Micro exam sheet

Michael B. Nattinger

March 15, 2021

1 Discussion 4 (ME)

- Walrasian price stabilit: raise price if net demand is positive and lower if negative
- Marshallian quantity stability: raise supply quantity if demand price exceeds supply price
- Eqm may not be marshallian stable if the supply curve is the supply curve is backwards bending
- Demand elasticity $\epsilon = \frac{dQ_D P_D}{dP_D Q_D}$
- Supply elasticity $\eta = \frac{dQ_S P_S}{dP_S Q_S}$
- tax incidence theorem: the share of a small tax paid by demand is equal to $\frac{\eta}{\eta - \epsilon}$
- tax irrelevance theorem: the total amount of lost surplus is invariant to whom the tax is levied upon
- Costs are escapable if can be avoided, sunk if not.
- Costs are fixed if invariant to quantity, variable if not.
- In the short run, fixed costs are inescapable. All costs are escapable in LR.
- Starting at a LR allocation, firms will exit if average escapable cost $> p$, and will not otherwise.

2 Discussion 5 (MP)

- Perfect competition: firms are price takers with no market power. $P = MC$
- Monopoly: a single firm with market power, equates marginal revenue to marginal cost: $MR = P(Q) + QP'(Q) = MC$

- Cartels: finite number of firms acting together as a monopoly. $MC_i = MR$ where MR is the marginal revenue for the cartel as a whole. $MC_i = P(Q) + Q\frac{\partial P(Q)}{\partial q_i} = \frac{\partial TC}{\partial q_i} = MR = P(Q) + QP'(Q)$
- Cournot: each firm independently maximizes their own profits. Firms take the production of others as given and sets $MR_i = P + q_i P'(Q) = MC_i$
- Stackleberg: Leader deduces follower's best response function, and maximizes their profits given the response function of the follower.
- First degree price discrimination: monopolists know the exact valuation of each consumer and can charge a personalized price to everyone. Monopolists extracts entire surplus but eliminates monopoly inefficiency.
- Second degree price discrimination: cannot distinguish between different types of consumers at all but can charge different rates for different selected quantities, i.e. bulk pricing.
- Third degree price discrimination: firm only knows a set of groups of consumers and charges a different price to each group.

3 Discussion 6 (Externalities)

- Piguovian tax τ makes private cost equal to total social cost. Let $\tau = \delta(q)$, set tax such that $B'(q) = C'(q) + \delta(q)$
- More useful, think of p. tax as adding in the externality that they are ignoring (from the other person) into their profit function.
- Coasian bargaining is another way to resolve externality issues. Property rights. Efficient outcome will arise regardless of who owns property rights, and piguovian tax in this case hurts welfare.
- Coase theorem: max total profits
- Public goods are nonexcludable - cannot prevent anybody from consuming them.
- Rival good - consumption by others increases difficulty or cost of consuming the public good.
- No congestion - pure public good.
- Tragedy of commons is classic example of rival public goods. Can be captured by game theory and fixed via pigouvian tax.

- Nonrival public goods: efficient funding of public goods occurs when the sum of everybody's marginal rate of substitution between private goods and public goods is equal to the marginal rate of transformation between the two goods. Samuelson condition, and $\sum_{i=1}^{n} \frac{u_G^i}{u_w^i} = \frac{1}{f'(t)}$

- Lindahl equilibrium: charges different individuals different prices for units of the public good so as to make everyone willingly contribute to hit the efficient public good provision.

- a Lindahl eqm is an allocation and individual public good prices such that $(x_i^*, G^*) = \arg\max_{x_i,G} u^i(x_i, G) s.t. x_i + p_i G = w_i$

- Write utility (if quasilinear) $U^i = m - s_i S + u(S)$ and take FOCs for all i to get S^* as a function of price; all S^* are in equilibrium so all are equal, and write shares in terms of other shares e.g. $s_1 = 2s_2$, and then prices sum to 1 e.g. $s_1 = 2/3, s_2 = 1/3$.

4 Discussion 7 (GE)

- Given prices solve for allocations - consumer side and firm side

- Market clearing to connect firm and household sides.

- Stochastic GE: Maximize expected utility (bernoulli) s.t. allocations

- market clearing to find prices of securities.

- Edgeworth box: fixed allocations, 2 goods, 2 consumers. Initial allocation. Contract curve equatios marginal rates of substitutions between the two consumers:

- $\frac{\partial U_X^1}{\partial U_Y^1} = \frac{\partial U_X^2}{\partial U_Y^2}$

- Note that if utilities are convex, equating MRS doess not find the optimum but rather a minimum in some sense, and (usually) the border of the box is the actual optimum.

- another thing to worry about are bliss points - if not lns. If both have it then contract curves connect the two (straight if preferences are circular)

- Trade offer curves: one agent, start at some initial allocation, plot where you end up given different price ratios froom 0 to ∞.

- max utility s.t. constraints, solve for eqm using (opt conds)+(budget cons)+(mkt clr).