Introductory Microeconomics

Tutorial 4

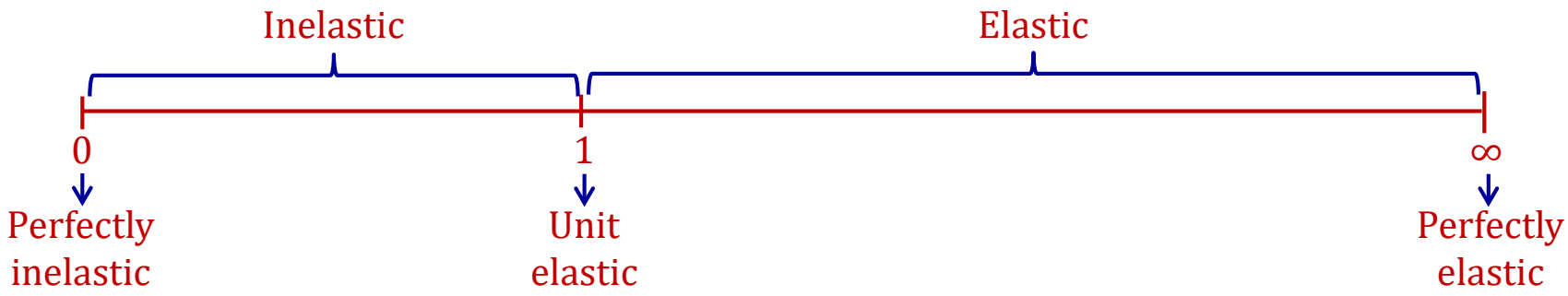
Nhan La

Task 1

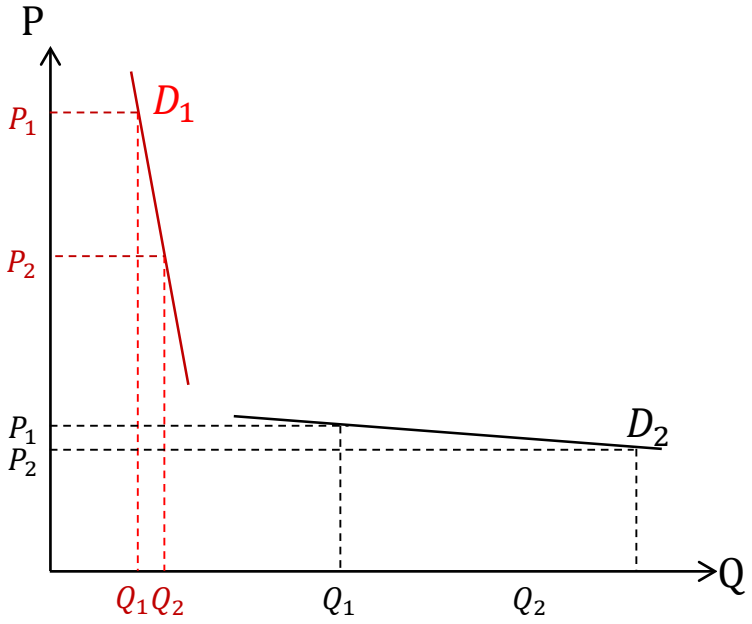
- Note on ε_D
  - Percentage change in quantity demanded per percent change in price
  - Conventionally reported as a positive number

$$|\varepsilon_D| = \left|\frac{\partial Q_D/Q_D}{\partial P/P}\right| = \left|\frac{\partial Q_D}{\partial P} \text{x} \frac{P}{Q_D}\right|$$

- Value range and price elasticity (applied for both ε_D and ε_S)

