing these ideas in action throughout the semester and that they will gain additional understanding as the semester progresses.

2 Give students a list of activities with time requirements. For example: sleep, 8 hours; sleep, 6 hours; eat breakfast, 30 minutes; ride a bike, 1 hour; go hiking, 2 hours; study, 3 hours; study, 2 hours; go to class, 4 hours; go to class, 6 hours; watch TV, 2 hours; watch TV, 6 hours; take a nap, 1 hour; work, 8 hours; work, 4 hours; etc. Make sure that there are many choices and that there are many pleasurable experiences – too much for a 24-hour period. Ask students which lessons from economics this illustrates. If they do not say 1, 2, 3, and 4, help them see that this exercise has trade-offs in the choices they make, that each choice has an opportunity cost, that deciding whether or not to sleep four more hours may depend on whether you have already slept for six, and that choices may be influenced by the incentives the student faces. For example, a student who is about to be placed on academic probation has an incentive to study harder.

3 Divide the students into groups of four. Assign each group the definition of economics or one or two of the lessons from economics. Have each group draw the definition or lesson, no words allowed. Allow time for classroom discussion of the drawings. For example, you may want the other members of the class to try and guess what the drawing shows. Or, you may just want the group to explain their drawing to the class. Make sure that you fill in any conceptual gaps. Encourage students to keep thinking about the pictures throughout the semester as they cover the remaining chapters and allow them to modify or draw new pictures if they choose.

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Solutions to text problems

Q Describe an important trade-off you recently faced. Give an example of some action that has both a monetary and non-monetary opportunity cost. Describe an incentive your parents offered you in an effort to influence your behaviour. (Page 10)

This question is likely to get students thinking about the decision to come to university for a degree. Tradeoffs here might include where they study (at a local or distant tertiary provider), the degree they're doing (especially if there are different fees), or attending at all (as opposed to seeking employment). Parents could influence this decision by offering to pay for some of the education costs or by supporting these decisions through free (or low-cost) accommodation. Ideally students should realise not all trade-offs are ones where they spend money, but also their time, and other 'options'. Be prepared for other trade-offs however.

Q 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 governments play in them? (Page 16)

The three lessons concerning economic interactions are:

1 Trade can make everyone better off.

2 Markets are usually a good way to organise economic activity.

3 Governments can sometimes improve market outcomes.

Trade can make everyone better off because it allows countries to specialise in what they do best and to enjoy a wider variety of goods and services. A country is better off not isolating itself from all other countries because it can take advantage of these gains from specialisation and variety.

Markets are usually a good way to organise economic activity because the invisible hand leads markets to desirable outcomes. Externalities and market power are a source of market failure, i.e. the market outcome will be inefficient. Most economists accept that if the market fails the government can sometimes improve the outcome, i.e. improve efficiency by intervening in the market.

Q What factors determine a country's standard of living? How does printing more money affect a country's economy in the long term and in the short term? (Page 19)

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 and skills of workers and the access workers have to the necessary tools and technology. Prices rise when the government prints too much money because too much money is chasing too few goods. The rise in the general price level is called inflation. Society faces a short-run trade-off between inflation and unemployment because some prices are 'sticky', so that a change in policy can affect spending, causing unemployment to change in the opposite direction of a change in inflation, until prices have fully adjusted to the change.

Questions for review (page 21)

1 Examples of trade-offs include time trade-offs (such as studying one subject over another, or studying at all compared to engaging in social activities) and spending trade-offs (such as whether to use your last 10 dollars on pizza or on a study guide for that tough economics course).

2 The opportunity cost of a dinner at a fancy restaurant includes the monetary cost of the meal plus the time cost of going to the restaurant and eating there. The time cost depends on what else you might do with that time. For example, if the next best alternative is picking up a pizza and watching a TV show at home, the time cost may be small, e.g., an old sitcom, or large, e.g., a live broadcast of your favourite sport. If the next best alternative is working an extra three hours at your job, the time cost includes the money you could have earned.

3 The marginal benefit of a glass of water depends on circumstances. If you have just run a marathon, or you've been walking in the Outback desert sun for three hours, the marginal benefit is very high.

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But if you have been drinking a lot of water recently, the marginal benefit is probably quite low. The point is that even necessities of life, like water, don't always have large marginal benefits.

4 Policymakers need to think about incentives in order to understand how people will respond to the policies they put in place. The text 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 Trade among countries isn't a game with some losers and some winners because trade can make everyone better off. Trades only happen if the buyer and seller agree to the transaction; this indicates that they both must believe that they are better off. By allowing specialisation, trade between people and trade between countries can improve everyone's welfare.

6 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 this self-interest into doing what's good for society as a whole.

7 Efficiency is the property of society getting the most it can from its scarce resources. Equity is the property of distributing economic prosperity fairly among the members of society. Promoting efficiency and promoting equity are the two broad reasons for government to intervene in the economy. Governments can enhance efficiency, for example, by regulating the price that a monopolist charges. Governments can enhance equity, for example, via policies to achieve a more equitable distribution of economic wellbeing.

8 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 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 relative to the available goods and services.

10 Inflation and unemployment are negatively related in the short term. Reducing inflation entails costs to society in the form of higher unemployment in the short term because it takes time for all prices to adjust fully.

