

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

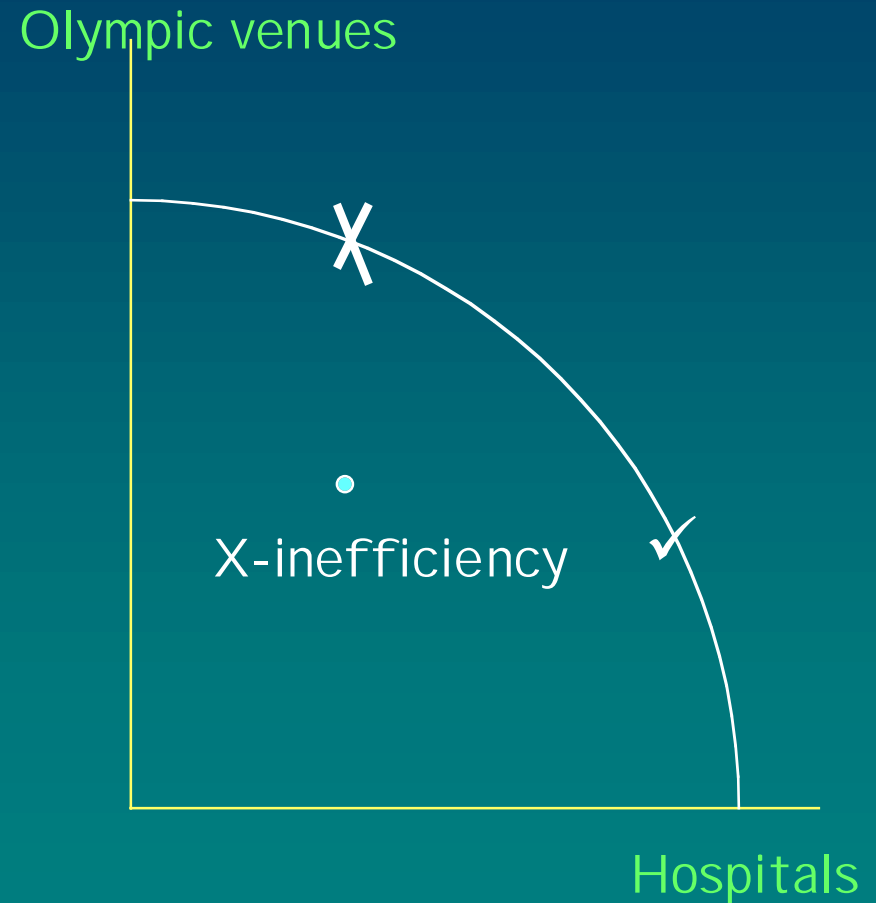
- Also called technical inefficiency: when more resources than required are used to produce a given quantity of output
- Indicates that more could be produced *without* giving up anything