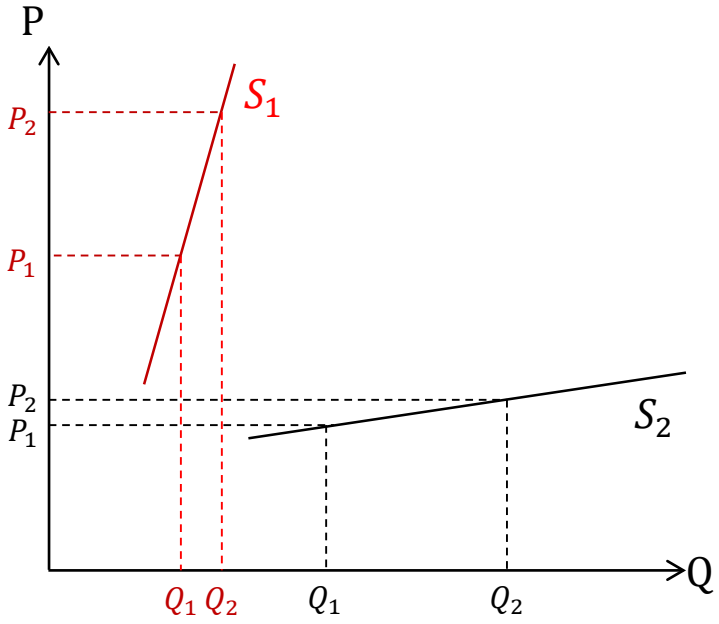


Task 1



D_1: Very inelastic. A small change (decrease) in quantity demanded followed a big change (increase) in price.

D_2: Very elastic. Why?



S_1: Very inelastic. A small change (increase) in quantity supplied followed a big change (increase) in price.

S_2: Very elastic. Why?

Task 1

a/ Own price $\boldsymbol{\varepsilon_D}$

Services	$\boldsymbol{\partial P/P}$	$\boldsymbol{\partial Q_D/Q_D}$	$\boldsymbol{\varepsilon_D}$
Regular mails	1	-1.5	Elastic
Parcels	1	-1	Unit elastic
Home broadband	1	-0.5	Inelastic

Task 1

b/ Cross-price $\boldsymbol{\varepsilon_{AB}}$

Services	$\partial P^A / P^A$	$\partial Q^B{}_D / Q^B{}_D$	ε_{AB}	Relationship
Regular mails vs. Home broadband	1	>0	>0	Substitutes
Parcels vs. Home broadband	1	<0	<0	Complements
Regular mails vs. Parcels	1	=0	=0	Neither

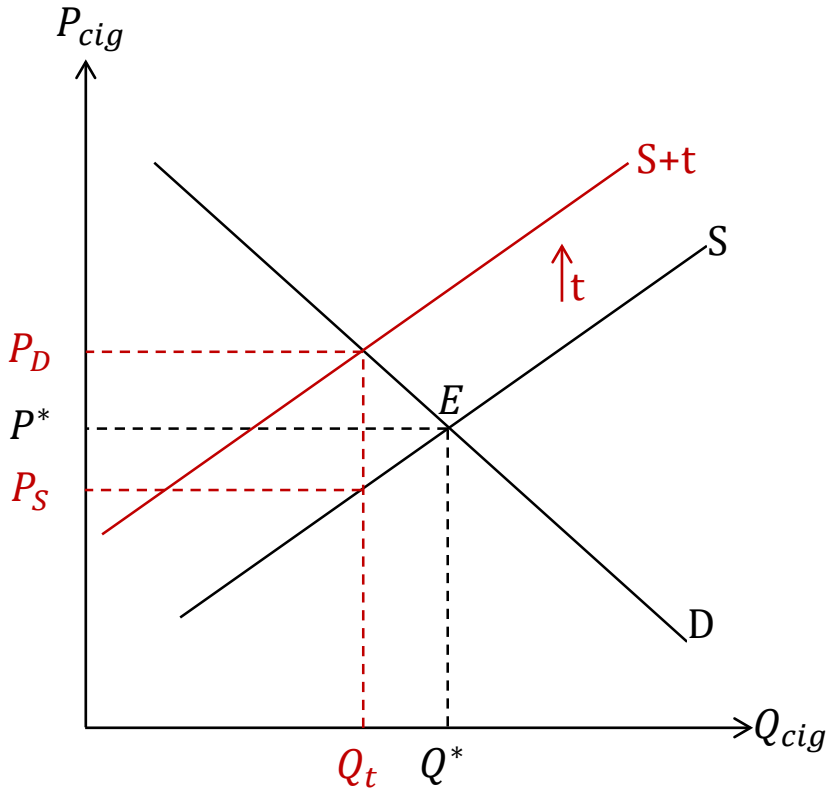
Task 1

b/ Cross-price $\boldsymbol{\varepsilon_{AB}}$

Services	$\boldsymbol{\partial P/P}$	$\boldsymbol{\partial Q_D/Q_D}$	$\boldsymbol{\varepsilon_D}$	$\boldsymbol{R = P}$x$\boldsymbol{Q}$
Regular mails	1	-1.5	Elastic	Decrease
Home broadband	1	-0.5	Inelastic	Increase