Multiple choice (pages 21–2)

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

Problems and applications (pages 22–3)

1 **a** A family deciding whether to buy a new car faces a trade-off between the benefit of the car and other things they might want to buy. For example, buying the car might mean they must give up going on a holiday for the next two years. So the economic cost of the car is the family's opportunity cost in terms of what they must give up.

b For a politician deciding whether to increase spending on national parks, the trade-off is between parks and other spending items or tax cuts. If more money is spent on national parks, that may mean less spending on national defence or on the police force. Or, instead of spending more money on national parks, taxes could be reduced.

c When a company director 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 profits the most?'

d In deciding how much to prepare for a lecture, a professor faces a trade-off between the value of improving the quality of the lecture compared to other things they could do with her time, such as working on additional research.

2 When the benefits of something are psychological, such as going on a holiday, it isn't easy to directly compare benefits to costs to determine whether it's worth doing. But there are two ways to think about the benefits. One is to compare the holiday with what you would do in its place. If you didn't go on the holiday, would you buy something like a new set of golf clubs? Then you can

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decide whether you'd rather have the new clubs or the holiday. A second way is to think about how much work you had to do to earn the money to pay for the holiday; then you can decide if the psychological benefits of the holiday were worth the psychological cost of working.

3 If you are thinking of going swimming instead of working at your part-time job, the economic costs are the monetary expense of swimming and time costs, i.e. the opportunity cost of the wages you're giving up by not working. If the choice is between swimming and going to the library to study, then the cost of swimming is its monetary and time costs, i.e. the cost to you of getting a lower grade in your course.

4 If you spend $100 now instead of investing it for a year and earning 5 per cent 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, a subfield of economics.

5 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 for the current decision 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 **a** When welfare recipients who are able to work have their benefits cut off after two years, they have greater incentive to find jobs than if their benefits were to last forever.

b 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. Thus the change in the law is one that increases efficiency but reduces equity.

7 **a** Efficiency: The market failure comes from the local telephone monopoly. In Australia there is also an equity argument, i.e. users in rural Australia do not have to pay higher fees than users in highly populated areas.

b Equity.

c Efficiency: An externality arises because second-hand smoke harms non-smokers.

d Efficiency: The market failure occurs because a single generator has market power.

e Equity.

f Efficiency: There's an externality because of accidents caused by drunk drivers.

8 If everyone were guaranteed the best health care possible, much more of our nation's resources 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 might be smaller and would consist of more health care and less of other goods.

9 Since average income in Australia has roughly doubled every 35 years, we are likely to have a better standard of living than our parents did, and a much better standard of living than our grandparents did. 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.

10 If Australians 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.

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There's no such thing as a free lunch, though, because when people save more, they're giving up current consumption. They get higher future incomes at the cost of consuming fewer goods today.

11 a If people have more money, they're probably going to spend more on goods and services.

b If prices are sticky, and people spend more on goods and services, then output may increase, as producers increase output to meet the higher demand rather than raising prices.

c If prices can adjust, then people's higher spending will be matched with increased prices, and output won't rise.

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Chapter 2
Thinking like an economist

Contents

Learning objectives

In this chapter, students will:

- see how economists apply the methods of science
- consider how assumptions and models can shed light on the world
- learn two simple models – the circular-flow diagram and the production possibilities frontier
- distinguish between microeconomics and macroeconomics
- learn the difference between positive and normative statements
- examine the role of economists in making policy
- consider why economists sometimes disagree with one another.

Key points

- Economists try to approach their subject with a scientist's objectivity. Like all scientists, they make appropriate assumptions and build simplified models in order to understand the world around them.
- The field of economics is divided into two subfields – microeconomics and macroeconomics. Microeconomists study decision making by households and firms and the interaction among households and firms in the marketplace. Macroeconomists study the forces and trends that affect the economy as a whole.
- A positive statement is an assertion about how the world *is*. A normative statement is an assertion about how the world *ought to be*. When economists make normative statements, they are acting more as policymakers than scientists.
- Economists who advise policymakers offer conflicting advice either because of differences in scientific judgements or because of differences in values. At other times, economists are united in the advice they offer, but policymakers may choose to ignore it.

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Chapter outline

Introduction

This chapter is an introduction to economic methodology. The aim is to develop an overview of how economists approach the world and of what it means to think like an economist. Emphasise that learning about the approach and language of economics is a vital step before delving into the substance and details of the subject.

The economist as scientist

The scientific method: Observation, theory and more observation

- Observations help us to develop theory. Data can be collected and analysed to test and evaluate economic theories.
- Unfortunately, experiments are more difficult in economics than in the physical sciences because repeated and controlled experiments often cannot be performed. Economists frequently have to rely on the natural experiments offered by history.

The role of assumptions

- Assumptions are useful because they simplify the problem without substantially affecting the answer. Most assumptions will be somewhat unrealistic but will have small effects on the actual outcome of the answer.
- Example: to understand international trade, it may be helpful to start out assuming that there are only two countries in the world producing only two goods. Once we understand trade between these two countries, we can extend the analysis to a greater number of countries and goods.

Economic models

- All models simplify reality in order to improve our understanding of it. The clever use of assumptions assists in this.

  To illustrate to the class how simple but unrealistic models can be useful, bring a road map to class. Point out how unrealistic it is. For example, it does not show where all of the stop signs, petrol stations, or restaurants are located. It assumes that the earth is flat and two-dimensional. But, despite these simplifications, a map usually helps travellers get from one place to another. Thus, it is a good model for its purpose.

