Last Revised: 04/22/2025

2026 Level 1 - Economics

The Firm and Market Structures

a. determine and interpret breakeven and shutdown points of production, as well as how economies and diseconomies of scale affect costs under perfect and imperfect competition

b. describe characteristics of perfect competition, monopolistic competition, oligopoly, and pure monopoly

c. explain supply and demand relationships under monopolistic competition, including the optimal price and output for firms as well as pricing strategy

d. explain supply and demand relationships under oligopoly, including the optimal price and output for firms as well as pricing strategy

e. identify the type of market structure within which a firm operates and describe the use and limitations of concentration measures

Profit

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LOS a
- calculate
- interpret
- compare

- Objective of the firm – maximize profit

$\pi = TR - TC$ ($P \times Q$) — economic / accounting

- accounting profit ⇒ TR – accounting costs (explicit costs)
  - includes interest exp.
- economic profit ⇒ accounting profit – total implicit opportunity costs
  - required rate of return on equity
  - normal profit: economic profit = 0
  - economic profit > 0 ⇒ abnormal/supernormal profit
    - result of ⇒ ⇓
      - technology
      - efficiency
      - cost advantage

      } firm specific

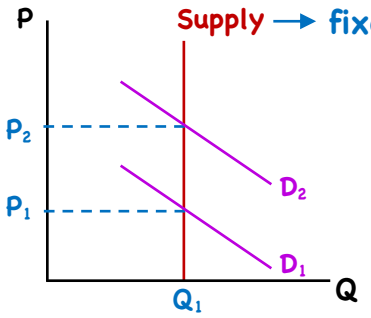
      } competitive advantage
    - gov't. policy
    - monopoly power
    - barriers to entry

      } Structural (long-term)

      } sustainable competitive advantage

Page 2
LOS a
- calculate
- interpret
- compare

- Economic Rent/



Supply → fixed in short-run (inelastic supply)

∴ demand determines price

- at P_1 ⇒ normal profit
  - demand increases to D_2, Price to P_2
- at P_2 ⇒ economic rent = $(P_2 - P_1) \times Q_1$

- any commodity, resource or good that is fixed/nearly-fixed in supply has the potential to generate economic rent
  - the more inelastic supply is, the higher the potential

- Effect on Equity Value:

economic profit	> 0	positive effect
	= 0	no effect
	< 0	negative effect

Revenue

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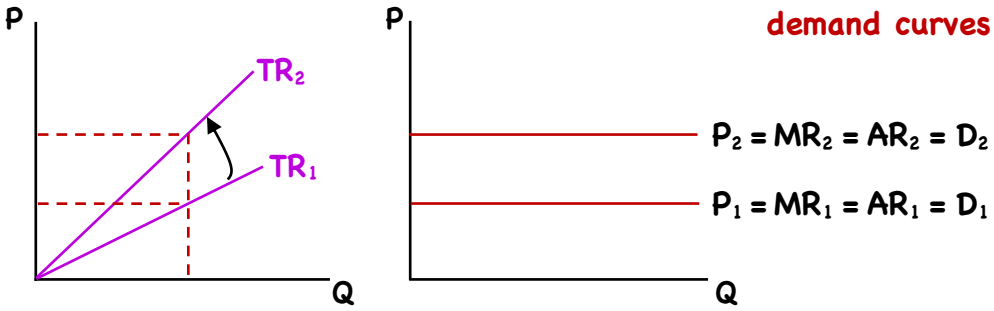
LOS b
- calculate
- interpret
- compare

Revenue:	Total	Average	Marginal
	$P \times Q$	$\frac{P \times Q}{Q}$	$\frac{\Delta(P \times Q)}{\Delta Q}$
	(TR)	(AR)	(MR)

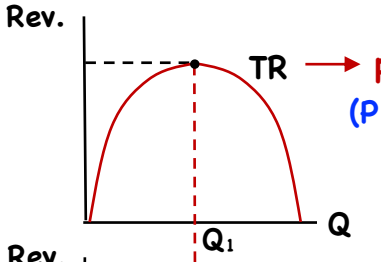
① Perfect Competition/ • firms are price takers, all face horizontal demand curves



