Economic scenarios

Chapter 2: Economic decision-making

SACE Subject Outline – Summary

Students explore production choices, using the production possibility frontier model to understand the conce of opportunity cost. They investigate trade-offs and factors influencing economic capacity.

Students consider decision-making using cost–benefit analysis, incorporating private, external and social cos and benefits.

Market outcomes are explored through the market structures of perfect competition, monopolistic competitio oligopoly and monopoly. The characteristics of these structures are considered, along with possible outcom for consumers and firms within these markets.

The production possibility model

Opportunity cost

Economics involves making choices regarding the allocation of resources. While our resources are limited, c wants are infinite. Choices regarding the use of resources must be made between competing wants. This issue what is known as the **basic economic problem**. Land could be used to graze cattle perhaps, but to do that t forest existing on that land would need to be cleared. Every decision, economic or otherwise, involves makin choice, and by deciding on one course of action, another possibility is being given up. We can say that opportur cost involves '**alternatives foregone**'. By reading this page you are losing the opportunity of sleeping, talki with friends, and countless other possible pursuits. Note that in economics this term 'cost' does not confine its to financial loss, but means any disadvantage. That, of course, may include a financial cost.

Resource classification

Resources in Economics can be divided into what we call the **factors of production, land, labour, capital a enterprise**.

- 'Land' refers to anything natural, for instance farming, grazing animals, fishing and forestry.
- 'Labour' is human effort.
- 'Capital' relates to something which has been created which can be further used in the production proce For instance, while forestry creates timber ('land'), a wooden table is a capital item. It has been produced a can then be bought for use in a restaurant to create a service and provide income for the owner.
- 'Enterprise' involves human effort, but goes beyond work. It is the innovation that the creator has taken to t market as a result of the time and research involved, considerable risk in raising the finance, and anticipati of market behaviour and likely demand. Playing Marvel's Spider-Man does not make you an entrepreneur, b creating a new genre of video game, which you finance, market and sell to consumers, does.

Whilst economic capacity depends on the maximisation of resource use, changes in the factors of producti can be inhibited by many factors, including the level of technological advance, environmental or climatic facto legalities, political inclinations, cultural or religious beliefs and the finite nature of some resources.

Assumptions

To understand opportunity cost, we make a simplification of the real world and draw the production possibi model, or graph. We base our analysis on two assumptions:

- Both resources and technology are fixed
- Only two combinations can be produced with the existing resources

Drawing the graph

Consider this example. Goods and services can both be plotted on a graph. This country, Econostan, could use its resources to produce 0 goods and 200 services, or put all of its resources into 100 goods, but provide no services. It is also possible to produce various combinations of both goods and services. This is shown on the next page.

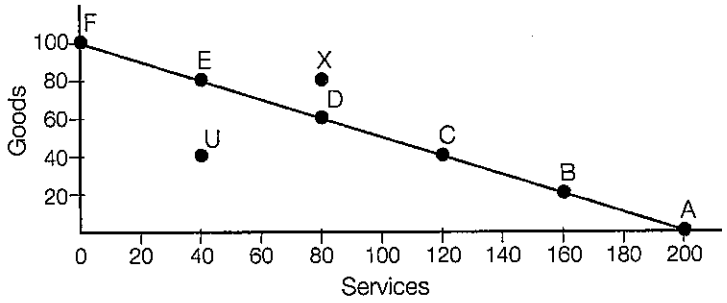

Figure 2.1: Production Possibility Curve for Econostan

Consider the graph.

The line joining the points A through to F is the production possibility frontier. It separates what is possible from what is not, and therefore we give the line itself the name 'frontier'.

Points A, B, C, D, E and F are various combinations that could be produced. At any of these points, Econostan is maximising its potential – it is producing at a combination which places it on its production possibility frontier. It is important to note that no one of these points is necessarily 'better' than another. At each of them **resource use is being maximised**.

What about point U?