- Most economic models are composed of diagrams and equations.

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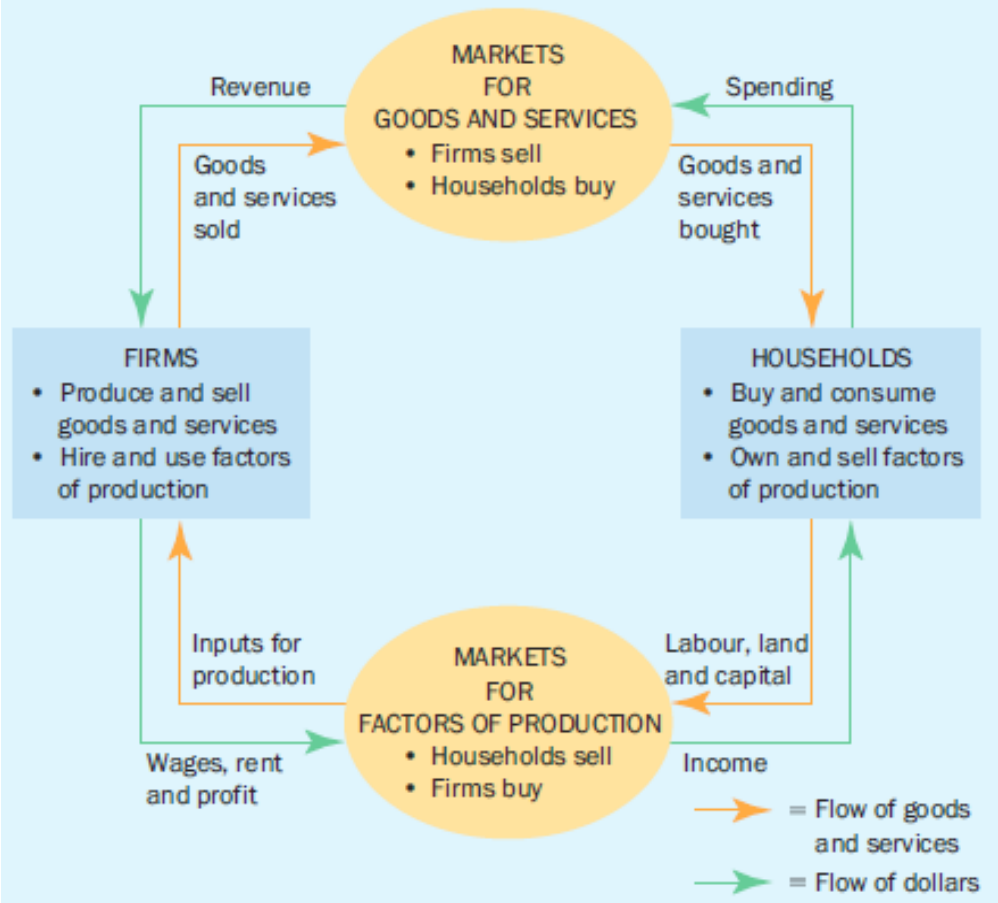

Our first model: The circular-flow diagram

Figure 2.1 The circular flow (text page 28)

- Definition: *circular-flow diagram* – a visual model of the economy that shows how dollars and goods and services flow through markets among households and firms.
- This diagram is a very simple model of the economy. Note that it ignores the roles of government and international trade. It includes:
  - Two types of decision makers in the model: households and firms.
  - Two types of markets: markets for goods and services, and markets for factors of production.
  - Firms are sellers in the goods and services markets and buyers in the factors of production markets.
  - Households are buyers in the goods and services market and sellers in the factors of production market.
  - The inner loop represents the flow of goods and services between households and firms.
  - The outer loop represents the flow of dollars between households and firms.

Spend more time with these first two models than you might think is necessary. Be aware that the maths skills of some of your students will be limited. It is important the students feel confident with their first graphical and mathematical model. Be deliberate with every point. If you lose them with these models, they may be gone for the rest of the course. Highlight that there are always two opposing arrows, which indicate that a trade (exchange) has occurred.

Our second model: The production possibilities frontier

- Definition: *production possibilities frontier* – a graph that shows the various combinations of output that the economy can possibly produce given the available factors of production and the available production technology.

