Review Notes - Micro Review

- Demand Defined
  - definition
  - the law of demand (as P increases => Q_d decreases)
    - Why?
      - substitution effect
      - income effect
      - absolute vs. relative price for the law of demand
  - market demand
- Other influences on Demand
  - tastes and preferences: as they increase => D increases and reverse
  - income (Y)
    - normal goods: as Y increases => D increases and reverse
    - inferior goods: as Y increases => D decreases and reverse
  - the price of related goods
    - substitutes in consumption: as P_s increases => D increases and reverse
    - complements in consumption: as P_c increases => D decreases and reverse
  - the number of demanders (buyers) in a market: as # increases => D increases and reverse
  - expectations about the future: if expect P increase in the future => D increases in the present and vice versa
- Change in Demand (D) vs. change in Quantity Demanded (Q_d)

- Supply Defined
  - definition
  - the law of supply (as P increases => Q_s increases)
  - market supply
- Other influences on Supply (besides the good's own price)
  - costs of production: as costs increases => S decreases and reverse
    - technology: as tech. increases => costs decrease and reverse
    - input prices: as input prices increases => costs increase and reverse
  - the price of related goods
    - substitutes in production: as P_s increases => S decreases and reverse
    - complements in production: as P_c increases => S increases and reverse
• the number of suppliers (firms) in a market: as # increases => S increases and reverse
• expectations about the future: if expect P increases in the future => S decreases in the present and vice versa

• Change in Supply (S) vs. change in Quantity Supplied (Qs)
• Demand and Supply as flow variables (vs. stock variables)

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• Market equilibrium
  • Definitions
    • equilibrium
    • stable equilibrium
  • How does the market attain equilibrium?
    • excess demand or a shortage
      o price competition among consumers
    • excess supply or a surplus
      o price competition among suppliers
  • Predictions about equilibrium P and Q
    • increase in D => what happens to equilibrium P and Q?
    • decrease in D => what happens to equilibrium P and Q?
    • increase in S => what happens to equilibrium P and Q?
    • decrease in S => what happens to equilibrium P and Q?
    • increase in D and increase in S => what happens to equilibrium P and Q?
    • increase in D and decrease in S => what happens to equilibrium P and Q?
    • decrease in D and increase in S => what happens to equilibrium P and Q?
    • decrease in D and decrease in S => what happens to equilibrium P and Q?

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• Elasticity
  • Definition of 4 different types
    • Price Elasticity of Demand (\( \eta_D \))
    • Price Elasticity of Supply (\( \eta_S \))
    • Income Elasticity of Demand (\( \eta_{\text{y}} \))
    • Cross Elasticity of Demand (\( \eta_{x,y} \))
- Interpretation of size and sign of the elasticity coefficient for each type of elasticity.
  - sign
    - \(-\eta < \text{ or } = 0\) always; reflects the law of Demand (as \(P\) increases \(\Rightarrow Q_d\) decreases)
    - \(-\eta_s > \text{ or } = 0\) always; reflects the law of Supply (as \(P\) increases \(\Rightarrow Q_s\) increases)
    - \(-\eta_y\); if \(\eta_y > 0\) \(\Rightarrow\) as income increases, \(Q_d\) increases, \(\Rightarrow\) the good is normal.
      - if \(\eta_y < 0\) \(\Rightarrow\) as income increases, \(Q_d\) decreases, \(\Rightarrow\) the good is inferior.
    - \(\eta_{x,y}\); if \(\eta_{x,y} > 0\) as \(P_x\) increases, \(Q_d\) of \(y\) increases \(\Rightarrow\) \(x\) and \(y\) are substitutes.
      - if \(\eta_{x,y} < 0\) as \(P_x\) increases, \(Q_d\) of \(y\) decreases \(\Rightarrow\) \(x\) and \(y\) are complements.
      - if \(\eta_{x,y} = 0\) as \(P_x\) increases, \(Q_d\) of \(y\) is constant \(\Rightarrow\) \(x\) and \(y\) are unrelated.
  - size
    - \(-\eta\); if \(\eta > 1\) \(\Rightarrow\) \(D\) is price elastic \((\%\Delta Q_d > \%\Delta P)\).
      - if \(\eta < 1\) \(\Rightarrow\) \(D\) is price inelastic \((\%\Delta Q_d < \%\Delta P)\).
      - if \(\eta = 1\) \(\Rightarrow\) \(D\) is unitarily elastic \((\%\Delta Q_d = \%\Delta P)\).
    - \(-\eta_s\); if \(\eta_s > 1\) \(\Rightarrow\) \(S\) is price elastic \((\%\Delta Q_s > \%\Delta P)\).
      - if \(\eta_s < 1\) \(\Rightarrow\) \(S\) is price inelastic \((\%\Delta Q_s < \%\Delta P)\).
      - if \(\eta_s = 1\) \(\Rightarrow\) \(S\) is unitarily elastic \((\%\Delta Q_s = \%\Delta P)\).
    - \(-\eta_y\); if \(\eta_y > 1\) \(\Rightarrow\) \(D\) is income elastic \((|\%\Delta Q_d| > |\%\Delta Y|)\).
      - if \(\eta_y < 1\) \(\Rightarrow\) \(D\) is income inelastic \((|\%\Delta Q_d| < |\%\Delta Y|)\).
      - if \(\eta_y > 1\) \(\Rightarrow\) the good is a luxury.
      - if \(0 < \eta_y < 1\) \(\Rightarrow\) the good is a necessity.
    - \(-\eta_{x,y}\); if \(\eta_{x,y} > 0\) \(\Rightarrow\) as \(\eta_{x,y}\) increases \(x\) and \(y\) become closer substitutes.
      - if \(\eta_{x,y} < 0\) \(\Rightarrow\) as \(\eta_{x,y}\) decreases (increases in absolute value) \(x\) and \(y\) become closer complements.
  - make sure you know how to interpret elasticity coefficients

