EE481: Industrial Economics

Lecture 1:
Introduction to Industrial Organization

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Industrial Organization

Economists have developed a branch of economic analysis called *Industrial Organization* to trace the relationship between the structure of a market and the performance of the firms in that market.

What will you learn in this course?

- Learn how to analyze the market structure of an industry
  - Monopoly, duopoly, oligopoly, perfect competition
  - Barriers to entry
  - Product differentiation
  - Vertical integration
- Learn about different competition strategies (conducts) firms adopt to compete
  - Collusion, Merger, Advertising, R&D, Pricing behavior, etc.
- Learn how we can asses firms' performance from the society's point of view
  - Price, Production Efficiency, Equity, etc.
- Learn what the government can do in order to promote for more desirable outcomes (performance).
  - Anti-trust policy, Government Regulation

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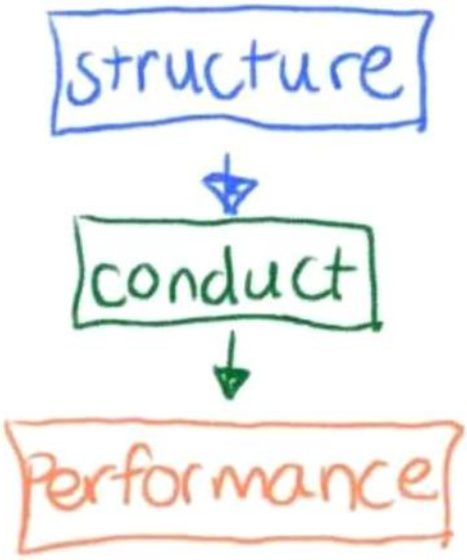
Major tools used in this course

- Structure-Conduct-Performance (SCP)
- Price Theory
  - Game Theory
    (von Neumann and Morgenstern (1944)
  - Transaction Costs Analysis
    [Ronald H. Coase (1937), Oliver Williamson (1975)]
  - Contestable Market Analysis
    [Demsetz (1968), Baumol, Panzar, and Willing (1982)]

Markets have three elements that may be the focus of public policy: structure, conduct, and performance



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Structure

The ***structure*** of a market is the set of conditions and characteristics that describe and define the market type. To describe market structure, economists consider

- the number and size distribution of firms;
- The number and size of buyers of the industry's product;
- Price and cross price elasticity of demand
- the effectiveness of barriers to entry;
- the extent of product differentiation / product branding

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- The degree to which an industry is vertically integrated up and down the supply chain. (e.g. forward and backward vertical integration)
- The market share of the largest businesses (measured by the concentration ratio)
- The nature of costs in the short and long run
- The turnover of customers from one seller to another (also called "market churn") – this is affected by brand loyalty and the effects of advertising and marketing

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RESOURCES & SUPPLIERS
MANUFACTURE
DISTRIBUTION

Market Structures

Type of Market	Perfect Competition	Monopoly	Monopolistic Competition	Oligopoly
Number of Firms	Many	One	Many	Few
Similar or Differentiated Products	Identical	Identical	Differentiated	Similar or Differentiated
Cost of Information	Low	Low	Costly	Small to Significant
Barriers to Entry	Low	High	Low	High but not impossible
Examples	Agriculture, Forestry, Personal Services	Utilities, Government Services	Restaurants, Retail, Services	Wholesale, construction, energy, Manufacturing
Special Characteristics	$\pi = 0$ in long run, P= MR= MC, P= Min(ATC) in long run	$\pi > 0$ in long run, P = MR > MC, "Deadweightloss"	$\pi = 0$ in long run, P = MR > MC and P = ATC but > min(ATC) – inefficient scale	Indeterminant behavior – incentive to compete or collude

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Market Structures

	Perfect Competition	Monopolistic Competition	Oligopoly	Pure Monopoly
No. and Size of Firm	MANY	MANY	A FEW	ONE
Extent of Product Differentiation	NO	DIFFERENT	IDENTICAL OR DIFFERENT	A UNIQUE GOOD W/O CLOSE SUBSTITUTES
Barriers to Entry	NO	NO	MODERATE TO DIFFICULT	BLOCKED

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Defining the market

- Market and the industry are terms often used inter-changeably
- But.....
  - If we define a market in a narrow sense, it is likely that there will be fewer producers
    - E.g. the market for snooker tables or the market for air travel to Chiangmai
  - A broader definition of the market often gives us more choice
    - E.g. the air transport industry
    - The market for sports footwear
  - Defining the market is important when we try to measure the concentration ratio and the extent to which a market is dominated by one or a few large producers

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The Conduct / Behaviour of Firms

Conduct refers to the behavior, policies, and strategies used by the firms in the industry. To describe firms' conduct, economists consider the strategies used by firms as they affect

- pricing;
- production;
- promotion; and
- distribution

- How does **market structure** affect pricing, output and other decisions of businesses within the market
- Are there dominant firms?