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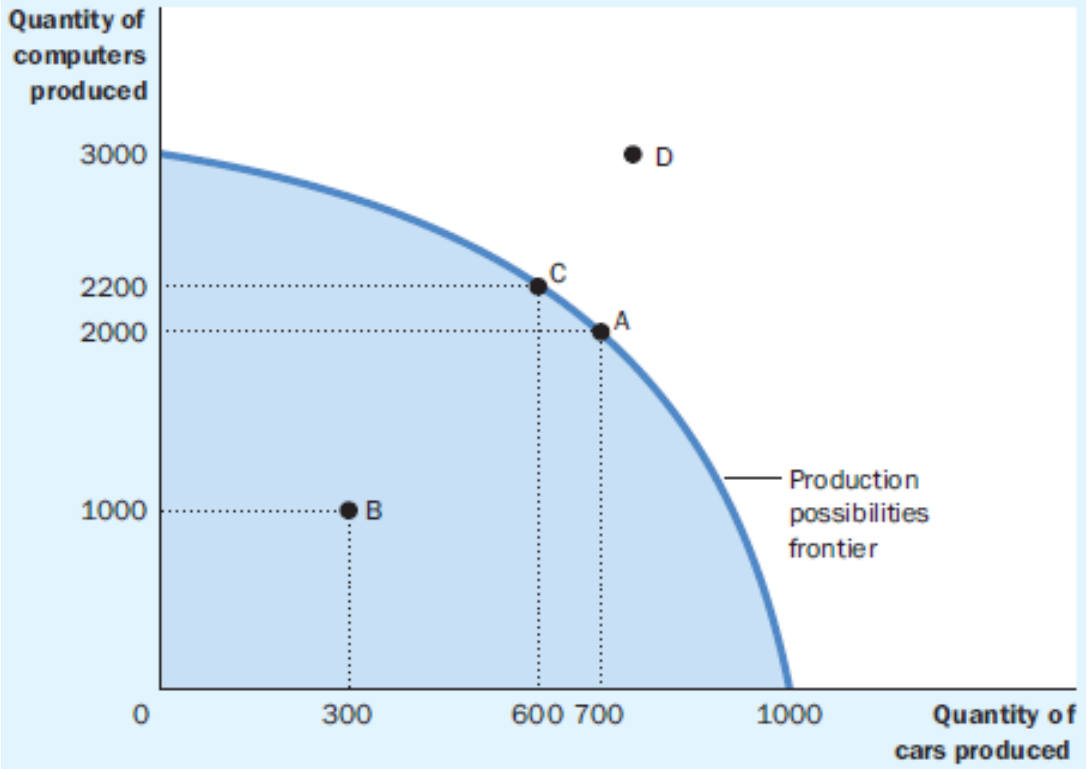
- Example: a country that produces two goods – cars and computers.
  - If all resources are used to produce cars, the economy can produce 1000 cars.
  - If all resources are used to produce computers, the economy can produce 3000 computers.
  - If resources are divided between the two industries, the feasible combinations of output are shown on the curve.

Figure 2.2 The production possibilities frontier (text page 30)



You may want to emphasise that the production data are measured in terms of annual flows. This will help students to realise that a new production possibilities frontier occurs for each year. Thus, the axes show the level of output per year.

- Production is efficient at all points that lie on the curve. This implies that the economy is getting all it can from the scarce resources it has available. Production at a point inside the curve is inefficient. Production at a point outside of the curve is not possible given the economy's current level of resources and technology.
- The production possibilities frontier reveals Principle 1: People face trade-offs. Suppose the economy is currently producing 600 cars and 2200 computers. To increase production of cars to 700, the production of computers must fall to 2000.
- Principle 2 is also shown on the production possibilities frontier: the cost of something is what you give up to get it (opportunity cost). The opportunity cost of increasing the production of cars from 600 to 700 is 200 computers.
- The shape of the production possibilities frontier indicates that the opportunity cost of cars in terms of computers increases as the country produces more cars and fewer computers. This occurs because some resources are better suited to the production of cars than computers and vice versa. For example, when the economy is using most of its resources to make computers, the resources best suited to making computers are already in the computer industry and each car the economy gives up yields only a small increase in the number of computers.

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Be aware that students often have trouble understanding why opportunity costs rise as the production of a good increases. You may want to use several specific examples of resources that are more suited to producing one good than another e.g. a computer engineer is more suited to producing computers than cars, an engine designer is more suited to producing cars than computers.

- The production possibilities frontier can shift if resource availability or technology changes. Refer to text Figure 2.3, page 32. Emphasise that the production possibilities curve depends on the availability of resources and the technology level.

You may also want to teach students about budget constraints at this time (call them 'consumption possibilities frontiers'). This reinforces the idea of opportunity cost and allows them to see how opportunity cost can be measured by the slope. Also, it will introduce students to straight-line production possibilities frontiers, which are used in chapter 3. However, be careful if you choose to do this, as students find the difference between straight-line and concave production possibilities curves challenging.

ALTERNATIVE CLASSROOM EXAMPLE

A small country produces two goods: steel (measured in tons) and trucks. Points on a production possibilities frontier can be shown in a table or a graph:

	A	B	C	D	E
Trucks	0	10	20	30	40
Steel	70	60	45	25	0

The production possibilities frontier should be drawn from the numbers above.

Students should be asked to calculate the opportunity cost of increasing the number of trucks produced by 10:

- between 0 and 10
- between 10 and 20
- between 20 and 30
- between 30 and 40

Points inside the curve, points on the curve, and points outside of the curve can also be discussed.

ALTERNATIVE CLASSROOM EXAMPLE

Ivan receives an allowance from his parents of $20 each week. He spends his entire allowance on two goods: cans of soft drink (which cost $2 each) and tickets to the movies (which cost $10 each).

Students should be asked to calculate the opportunity cost of one movie and the opportunity cost of one can of soft drink.

Ivan's consumption possibilities frontier (budget constraint) can be drawn. It should be noted that the slope is equal to the opportunity cost and is constant because the opportunity cost is constant.

Ask students what would happen to the consumption possibilities frontier if Ivan's allowance changes or if the price of a can of soft drink or movies changes.

Microeconomics and macroeconomics

- Definition: *microeconomics* – the study of how households and firms make decisions and how they interact in markets.
- Definition: *macroeconomics* – the study of economy-wide phenomena, including inflation, unemployment and economic growth.

