Lecture Notes 3

August 29, 2023

EC1101E Summary Notes

Elasticity

1. **Definition:** Elasticity is a measure of the **responsiveness** of Q^D or Q^S to one of its determinants (price, price of a related good, income).
2. **Type of Elasticity:** Price elasticity of demand、Cross-price elasticity of demand、Income elasticity of demand、Price elasticity of supply

2.1. Price Elasticity of Demand

1. **Definition**

- How much Q^D responds to a change in P.
- Loosely speaking, it measures the price-sensitivity of buyers' demand.
- Use the midpoint(the average of start and end values) method to calculate Percentage Changes

1. **Character**:
   - The price elasticity of demand is closely related tothe slope of the demand curve. Slope ↑ elasticity ↑
   - The price elasticity of demand is greater for **narrowly defined goods**(many substitutes) than for **broadly defined ones**(fewer substitutes).
   - The price elasticity of demand is greater for **luxuries** than for **necessities**.
   - The price elasticity of demand is greater when close substitutes are available.
   - The price elasticity of demand is greater for expensive goods than for cheap ones.
   - The price elasticity of demand is greater in the long run than in the short run.
2. **Type**

Condition	**D curve**	**Consumers' price sensitivity**	**Elasticity**
Perfectly inelastic demand	vertical	None	0
Inelastic demand	relatively steep	relatively low	<1
Unit elastic demand	intermediate slope	intermediate	1
Elastic demand	relatively flat	relatively high	>1
Perfectly elastic demand	horizontal	extreme	extreme

3. **Revenue = P×Q**
   - When D is **elastic**, a price increase causes revenue to ↓
   - When D is **inelastic**, a price increase causes revenue to ↑

2.2. Cross-price Elasticity of Demand
- How much Q^D responds to a change in the price of another good.
- For substitutes, cross-price elasticity > 0
- For complements, cross-price elasticity < 0

2.3. Income Elasticity of Demand
- How much Q^D responds to a change in income
- For normal goods, income elasticity > 0
- For inferior goods, income elasticity < 0

2.4. Price Elasticity of Supply
1. **Definition**
   - How much Q S responds to a change in P.
   - Loosely speaking, it measures the price-sensitivity of sellers' supply.
2. **Character**
   - Slope ↑ elasticity ↓
   - The more easily sellers can **change the quantity** they produce, the **greater** the price elasticity of supply
   - Price elasticity of supply is greater in the long run than in the short run
3. **Type**

Condition	**D curve**	**Sellers' price sensitivity**	**Elasticity**
Perfectly inelastic supply	vertical	None	0
Inelastic supply	relatively steep	relatively low	<1
Unit elastic supply	intermediate slope	intermediate	1
Elastic supply	relatively flat	relatively high	>1
Perfectly elastic supply	horizontal	extreme	extreme

The Efficiency of Markets
1. **Welfare economics**: studies how the allocation of resources affects economic well-being.
2. **Willingness to Pay (WTP)**: the maximum amount the buyer will pay for that good
   - A buyer will buy a good only if his willingness to pay (WTP) is at least as high as the price.
3. **Consumer surplus (CS)**
   - The amount a buyer is willing to pay minus the amount he actually pays.
   - Total CS is the area below the D curve, above the price, from 0 to Q.

4. **Cost and Producer Surplus**
    1. **Cost** is the value of everything a seller must give up to produce a good including the cost of inputs and the value of the seller's time.
    2. A seller will produce and sell a good only if the price is at least as **high** as his cost.
    3. Hence cost is a measure of **willingness to sell**.
5. **Producer surplus (PS)**
    - The amount a seller is paid for a good minus his cost
    - Total PS is the area above the S curve below the price, from 0 to Q.
    - Fall in PS due to remaining sellers getting lower P

Total Surplus and Efficiency

1. CS = Value to Buyers – P = buyers' gains from participating in the market
2. PS = P – Cost to Sellers = sellers' gains from participating in the market
3. Total Surplus = CS + PS = Value to Buyers – Cost to Sellers = total gains from trade
    - An allocation of resources is **efficient** if it **maximizes** total surplus
4. Efficiency means:
    - The goods are consumed by the buyers who **value them most highly**.
    - The goods are produced by the sellers with the **lowest cost**.
5. The sellers with the **lowest cost** are the ones who produce the good.

Market Economy

1. **Definition**: The invisible hand works through the price system.
2. **Relationship**
    - The **interaction** of buyers and sellers determines prices
    - Each price reflects the **buyer's valuation** of the good and the **seller's cost** of producing the good
    - Prices guide self-interested households and firms to allocate resources such that society's well-being is **maximized**.
3. **Government Intervention**: To allocate resources efficiently and maximize total surplus, the central planner would need to know
    - every seller's **cost**
    - every buyer's **WTP**
    - for every good in the **entire economy**