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

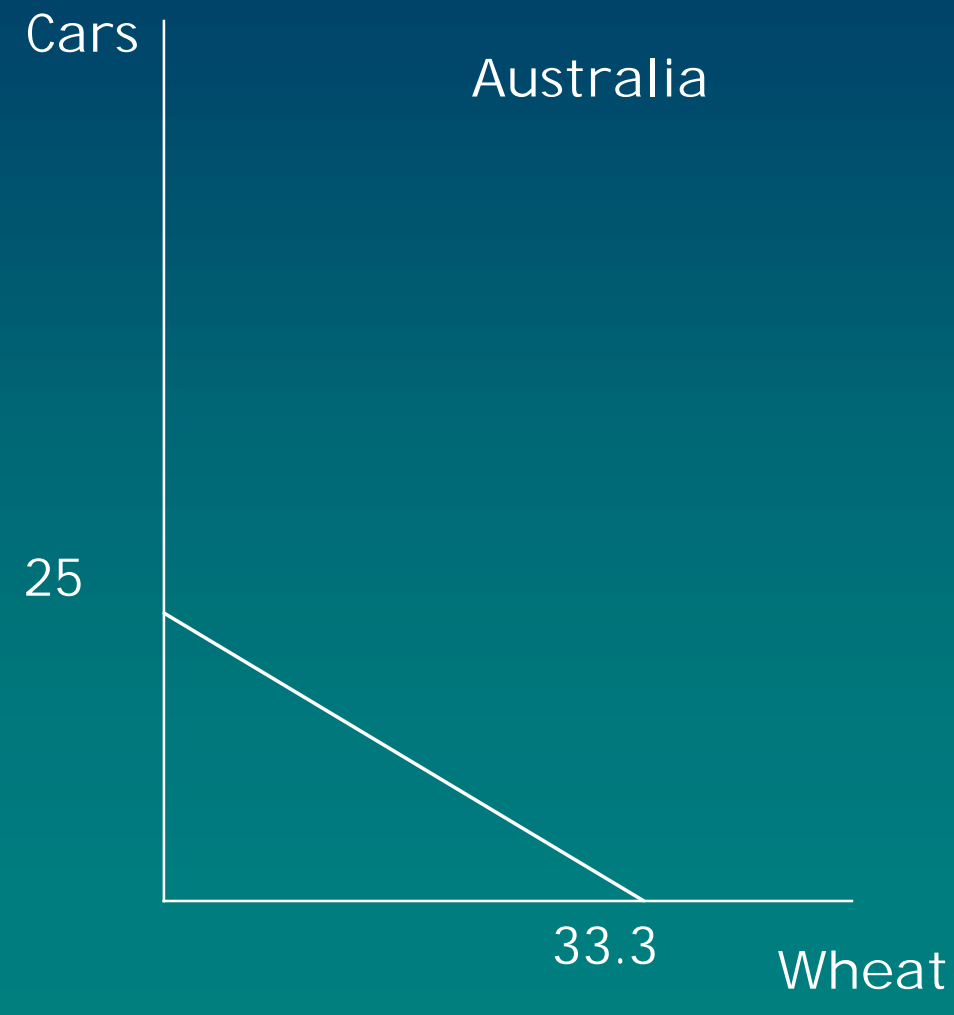
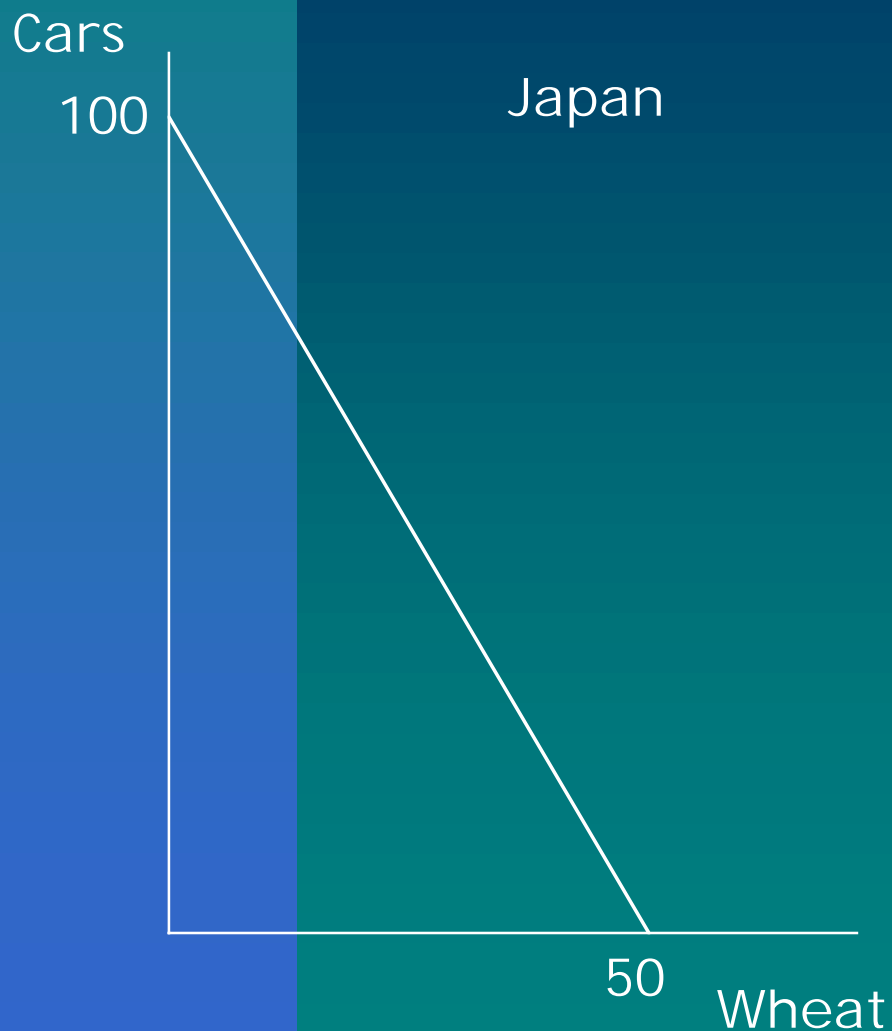
Opportunity costs