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The economist as policy adviser

- The study of economics is useful in many career paths.

Positive versus normative analysis

- Example of a discussion of minimum-wage laws: Polly says, 'Minimum-wage laws cause unemployment'. Norma says, 'The government should raise the minimum wage'.
- Definition: *positive statements* – claims that attempt to describe the world as it is.
- Definition: *normative statements* – claims that attempt to prescribe how the world should be.
- Positive statements can be evaluated using evidence, while normative statements involve personal viewpoints and values.

> Use several examples to illustrate the differences between positive and normative statements and stimulate classroom discussion. Possible examples include the minimum wage, budget deficits and petrol taxes.

Economists in government

- In Australia, economists provide advice to government while working in the Commonwealth Treasury, the Department of Finance and the Productivity Commission.
- Economists also advise and work for various government bodies such as the Australian Bureau of Statistics, the Australian Competition and Consumer Commission and the Reserve Bank of Australia. Refer to text Table 2.1, page 34.
- Students also like to know that are private sector options as well. E.g. commercial banks, consultancies, fishing or forestry industry etc.

Why economists disagree

Differences in scientific judgements

- Economists sometimes disagree about the validity of alternative theories or about the size of the effects on the economy of behaviour.
- Example: some economists feel that changing the tax system to reduce taxes on income and increase taxes on consumption would increase national savings in Australia. However, other economists believe that changing the tax system this way would have little effect on saving behaviour and therefore they do not support the change.
- It is also important to explain that these are not dogmatic differences but are settled (sometimes gradually) by empirical evidence. Positions don't remain irreconcilably entrenched.

Differences in values

- People have different ideas about what is fair and what are appropriate trade-offs between efficiency and equity. Economists give conflicting advice sometimes because they have different values.

What Australian economists think

Perception versus reality

- While it may seem as if economists do not agree on much, this is in fact not true.

> Emphasise that there is more agreement among economists than most people think. Many of the things economists agree about would not have the same consensus among the general public.

Let's get going

- The first two chapters provide an introduction to the ideas and methods of economics. We are now ready to consider in more detail the principles of economic behaviour and economic policy.

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Appendix: Graphing – a brief review

Many beginning students will have trouble grasping the most basic graphs. It is important for lecturers to make sure that students are comfortable with these techniques.

Graphs of a single variable

See text Figure 2A.1, page 43

- Pie chart
- Bar graph
- Time-series graph.

Graphs of two variables: The coordinate system

See text Figure 2A.2, page 44

- Ordered pairs of numbers can be graphed on a two-dimensional grid.
- The first number in the ordered pair is the *x*-coordinate.
- The second number in the ordered pair is the *y*-coordinate.
- The point with both an *x*-coordinate and *y*-coordinate of zero is called the origin.
- Scatterplots are plots of scattered points.
- Two variables that increase or decrease together have a positive correlation.
- Two variables that move in opposite directions (one increases when the other decreases) have a negative correlation.

Curves in the coordinate system

See text Table 2A.1, page 45

See text Figure 2A.3, page 46

- Often economists want to show how one variable affects another, holding everything else constant.
  - An example of this is the demand curve. The demand curve shows how the quantity of a good a consumer wants to purchase varies as its price varies, holding everything else (such as income) constant.
  - If income does change, this will alter the amount of a good that the consumer wants to purchase at any given price. Thus, the relationship between price and quantity desired has changed and must be represented as a new demand curve.

See text Figure 2A.4, page 47

- A simple way to tell if it is necessary to shift the curve is to look at the axes. When a variable that is not named on either axis changes, the curve shifts.

Slope and elasticity

See text Figure 2A.5, page 48

- We may want to ask how much a consumer's purchasing habits respond to changes in the price of a product.
  - If the demand curve is very steep, quantity desired does not change much in response to a change in price.
  - If the demand curve is very flat, quantity desired changes a great deal when the price changes.
- The slope of a line is the ratio of the vertical distance covered to the horizontal distance covered as we move along the line ('rise over run').

$$slope = \frac{\Delta y}{\Delta x}$$

- The slope of the demand curve tells us something about how a consumer will react to a change in price. A small slope means that the demand curve is relatively flat and a consumer will adjust the

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quantity purchased substantially in response to a price change. A large slope means that the demand curve is relatively steep and that the quantity purchased will respond only slightly in response to a price change.

Cause and effect

- Economists often make statements suggesting that a change in variable A causes a change in variable B.
- Ideally, we would like to see how changes in variable A affect variable B, holding all other variables constant. This is not always possible and could lead to a problem caused by omitted variables. Even if we have identified the correct variables there can still be the problem of reverse causality.

Omitted variables

See text Figure 2A.6, page 50

- If variables A and B both change at the same time, we may conclude that the change in variable A caused the change in variable B.
- However, if variable C has also changed, then it is entirely possible that variable C is responsible for the change in variable B.

Reverse causality

See text Figure 2A.7, page 51

- If variable A and variable B both change at the same time, we may believe that the change in variable A led to the change in variable B.
- However, it is entirely possible that the change in variable B led to the change in variable A.
- It is not always as simple as determining which variable changed first because individuals often change their behaviour in response to a change in their expectations about the future. This means that variable A may change before variable B but only because people expect a change in variable B.

