Chapter 2
Thinking like an economist

Contents

Learning objectives 0201
Key points 0201
Chapter outline 0202
Introduction 0202
The economist as scientist 0202
The economist as policy adviser 0206
Why economists disagree 0206
Let's get going 0206
Appendix: Graphing – a brief review 0207
Adjunct teaching tips and warm-up activities 0208
Solutions to text problems 0208
Questions for review (page 39) 0209
Multiple choice (pp 39–40) 0210
Problems and applications (pages 40–41) 0210

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.

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

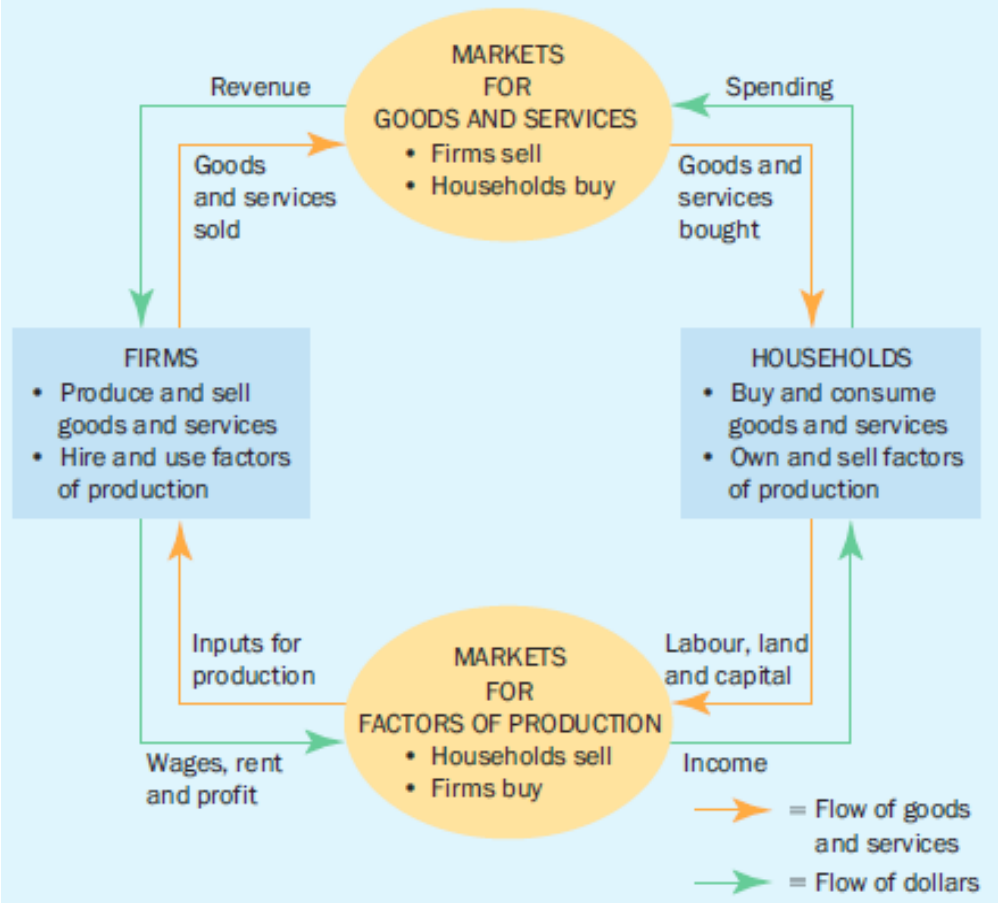
- Assumptions are useful because they simplify the problem without substantially affecting the answer. Most assumptions will be somewhat unrealistic but will have small effects on the actual outcome of the answer.
- Example: to understand international trade, it may be helpful to start out assuming that 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.



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.