| | 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

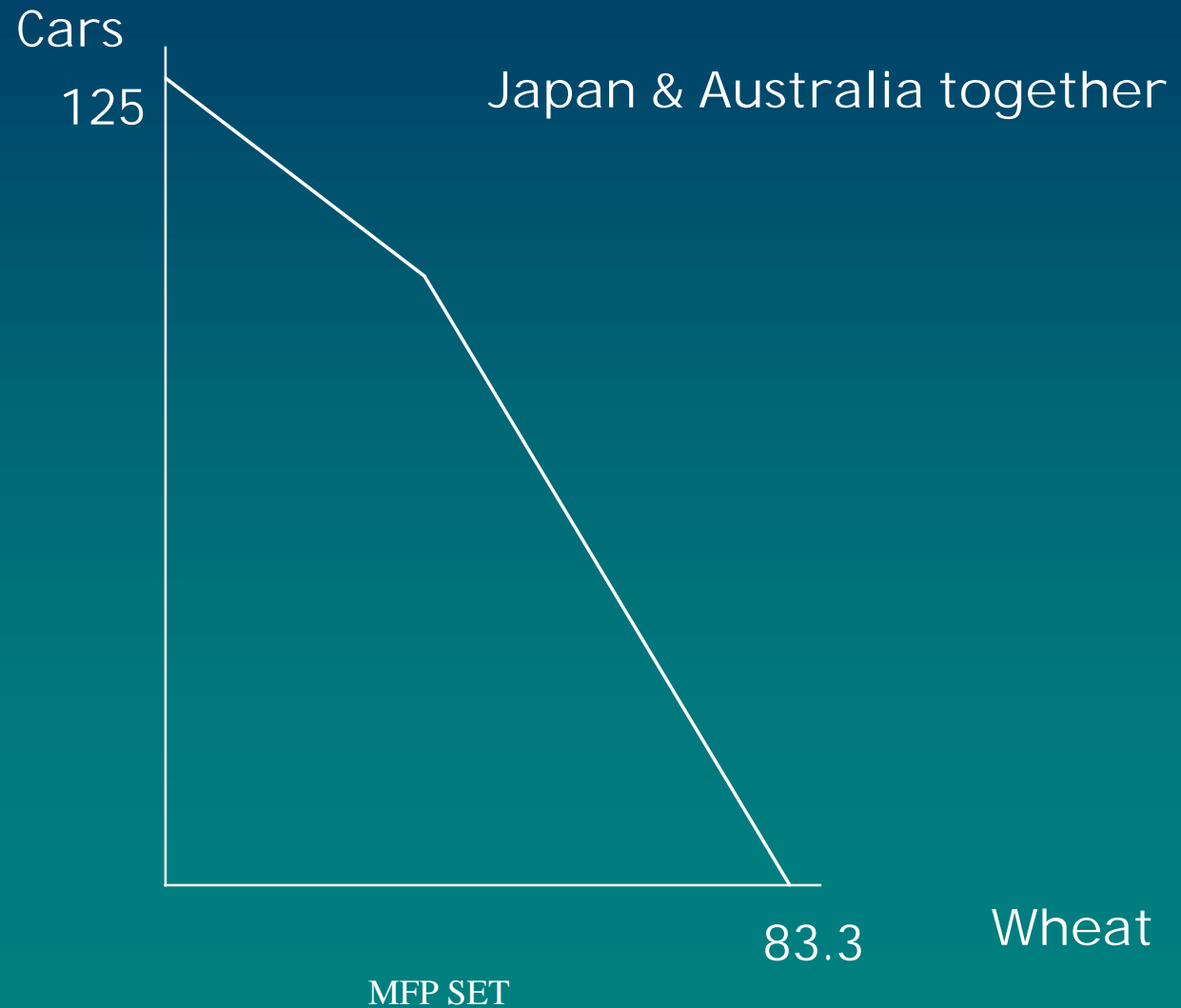
Production possibility frontiers