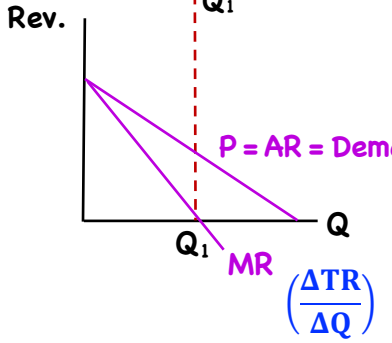
② Imperfect Competition/ • individual firms can influence price
• smaller number of firms in market (only one = monopoly)
• firms face downward sloping demand curves

Page 4
LOS b
- calculate
- interpret
- compare

2. Imperfect Competition/



→ peaks when MR = 0 ($P \times Q$)



$\left(\frac{TR}{Q} = P\right)$

$\left(\frac{\Delta TR}{\Delta Q}\right)$

• curve has a decreasing slope throughout ⇒ implies that ΔTR at each successive increment of Q is getting smaller

• AR > MR at all points

Costs

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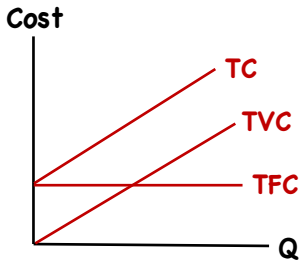
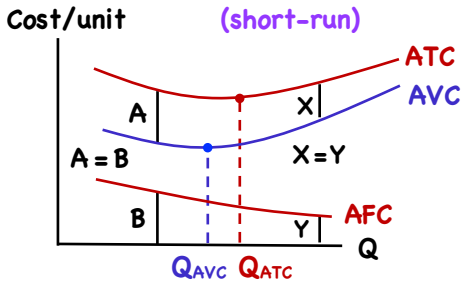
LOS d
- calculate
- interpret

	Total	Average	Marginal
Fixed (explicit + implicit)	TFC	TFC/Q (AFC)	
Variable	$VC/v \times Q$ (TVC)	TVC/Q (AVC)	
Total Costs	TFC + TVC (TC)	$\frac{TC}{Q}$ (ATC) or AFC + AVC	$\frac{\Delta TC}{\Delta Q}$ (MC)





Q_{AVC} – AVC is at a minimum, but since AFC will continue to decline,

Q_{ATC} – represents total minimum cost point (i.e. min. cost/unit)

Breakeven & Shutdown Points

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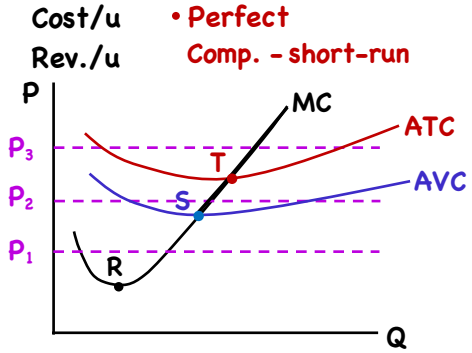
LOS e
- determine
- describe



Point S – shutdown point (AR < AVC)
- below S, actg. profit < 0

S – T: actg. profit < RRR

Point T – economic BEP (P = AR = MR = ATC)
- TR = TC
- ROE = RRR
- ATC = MR = AR = P
- above T: actg. profit > RRR

- if AVC are decreasing, MC < AVC
- if AVC are increasing, MC > AVC
- MC intersects both AVC & ATC at their minimums
  - at P_1 – firm is not covering variable cost/unit
  - at P_2 – VC/unit covered but TC/unit is not
  - at P_3 – all costs covered

	short-run	long-run
Below S	shutdown	leave
S – T	produce	leave
Above T	produce	stay