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PRICE STRATEGIES
- UNIFORM PRICING
- NON-UNIFORM PRICING
  - 1ST DEGREE PD
  - 2ND DEGREE PD (BLOCK PRICING)
  - 3RD DEGREE PD
  - TWO-PART TARIFFS
  - BUNDLING
    - PURE BUNDLING
    - MIXED
  - TIE-IN SALE

NON-PRICE STRATEGIES
- CUSTOMER TARGETING
- DISTRIBUTION CHANNEL
- LOCATION CHOICE
- R&D
- ADVERTISING
- INTEGRATION

Conduct / Behavior of firms

- Is there evidence of anti-competitive behaviour?
  - Collusive pricing agreements
  - Predatory pricing?
  - Vertical restraint?
- How important is non-price competition in the market?
- Is there **interdependence** between firms?
- Do businesses behave strategically to retain profits by deterring the entry of new competitors in the long run?
- Be aware that the market structure will affect the behaviour of firms

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Performance

Performance refers to the economic outcomes that result from the market structure and the firms' conduct. To evaluate an industry's performance, economists consider

- allocation efficiency;
- production efficiency;
- equity; and
- technological advancement.

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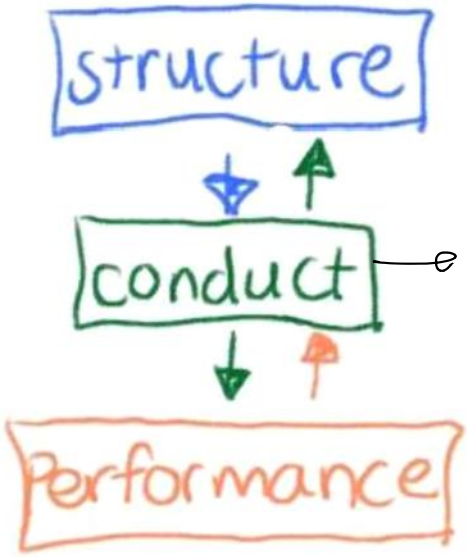

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The Firm : Objective

- The objective of a Firm : MAXIMIZE PROFITS (π) = TOTAL REVENUE (TR) − TOTAL COST (TC)
  - ↓
  - EXPLICIT COSTS & IMPLICIT COSTS

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The Firm : Ownership and Control

- Three Basic Forms of Ownership
  - Sole proprietorships - owned by 1 owner
    - PROS → • EASE OF CONTROL
      • FLEXIBILITY
    - CONS → SOURCE OF FINANCING
      → UNLIMITED LIABILITY
      → IF THE OWNER DIES, FIRM DISAPPEARED.
  - Partnerships - owned by multiple owners
    - SHARING KNOWLEDGE & SKILLS
    - FINANCING
    - LIMITED LIABILITY FOR LIMITED PARTNERSHIP.

The Firm : Separation of Ownership and Control

Corporations - companies whose capital is divided into shares. A corporation raises funds through two channels

-¿ from shareholders (equity owners)
-¿ from debt holders (banks, people who buy the company's corporate bonds)