This is the combination which Econostan may produce when consumer confidence falls and spending slows. You can see that the country is producing a combination of 40 goods and 40 services. It is operating well inside its potential. It could be producing more goods and more services to shift out to point D for instance. It has a high level of unemployed resources, meaning that **resources are being wasted**.

What about point X?

It is **impossible** for Econostan to be producing outside the frontier. The country cannot exceed its potential given its existing levels of resources and technology.

How does this model relate to opportunity cost?

There is always an opportunity cost involved if we are positioned on our production possibility frontier and we decide to increase production of either our goods or our services.

You can see in Figure 2.2 that to gain 40 services, 20 goods will be given up, as production falls from 100 goods to 80 goods.

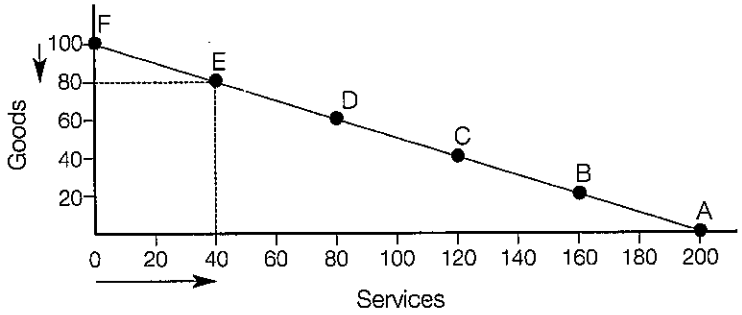

Figure 2.2: Opportunity cost of increasing the provision of services.

Note

When asked to calculate opportunity cost some students make the mistake of just giving the combination that could be produced rather than calculating what is given up. In other words, they would give the answer '80 goods' in the example above, which is the combination that could be produced with 40 services. But this is not what the question asks. What is being lost is 20 goods (100 – 80).

Activities

1. (a) Outline the economic use of the following terms:

- opportunity cost

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- production possibility frontier

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(b) State the assumptions upon which we base use of the production possibility curve.

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(c) Draw the production possibility frontier that arises from the combinations provided below.

Consumer goods	100	80	60	40	20	0
Capital goods	0	10	20	30	40	50

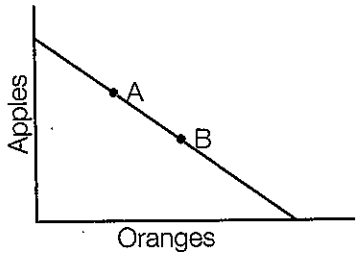
Hint: Keep these points in mind when you are drawing graphs:

- Use an equal interval for your scale. If you are using intervals of 10, for instance, don't write 0, 10, 20, 60, 80, 100.
- Always label each axis to show what it is you are plotting.
- Don't forget a title for your graph.

(i) What is the opportunity cost of increasing the combination of 40 consumer and 30 capital goods to 80 consumer goods, while still maximising resource use? Show this with arrows on the graph you have drawn.

(d) Look at the graph which follows.

(i) Is it better to be producing at point A or point B? Explain your answer.



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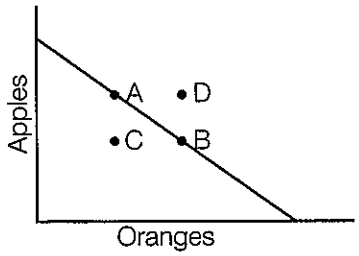
Activities

(ii) Referring to the graph which follows, is a wastage of resources occurring at point A, B, C or D? Explain your choice.



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(iii) Consider the graph above. What point is unobtainable given present levels of technology and resource use?

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Give a reason for your opinion.

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(e) Construct a production possibility model from the information which follows.

Food	0	1	3	5	6
Machinery	12	10	6	2	0

(i) Mark on the diagram the combination of 2 units of food and 4 units of machinery. Call this point A on your graph.

What can you say about a country producing this particular combination of food and machinery in terms of efficiency?

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(ii) The demand for food remains the same, but demand for machinery increases to 6 units. Mark this combination on your curve and call it point B.

Comment on the movement from point A to point B. What does it mean?