Adjunct teaching tips and warm-up activities

1 Make sure that you give students adequate time to catch up with you as you discuss the production possibilities frontier. Ask frequent questions and give students time to think before answering to make sure that they are following you.

2 When reviewing graphing with the students, it is best to bring students to the board to be 'recorders' of what the other students say as you give a series of instructions like 'Draw a pie chart' or ask questions like 'How tall should the bar be if the value is 120 million?' Do not make the student at the board responsible for the answer. Instead, he or she should be simply recording what the other students say. Students are often uneasy about graphing at first and need to see that they are not alone.

3 Have students bring in newspaper articles and, in groups, identify each statement in an editorial paragraph as being a positive or normative statement. Discuss the difference between straight news stories and editorials and the analogy with economists as scientists and as policy advisers.

Solutions to text problems

Q 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. (page 33)

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

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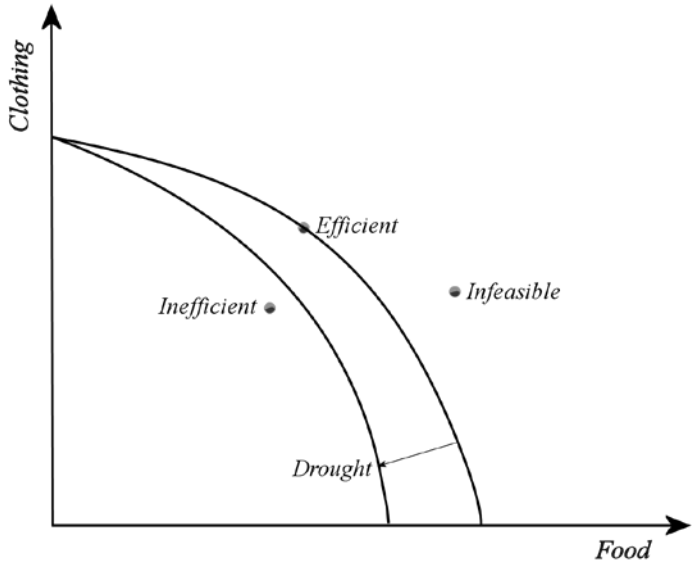
Production Possibility Frontier



The drought has the effect of pivoting the PPF inward about the clothing axis-point. Note that some students might reason that clothing output might also shift inward to some degree, because output of raw inputs of natural fibres (like cotton, or wool) might also decrease during a drought.
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.

Q 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. (page 35)

An example of a positive statement is 'higher taxes discourage work effort'; many other answers are possible. It is a positive statement as it describes the effect of higher taxes, describing the world as it is. An example of a normative statement is 'the government should reduce tax rates'. This is a normative statement as it is a claim about how the world should be.

Parts of the government that regularly rely on advice from economists include Commonwealth Treasury, the Department of Finance, the Reserve Bank of Australia and the Australian Competition and Consumer Commission. New Zealand examples include the NZ Treasury, the Reserve Bank of New Zealand, the Commerce Commission and the Ministry for the Environment. Many other answers are also possible.

Q Give two reasons why two economic advisers to the federal government might disagree about a question of policy. (page 37)

Economic advisers to the federal government might disagree about a question of policy due to differing scientific judgements, i.e. in their positive theories, or differences in values, i.e. in their normative views.

Questions for review (page 39)

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

Include examples of other sciences that also use natural experiments. Ecology and astronomy can yield good case studies of this.

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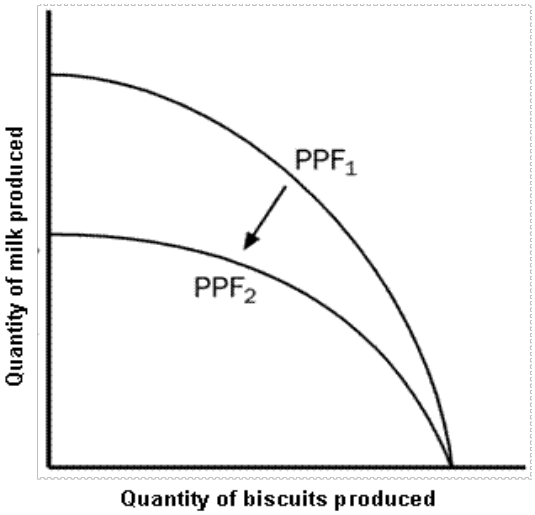
2 Economists make assumptions to simplify problems. If the assumptions are chosen well the resulting simplification does not substantially affect the answer. Assumptions can make the world easier to understand.

3 Economic models should not describe reality exactly because they would be too complex to understand. A model is a simplification that lets the economist see what is truly important.

4 Figure 2.3 shows a production possibilities frontier between milk and biscuits (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 biscuits, then it doesn't need any cows, and production is unaffected. But if the economy produces any milk at all, then there will be less production possible after the disease hits.

Figure 2.3 A shift in the production possibilities frontier



5 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 markets. Macroeconomics is the study of economy-wide phenomena, including inflation, unemployment and economic growth.

6 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 should be. Here's an example of each. Positive: A rapid growth rate of money is the cause of inflation. Normative: The government should keep the growth rate of money low.

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

Multiple choice (pp 39–40)

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

Problems and applications (pages 40–41)

1 Many answers are possible. The important point is that expert language is more exact and all experts immediately understand what is said without any further explanation. This eases communication between experts.

