Industrial organization:

How do firms compete in imperfect competition?
(1) Interactions between firms
(2) Info
(3) Externalities
(4) Public policy

Game theory: study of strategic decisions between agents
(1) Interactions between players
(2) Order of movers
(3) Information

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

2.2 Consumer Theory and Demand

Introductory model

$$Individual\ utility = U(\underbrace{q1,\ \ q2,}_{\text{Goods}}\ \overbrace{t,\ \ m}^{\text{Tastes \& income}})$$

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

Demand curve has three qualities:

(1) Price intercept (a)
(2) Quantity intercept $\frac{a}{b}$
(3) Slope (b)

All other determinants are demand shifters:

(1) Price of other goods (p2)
(2) Income (m)
(3) Tastes (t)

Relationship between goods and income:

(1) **Normal:** Higher income -> Higher Demand
(2) **Inferior:** Higher income -> Lower Demand
(3) **Income Neutral:** Higher income -> Same Demand

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)

$W_L = Price\ of\ labor$
$W_K = Price\ of\ capital$
$q1 = Quantity\ of\ good\ 1$
$q2 = Quantity\ of\ good\ 2$
$T = Technology$

$$Total\ Cost = TC\ (\underbrace{W_L,\ W_K}, \underbrace{q1,\ q2}, T)$$

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 - Mimimum quantity produced to take advantage of economies of scale.

$$AC = \frac{100 - \overbrace{20Q+Q^2}^{\text{Minimize this}} + \overbrace{40\alpha}^{\text{Parameter (Larger = flatter parabola)}}}{4\alpha}$$

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

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

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

$$Economic\ profits\ =\ total\ revenue\ -\ economic\ costs$$

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

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

Solution: Discounting

$$\beta = Discount\ factor\ (PV\ of\ 1\ dollar\ recieved\ next\ period,\ scale\ from\ 0\ to\ 1)$$
$$\beta = .9\ represents\ 90\ cents\ today\ equaling\ 1\ dollar\ tomorrow$$

$$Value(\pi, \infty) = \beta^0\pi + \beta^1\pi + \ldots + \beta^n\pi$$

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

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

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 β implies that a greater value is placed on the future.

Another issue:

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

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)

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