

# Industrial organization:

## How do firms compete in imperfect competition?

- (1) Interactions between firms
  - (2) Info
  - (3) Externalities
  - (4) Public policy
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## Game theory: study of strategic decisions between agents

- (1) Interactions between players
  - (2) Order of movers
  - (3) Information
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## Behavioral econ: integrate psychology & economics

- (1) Framing effects (how we present a choice)
  - (2) Bounded rationality (take into account info we want)
  - (3) Heuristics: Mental shortcuts
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## 2.2 Consumer Theory and Demand

### Introductory model

$$\text{Individual utility} = U(\underbrace{q_1, q_2}_{\text{Goods}}, \underbrace{t, m}_{\text{Tastes \& income}})$$

The steepness of the demand curve comes from the combination of substitution and income effects.

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### Demand curve has three qualities:

- (1) Price intercept (a)
  - (2) Quantity intercept  $\frac{a}{b}$
  - (3) Slope (b)
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### All other determinants are demand shifters:

- (1) Price of other goods ( $p_2$ )
  - (2) Income ( $m$ )
  - (3) Tastes ( $t$ )
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### Relationship between goods and income:

- (1) **Normal:** Higher income  $\rightarrow$  Higher Demand
  - (2) **Inferior:** Higher income  $\rightarrow$  Lower Demand
  - (3) **Income Neutral:** Higher income  $\rightarrow$  Same Demand
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### Nonfunctional demand: motivated by qualities other than inherent characteristics

- (1) Interdependent - based on other people
  - (a) Bandwagon effect - purchase because others purchased
  - (b) Snob effect - purchase to be different than others
  - (c) Veblen / conspicuous consumption effect - purchase to impress, expensive
- (2) Speculative - purchase as an investment

(3) Irrational - purchase on a whim

## 2.3 Technology and Costs (Multiple Products)

$W_L$  = Price of labor

$W_K$  = Price of capital

$q_1$  = Quantity of good 1

$q_2$  = Quantity of good 2

$T$  = Technology

$$\text{Total Cost} = TC(W_L, W_K, q_1, q_2, T)$$

We will see **economies of scale** when the long run average cost falls as output increases.

As long as the average cost is less than the marginal cost, we should keep producing.

**Minimum efficient scale** - Minimum quantity produced to take advantage of economies of scale.

$$AC = \frac{100 - 20Q + Q^2 + \frac{40\alpha}{4\alpha}}{4\alpha}$$

$$MC = \frac{100 - 40Q + 3Q^2 + 40\alpha}{4\alpha}$$

At the quantity where AC is minimized,  $AC = MC$ .

There is **economies of scope** if joint production by a single firm is cheaper than production by two separate firms.

Why?

- (1) Complements in production (using by-products of each other)
- (2) Share common inputs (railroads transporting passengers and freight)

## 2.4 Theory of the Firm: "The goal of the firm is to maximize profits."

$\text{Economic profits} = \text{total revenue} - \text{economic costs}$

$\text{Value of an asset} = \text{PV of the stream of its expected future returns}$

**Issue: Firms look to maximize in the long run, not just right now**

**Solution: Discounting**

$\beta$  = Discount factor (PV of 1 dollar received next period, scale from 0 to 1)

$\beta = .9$  represents 90 cents today equaling 1 dollar tomorrow

$$\text{Value}(\pi, \infty) = \beta^0 \pi + \beta^1 \pi + \dots + \beta^n \pi$$

$$\text{Value}(\pi, \infty) = \frac{\pi}{1-\beta}$$

**Discounting Example**

So, the PV of receiving 1 dollar every day when we value 90c today as 1 USD tomorrow is 10 dollars

$D = .9$

$\pi = 1$  dollar

$$\text{Value} = \frac{\pi}{1-\beta} = \frac{1}{1-.9} = 10$$

This helps us see how much profit we will be willing to give up today in exchange for additional profit in the future. A higher  $\beta$  implies that a greater value is placed on the future.

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**Another issue:**

Principle-agent problem - managers and employees look to maximize their own utility (income, prestige, other psychological factors)

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## 2.4 Boundaries of the firm

**Why set up a firm?**

- (1) Horizontal growth - provides greater economies of scale (merger in same industry)
- (2) Conglomerate growth - provides greater economies of scope (merger in different industries)
- (3) Reduces transaction costs (costs associated with trading)
- (4) Vertical growth - buying up the supply chain

**Forces that limit size of firm:**

- (1) Merger with a supplier reduces the suppliers flexibility and control -> market inefficiencies
- (2) The supplier may be too large to be profitably owned by a single wholesaler
- (3) Managerial capacity - costs grow as firm grows

**Costs can be broken down into 2 groups:**

- (1) Those that decline as the org grows (eg transaction costs)
- (2) Those that grow as the org grows (eg managerial costs)

$$TC = C_{MGT} + C_{MKT}$$