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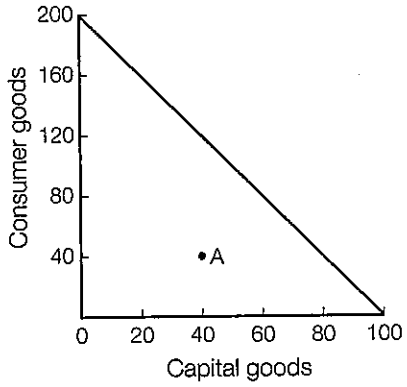
Activities

(f) Circle the correct answer which relates to the following graph.



The opportunity cost of increasing the production of 40 consumer goods at point A to 80 consumer goods is:

J 40 capital goods

K 40 consumer goods

L 20 capital goods

M nil, as there is no opportunity cost.

(g) You go to the movies on Saturday night with your friend.

(i) What was the opportunity cost of this decision for you?

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(ii) Will the opportunity cost for going to the movies always be the same? Explain.

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(iii) Is the opportunity cost the same for your friend? Explain.

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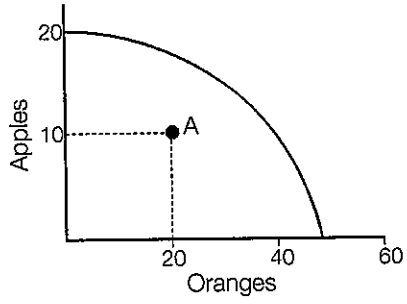
(h) Consider the graph below.



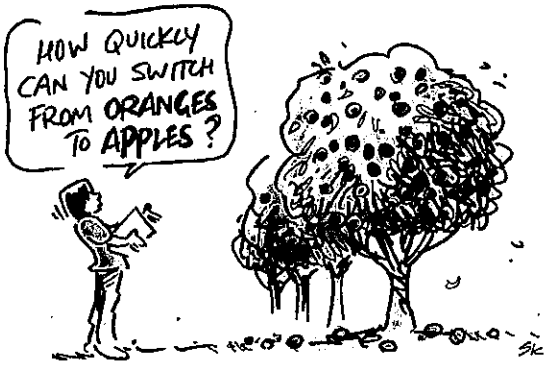
There is an increase in demand for apples. The opportunity cost of doubling apple production would be:

J 20 oranges

K 40 oranges

L nothing

M impossible to calculate.



Changes in the production possibility frontier

What happens if we relax our assumptions? If there is a change in resources or technology, our potential will change, maybe for both of the items being plotted, or perhaps just one.

This can be seen on the graph below, where scientific research has developed a new, higher-producing variety of apple. On the original land, the farmer could potentially produce 100 apples (and 0 oranges), or 200 oranges (and 0 apples). After the new development, the land could still produce 200 oranges (and 0 apples), but now the potential maximum for apples has increased to 200.

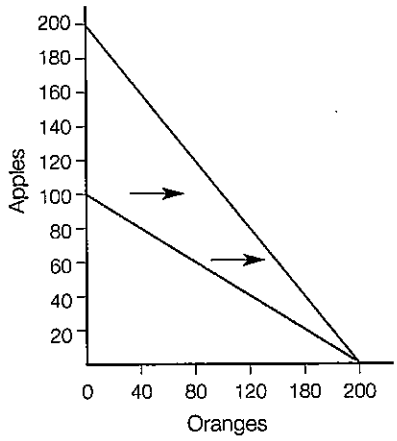


Figure 2.3: Potential output after technological development benefits apple production

More examples relating to a change in potential are shown below.

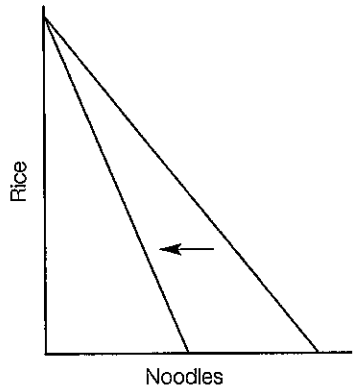


Figure 2.4: Noodle-worms destroy half the noodle crop

The potential for noodles will fall, but the potential for rice will not increase, as we had already ascertained how much rice could be produced if no noodles were produced.

