Apr. 13. 20
Monday

Chapter 6
Elasticity
المرونة

* P↑ ⇒ Qd↓ , by how much?
⇒ Elasticity: the degree of responsiveness, sensitivity of consumer to change in price.

P↑ ⇒ Qd ↓↓↓ "elastic" → eg: perfume
P↑ ⇒ Qd ↓ "less elastic" → eg: Salt
↳ الطلب عليه بقل بس مش لدرجة ما نشتريه ، بس العطر (حسب نوع السلعة)
(خاصة الفخمة والغالية) ← بقل الكمية المطلوبة بشكل أكبر
→ more elastic.

* Price elasticity of demand: the percentage change in the quantity demanded of a good in response to 1 percent change in its price

* If the consumer is relatively responsive to price change, demand is said to be elastic: perfume, resturant meals
* If the consumer is relatively unresponsive to price change, demand is said to be inelastic: medicine; gasoline

eg: $100 : 1000 units
(ازداد السعر) $101 : 999 units → $\frac{1}{1000}$ ⇒ inelastic (الطلب قل)
500 units → $\frac{1}{2}$ ⇒ elastic (الطلب قل كثير)

$$E_d = \frac{\%\Delta Q_d}{\%\Delta P} \quad \text{----- ①}$$

منحل "ع ① أو ②
"حسب السؤال"

$$E_d = \frac{Q_2 - Q_1}{Q_2 + Q_1} * \frac{P_2 + P_1}{P_2 - P_1} \quad \text{----- ②}$$

أرقام → ②
نسب مئوية → ①

e.g :-

Price	Qd
5	1
4	2
3	3
2	4
1	5

⇒ Calculate the price elasticity of demand for the price decrease from $5 to $4.

→ ②

Sol :- $\frac{2-1}{2+1} * \frac{4+5}{4-5} = \frac{1}{3} * \frac{9}{-1} = -3$

⇒ law of Elasticity.

$|E_d| = |-3| = 3$ "لازم يطلع سالب"

e.g :- Suppose that the price elasticity of demand for perfume has been estimated at -5, if the Qd increase by 10%, by how much the price have change? → ①

Sol :- $E_d = \frac{\%\Delta Q_d}{\%\Delta P} \Rightarrow -5 = \frac{10\%}{\%\Delta P}$

$\%\Delta P = -2\%$

Apr 15.20
Wednesday

* Sensitive for change in price :-

P↑ ⇒ Qd ↓ : inelastic (like medicine)

P↑ ⇒ Qd ↓↓↓ : elastic (like perfumes, meals)

* $Ed = \left|\frac{-1}{3}\right| = \frac{1}{3} = \frac{\%\Delta Qd}{\%\Delta P}$ ← → If price increase by 3% ; Qd will decrease by 1% ⇒ Interpret.

or: decrease ... increase (العكس بالعكس)

* $Ed = 3 \Rightarrow 3 = \frac{3}{1} = \frac{\%\Delta Qd}{\%\Delta P}$

→ If price increases by 1%, then Qd will decreases by 3%.

---

* $Ed > 1$; demand is elastic ($\%\Delta P < \%\Delta Qd$)

$Ed < 1$; demand is inelastic ($\%\Delta P > \%\Delta Qd$)

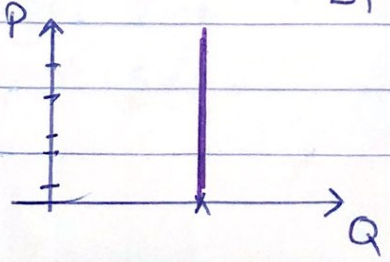
$Ed = 1$; demand is unit elastic ($\%\Delta P = \%\Delta Qd$)

---

* Extreme cases:

1. Perfect inelastic : (eg: insulin) → whatever price change (even large), results no change in Qd.

$Ed = \frac{\%\Delta Qd}{\%\Delta P} = \frac{\text{Zero}}{\%10\ (\text{أي رقم})} = \boxed{\text{Zero}}$ (Perfect)



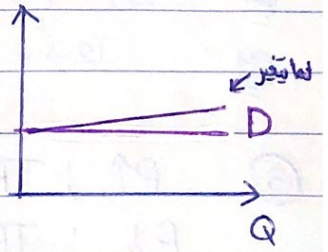
"vertical عمودي"

2. Perfectly elastic :

$$Ed = \frac{\%\Delta Qd}{\%\Delta P} = \frac{\text{large number}}{0.1\%} = \infty$$

Demand curve : "أفقي" Horizontal

التغير صغير كبير (الكمية بتتغير قليلة كبير).