- Efficiency
  - allocative efficiency and inefficiency
    - MSB and MSC (what are those?)
    - efficiency occurs where?
• technological efficiency and inefficiency
  • definition
• Applications
  ▪ Health Insurance
    • what is the impact of regular third-party health insurance?
      o to price and quantity?
      o allocative efficiency?

• Consumer Choice
  ▪ Simple two good model
  ▪ Budget constraint
    • \( p_1X_1 + p_2X_2 \leq M \)
    • meaning? graphically?
  ▪ Budget Line
    • \( p_1X_1 + p_2X_2 = M \)
    • meaning? graphically?
    • intercepts of the BL?
    • slope of the BL?
    • what shifts the BL?
    • opportunity cost of the two goods?

• Preferences
  • define consumption bundle, preferred, and indifferent
  • rationality
    o completeness (what's that?)
    o transitivity (what's that?)
  • indifference curves
    o how are points on, and off, an indifference curve related?
      • two points on the same indifference curve?
      • a point above and a point on an indifference curve?
      • a point below and a point on an indifference curve?
    o what do they look like?
    o how many are there?
    o in which direction is the consumer better off?
    o can indifference curves cross?
    o what do different examples of indifference curves look like?
  • utility
    o what does utility measure?
    o what happens to utility as we move to a higher indifference curve?
• assume individuals want to maximize utility given prices, income, and preferences
  • what is marginal utility?
  • how do you derive a demand curve, graphically, from indifference curve analysis?

▪ applications
  • subsidies of health by the government

• Production and Profit Maximization
  ▪ what is production?
    • production function - \( Q = f(\text{inputs}) \)
      ○ graphically
      ○ interpret the graph
  • law of diminishing returns (marginal productivity)
    ○ definitions
    ○ graphically
    ○ relationship to production function?
  ▪ costs of production
    • definitions: marginal cost, average total cost, average variable cost, etc.
    • what do the curves look like?
    • relationship between costs and production?
  ▪ profit maximization
    • what is marginal revenue?
    • where does profit maximization occur and why? (\( MR = MC \))
      ○ for perfectly competitive firms
      ○ for monopoly firms
    • what is profit on the graph?
    • technological efficiency
      ○ firm technological efficiency (produce on the cost curve given output produced)
      ○ industry technological efficiency (produce at the minimum point of the ATC curve)

• Statistical Tools
  ▪ What is a hypothesis? How do we test it?
  ▪ How do we test whether two means are different?
    • Focus on definitions of terms - variance, standard deviation, standard error, normal distribution, etc.
• What is the general idea of how one would test whether the means of two groups are different? What is statistical significance?

- Regression analysis

• Define regression analysis, multiple regression analysis, and Ordinary Least Squares (OLS) regression.
• What is the basic idea behind regression analysis, multiple regression analysis?
• How do you use/interpret the coefficient estimates from regression analysis?
• How do you test the coefficients - when are they statistically significant?

• Cost/Benefit Analysis (and others)

- Definitions

• Cost/Benefit Analysis, Cost/Effectiveness Analysis, Cost/Utility Analysis.

- Cost/Benefit Analysis

• What is Marginal Social Benefit/Marginal Social Cost? How do they relate to Cost/Benefit analysis?
• where is the social optimum?
• What is discounting? Why is it necessary? (Don't need to know how to do it although this is a useful skill.)
• Problems with Cost/Benefit Analysis
  o how to identify B/C in dollar terms
  o how to include external costs (externalities)
  o What is the correct discount rate?

- Cost Effectiveness Analysis

• - What is the major difference between CBA and CEA?
• - What are the advantages of CEA?
• - What are the disadvantages of CEA?

- Cost Utility Analysis

• What are the differences between CEA and CUA?
• QALYs
  o Definition
  o Problems with QALYs