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2 **a** Steel is generally a fairly uniform commodity. There are standardised grades of steel and some firms produce steel of lower grades.

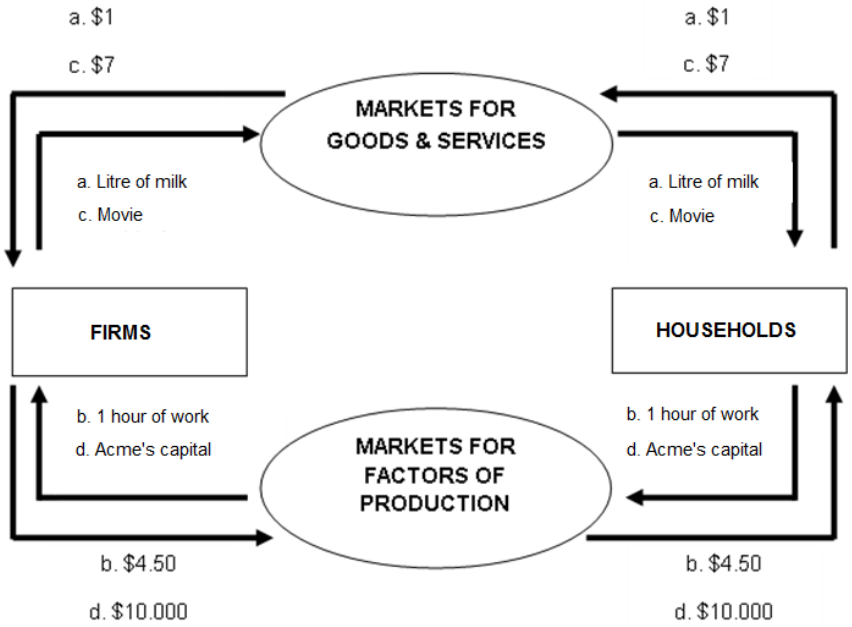
b Novels are each unique, so they are quite distinguishable.

c Wheat produced by one farmer is completely indistinguishable from wheat produced by another.

d Fast food is more distinguishable than steel or wheat, but certainly not as much as novels.

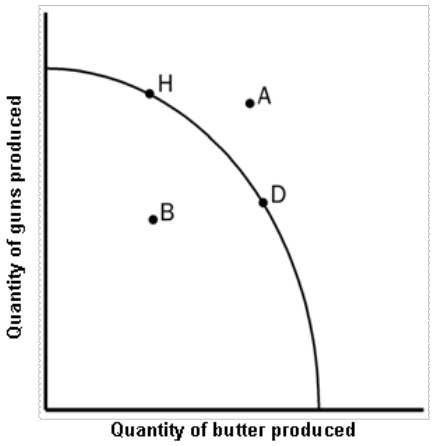
3 Figure 2.4; the four transactions are shown.

Figure 2.4



4 **a** Figure 2.5 depicts 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.

Figure 2.5



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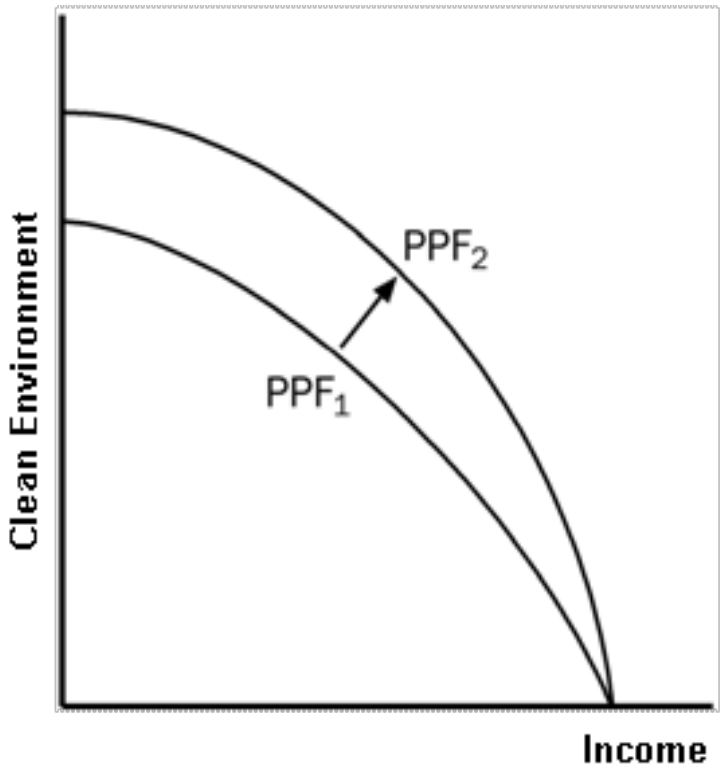
b Point A is impossible for the economy to achieve; it is outside the production possibilities frontier. Point B is feasible but inefficient because it's inside the production possibilities frontier.

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 steeper 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.

5 Figure 2.6 shows a production possibilities frontier between cleanliness of the environment and income. The shape and position of the frontier depend on the cost 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, and greener production technologies, lead to shifts of the production-possibilities frontier, like the shift from PPF_1 to PPF_2 shown. Note that 'production' of a clean environment is actually lower pollution.

