

MFP SET

Lecture 4

An economist's view of costs

Case studies

- Due in tutorials on Thursday, 9th March
- Odd numbered groups will turn in the assignment this week and be responsible for leading discussions in tutorials

Tradeoffs

- Tradeoffs: the basis for opportunity costs
 - What do you have to give up to get something else
- The existence of tradeoffs are a measure of efficiency – if a firm faces tradeoffs, then it can't produce more of one thing without giving up something else

Efficiency

- Efficiency is the relationship between what an organisation produces & what it could feasibly produce
- Two reasons for inefficiency
 1. Waste: X-inefficiency
 2. Allocative inefficiency

X-inefficiency

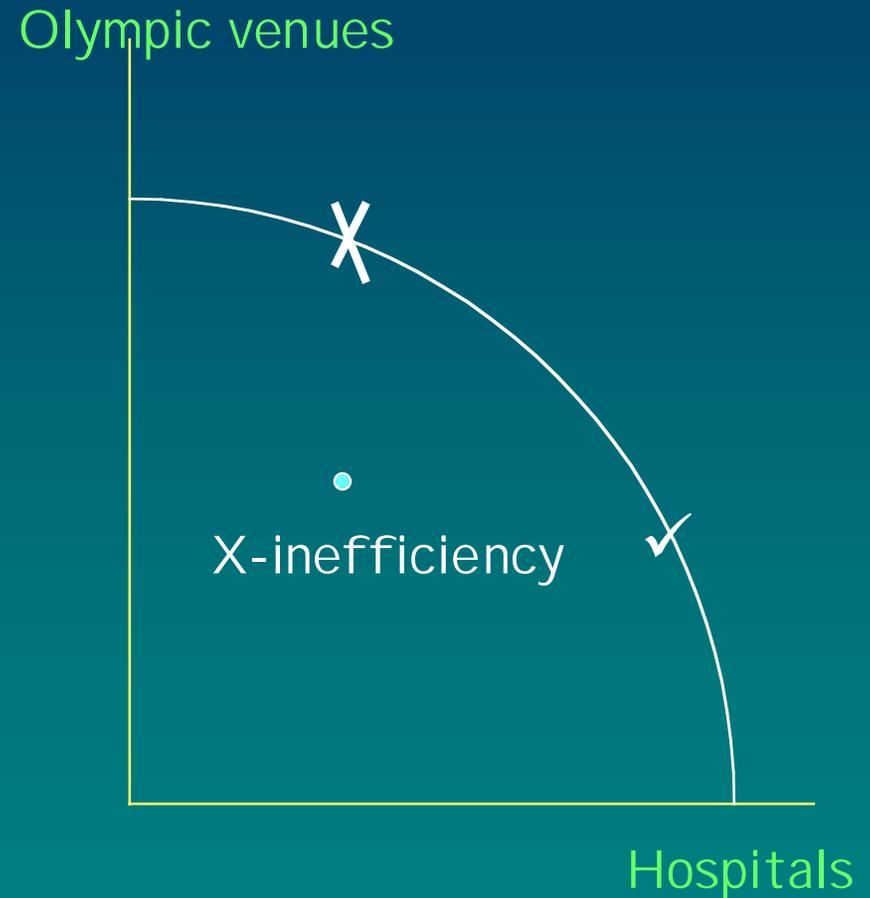
- Also called technical inefficiency: when more resources than required are used to produce a given quantity of output
- Indicates that more could be produced *without* giving up anything

Allocative inefficiency

- Allocative inefficiency occurs when someone can be made better off without making someone worse off
 - Resources are allocated inefficiently when firms are producing goods that consumers don't necessarily want
 - Can occur even if firms are producing those goods efficiently

A diagrammatic view of inefficiencies

- X-inefficiency can be represented as being *inside* the production possibility frontier
- Allocative inefficiency is represented as being in the wrong place on the frontier



Economic decision-making

- What is the process of economic decision-making?
 1. Define your objectives – what is your goal?
 2. List the options available
 3. Choose the option that best meets your objective

How to choose the appropriate option

- Using the logic of costs-benefits (what Maital refers to as cost-value logic), answer these questions
 - What am I giving up?
 - Is it worth more or less than I am gaining?
- A good choice matches costs - what am I giving up - with the value of what you gain

Examples of tradeoffs

- To increase production, should we hire more labour or buy more capital equipment? Or smaller amounts of both?
- As an employer, do you want to provide more incentive for your employee, thus increasing his/her risk, or do you want to provide less risk, thus reducing incentives?

