

## Intermediate Microeconomics

### Chapter 7 The Firm and Its Goals

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## Decisions of firms

- What should it produce?
  - How should it produce its output?
  - How much should it sell and for what price?
  - How should it promote the product?
- ⇒ the answers to these questions determine the behavior of the firm as a supplier in the goods market and demander in the inputs market

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## Economic profit

- *Total revenue* = sum of payments that the firm receives from the sale of its output
- *Total economic cost* = firm's total expenditure on the inputs used to produce the output, where expenditures are measured in terms of opportunity cost ⇒ different from "accounting" costs, which usually underestimate economic costs
- Economic profit = Total revenue – Total economic cost

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## User cost of capital

- Depreciation = fall in the value of an asset over a defined period of time
- User cost of capital = opportunity cost that an owner incurs as a consequence of owning and using an asset (e.g., depreciation + forgone interest)

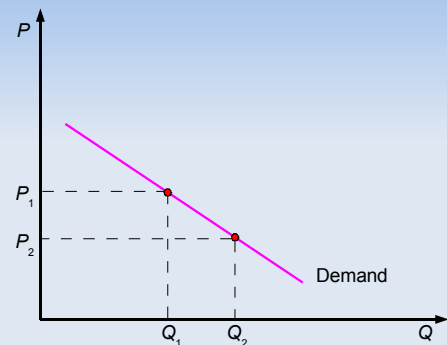
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## Total revenue curve

- Firm-specific demand curve = schedule showing the quantity of a single firm's output demanded for any price charged by that particular firm
- Total revenue curve = schedule showing the relationship between a firm's output level and the resulting amount of revenue
- The firm-specific demand curve includes all the information needed to derive the total revenue curve

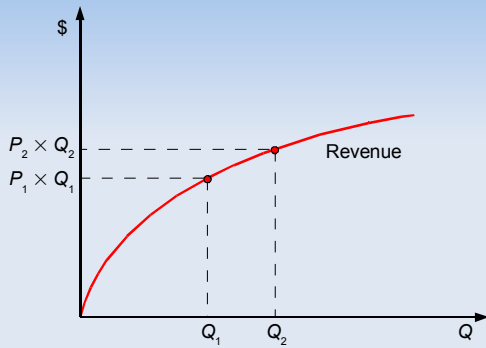
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## Firm-specific demand curve



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## Total revenue curve



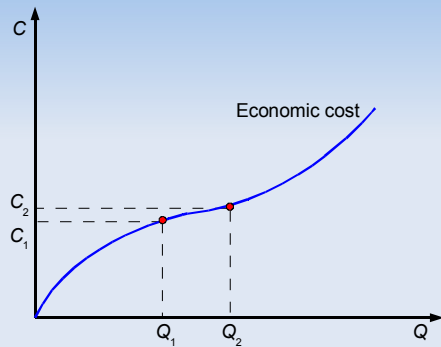
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## Total economic cost curve

- Total economic cost curve = schedule showing the relationship between a firm's output level and the resulting level of economic cost
- Factors kept constant:
  - factor prices
  - technological possibilities
  - product characteristics

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## Total economic cost curve



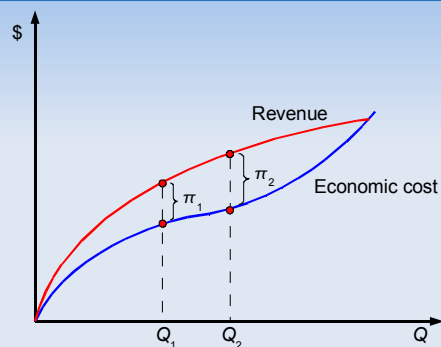
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## Maximizing profit

- Profit function = algebraic or graphical relationship between a firm's output level and its resulting profit level
- Factors kept constant:
  - factor prices
  - technological possibilities
  - product characteristics

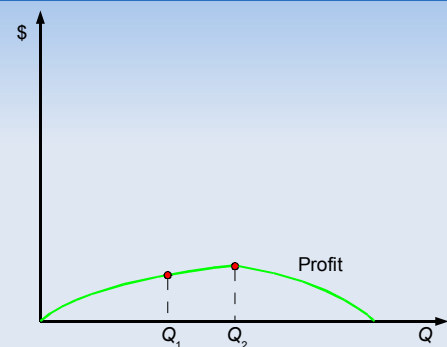
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## Determination of profit



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## Profit function



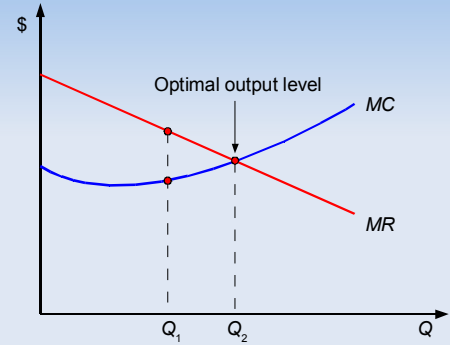
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## Optimal output level

- *Marginal revenue (MR)* = change in revenue due to the sale of one more unit of output
- *Marginal cost (MC)* = change in total cost due to the production of one more unit of output
- *Marginal output rule*:
  - if  $MR > MC$ , producing one more unit will increase profit  $\Rightarrow$  increase output
  - if  $MR < MC$ , producing one more unit will decrease profit  $\Rightarrow$  decrease output
  - if  $MR = MC$ , no incentive to change output  $\Rightarrow$  optimal level of output

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## Marginal revenue and cost



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## Marginal output rule

- If a firm does not shut down, then it should produce output at a level where marginal revenue is equal to marginal cost
- Although the shape of the MR and MC functions depend on the particulars of the market in which the firm operates, the rule that the firm should produce at a point where MR is equal to MC is valid for *any profit-maximizing firm*

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## Shut-down rule

- *Average revenue (AR)* = firm's total revenue divided by the number of units produced
- *Average economic cost (AEC)* = firm's total economic cost divided by the number of units produced
- Shut-down rule: a firm should shut down if economic profit is negative, or equivalently, if  $AEC > AR$ , for *every level of output*
- Note that a firm with zero economic profit will choose to stay in business (why? because it is *economic* and not *accounting* profit)

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## Do firms really maximize profits?

- We treat firms as a black box: inputs go in, technology is applied, output comes out according to profit-maximizing rule
- In reality, firms operate in a more complex way
- The most important aspect is the separation of ownership (shareholders) from control (managers) – they might not have the same objectives  $\Rightarrow$  principal-agent problem

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