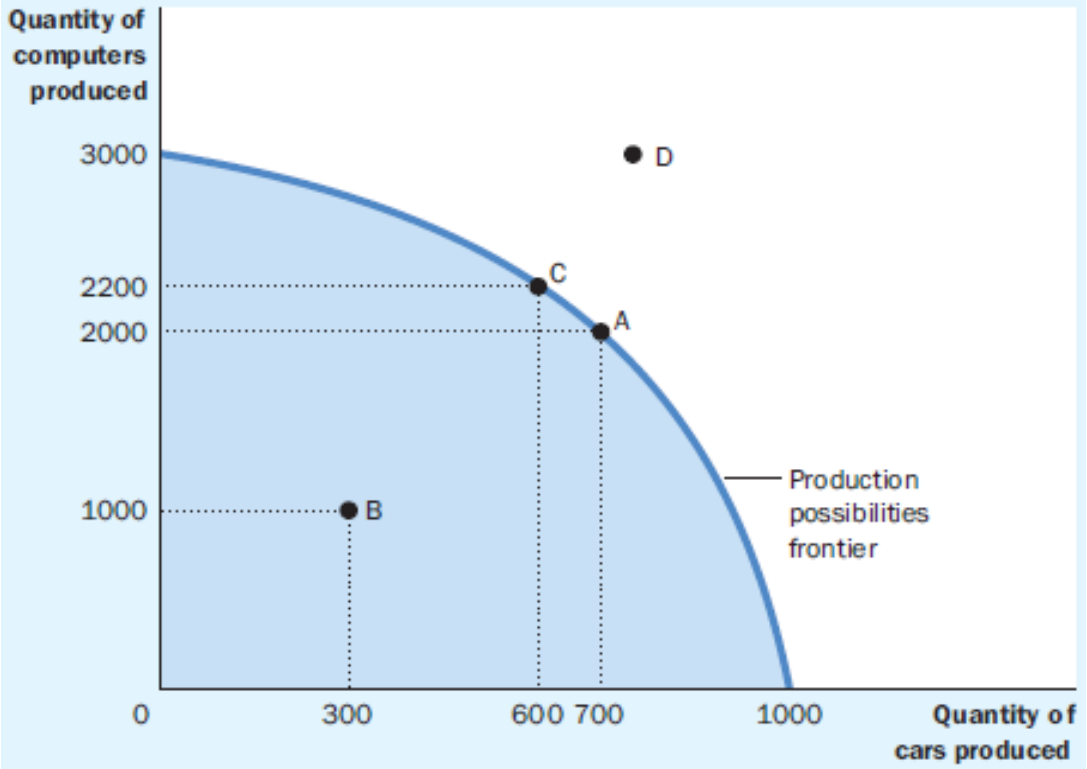
Spend more time with these first two models than you might think is necessary. Be aware that the maths skills of some of your students will be limited. It is important the students feel confident with their first graphical and mathematical model. Be deliberate with every point. If you lose them with 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.

- 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.

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.

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.

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

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.

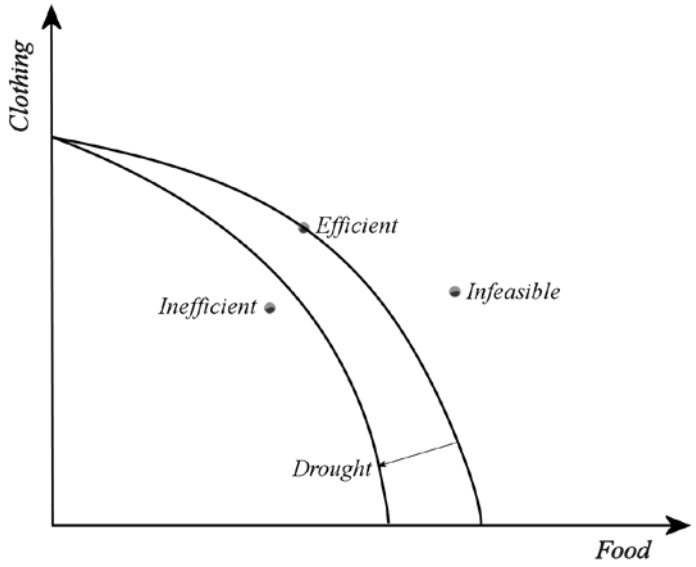
3 Have students bring in newspaper articles and, in groups, identify each statement in an editorial paragraph as being a positive or normative statement. Discuss the difference between straight news stories and editorials and the analogy with economists as scientists and as policy advisers.