Two sides to question

- Technology: what is the most efficient way to produce the product?
 - Depends on technology
 - Depends on input prices
- Preferences: what do consumers prefer?
 - Depends on tastes, income, location

Comparative advantage

- *Comparative advantage* is the ability of one firm (country) to produce a good at a lower opportunity cost than another
 - Holds even if one produces *all* goods more cheaply
 - Relies on opportunity cost to determine which producer is lower cost
 - Is the reason why specialisation leads to greater consumption possibilities

Two examples

- How should a relatively unproductive worker or plant or division be used, if at all?
- Should countries impose tariffs, quotas or other barriers to trade?
 - Why do most economists agree that free trade is optimal?

An example

- Suppose that Australia & Japan both have 100 units of labour to devote to production of cars & wheat and that labour is the only input
 - Suppose that it takes 4 units of labour to produce a car in Australia, and 3 units of labour to produce a tonne of wheat
 - Suppose that it takes 1 unit of labour to produce a car in Japan, and 2 units of labour to produce a tonne of wheat

Absolute advantage

- Given the numbers in the example, Japan is said to have an *absolute advantage* in the production of both goods – it can produce both goods at a lower absolute cost (using fewer resources) than Australia
- Does this mean that Australia should produce nothing?

Using opportunity costs

- Consider Japan – in order to produce an additional car in Japan, $\frac{1}{2}$ tonnes of wheat needs to be sacrificed
 - It takes 1 unit of labour to produce a car, and 2 units of labour to produce a tonne of wheat
- In order to produce an additional car, Australia must sacrifice $1 \frac{1}{3}$ tonnes of wheat

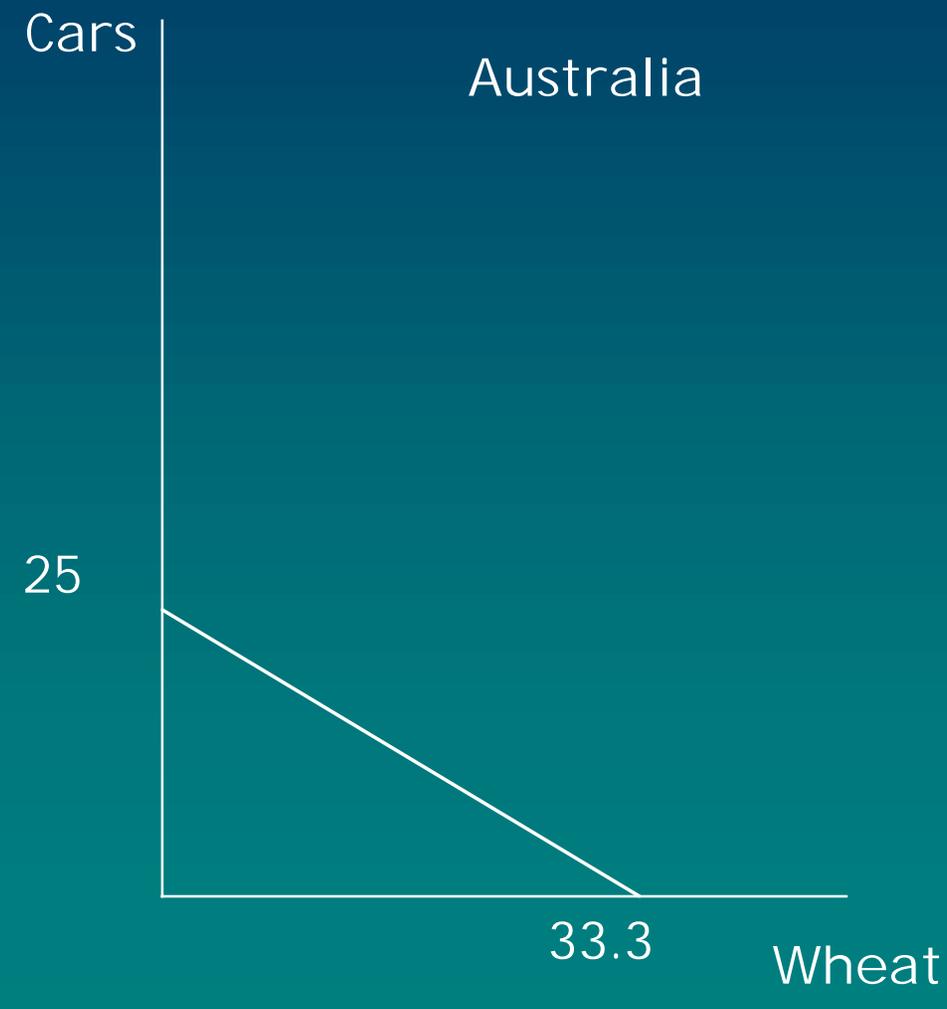
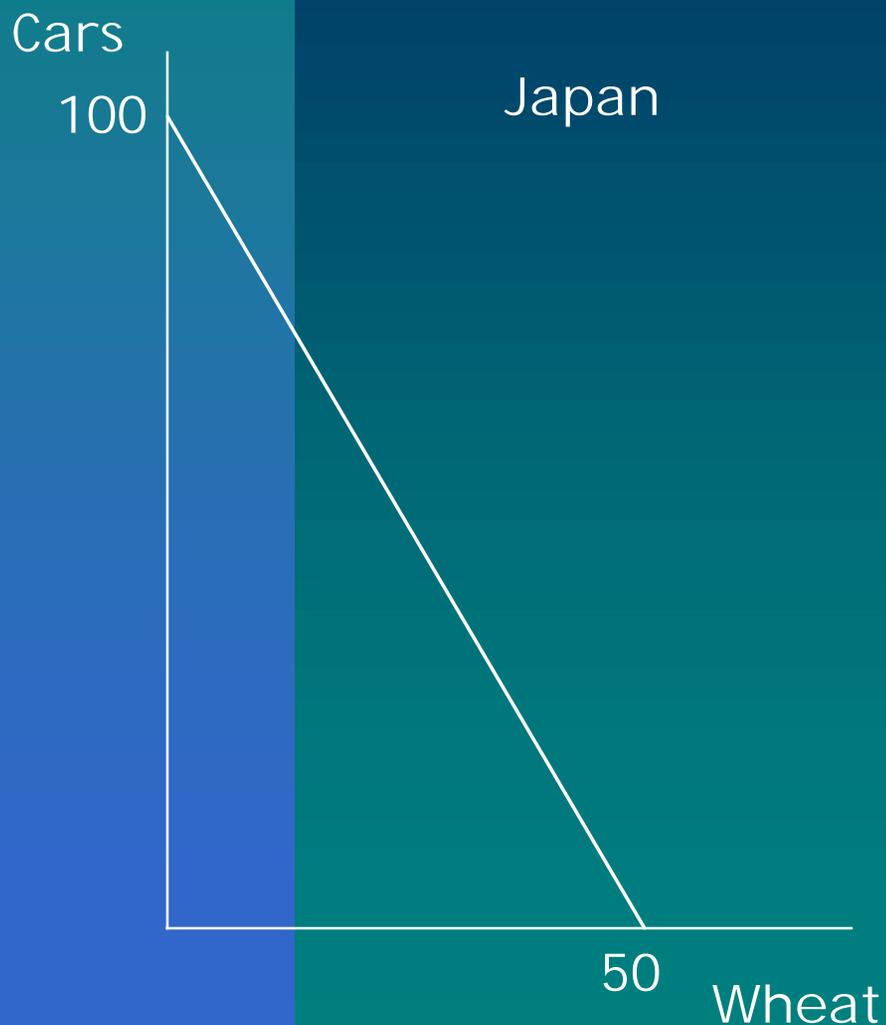
Opportunity costs