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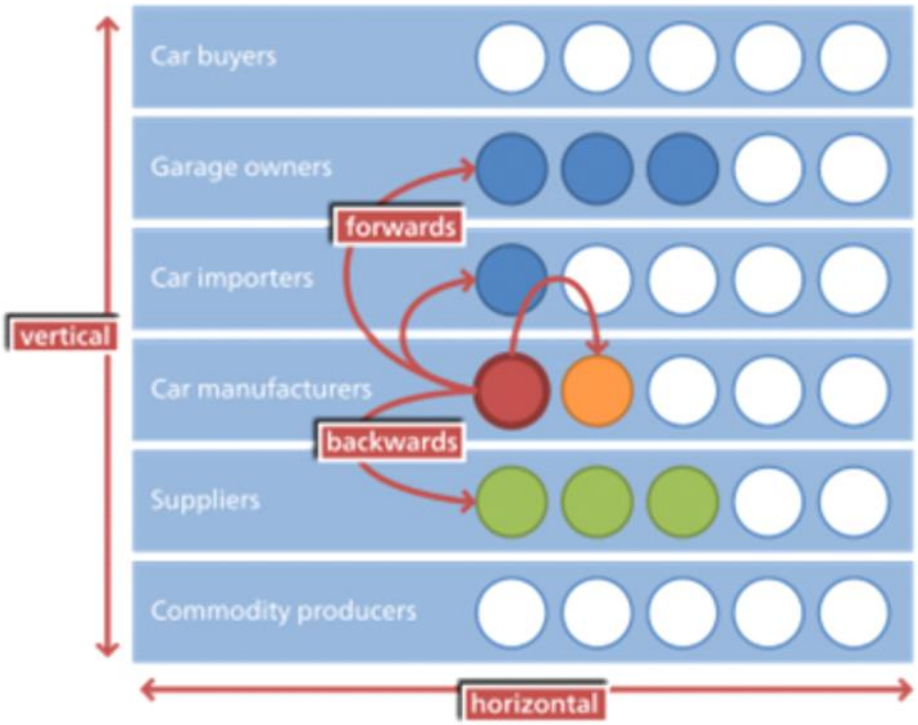
Horizontal and Vertical Integration by a firm



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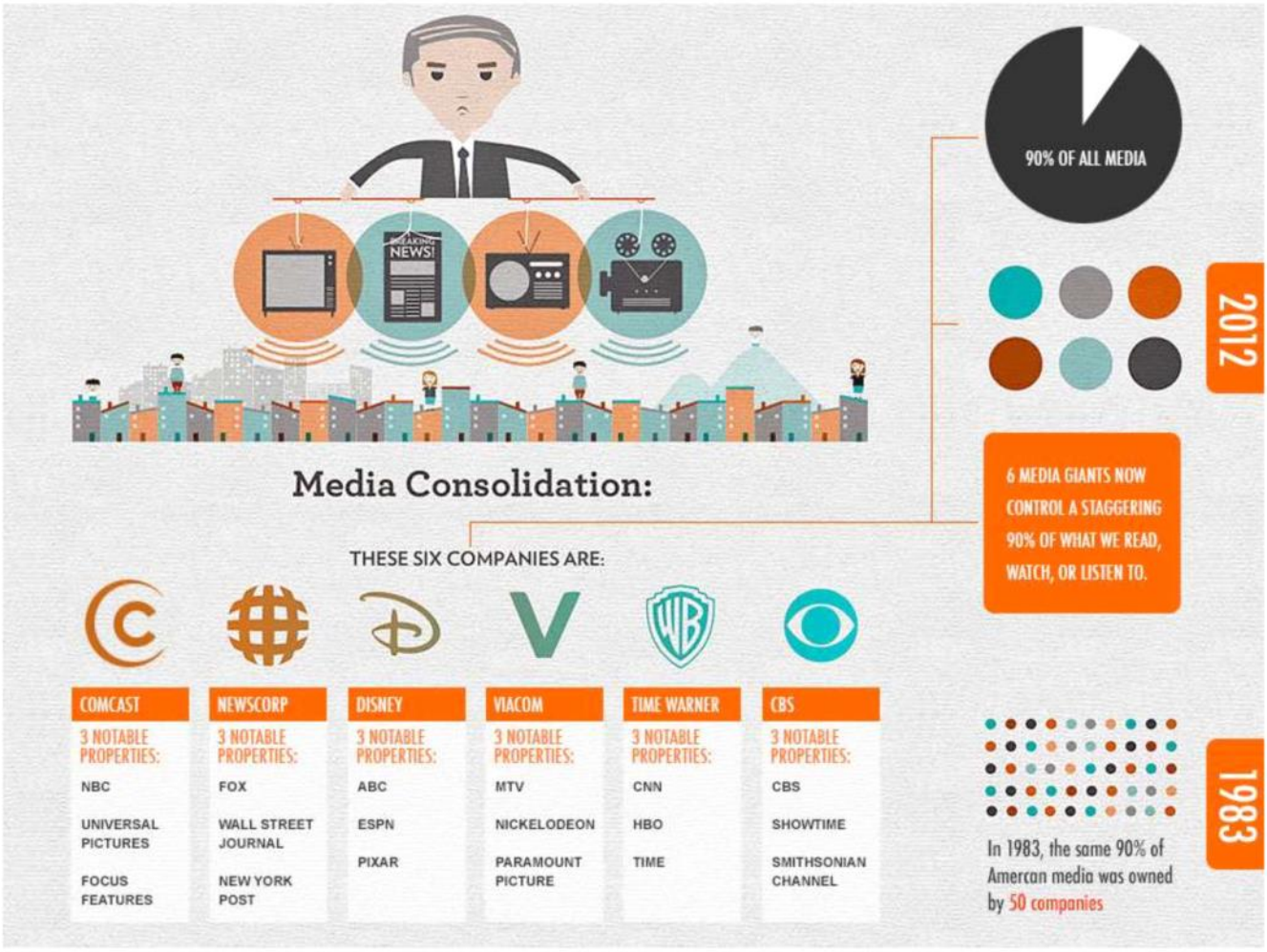
BREAKING NEWS!
Media Consolidation:
THESE SIX COMPANIES ARE:
COMCAST
3 NOTABLE PROPERTIES:
NBC
UNIVERSAL PICTURES
FOCUS FEATURES
NEWSCORP
3 NOTABLE PROPERTIES:
FOX
WALL STREET JOURNAL
NEW YORK POST
DISNEY
3 NOTABLE PROPERTIES:
ABC
ESPN
PIXAR
VIACOM
3 NOTABLE PROPERTIES:
MTV
NICKELODEON
PARAMOUNT PICTURE
TIME WARNER
3 NOTABLE PROPERTIES:
CNN
HBO
TIME
CBS
3 NOTABLE PROPERTIES:
CBS
SHOWTIME
SMITHSONIAN CHANNEL
90% OF ALL MEDIA
2012
6 MEDIA GIANTS NOW CONTROL A STAGGERING 90% OF WHAT WE READ, WATCH, OR LISTEN TO.
1983
In 1983, the same 90% of Amercan media was owned by 50 companies