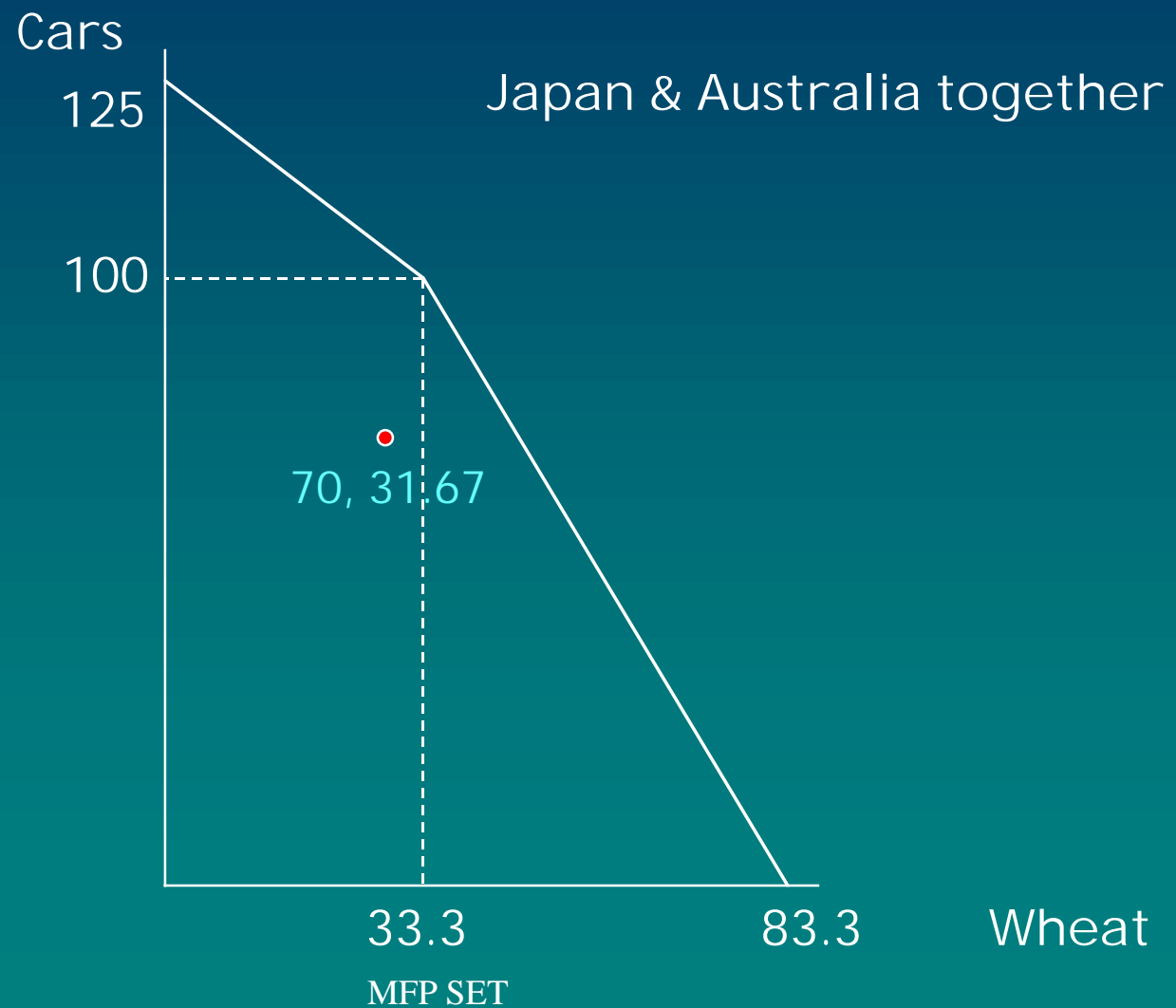
Consumption prior to trade

| | 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

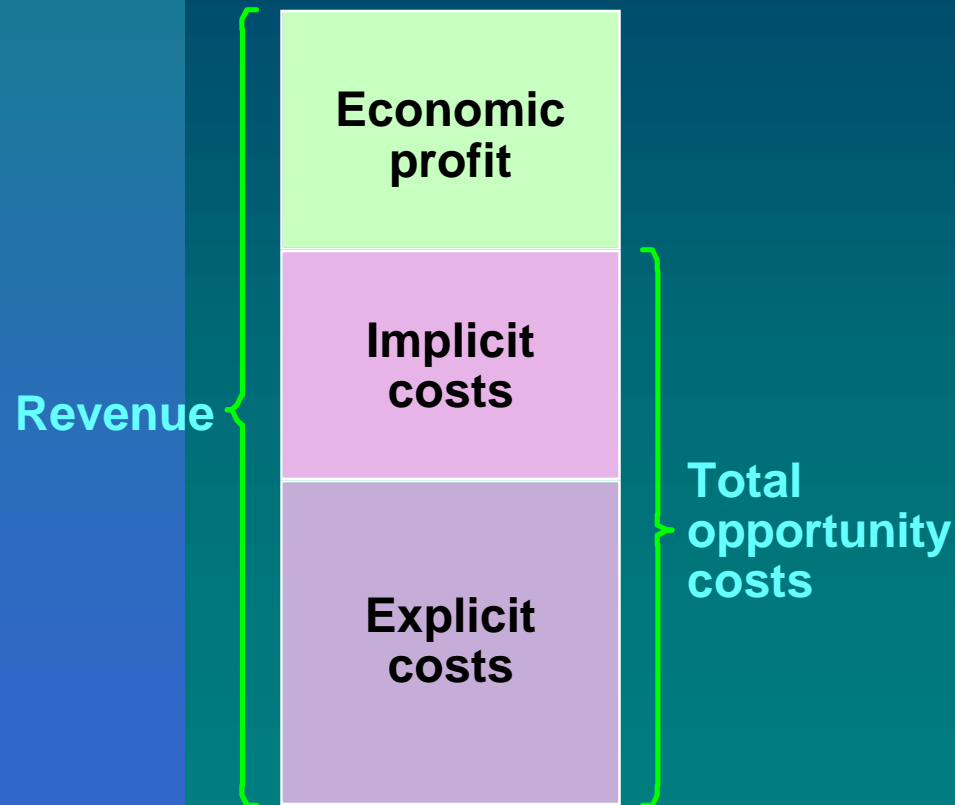
- Economists include all opportunity costs when measuring costs
- Accountants measure the explicit costs but often ignore the implicit costs