	Japan	Australia
Cars	1/2 tonne of wheat	1 1/3 tonnes of wheat
Wheat	2 cars	3/4 cars

What does opportunity cost tell us?

- Cars are relatively inexpensive in Japan, while wheat is relatively expensive
- Wheat is relatively inexpensive in Australia, while cars are relatively expensive
- Conclusion: Australia should produce wheat, Japan should produce cars

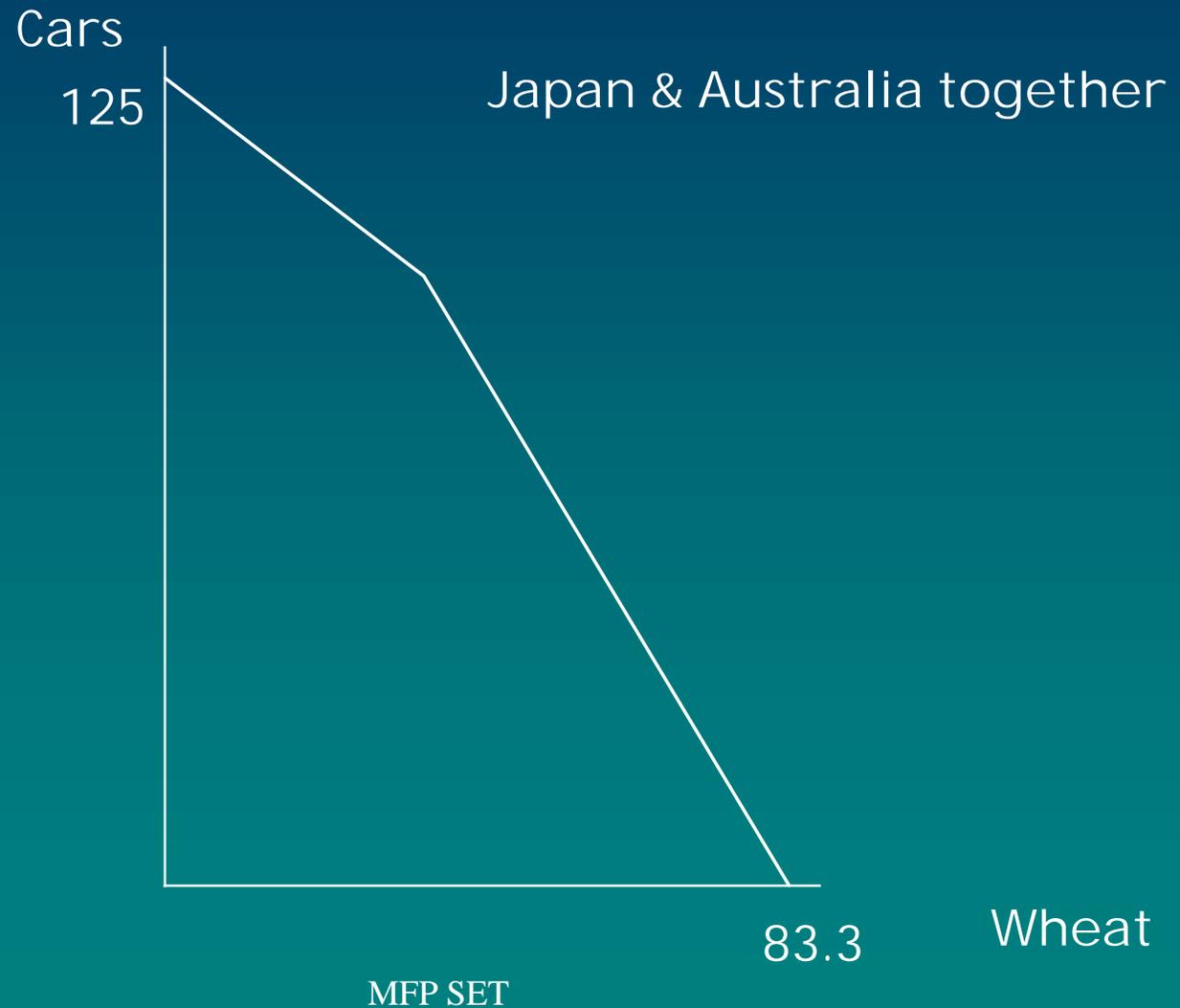
Production possibility frontiers



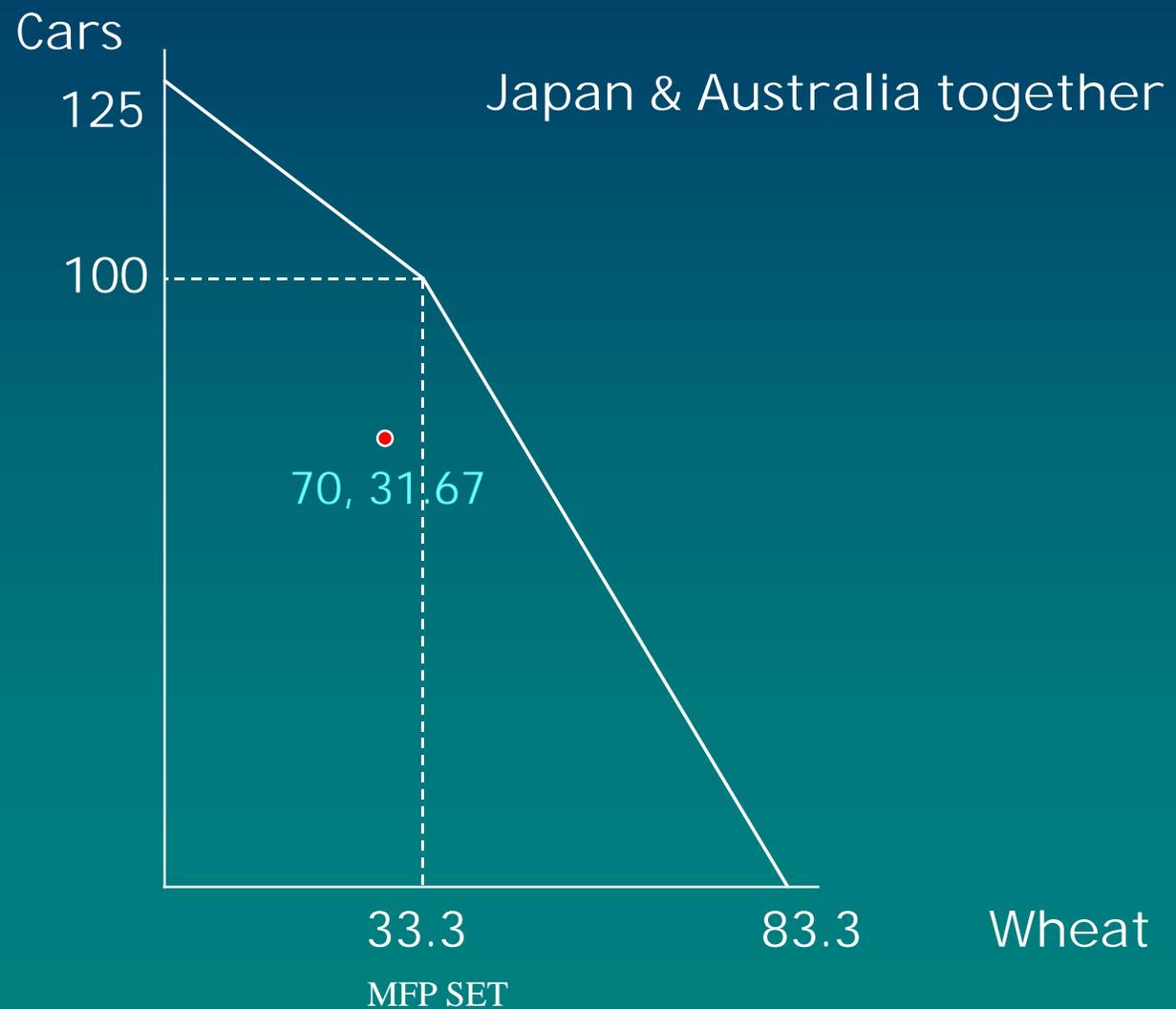
Consumption prior to trade

	Japan	Australia	Total
Cars	50	20	70
Wheat	25	6.67	31.67

Combined production possibilities



Consumption possibilities



Consumption after specialisation & trade

	Japan	Australia	Total
Cars	74	26	100
Wheat	26	7.3	33.3