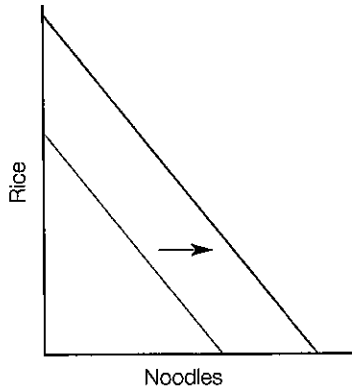


Figure 2.5: Agricultural land is reclaimed from the sea

Now there is more land, a resource, which means that more rice as well as more noodles could potentially be produced.

The effect of demand upon the production possibility frontier

Does demand change potential? Just because consumers may wish to purchase more apples or oranges, doesn't mean that more resources or technology exist to increase the potential maximum for these fruits.

Thus a change in demand **does not change potential**. It causes a change in the combination being produce – a movement along or within the existing frontier.

Note that in the examples that follow, the frontier is not a straight line. This is irrelevant to the principle of opportunit cost. It simply means that the opportunity cost will vary at different points of production. The principle remains th same. If operating on the frontier, it is not possible to increase production along one axis, without experiencing loss along the other. This is because resource used is being maximised at any point of operation along the frontie In the graph below you can see that an increase in production of consumer goods from point A would incur a los of capital goods.

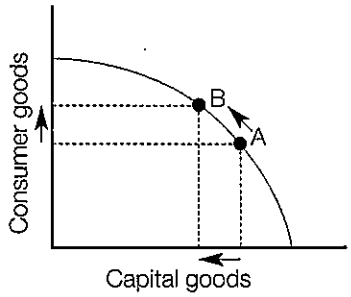


Figure 2.6: An increase in demand for consumer goods

Consider the graph in Figure 2.7. If Oodnawoopwoop was operating at point C, and there were significant ta cuts which created extra demand for both consumer and capital goods, Oodnawoopwoop could produce mor of both capital and consumer goods and move out to point D. There is no opportunity cost in this case, as th country's available resources and technology were not being fully utilised at point C.

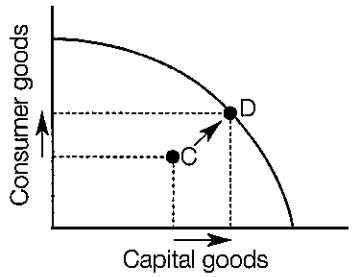


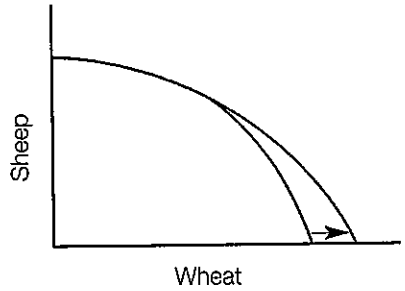
Figure 2.7: An increase in demand when resources are not fully utilised

Note

The key question to ask when trying to work out if the whole frontier changes is 'does the potential change'? If it does, either by a change in resources or technology, then a new curve will result. If it doesn't then there will just be a movement between different points on or within the existing curve.

Activities

2. (a) What is the most likely reason for the movement in the graph below?



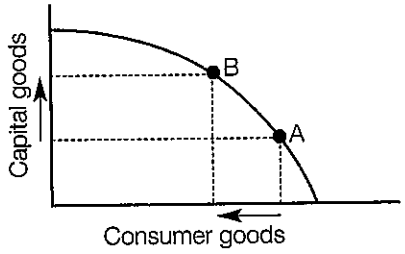
J increased consumer demand for wheat

K discovery of a new high-yielding wheat variety

L a virus sweeping through the sheep flock

M a shift in producers' preference from sheep to wheat.

(b) Consider the graph below.