Economic profit vs accounting profit

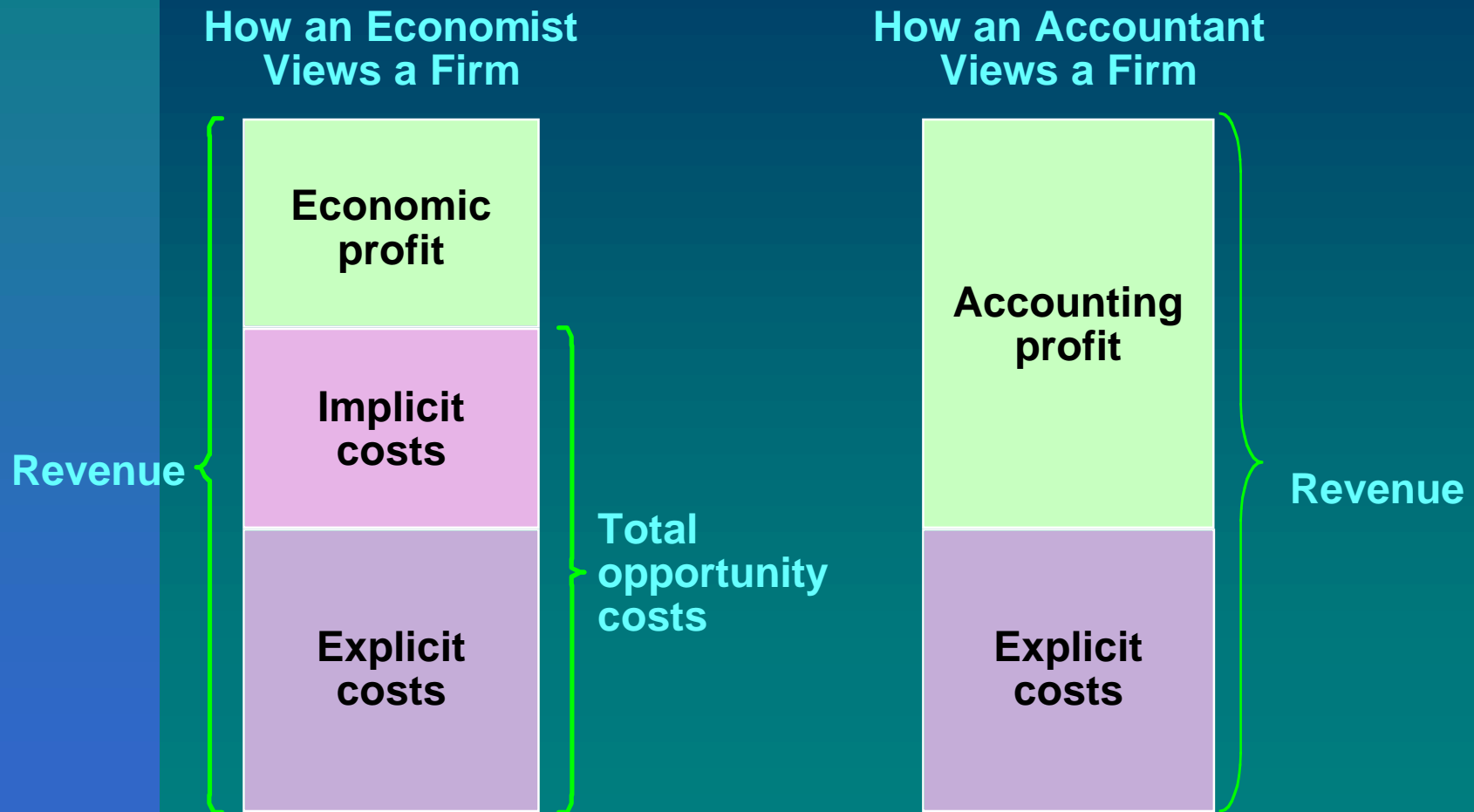
- When total revenue exceeds both explicit and implicit costs, the firm earns *economic profit*
 - Economic profit is smaller than accounting profit
 - Economists count a normal rate of return (the value of the next best use of the resource) as a cost