Accountants vs economists

- Both want to provide managers with information about the cost of doing business to help them make decisions in the company's best interest
- Accountants (usually) consider only explicit costs
- Economists also consider implicit costs

Explicit and Implicit Costs

- A firm's cost of production include explicit costs and implicit costs
 - *Explicit costs* involve a direct money outlay for factors of production
 - *Implicit costs* do not involve a direct money outlay

Economic profit vs accounting profit

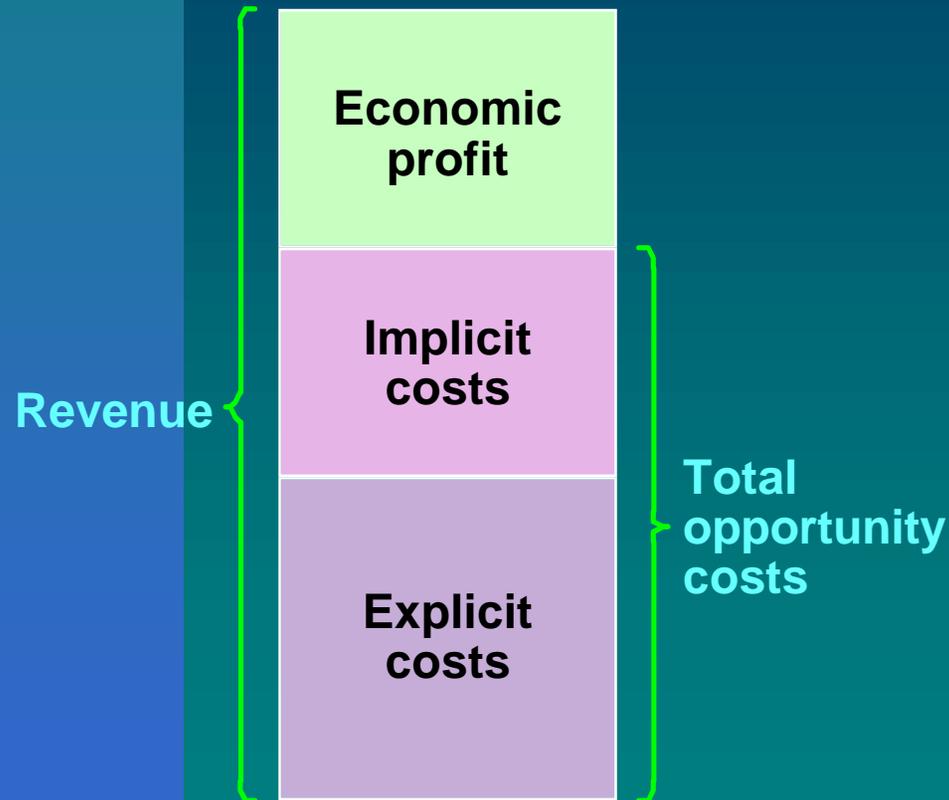
- Economists include all opportunity costs when measuring costs
- Accountants measure the explicit costs but often ignore the implicit costs