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.

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.

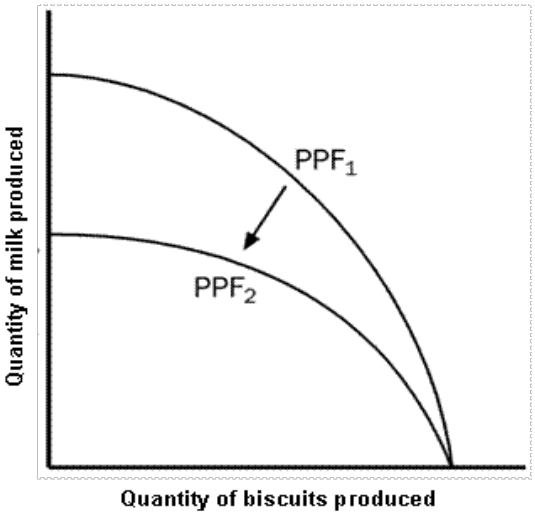
Include examples of other sciences that also use natural experiments. Ecology and astronomy can yield good case studies of this.

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.

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

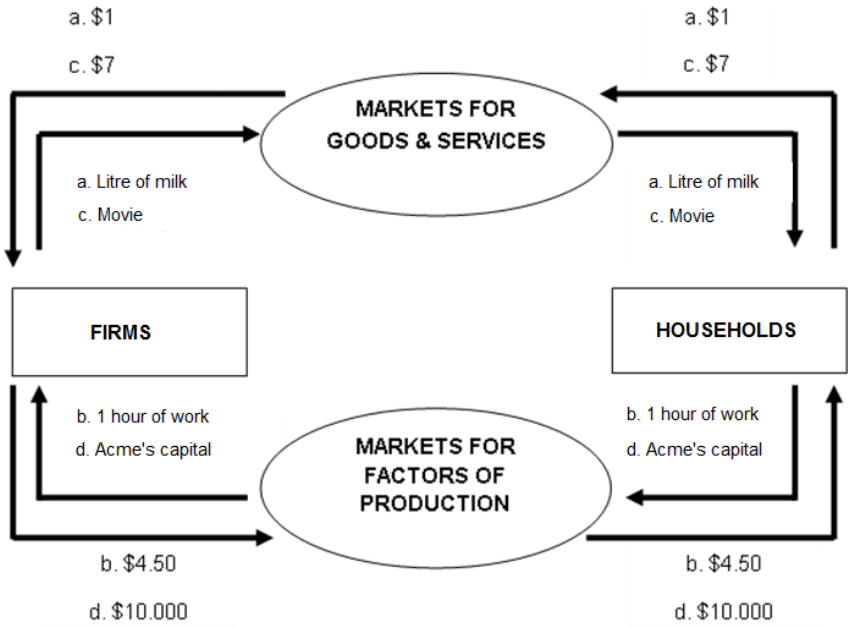
b Novels are each unique, so they are quite distinguishable.

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.

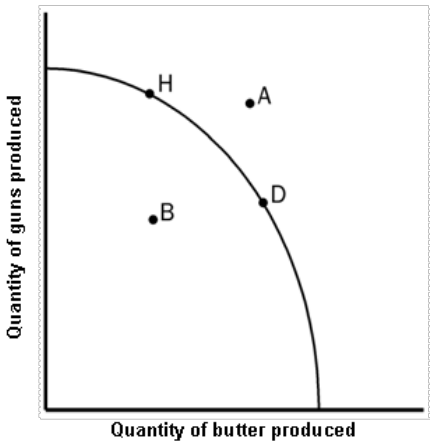
3 Figure 2.4; the four transactions are shown.