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

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

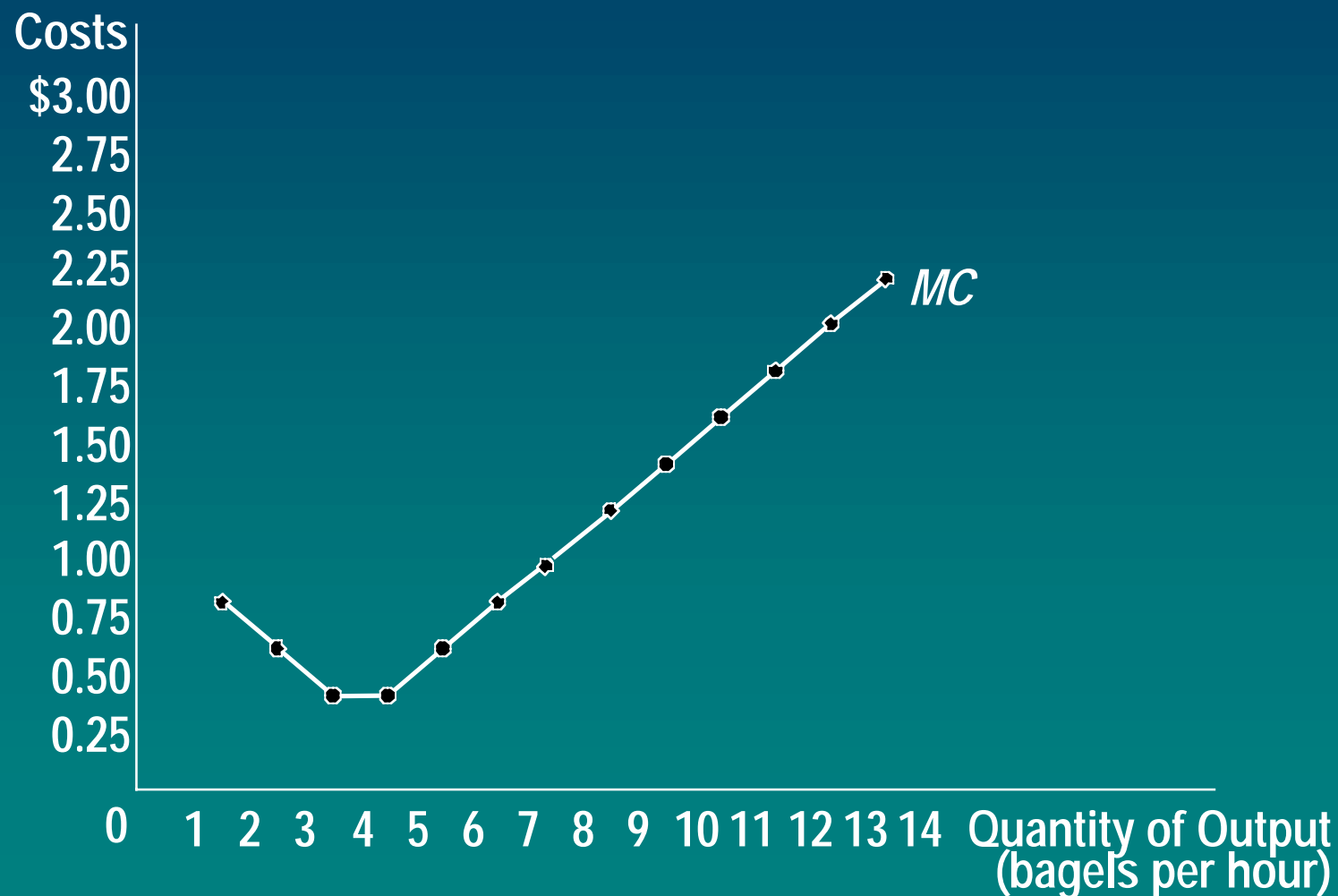
Diminishing marginal product