The movement from A to B could have been caused by:

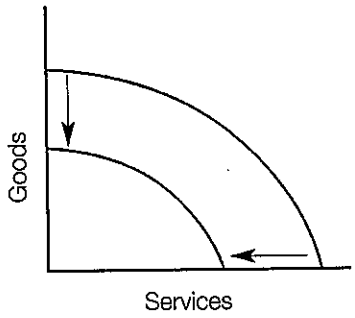
J a switch in demand from consumer goods to capital goods

K a switch in demand from capital goods to consumer goods

L an improvement in the technology of producing capital goods

M an increase in resources suitable for the production of capital goods.

(c) Consider the graph below.



A movement in the production possibility frontier as shown could have been caused by:

J a fall in demand for both goods and services

K technological advances in the production of both goods and services

L population increase

M a major earthquake.

Activities

(d) (i) From the information provided below draw a production possibility curve.

Bananas	0	10	20	30	40	50
Peanuts	150	140	120	90	50	0

Farmer Finnegan reclaims land from a swamp. It is perfect for growing bananas, but not peanuts. The potential for bananas changes and possible combinations now are as follows:

Bananas	0	20	40	55	70	80
Peanuts	150	140	120	90	50	0

(ii) Use a different coloured pen to show the new combination of bananas on the graph you have constructed for part (i).

(iii) Now, what has happened to the potential output of peanuts?

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(iv) Give an example of something which could cause a shift in the frontier in relation to bananas (remember the two key points which cause a change in potential and try to apply them to this example).

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(v) Suggest something which would cause the entire frontier for peanuts to move to the left.

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(vi) On the graph, mark the combination of 80 peanuts and 30 bananas. Call this point A.

(vii) Comment on Farmer Finnegan's efficiency at point A.

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(viii) It is discovered that peanuts have the potential to increase life expectancy. Will this shift the production possibility frontier for peanuts? Explain.

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(ix) Farmer Finnegan decides to respond to this news by increasing peanut production from 80 to 150 units. Is this physically possible? Explain.

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(x) Farmer Finnegan changes his production combination from point A to 30 bananas and 90 peanuts. Label this point B.

Activities

(xi) Comment on the opportunity cost involved in this move.

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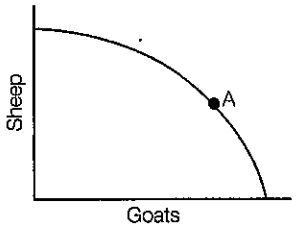
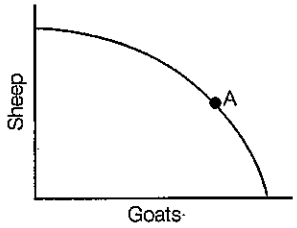
(e) Respond to the scenarios given below by drawing a new graph for each scenario.

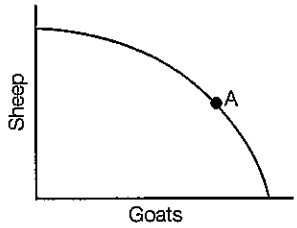


Note that point A on the graph shows the combinations that are currently being produced.

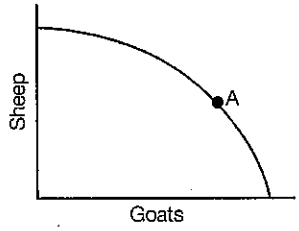
(i) outbreak of severe sheep disease



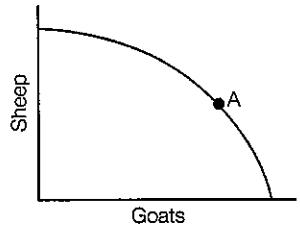
(ii) the high-fat content in lamb is said to contribute to obesity



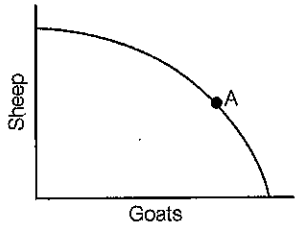
(iii) the price of goat meat rises



(iv) forests are cleared for agriculture



(v) goat cloning discovery is announced.