Figure 2.6



6 **a** **i** No cars are washed and the workers mow 40 lawns (Larry mows 10 lawns, Moe mows 10 lawns, and Curly mows 20 lawns). (A)

ii No lawns are mown and the workers wash 40 cars (Larry washes 10 cars, Moe washes 20 cars, and Curly washes 10 cars). (B)

iii The workers mow 20 lawns (Larry mows 5 lawns, Moe mows 5 lawns, and Curly mows 10 lawns) and wash 20 cars (Larry washes 5 cars, Moe washes 10 cars, and Curly washes 5 cars). (C)

iv The workers mow 25 lawns (Larry mows 5 lawns and Curly mows 20 lawns) and wash 25 cars (Larry washes 5 cars and Moe washes 20 cars). (D)

The production possibilities frontier for this economy is represented by Figure 2.7, with all four points shown.

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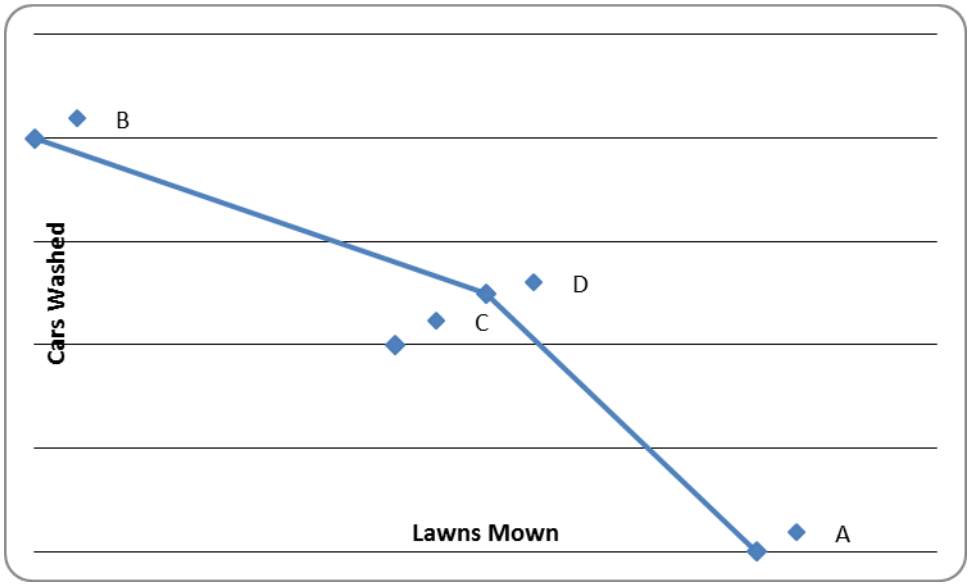
Figure 2.7



b The frontier is bowed out because not all of the workers are equally good at mowing lawns and washing cars. Curly is better at mowing lawns, and Moe is better at washing cars. When the economy is mowing a lot of lawns, Moe is needed to mow some lawns, so each lawn that is mown yields a large decrease in the number of cars washed; thus the production possibilities frontier is relatively steep. Similarly, when the economy is washing a lot of cars, Curly is needed to wash some cars, so each car that is washed yields a large decrease in the number of lawns mown; thus the production possibilities frontier is relatively flat.

c The allocation (C) is inefficient. It lies inside the production possibilities frontier.

7 **a** A family's decision about how much income to save is microeconomics.

b The effect of government regulations on car emissions is microeconomics.

c The impact of higher 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.

8 **a** The statement that society faces a short-term trade-off 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's a short-term negative relationship between inflation and unemployment, the statement is a fact, therefore 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 are very closely related. The statement tells how the world is, and so it is a positive statement.

c The statement that the Reserve Bank should reduce the rate of growth of money is a normative statement. It states an opinion about something that should be done, not how the world is.

d The statement that society ought to require social security recipients to look for jobs is a normative statement. It doesn't state a fact about how the world is. Instead, it is a statement of how the world should be and is thus a normative statement.

e The statement that lower tax rates encourage more work and more saving is a positive statement. Economists have studied the relationship between tax rates and work, as well as the relationship between tax rates and saving. They have found a negative relationship in both cases. So the statement tells how the world is, and is thus a positive statement.

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9 As prime minister, you'd be interested in both the positive and normative views of economists, but you'd probably be *most* interested in their positive views. Economists are on your staff to provide expert advice about how the economy works. They know many facts about the economy and the interaction of different sectors. So you'd be most likely to call on them about questions of fact – positive analysis. Since you're the prime minister, you are the one who has the make the normative statements as to what should be done, with an eye to the political consequences.

10 As time goes on, you might expect economists to disagree less about public policy because they will have opportunities to observe different policies that are put into place. As new policies are tried, their results will become known, and they can be evaluated better. It is likely that the disagreement about them will be reduced after they have been tried in practice. For example, many economists thought that wage indexation would be a good idea for determining wage increases, while others thought it was a bad idea. When wage indexation was tried in the 1980s, the resulting system was not flexible enough to deal with the external shocks of the time. As a result, most economists came to believe that wage increases are better determined with reference to productivity increases and structural change.

Still, it is unlikely that the differences between economists will ever be completely eliminated. Economists differ on too many aspects of how the world works. Plus, even as some policies get tried out and are either accepted or rejected, creative economists keep coming up with new ideas.

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