Economic profit vs accounting profit

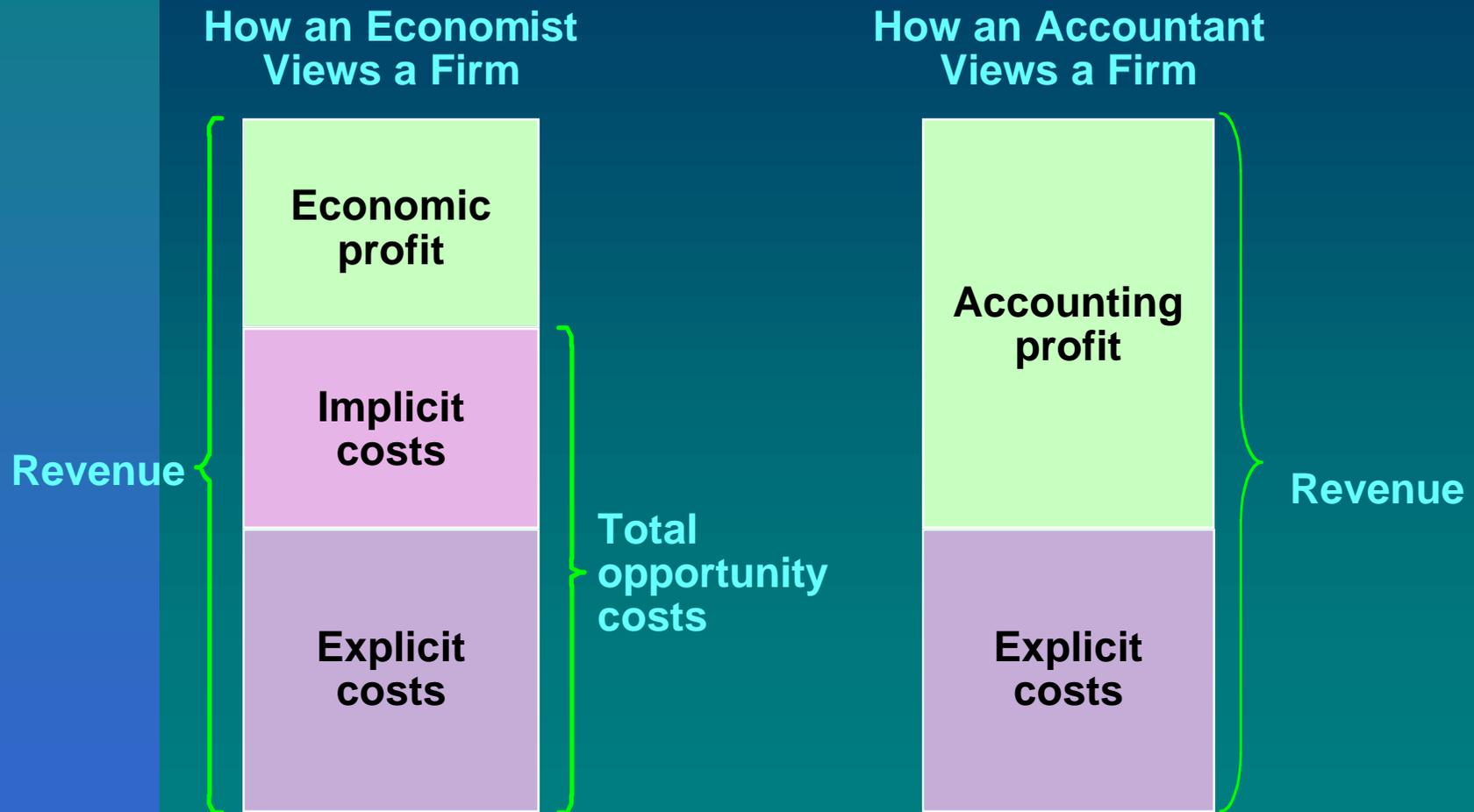
- When total revenue exceeds both explicit and implicit costs, the firm earns *economic profit*
 - Economic profit is smaller than accounting profit
 - Economists count a normal rate of return (the value of the next best use of the resource) as a cost

A comparison of economic & accounting profit

How an Economist Views a Firm



Economic Profit versus Accounting Profit



Which costs are relevant?