- *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

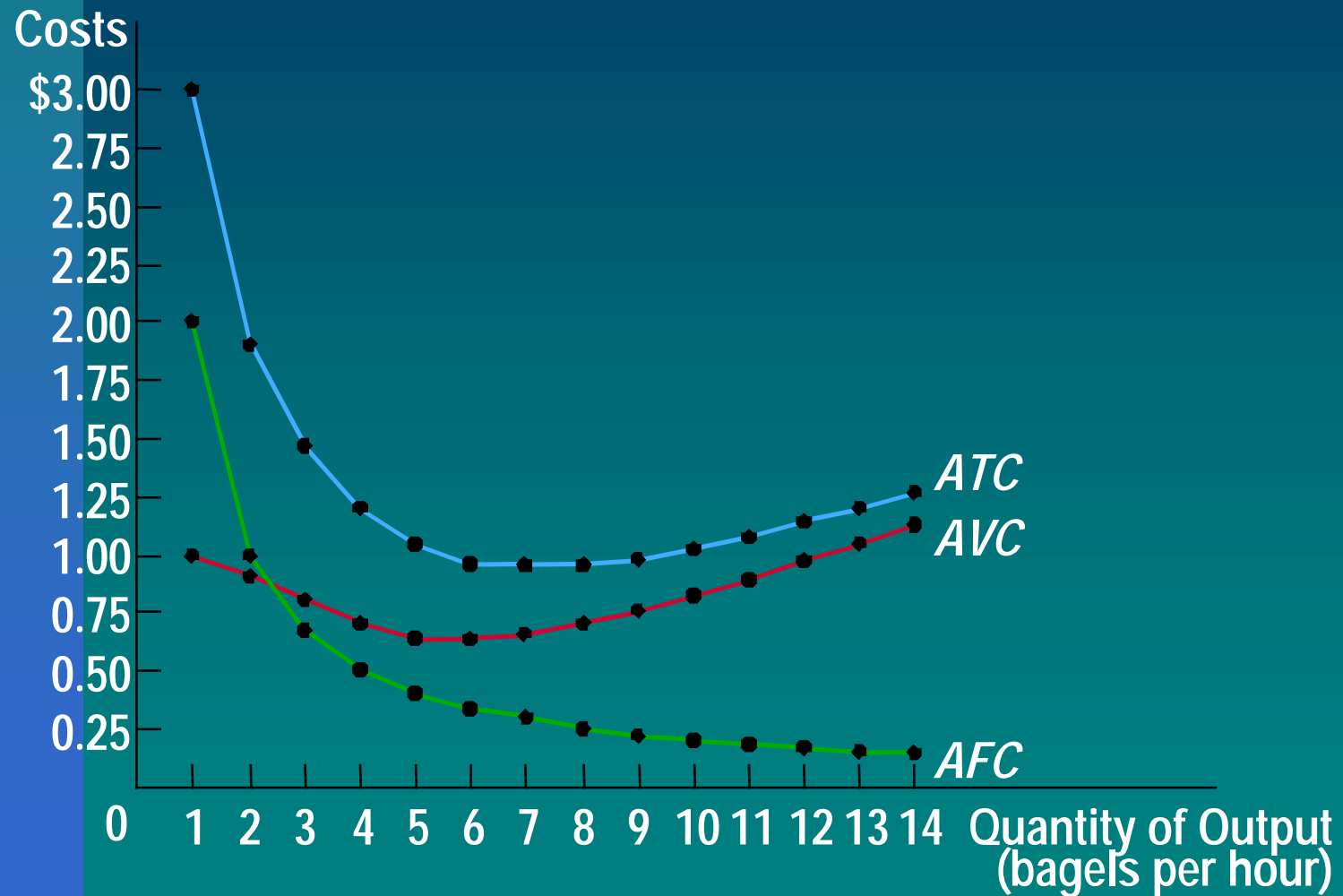
Marginal cost curves



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

