

Key topics and concepts for 2nd midterm

Monopoly theory

- Causes of monopoly
 - Barriers to entry
 - Control over unique resources, patents, other legally protected monopolies
 - Product differentiation
 - Natural monopoly: pervasive economies of scale at level of full market
- $MR < P$
 - Expanding output means lowering price of earlier units as well as the new one
 - Demand curve for firm slopes downward
 - MR curve is below demand curve (twice as steep in linear case)
 - $MR < 0$ when demand is inelastic
- Profit maximization
 - Choose Q where $MR = MC$ (if $P > AVC$)
 - Shut down (produce $Q = 0$) if $P < AVC$
 - Price at level demand curve allows at optimal Q
 - Profit (loss) is rectangle bounded by vertical axis, Q, and D and ATC at Q
- Inefficiency
 - Monopoly produces where $P > MC$, so there is “contrived scarcity”
 - In natural monopoly, regulator cannot choose efficient point because firm makes losses
- Monopolistic competition
 - Heterogeneous product means highly (but imperfectly) elastic demand
 - Free entry drives economic profit to zero
 - Demand falls with entry until firm’s D is tangent to ATC
- Price discrimination
 - Must be able to prevent resale from low-price markets to high-price
 - First-degree: charge every unit at exact willingness to pay
 - Requires perfect knowledge by firm of demand
 - No consumer surplus
 - $P = MC$ at margin, so no efficiency loss
 - Third-degree: market segmentation
 - Charge high price in market where demand is less elastic
 - Second-degree: Customers separate themselves into segments
 - Does not require knowledge by firm
- Two-part tariffs: Elastic demand for “hardware system” and then inelastic demand for “software applications” that use hardware

Oligopoly

- Few producers means strategic interaction among firms
- Some barriers to entry allow some profits to persist
- Game theory to analyze strategic interaction
 - Nash equilibrium: each player is doing best given what others do
 - Reaction function gives optimal response to other
 - Dominant strategy = same decision regardless of what other does
- Collusion is prisoners' dilemma game and tends to break down
- Cournot model
 - Each takes other's Q as given and decides own Q to max profit
 - Outcome is between collusion (monopoly) and competition
- Bertrand model
 - Each takes other's P as given and decides own P to max profit
 - Leads to price wars and $P = MC$ if homogeneous product
- Stackelberg model
 - One dominant firm sets decision taking into account the responses from the fringe firms, which are too small to affect leader individually
- Common games
 - Prisoners' dilemma
 - Battle of sexes
 - "Mixed strategy" games such as penalty kicks
 - Grim and maximin strategies
 - Repeated games vs. one-shot
 - Sequential games in which one player moves first

Factor markets

- $MRP = MR \times MP$
- If firm is competitive in output market, $MR = P$ and $MRP = P \times MP$
- If firm is price taker in input market (usual) then max profit at $MRP = \text{price of input}$
 - This is same condition as $MR = MC$ in output market
 - Firm's demand curve for input is MRP curve (w on vertical axis and L on horizontal)
- Industry input demand is more elastic than horizontal sum of firms' individual demands because of change in output price as higher input price is passed through to output
- Long-run demand is more elastic than short-run due to options for substitution
- Economic rents are "producer surplus" in input market: payments to factors in excess of their "reservation" price

Labor markets

- Labor is different than other economic commodities
 - Perfectly heterogeneous
 - Workers have preferences about jobs
- Labor supply
 - Trade-off between leisure and goods
 - Substitution and income/wealth effect of change in wage
 - Labor supply curve will bend backward if income effect (–) dominates substitution effect (+)
- Human capital
 - Acquired characteristics that advance productivity
 - Education, experience, health
 - Differences in amount and kind of human capital lead to segmentation in labor market
- Unions
 - Act as collective monopoly in labor market
 - Would lead to inefficiency if market were otherwise competitive, but not if firms have monopsony power on the other side
 - Manage labor relations within firm/industry
- Wage differentials
 - Higher wages for:
 - High productivity workers
 - Undesirable jobs
- Efficiency wages to motivate workers
- Minimum wages
 - May act like wage floor leading to unemployment in unskilled markets
 - Probably little effect on most workers because their equilibrium wage is higher

Capital markets

- Capital = durable
 - Physical vs. financial capital
 - Capital is a stock, investment is flow of new capital
- Present value formula
- Bonds prices are negatively related to market interest rates (for any given coupon rate on the bond)
- Net present value = present value of the stream of benefits and costs associated with a project
 - Invest in the project if $NPV > 0$
 - Rise in interest rate usually lowers NPV because benefits are in future and costs are now

- Nominal and real interest rates
- Real interest rate is equilibrium determined by supply and demand for loanable funds

General equilibrium

- Pareto optimality
- Efficiency in exchange: All have same MRS
- Efficiency in input use: All have same MRTS
- Allocative efficiency: $MRS = MRT$
- Perfect competition assures all three through “invisible hand” of prices
- Edgeworth box
 - From any endowment point, lens-shaped area is area of mutual gains
 - Contract curve connects points of tangency between indifference curves
 - All points on contract curve are efficient, but some are better for one consumer than the other
- First theorem of welfare economics: perfect competition is efficient
- Second theorem: different efficient points have different equality implications

Externalities

- Positive or negative external effects of one’s actions
- Social cost/benefit = private plus external
- Private costs affect decisions, so presence of externalities leads to economic inefficiency
- Efficient amount of pollution is where marginal social cost of pollution = marginal abatement cost
- Policies to redress externalities
 - Pigouvian tax
 - Emission standards (with or without cap and trade)
 - Cap and trade allows the “cheapest” sources of abatement to occur
- Coase theorem
 - Private sector can settle externalities if transaction/negotiation costs are zero
 - Clear property rights make this easier
 - Not feasible in cases of many affected agents
- Tragedy of the commons
 - Lack of property right means over-use of common-property resources (fishing case)

Public goods

- Voluntary contribution experiment
- Nonrivalry and nonexcludability

- Free-rider problem with all using but no one paying
- Under-provision by market; government must usually provide
- Due to nonrivalry, we add up demand curves vertically to get total demand for public goods
 - Optimal quantity is where $MC =$ this total demand

Technological change

- Knowledge is a public good: nonrival and nonexcludable
 - Little incentive for private provision
 - Appropriability mechanisms attempt to provide incentives for innovation
 - If innovation diffuses, then firm cannot profit because others enter or lower costs to match
 - Knowledge dilemma: protecting innovations from competition leads to monopoly inefficiency, not protecting them means little incentive to innovate
 - Short-run vs. long-run efficiency
- Appropriability mechanisms
 - Patents
 - Secrecy
 - Staying ahead
- Schumpeter's creative destruction and Baumol's "red-queen game"
 - Firms enjoy some monopoly power due to previous innovations
 - Must use up the monopoly rents to do R&D to keep up
 - Running as fast as you can just to keep up
 - Economic profit is zero when R&D costs are included

Inequality and poverty

- Inequality of what? Opportunity? Income? Wealth? Earnings?
- Rawlsian justice
- Lorenz curve and Gini coefficient
- Marginal productivity theory of income distribution
 - Variations causing income differences
- Does greater equality require less efficiency?
 - Okun's leaky bucket