- Two ways to determine relevant costs
 - Sunk vs incremental
 - Fixed vs variable
- Sunk costs: a prior expenditure that does not affect any current decision
- Incremental cost: a cost that is associated with any decision about a future course of action

Fixed vs variable

- Fixed cost: a cost that does not change with the level of activity or output
- Variable cost: a cost that varies with the level of activity or output
- Sunk or fixed costs are irrelevant
- Incremental or variable costs are relevant

Time

- Short run costs vs long run
 - In the short run, certain costs are fixed because certain factors of production are fixed
 - Examples:
 - ✦ Capital equipment
 - ✦ Labour?
 - ✦ Leases on buildings

Long run

- How long is the long run?
- How long does it take to vary all factors of production?
 - There are no fixed factors in the long run

The production function

- The *production function* shows the relationship between quantity of inputs used to make a good and the quantity of output of that good
- The *marginal product* of any input into production is the increase in the quantity of output obtained from an additional unit of that input

$$\text{Marginal product} = \frac{\text{Additional output}}{\text{Additional input}}$$

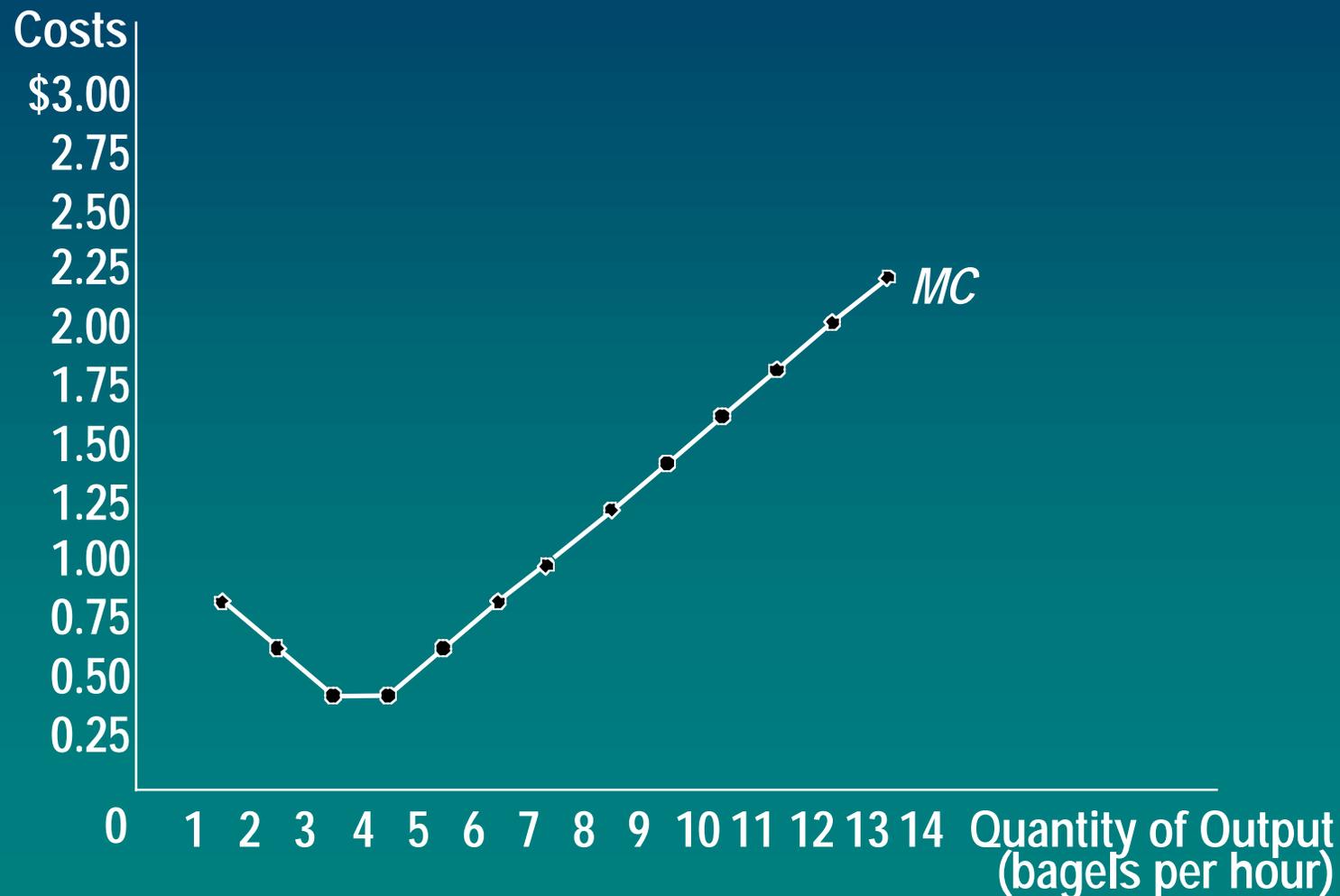
Diminishing marginal product

- *Diminishing marginal product* is the property that the marginal product of an input declines as the quantity of the input increases, holding other inputs constant
 - Example: As more and more workers are hired at a firm, each additional worker contributes less and less to production because the firm has a limited amount of equipment