Economies/Diseconomies of Scale

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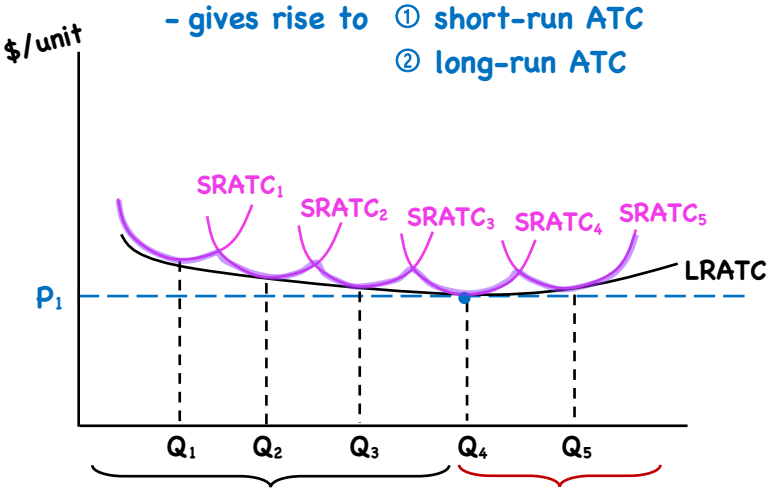
- describe

Define: short-run – at least one of the factors of production are fixed – technology, plant size

long-run – all are variable

– gives rise to ① short-run ATC
② long-run ATC



economies of scale
• increasing returns to scale

diseconomies of scale
– decreasing returns to scale

Recall: Perfect Competition
– firm is a price taker
– at P_1, firms must produce at $SRATC_4$ or exit

minimum efficient scale

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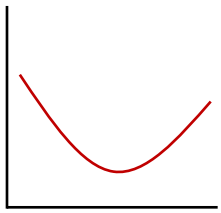
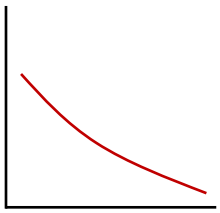
LOS g
- describe

• economies of scale
– division of labour/mgmt.
• specialization
– productivity enhancing equipment/technology
– efficiency gains – waste reduction, energy reduction
– superior market insight
– volume discounts

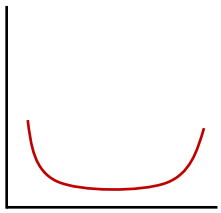
• diseconomies of scale
– poor mgmt. control/oversight
– overlap/duplication
– greater stress on local supply markets
– big target – unions, antitrust legislation, litigation



– rapid economies
– rapid diseconomies



– consistent economies



– constant returns to scale

Short/Long Run Profit Max.

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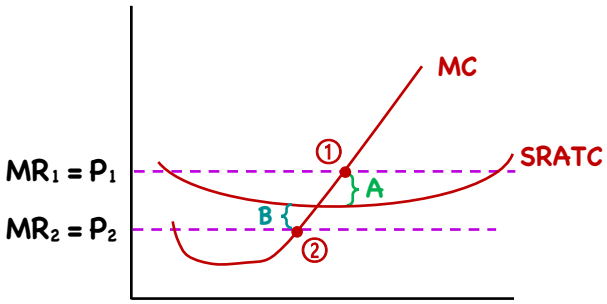
LOS h
- distinguish



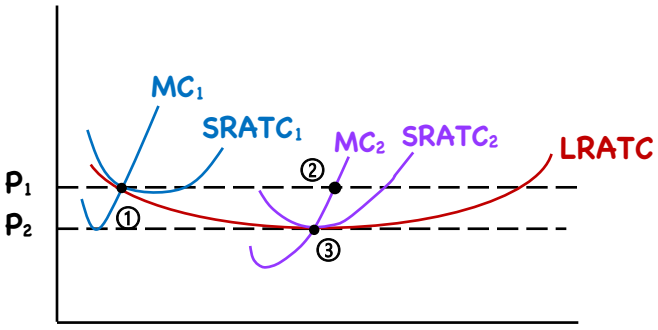
Recall: Perfect Competition
- firm is a price taker
P = MR
MR = MC - max. profit/min. loss in short run

- at P_1, $MR_1 = MC$ at ①
⇒ max. profit

at P_2, $MR_2 = MC$ at ②
⇒ min. loss

- economic profit = A ⇒ encourages market entry since ROE > RRR
- downward pressure on P_1
- economic loss = B ⇒ encourages market exit since ROE < RRR
- upward pressure on P_2