Task 2

- Consumers:
  - Price increases from P^* to P_D
  - Tax borne: $P_D - P^*$
- Sellers:
  - Price decreases from P^* to P_S
  - Tax borne: $P^* - P_S$
- Who bears more tax?
  - Compare $P_D - P^*$ and $P^* - P_S$
  - Or, compare ε_D and ε_S
- Quantity traded:
  - Decrease from Q^* to Q_t

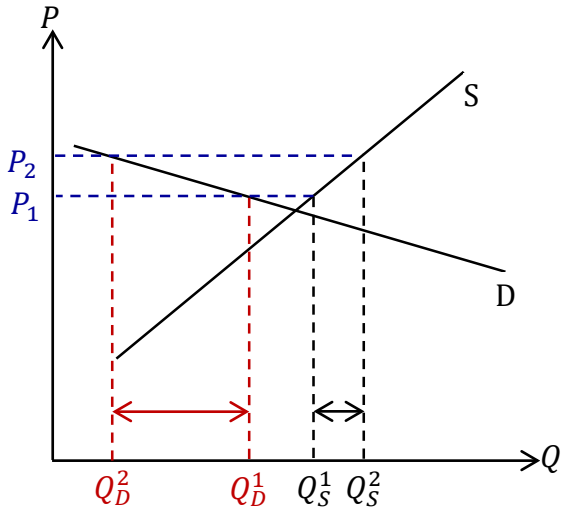


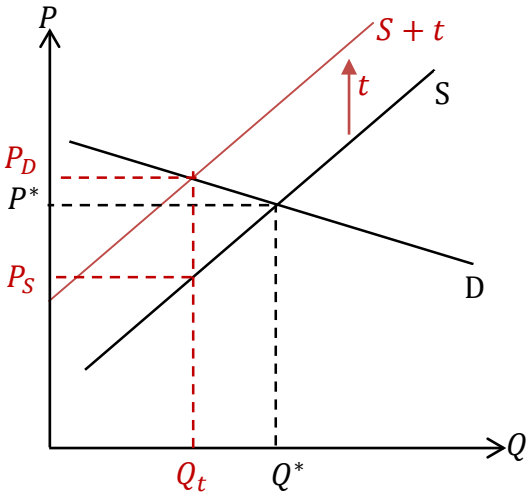
Task 2

- Less elastic (or more inelastic) side bears more tax.
- Use absolute value of slopes to compare elasticities of demand and supply
- General forms

  Demand: $Q_D = a_D P + b_D, a_D < 0$

  Supply: $Q_S = a_S P + b_S, a_S > 0$
- If $|a_D| > a_S$
  - Demand is more elastic than supply
  - That means, as price increases from P_1 to P_2, the decrease in Q_D is greater than the increase in Q_S
  - Suppliers will bear more tax if there is one.
- If $|a_D| < a_S$? Similar rules apply.





Task 3

Demand: $L_D = 2000 - 50W$

Supply: $L_S = 1000 + 50W$

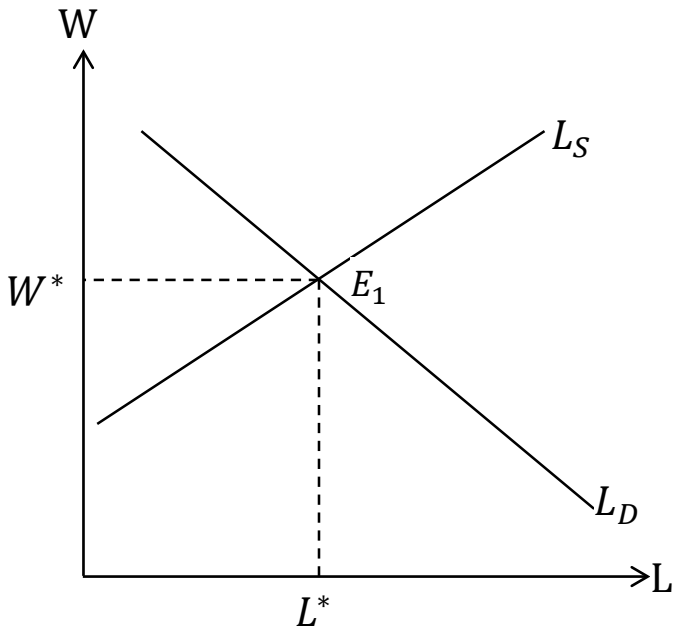
a/ To find wage W^* and labour traded L^* at the equilibrium E_1, solve:

$$\begin{cases} L^* = 2000 - 50W^* \\ L^* = 1000 + 50W^* \end{cases}$$

- From this, to find W^*, set:

$2000 - 50W^* = 1000 + 50W^*$

$\Leftrightarrow W^* = 10$



- To find L^*, plug W^*value back to either equation:

$L^* = 1000 + 50\text{x}10 = 1500$

Or: $L^* = 2000 - 50\text{x}10 = 1500$

Task 3

b/ Recall

$$\varepsilon = \frac{\partial Q/Q}{\partial P/P} = \frac{\partial Q}{\partial P} \text{x} \frac{P}{Q}$$

- Here, Q = labour; S = wage, so:

$$\varepsilon = \frac{\partial L/L}{\partial W/W} = \frac{\partial L}{\partial W} \text{x} \frac{W}{L}$$

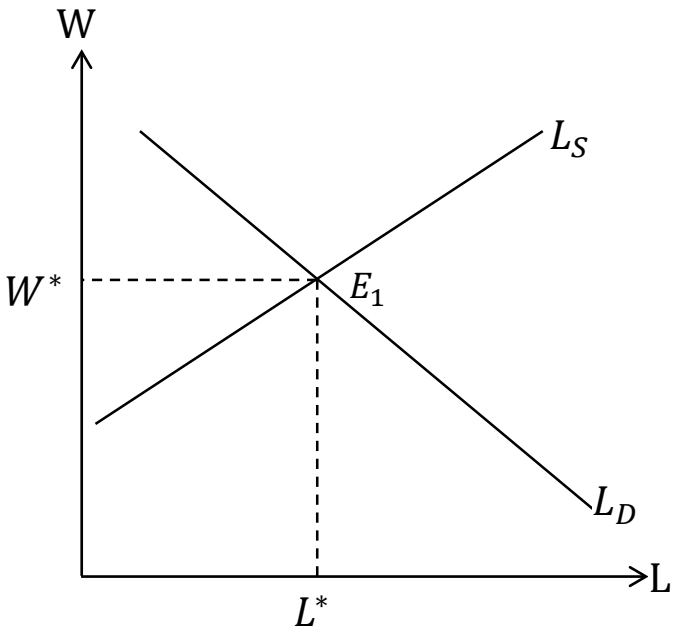
- Hence, for ε_D at E_1:

$$\varepsilon_D = \frac{\partial L_D}{\partial W} \text{x} \frac{W^*}{L^*} = -50 \text{x} \frac{10}{1500} \approx -0.33$$

- For ε_S at E_1:

$$\varepsilon_S = \frac{\partial L_S}{\partial W} \text{x} \frac{W^*}{L^*} = 50 \text{x} \frac{10}{1500} \approx 0.33$$

- Both supply and demand are inelastic.



Task 3

c/ Wage subsidy only applies on workers.

Demand is unchanged. New curves:

Demand: $L_D = 2000 - 50W$

Supply: $L_S = 1000 + 50(W + 2)$

Supply (labour) curve is shifted to the right

- To find wage W^* (W'_D) and labour traded $L^*(L')$ at the equilibrium E_2, solve:

$$\begin{cases} L^* = 2000 - 50W^* \\ L^* = 1000 + 50(W^* + 2) \end{cases}$$

That gives: $W^* = 9$; $L^* = 1550$

- W^* (W'_D) is the wage that employers pay at equilibrium E_2.
- But workers will get: $W'_S = W^* + \text{subsidy} = 9 + 2 = 11$.