Cost Concepts : Types of Costs

Cost Concepts : Types of Costs

Cost Concepts : Types of Costs

$$TC = FC + VC$$

$$\frac{TC}{Q} = \frac{FC}{Q} + \frac{VC}{Q}$$

$$AC = AFC + AVC$$

- UNIT COSTS
- COST PER UNIT

$$\frac{dTC}{dQ} = MC$$

$$\pi = TR - TC$$

$$\frac{\pi}{Q} = \frac{TR}{Q} - \frac{TC}{Q}$$

$$= \frac{P \times Q}{Q} - AC$$

$$\boxed{\frac{\pi}{Q} = P - AC}$$

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Cost Concepts — Types of Costs

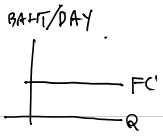
Output	FC	AFC	VC	AVC	TC	ATC	MC
0	100	-	0	-	100	-	
1	100	100	10	10	110	110	10
2	100	50	19	9.5	119	59.5	9
3	100	33.3	25	8.3	125	41.7	6
4	100	25	32	8	132	33	7
5	100	20	40	8.0	140	28	8
6	100	16.7	49	8.6	149	24.8	9
7	100	14.2	60	9.1	160	22.9	11
8	100	12.5	73	9.8	173	21.6	13
9	100	11.1	88	10.8	188	20.9	15