Page 13
LOS h
- distinguish



- at P_1, $MR_1 = MC$, on $SRATC_1$ at ①
- firm invests and moves to $SRATC_2$ at ②

$MR_1 = MC_2$ ⇒ economic profit

- encourages firm entry, prices drop to P_2
- at P_2, $MR_2 = MC_2$ on $SRATC_2$ at ③

economic profit = 0

Market Structure

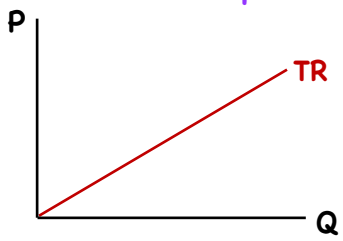
Page 1
LOS a
- describe

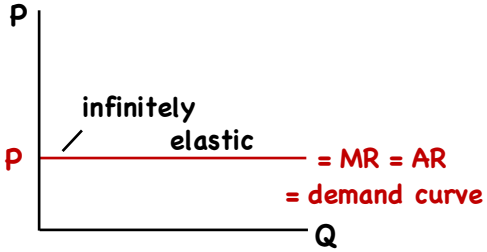
- significant determinant of long-term profitability

- factors that determine market structure	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
① number and relative size of firms	many	many	few	one
② degree of product differentiation	• homogeneous • standardized	• differentiated	• homogeneous • standardized	• unique
③ seller power over pricing decisions	• none	• some	• some or considerable	• considerable
④ Barriers to entry/exit	• very low	• low	• high	• very high
⑤ Degree of non-price competition	• none	• Advertising/ Product Differentiation	Advertising/ Product Differentiation	• Advertising

Page 2
LOS b-f
- explain

Perfect Competition



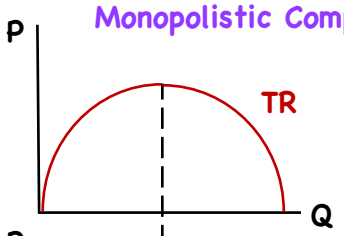


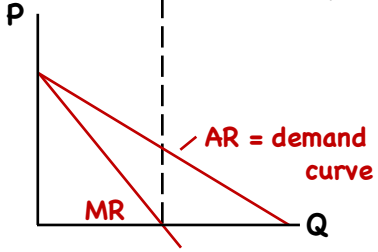
- price taker
- prices are industry determined

• Demand Analysis

→ • differentiated product + non-price competition = some pricing power →

Monopolistic Competition





- downward sloping demand curve since prices are firm determined

Proof: $Q = a - bP$

$P = {}^{a}/_{b} - {}^{Q}/_{b}$ ↓ $m = {}^{-1}/_{b}$

$TR = P \times Q$

$= \left({}^{a}/_{b} - {}^{Q}/_{b}\right) Q$

$= {}^{a}/_{b} \cdot Q - {}^{Q^2}/_{b}$

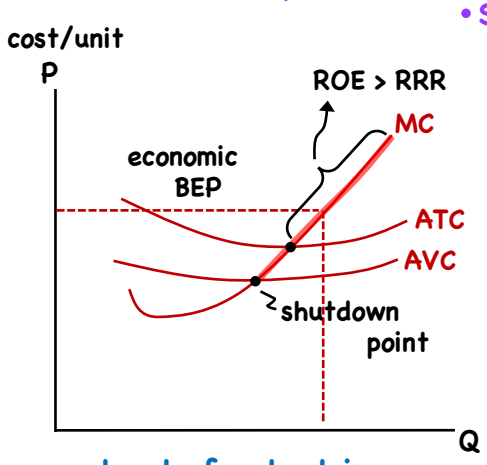
$MR = \frac{dTR}{dQ} = {}^{a}/_{b} - {}^{2Q}/_{b}$ ↓ $m = {}^{-2}/_{b}$