Marginal cost and marginal productivity

- Marginal cost rises with the amount of output produced
 - At low levels of output, an increase in production will occur at a relatively small cost
 - Increasing output is more costly when the amount being produced is already high – this is due to the existence of diminishing marginal productivity

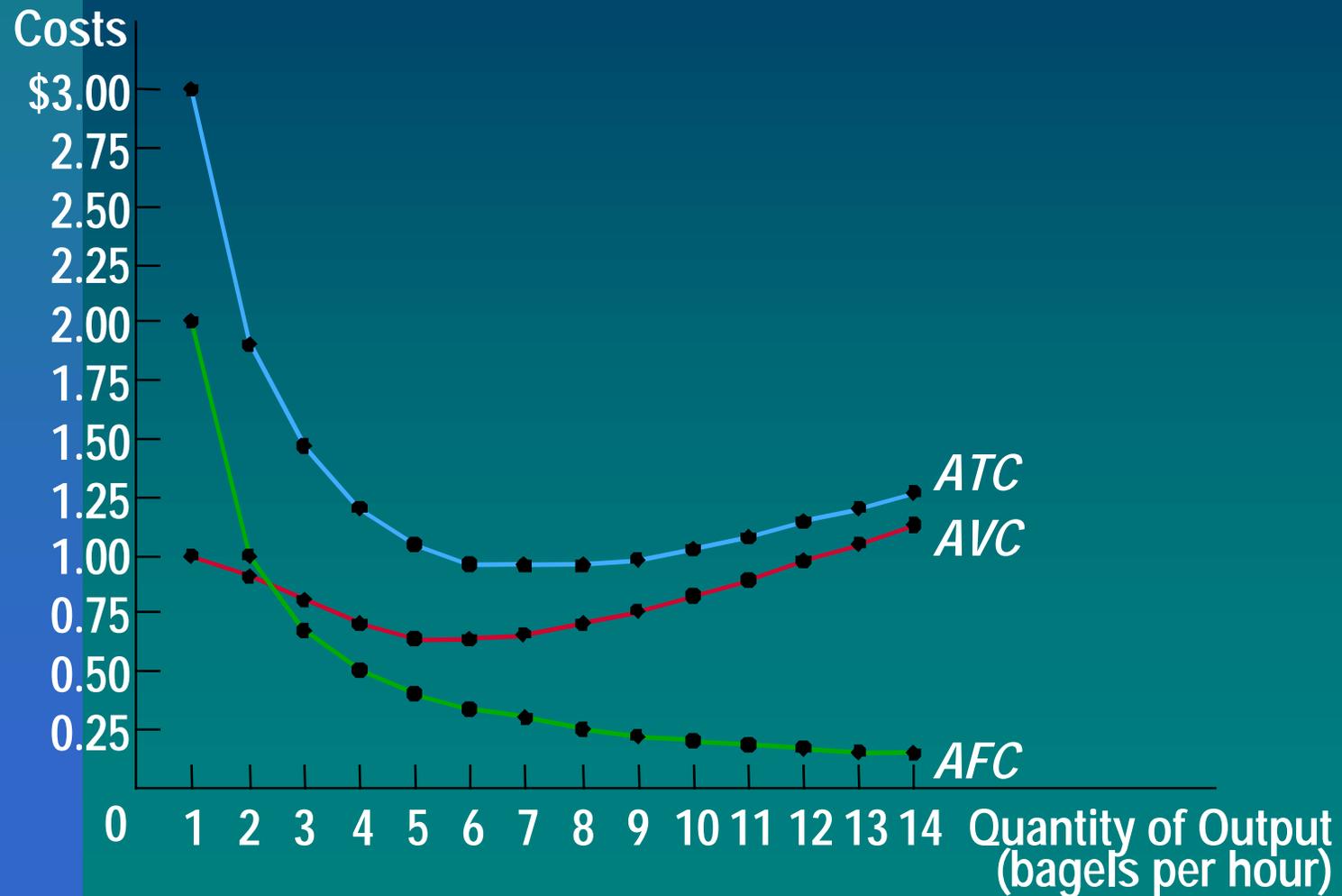
Marginal cost curves



Definitions of cost concepts

- Total cost: $TC = TFC + TVC$
- Average fixed cost: $AFC = TFC/Q$
- Average variable cost: $AVC = TVC/Q$
- Average total cost: $ATC = TC/Q$
 $= AFC + AVC$
- *Marginal cost: $MC = \Delta TVC / \Delta Q$
 $= \Delta TVC / \Delta Q$

Average cost curves



Relationship between marginal cost and average total cost