---

* **Total revenue test (TR)** : the total amount received by seller from a sale of product.

① $TR = P.Q$ ⇒ If total revenue changes in opposite direction from price, Demand is elastic.

↓

$P\downarrow \Rightarrow TR\uparrow \Rightarrow$ Demand is elastic

for example :- $TR_1 = 10 \times 10 = 100$ لأن الـ Q زادت

$TR_2 = 5 \times 40 = 200$ بنسبة أكبر من نسبة

التي قل فيها السعر (price)

$\%\Delta Qd\uparrow > \%\Delta P\downarrow$

$300\% > 50\% \rightarrow$ elastic

---

eg

P	Q	TR
2	10	20
1	40	40

→ P↓ ; TR↑

(2→1) ; TR (20→40)

elastic.

(الأسهم عكس بعض ← elastic).

② If price and TR change in same direction ⇒ inelastic
(inelastic ← الأسهم بنفس الاتجاه) .

⇒ P↓ ; TR ↓

eg (2→1) ; (20 → 14) inelastic .

---

③ P↑ ; TR : no change
P↓ ; TR no change } ⇒ Unit elastic

---

* Determinants of price elasticity of demand :

Apr. 22.20
Wednesday

1- Substitute of product, more sub. , more elastic

⇒ P_B ↑ ⟶ Q_d ↓↓↓↓↓ "elastic"

e.g : P cigarettes (دخان) ↑ ⇒ Qd ↓ : بس مش كثير

عشان ما في للدخان بدائل .

P salt ↑ ⇒ Qd ↓ "inelastic"

P medicine ↑ ⇒ Qd ↓ "inelastic"

2- Propotion to price relative to income : → كم بتصرف على سلعة معينة من دخلك

$\frac{\text{Price of salt}}{\text{income}} = \frac{15}{4000}$ ↓ (for example) → inelastic

← فلما ارتفع سعر الملح ، ما رح يأثر كثير ، لأنه سعره ضئيل بالنسبة للدخل ، أما :

$\frac{\text{Price of cars}}{\text{income}} = \frac{50,000}{48,000}$ ↑ ⟶ elastic

more elastic ⇐ budget بالنسبة لل expenditure كلما زاد ال ⇐

⇒ more expenditure relative to one budgets ⇒ more elastic

⇒ Propotion ↓, elasticity ↓ (eg: salt)
↳ "less expenditure"

⇒ Propotion ↑ "more expenditure", elasticity ↑ (cars)

3- Whether the product is luxury or necessity.
كماليات أساسيات

more elastic ← ↳ less elastic

eg: vacations & electricity

P↑, Qd ↓↓↓ P↑, Qd ↓

⇒ Relatively elastic , ↳ less elastic

4- The amount of time involved, the larger the time period involved more elastic

P_x ↑ ⇒ "short run" ⇒ "inelastic"

P_x ↑ ⇒ "long run" ⇒ "elastic"

⇒ The larger the time period ⇒ more elastic.

---

* Price elasticity of supply: Apr 27

$$E_s = \frac{\% \Delta Q_s}{\% \Delta P}$$, P↑ ⇒ Q_s ↑ , $E_s > 0$

→

(تابع)

⇒ Q_S responsive to price change ⇒ supply is elastic

⇒ Q_S is unresponsive to price change ⇒ supply is inelastic

* $E_S > 1$; Supply elastic
  $E_S < 1$; Supply inelastic
  $E_S = 1$; Unit elastic

$$E_S = \frac{\%\Delta Q_S}{\%\Delta P} = \frac{2\%}{1\%} \Rightarrow \text{Elastic}$$