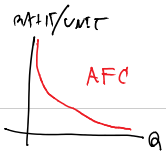
Q

= FC/Q

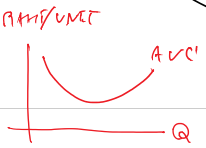
= VC/Q

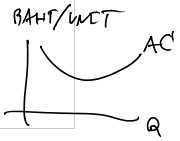
FC + VC = TC/Q



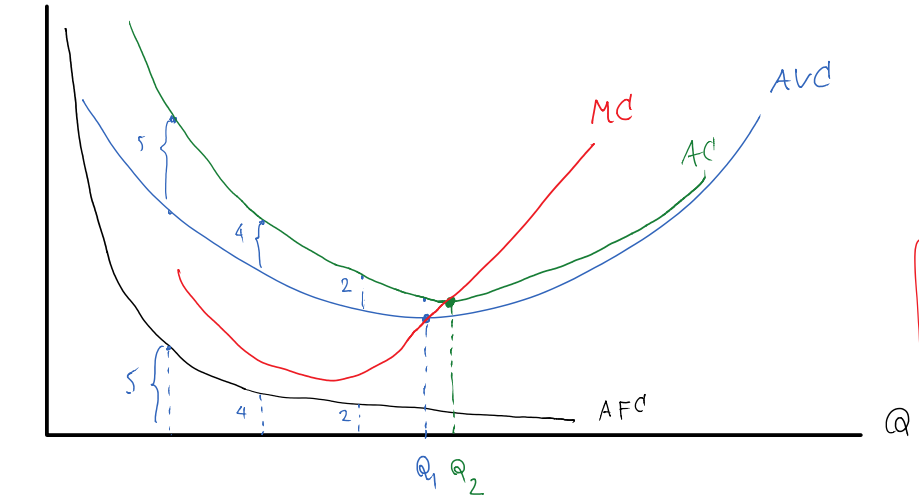


"SPREADING EFFECT"





AC = AFC + AVC



IF MC < AC, THEN AC ↓

IF MC > AC, THEN AC ↑

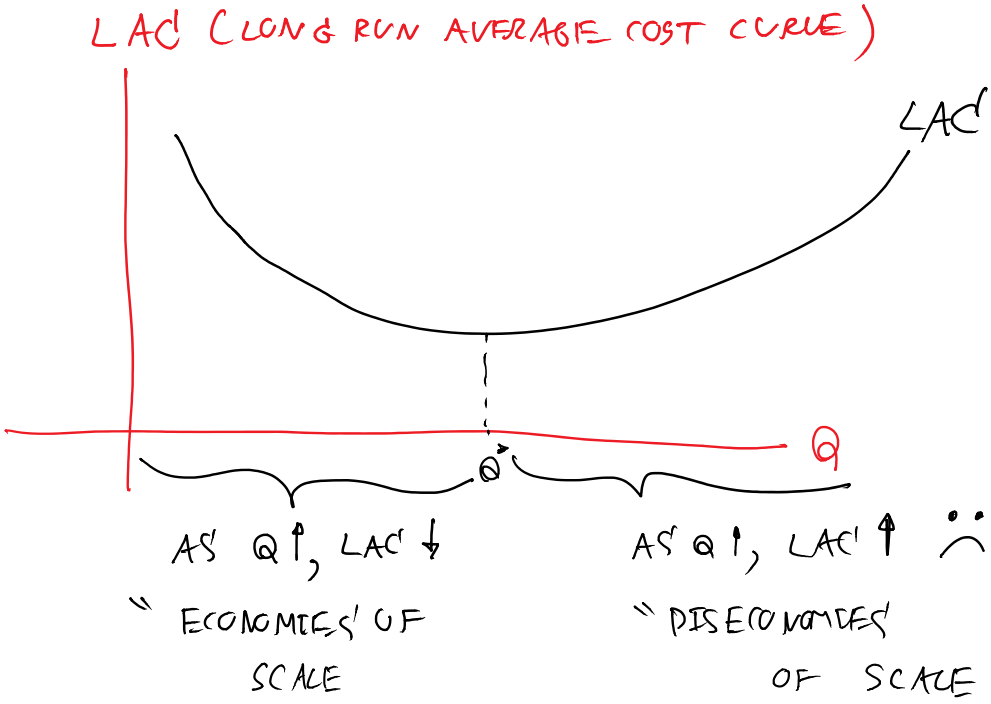
IF MC < AVC, THEN AVC ↓

IF MC > AVC, THEN AVC ↑

The Short Run Vs. The Long Run

- The Short Run
- The Long Run

Economies of Scale : slope of AC curve



Economies of Scope

There are positive spillovers (cost-saving, cost-sharing) effects when 1 firm produces more than 1 type of products.

$$C(Q_1, Q_2) < C(Q_1) + C(Q_2)$$

Reference and Further Reading

- Carlton, D.W. and J.M., Perloff.
  Modern Industrial Organization. 4th Edition.
  Pearson Addison Wesley Press, 2005.
- Church, J. and R. Ware.
  Industrial Organization: A Strategic Approach. International Edition. McGraw-Hill Press, 2000.