Note

Remember to ask yourself: does the potential change? If it does, a new curve results. If it doesn't, there will just be a movement along or within the existing frontier.

The concept of trade-offs

We all make trade-offs on a daily basis. You might stand at a cafe counter considering what to buy. You really fancy a muffin, but while waiting to be served, think that it would be healthier to have an apple. You opt for the muffin. You have traded off the health benefits of the apple for the taste of the muffin. You have created an opportunity cost. By choosing the muffin you have lost the opportunity on that occasion to have an apple. It is the alternative you have foregone. The opportunity cost is the loss of the next best alternative, which, to you in this example, is an apple.

Consumers, firms and government all make trade-offs, and thus incur opportunity costs. A government, for instance, might decide that the cost of free mass-vaccinations during a flu epidemic is worth the short-term financial cost of providing the vaccines. They have traded off a financial disadvantage in the short term with a potential societal health benefit, and fewer hospitalisations (and costs), in the long term.

The constraints we experience relating to time and money, along with other factors such as the state of technology and legalities, influence our decisions. Trade-offs are many and varied, and go far beyond the world of economics. By shortening our arms and standing us on two legs, we have experienced an evolutionary trade-off, in that we have lost the ability to swing between trees like our chimpanzee cousins while we have gained the benefits which developed our evolutionary superiority over the animal world today.

Trade-offs are linked with cost–benefit analysis, and will be considered later in this section.

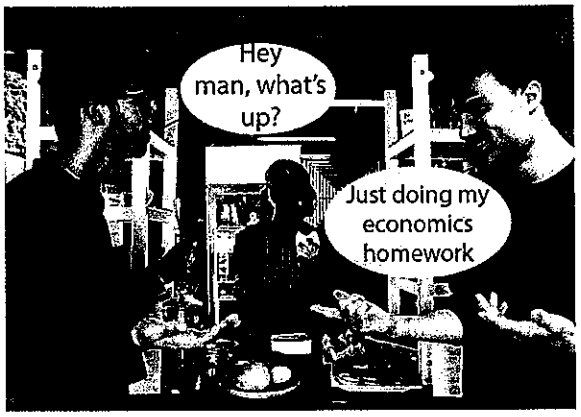
Activities

3. Inquiries

(a) Trade-offs lend themselves to memes.

Get with a friend and create a meme regarding the economic concept of trade-offs relating to individuals, firms or government. Send it to your teacher for sharing in class. (You may need to include a brief explanation.)

Here is an example, published with permission of the secondary-school creators.



(b) Work in small groups to analyse trade-offs in relation to one of the following decisions:

(i) The federal government's compulsory superannuation scheme.

(ii) The state government's free tram travel within the Adelaide CBD.

(iii) The Adelaide Oval Stadium Management Authority's building of a hotel alongside the stadium in the city's parklands.

(iv) The state government's decision to allow fishing in Adelaide's reservoirs.

(v) The government's decision to start up the desalination plant in Adelaide so that more Murray River water will be available in the drought-stricken eastern states.

Brainstorm the topic, then find evidence and credible sources to identify the trade-offs and validate your opinion, providing a brief reason as to whether or not you agree that the major trade-offs were justified.

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Changes in economic capacity

While economic capacity depends on the maximisation of resource use, as shown by our production possibility frontier, changes in the factors of production can be influenced by many situations, including the level of technological advance, environmental/climatic changes, legalities, political inclinations, war, migration, cultural or religious beliefs and the finite nature of many resources. Whilst countries wish to increase their potential and improve the standard of living of their citizens, this is often not readily achievable.

As well, there is the issue of sustainability to consider, and what degree of capacity improvement can be achieved without detrimental environmental, social or cultural impacts.

Activities

4. Inquiry – Influences on economic capacity

Compare the income over time of a high-income country with a less developed country.

Examples of high-income countries include the USA, Norway, Switzerland, Qatar, Australia, German Ireland and England. Low-/middle-income countries include Somalia, Zimbabwe, Mozambique, Syri Iraq and Pakistan.