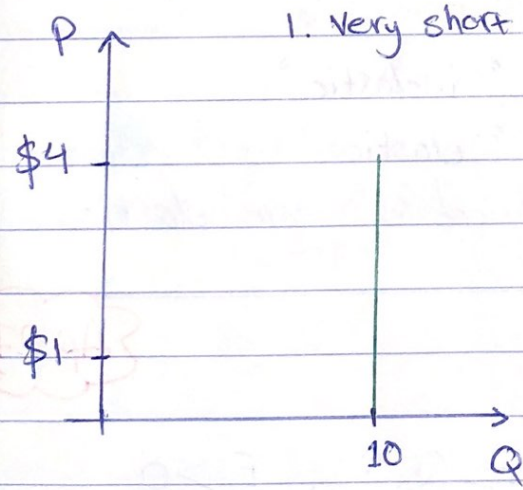
لأن التغير في السعر أعقبه تغير في Q_S وبنسبة أكبر منه.

$$E_S = \frac{0.5\%}{1\%} \Rightarrow \text{inelastic}$$

---

* Immediate market period; time is too short for producer to respond with a change in Q_S (1 night).

1. very short run :-

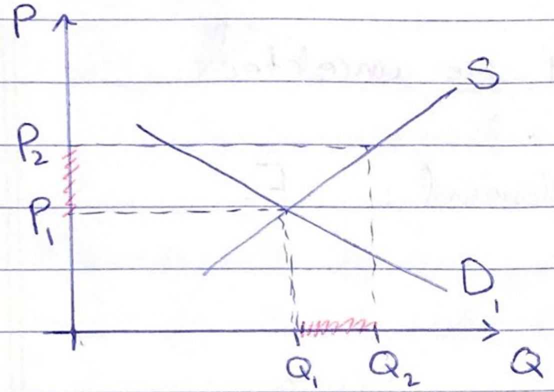


$\frac{0}{\%\Delta P} \Rightarrow$ Perfect inelastic

لأنه بقدرتش أزيد الانتاج (Q_S) في يوم وليلة بعد ارتفاع الأسعار (مثل الزراعة مثلاً).

Impact time on supply elasticity : 1, 2, ... : العوامل

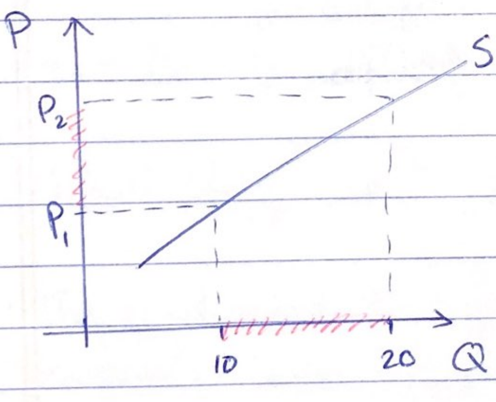
2. Short run : too short to change plant capacity but long enough to use the fixed size more or less intensively (زي مثال الانتاجية).



$P\uparrow \Rightarrow Q_s\uparrow$

elastic

3. Long run : time long enough to change even plant size (مثال الانتاجية) $\Rightarrow$ more and more elastic.



---

* Cross elasticity of demand :-

x, y : goods.

$$E_{xy} = \frac{\% \Delta Q_y}{\% \Delta P_x}$$

① $E_{xy} > 0$; $\frac{\% \Delta Q_y \uparrow}{\% \Delta P_x \uparrow}$; ∴ x, y are substitutes.

⇒

① $E_{xy} > 0$; x, y are subs. — مثل PoP, KFC

② $E_{xy} < 0$; x, y are complements — مثل الطماطم والخبز

③ $E_{xy} = 0$; x, y are unrelated.

---

* Income elasticity of demand : E_I

$$E_I = \frac{\% \Delta Qd \uparrow}{\% I \uparrow}$$

⇒ ① $E_i > 0$; normal "superior" (الدخل والطلب بنفس الاتجاه)

② $E_i < 0$; inferior (الدخل والطلب بعكس الاتجاه)