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



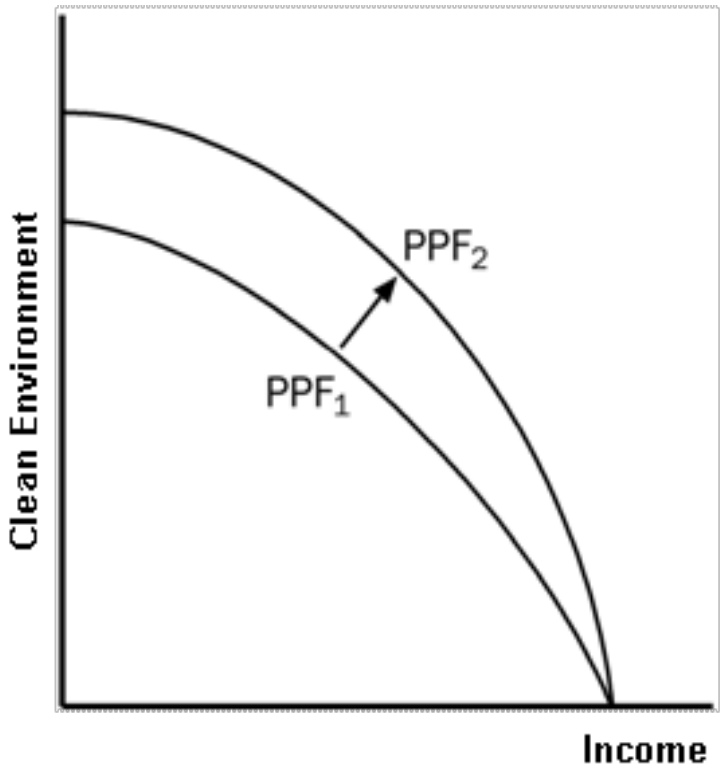
b Point A is impossible for the economy to achieve; it is outside the production possibilities frontier. Point B is feasible but inefficient because it's inside the production possibilities frontier.

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)

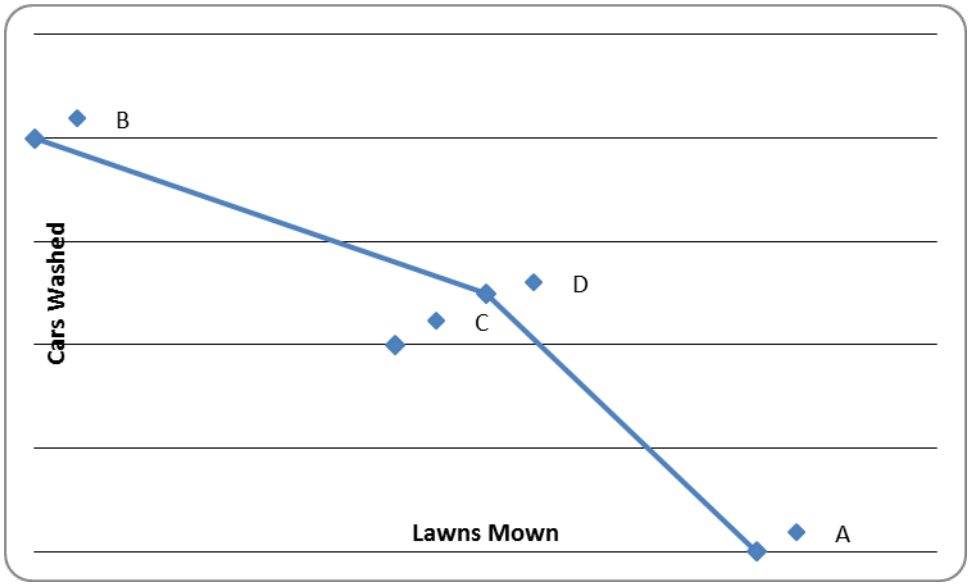
ii No lawns are mown and the workers wash 40 cars (Larry washes 10 cars, Moe washes 20 cars, and Curly washes 10 cars). (B)

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.

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.

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.