Use the data you have found to construct a graph showing the trends in income over time of bot countries. Gapminder.org is a useful resource, but display your results in a different format from othe you see on a website.

Investigate several influences on resource use and development which have impacted on eac country's economic growth over time, in either positive or negative ways.

You will possibly find that more than one issue is present.

Now explain why these issues have occurred. Use statistical evidence to support your argument If negative, were they avoidable? What of the future?

Cost/benefit analysis

To further consider the issue of trade-offs, cost/benefit analysis provides a more comprehensive framework to assist in effective decision-making. We divide the benefits (advantages) and costs (disadvantages) into several categories.

- **Private** costs and benefits are experienced by the decision-maker. For instance, if taxes are increased, the decision-maker would be the government.
- **External** costs and benefits are experienced by those affected by that decision, other than the decision-maker. From our example above, workers would be one group that would be affected by increased taxes.
- **Social** costs and benefits refer to the broadest group: society as a whole. If taxes are raised, workers will have less personal disposable income, thus spending in the economy may fall, decreasing economic growth. We try to combine private and external costs and benefits to see the effects on society as a whole. Governments and other decision-makers should try to come to a decision based on whichever plan has the highest ratio of social benefits to social costs.

Difficulties using cost/benefit analysis

If all costs and benefits had numerical values it would be relatively straight-forward to calculate the ratio of social benefits to social costs. However, many advantages and disadvantages do not have monetary values assigned to them. Some of the major issues in using the cost/benefit approach are outlined below.

Identification

Even identifying the costs and benefits can be difficult. Will the building of a new coastal marina cause sand erosion problems further along the coast? Will the erection of a wind-farm harm a rare bird species?

Measurement

Some costs and benefits are difficult to measure in monetary terms. What value should be assigned to how the noise from an Adelaide Oval concert affects neighbouring residents? What is the value to the government of allowing fishing in the state's reservoirs?

Time

Some benefits and costs do not become apparent for years after a project has commenced. Danger regarding the cladding used on some major South Australian buildings was only realised after a major fire in an apartment block in England caused 72 deaths, prompting many governments to test the quality of buildings under their own jurisdictions.

Distribution

What is a benefit to one person may be a cost to another. The noise from Adelaide Oval, referred to previously, might be abhorrent to one nearby resident, but a delight to another. Whose opinion is more important? How do you decide?

Activities

5. Outline the meaning of the following terms in Economics:

   (a) Private cost or benefit

   .....

   (b) External cost or benefit

   .....

   (c) Social cost or benefit

   .....

6. Read the article[1] and answer the questions that follow.

Relaxation of cannabis laws has mixed effects

A number of states in the United States of America have legalised the use of cannabis, with upw of 600 cannabis retail stores in Colorado alone. Annual sales in that state total more than $1 billi Specialists in addiction medicine have recorded a spike in emergency department presentatio because there is no control on the potency of the drugs that are on the market. In Colorado, the pote of THC, the active ingredient, tends to be considerably higher than the cannabis grown in Australia.

While there has been a significant drop in arrests for cannabis possession since the laws w changed in 2014, there has been a significant increase in violent crime. At this stage, however, th has been no investigation into whether there is a correlation between that increase and the relaxat of the cannabis laws.

1 This article has been compiled from several media reports.

   (a) Who experiences the private costs and benefits of the decision to relax the laws on canne use? Suggest a cost and a benefit this group might experience.

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   (b) Suggest several groups who might experience external costs and benefits from the decis Who might gain and who might not?

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   (c) Do you think the social benefits would outweigh social costs as a result of the relaxation of laws? Justify your viewpoint.

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   (d) Identify and explain two reasons why it could be difficult to use a cost/benefit analysis for issue (the relaxation of cannabis laws).

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Activities

7. Look back to question 3(b) (page 23) in relation to trade-offs, and see if you can improve your response to the same issue. This time use the categories relating to private, external and social costs and benefits.

   Note your points below.

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