

HANDOUT 3

1 Reminder

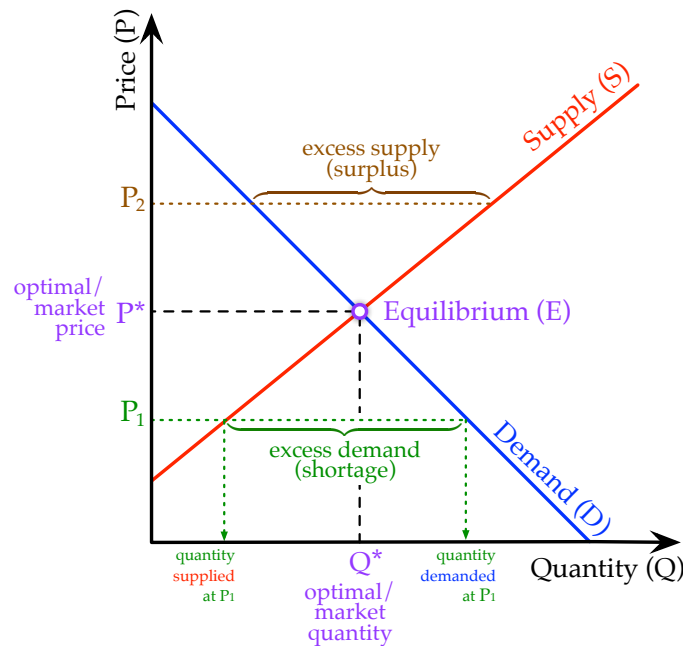
- Any comments feel free to use the anonymous *Feedback Survey* (on my website under *Teaching*).
- Homework Ch4: due next Monday (5/1) at 11:00 am.

Plannig

- 5/1 discussion section: Midterm review
- 5/8 No discussion: extra OH at SST 338 from 3pm - 5pm
- 5/9 Midterm exam

2 Demand and Supply Curve

- What's the difference between *demand* v.s *quantity demanded*?



- **Law of demand** (negative relationship between P and Q) v.s **law of supply** (positive relationship between P and Q)
- Individual demand/supply (curve) v.s aggregated/market demand/supply (curve)
 - Market demand/supply = **horizontal** aggregation of individual demand/supply (how to estimate?)
- Curve shifters:
 - Impact factors that belong to one of the axes: **move along** the curve
 - Impact factors not included in the axes: **shifts** the curve
 - * Demand shifters: income, price of substitutes/complements, preference (taste), expectations
 - * Supply shifters: input price, technology, expectations

3 Sensitivity Analysis

- How much will y change when x changes? How responsive/sensitive is y to x ?
 \Rightarrow We want to know when x changes, how much y will change.
our focus
 \Rightarrow We want to know about the x **elasticity**.

Elasticities	What we want to do	\rightarrow Analyze the impact of the change
Price elasticity of demand	change the price (P)	\rightarrow change in quantity demanded (Q^d)
Income elasticity of demand	change the income (I)	\rightarrow change in quantity demanded (Q^d)
Cross-price elasticity of demand	change in price of good x (P_x)	\rightarrow change in the quantity demanded of good y (Q_y^d)

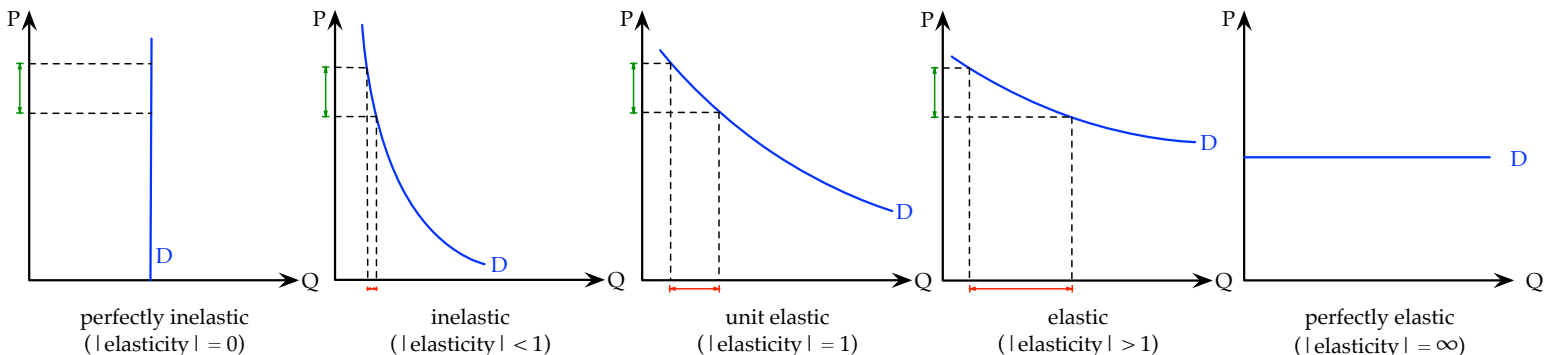
3.1 Elasticity (just a number, no unit)

- Price elasticity of demand:
 - We intend to adjust the price strategically \rightarrow need to assess how much the change in price will impact the quantity demanded (will it be substantial or minimal?)
- Price elasticity can be different: suppose we are selling coffee *on top of a mountain* v.s *on the ground*
 1. Mountain top case: we are the only coffee seller
 - \Rightarrow Charge high price due to limited options leads to more revenue.
 - \Rightarrow Coffee on *mountain top* is price **inelastic**, consumers are **not sensitive** to price change.
 2. Ground case: there are many other coffee sellers including *Starbucks, Peet's, Philz, Blue Bottle*
 - \Rightarrow Competitive pricing is necessary to attract customers.
 - \Rightarrow Coffee on *ground* is price **elastic**, consumers are **sensitive** to price change.
- Formula:

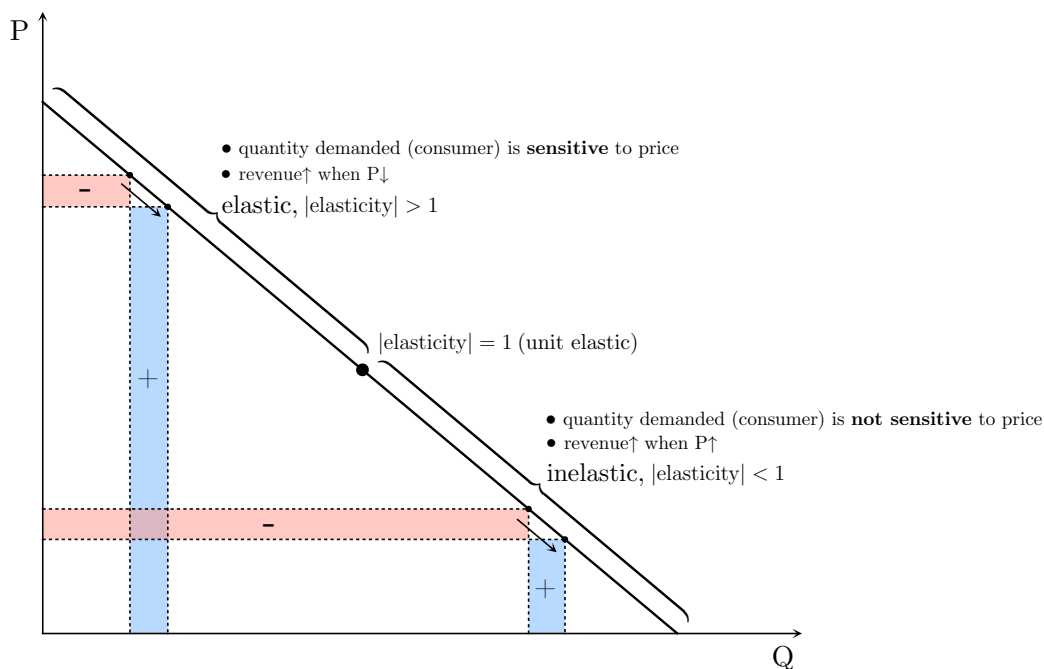
$$\text{price elasticity of demand} = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}} \quad (1)$$

$$\% \text{ change from } A \text{ to } B = \frac{B - A}{\text{midpoint between } A \text{ and } B} \times 100\% \quad (2)$$

- Sign of elasticity:
 - Negative: P and Q^d inversely related, elasticity of demand (law of demand), complement goods
 - Positive: P and Q^d directly related, elasticity of supply (law of supply), substitute goods



- Slope does not directly relate to elasticity (constant slope \neq constant elasticity)



\Rightarrow Demand curve with *constant elasticity* (same elasticity everywhere) must be **convex** (nonlinear).

4 Exercises

- Find the price elasticity of demand for *Beef Wellington* given price = \$70 (quantity demanded = 500), price = \$90 (quantity demanded = 300).
 - 2, and an increase in price will result in an increase in total revenue for Beef Wellington.
 - 2, and an increase in price will result in a decrease in total revenue for Beef Wellington.
 - 2, and an increase in price will result in an increase in total revenue for Beef Wellington.
 - 3, and an increase in price will result in an increase in total revenue for Beef Wellington.

- When the price of Nintendo Switch increases from \$260 to \$400, the quantity demanded of the game *The Legend of Zelda: Tears of the Kingdom* decreases from 1000 to 400. What is the cross-price elasticity of demand?
 - 4.29, and Switch and the game are complements.
 - 4.29, and Switch and the game are substitutes.
 - 2.02, and Switch and the game are complements.
 - 2.02, and Switch and the game are substitutes.

3. If the cost of bread rises, we can see a drop in the demand for strawberry jam and a rise in the demand for bagels. Based on this observation, which of the following statements is accurate?
- (a) Bread and jam are substitutes.
 - (b) Bread and bagels are substitutes.
 - (c) The cross-price elasticity between bread and jam is negative.
 - (d) The cross-price elasticity between bread and bagels is negative.
4. Let's analyze the dairy industry in California. Assume that due to a disease outbreak among dairy cows, the supply of cheese curds has reduced this year. What is the impact of this reduction in supply on the demand for cheese curds?
- (a) This results in the supply curve shifting to the right.
 - (b) This results in a movement along the supply curve.
 - (c) This results in a shift of the demand curve.
 - (d) This results in a movement along the demand curve.
5. If oil prices sharply decline, resulting in a significant drop in gasoline prices. How would the demand for gasoline-powered cars be affected?
- (a) right and cause the price of ICE cars to decrease.
 - (b) right and cause the price of ICE cars to increase.
 - (c) left and cause the price of ICE cars to decrease.
 - (d) left and cause the price of ICE cars to increase.
6. Suppose there is a commodity with a demand curve that slopes downwards. Which changes could lead to a rightward shift in the demand curve?
- (a) The price of the good decreases.
 - (b) The price of labor, an input in producing the good, decreases.
 - (c) The price of a substitute good in consumption increases.
 - (d) Income increases and the good is an inferior good.
7. Whenever there is an increase in _____ and a decrease in _____ we can't tell which direction the _____ moves in the new equilibrium.
- (a) demand, supply, price
 - (b) supply, demand, quantity