∴ Slope of MR curve

= 2× slope of the demand curve

Perfect Competition

• Supply Analysis

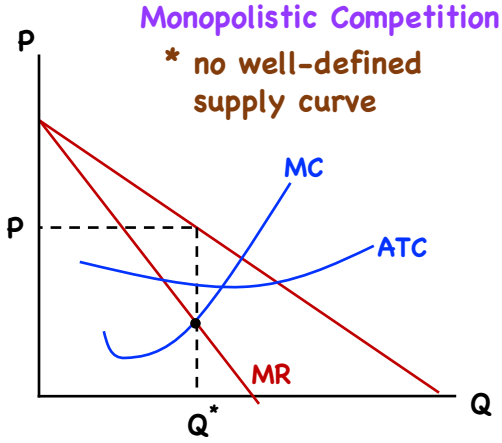


• level of output is determined by the MC schedule (MR = MC)

→ • differentiated product + non-price competition = some pricing power →

Monopolistic Competition

* no well-defined supply curve



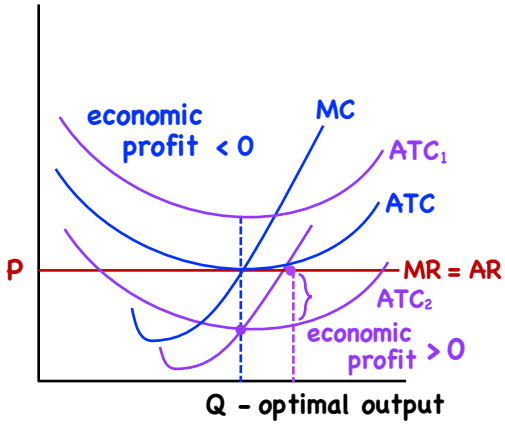
• level of output determined by MR = MC

• but price determined by demand curve

Page 4
LOS b-f
- describe

Perfect Competition

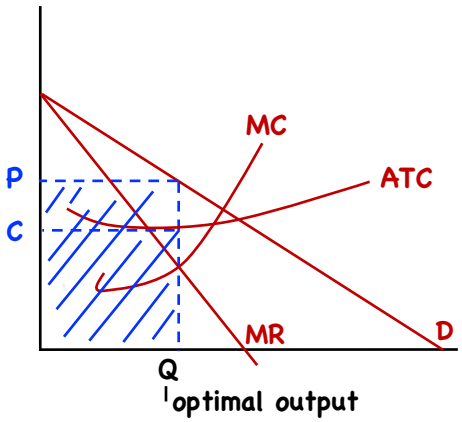
• Optimal Price/Output



π = TR − TC = economic profit

→ • differentiated product + non-price competition = some pricing power →

Monopolistic Competition



TR = P × Q

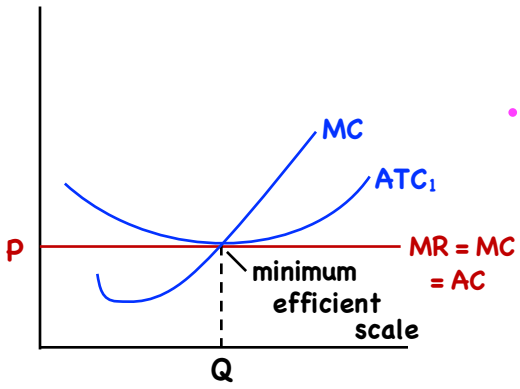
TC = C_1 × Q

π = TR − TC = economic profit > 0

Page 5
LOS b-f
- describe

Perfect Competition

• Long-run Equilibrium



- horizontal demand curve

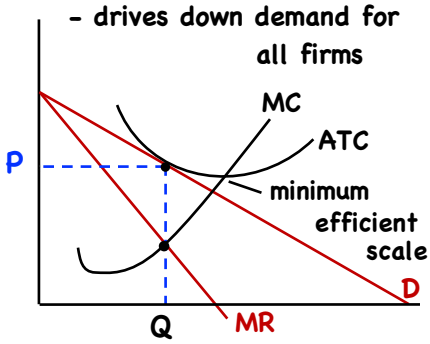
- profit max. when

MR = MC (= P = AC)

→ • differentiated product + non-price competition = some pricing power →

Monopolistic Competition

• economic profit > 0 encourages firm entry
- drives down demand for all firms



1) MR = MC ⇒ max. profit

2) P = AC ⇒ economic profit = 0

- downward sloping demand curve