EE481 Industrial Economics

Monopoly:
A Concise Review

Semester 2/2016

*Carlton D and Perloff J., ***Modern Industrial Organization***, 4th Edition, 2015, Pearson.

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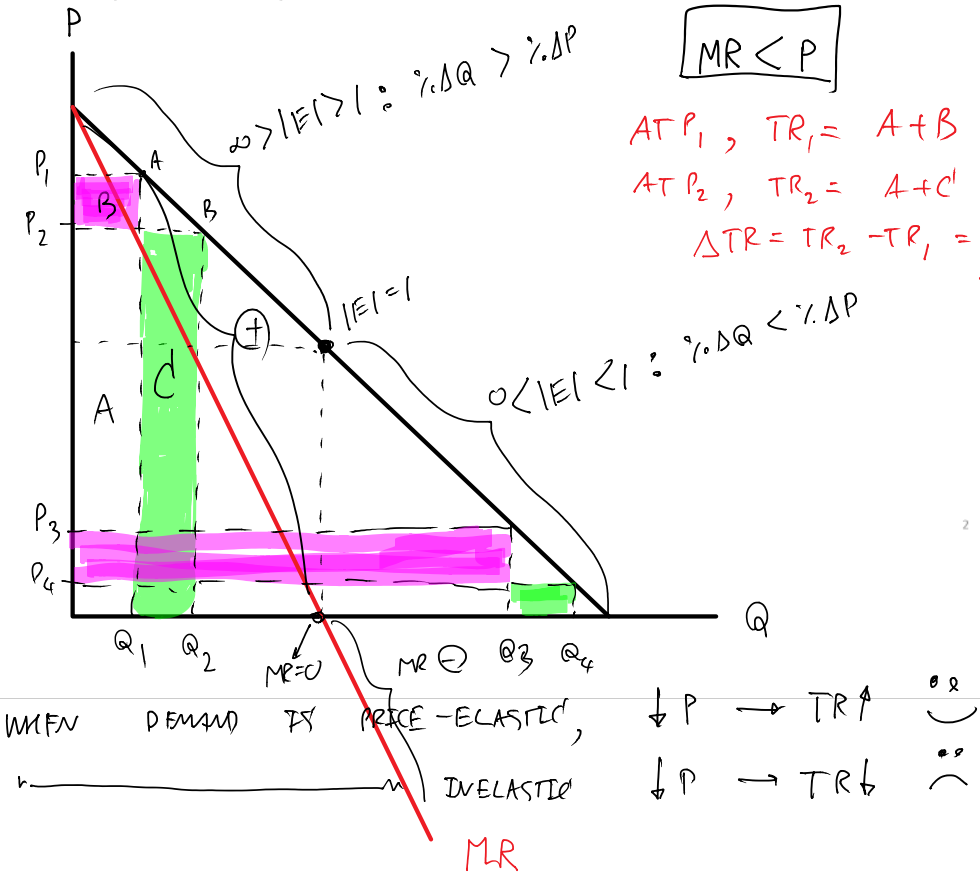
A monopolist captures market demand curve.



$\%\Delta Q > \%\Delta P$: $|E|>1$

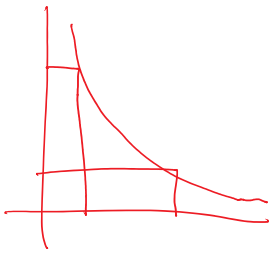
$\%\Delta Q < \%\Delta P$: $0<|E|<1$

$MR < P$

AT P_1, $TR_1 = A+B$

AT P_2, $TR_2 = A+C$

$\Delta TR = TR_2 - TR_1 = (A+C) - (A+B) = C - B > 0$



WHEN DEMAND IS PRICE-ELASTIC, $\downarrow P \rightarrow TR\uparrow$ ☺

INELASTIC $\downarrow P \rightarrow TR\downarrow$ ☹

Total Revenue and Price Elasticity of Demand

Monopolist's Profit Maximization Problem

MAXIMIZE $\pi(Q) = TR(Q) - TC(Q)$
Q

F.O.C: $\frac{d\pi(Q)}{dQ} = 0$

$\frac{d\pi(Q)}{dQ} = \frac{dTR(Q)}{dQ} - \frac{dTC(Q)}{dQ}$

$= MR(Q) - MC(Q) = 0$

SO, $MR(Q^*) = MC(Q^*)$