Spring 2018 Intermediate Microeconomics Outline

Updated: April 17, 2018

2. Supply and Demand
    - Demand: Curves, Functions, Schedules
    - Law of Demand
    - Factors influencing Demand
    - Supply: Curves, Functions, Schedules
    - Law of Supply
    - Factors influencing Supply
    - Market Equilibrium
    - What Happens when Supply and Demand Don't Intersect
    - Effects of Shifts of Supply and/or Demand
    - Elasticity: %-change in Quantity/%-change in Price
    - Elasticity: Alternative to (inverse) Slope
    - Elasticity with Linear Demand
    - Perfecty Elastic (horizontal) and Perfectly Inelastic (vertical) Supply and Demand
    - Relation between Elasticity of Demand and Total Spending (revenue)
    - Elasticities of Demand: Price, Cross-price, Income
    - Elasticity of Supply
3. Using Supply and Demand to Analyze Markets
    - Consumer's Surplus
    - Demand Curve as Marginal Value to Consumer (aka Marginal Willingness to Pay)
    - Producer's Surplus (note: in short run PS = Profit + FC)
    - Price Ceilings and Floors
    - Excise Taxes: Excess Burden, Incidence & Elasticity

$$t_D = t \times \frac{|\varepsilon_S|}{|\varepsilon_S| + |\varepsilon_D|}, \quad t_S = t \times \frac{|\varepsilon_D|}{|\varepsilon_S| + |\varepsilon_D|}$$

4. Consumer Behavior
    - Preferences: Completeness, Transitivity, Monotonicity (More is Better)
    - Indifference Map and Utility
    - Subjective Trade-offs: Marginal Rate of Substitution
    - Substitutes, Complements and the Shape of Indifference Curves
    - Constraints: The Budget Line
    - Objective Trade-offs: Slope of Budget Line ($-P_y/P_x$)
    - Consumer's Optimum I: $MRS = P_y/P_x$ or $MU_x/P_x = MU_y/P_y$
    - Consumer's Optimum II: Corner Solutions

5. Individual and Market Demand
    - Normal and Inferior Goods
    - Income Expansion Path and Engel Curve
    - Price-consumption Path
    - Demand curve
    - Behind the Demand Curve: Income and Substitution Effects
    - Inferior Goods and Giffen Goods
    - Income and Substitution Effects: Labor Supply
    - Income and Substitution Effects: Borrowing and Saving
6. Producer Behavior
    - Production Function
    - Short-run (at least one fixed input) and Long-run (no fixed inputs)
    - Production with a single variable factor
        - Total, Average, and Marginal Products
        - Relation between Marginal and Average
        - Law of Diminishing Returns
    - Production with two variable inputs (e.g., long-run)
        - Isoquants
        - Marginal Rate of Technical Substitution: $\mathrm{MRTS}_{LK} = \mathrm{MP}_L \,/\, \mathrm{MP}_K$ (slope of isoquant)
        - Shape of isoquants and substitution (more sharply curved = more complementary)
        - Constant, Diminishing and Increasing Returns to Scale
7. Costs
    - Opportunity Cost
    - Sunk Costs
    - Costs in Short-run: FC (from fixed factor K), VC (from variable factor L)
    - Shape of SR Cost Curves: ATC, AVC, MC
    - Long-run Cost Minimizing Inputs
    - Minimum requires $\mathrm{MRTS}_{LK} = w/r$. Equivalently, $\mathrm{MP}_K \,/r = \mathrm{MP}_L \,/w$.
    - Deriving the Cost Function
    - Relation of SR and LR Cost Curves
    - In short run, $MC = w/\,\mathrm{MP}_L$. In long run, $MC = w/\,\mathrm{MP}_L = r/\,\mathrm{MP}_K$
    - Economies of Scale

8. Supply in a Competitive Market
    - Perfectly Competitive Markets
    - Demand as seen by a Price-taker, Price-taking implies $p = \text{MR}$
    - Profit Maximization: $\text{MR} = \text{MC}$ becomes $p = \text{MC}$
    - Short-run Shutdown condition ($p < \text{AVC}$)
    - Supply is MC curve (above AVC)
    - Profitability (compare p and ATC)
    - Entry and Exit imply Zero Long-run Economic Profit
    - In Long-run Equilibrium: $p = \text{MC} = \text{ATC}$
    - Long-run Supply: Increasing and Constant Cost Industries
    - Analysis of Economic Changes (Demand, Costs) in Short and Long Runs
        - Demand Shifts
        - Taxes
9. Market Power and Monopoly
    - Monopoly: One seller, no entry, no close substitutes
    - Sources of Monopoly
    - Marginal Revenue: $\text{MR} = p \times (1 + 1/\varepsilon_D) < p$
    - Marginal Revenue with Linear Demand: Same vertical intercept, twice the slope. I.e., if $p = a - bq$, $\text{MR} = a - 2bq$
    - Profit Maximization: $\text{MR} = MC$
    - Profit Maximization with Markup Pricing: $p = \frac{\varepsilon_D}{1+\varepsilon_D} \times \text{MC}$
    - Possibility of Long-run Profits
    - Response of Monopoly to Shifts in Demand
    - Response of Monopoly to Cost Changes
    - Excise Taxes and Monopoly
    - Deadweight Loss due to Monopoly
    - Regulation: Effect of Price Ceilings
10. Market Power and Pricing Strategies
    - Preventing Resale
    - Perfect Price Discrimination (First Degree)
    - Price Discrimination: Segmented Markets (Third Degree): $p_i/p_j = (1+1/\varepsilon_j)/(1+1/\varepsilon_i)$ where ε is the signed elasticity of demand
    - Indirect Price Discrimination (Second Degree): Quantity Discounts, Versioning, and Coupons
    - Price Discrimination: Bundling
    - Advanced Pricing Strategies: Two-part Tariffs

11. Imperfect Competition
    - (Nash) Equilibrium in Oligopoly
        - Best Responses
        - Equilibrium as Mutual Best Responses
        - Example: Advertising Game
        - Dominant Strategies
    - Oligopoly: Few sellers of identical or differentiated products. Esp. duopoly = 2 sellers.
    - Cartels
    - When are Cartels unstable?
    - Cournot Competition
        - Cournot Competition with two firms
        - Cournot Competition with many firms
        - Cournot Competition with entry
    - Stackelberg Competition
    - Betrand Competition with Identical Goods ($P = \mathrm{MC}$)
    - Betrand Competition with Differentiated Goods (Reaction Functions)
    - Monopolistic Competition
12. Game Theory
    - What is a Game?
        - Pure and Mixed Strategies
        - Expected Payoffs
        - Nash Equilibrium
        - Dominant Strategies
    - Games with Multiple Nash Equilibria
        - Coordination Game
        - Escape! (full information)
    - Games that require Mixed Strategies
        - Rock, Paper, Scissors
        - Escape! (partial information)
    - Extensive Form Games
        - Imperfect Information
        - Perfect Information
        - Solution by Backwards Induction
    - Repeated Games
    - Grim Trigger and Tit-for-tat: Probabilities and Discounting
    - Sequential Games
    - Committment and Credibility
    - Entry Deterance