

MODUL / BAHAN AJAR

TEORI EKONOMI MIKRO I



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**FAKULTAS EKONOMI DAN BISNIS
UNIVERSITAS MULAWARMAN
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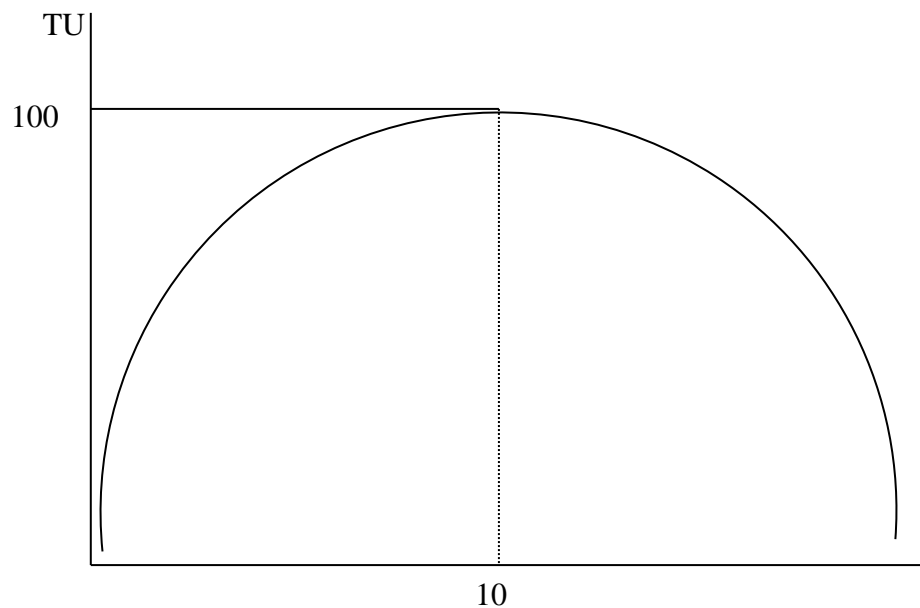
POKOK BAHASAN

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DAYA GUNA (UTILITY)

A. Pendekatan Kardinal.

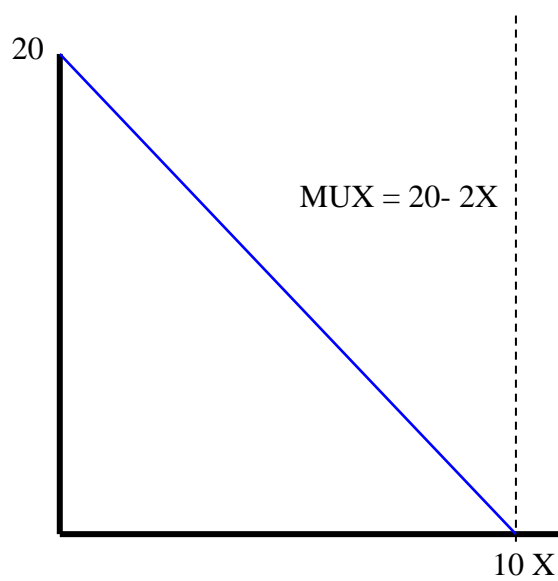
Total Utility atau $TUX = 20X - X^2$



Total marginal utility adalah : $\delta TU / \delta X = MUX = 20 - 2X$

Tabel : marjinal utility barang X.

X	1	2	3	4	6	7	8	9	10
MU	18	16	14	12	8	6	4	2	0



B. Pendekatan Ordinal

$$\text{Budge konsumen (B)} = H_x X + H_y Y$$

H_x : harga barang X

H_y : harga barang Y

X, Y : jumlah masing-masing barang.

$$Y = B_0/H_{0y} - (H_{0x}/H_{0y}) X$$

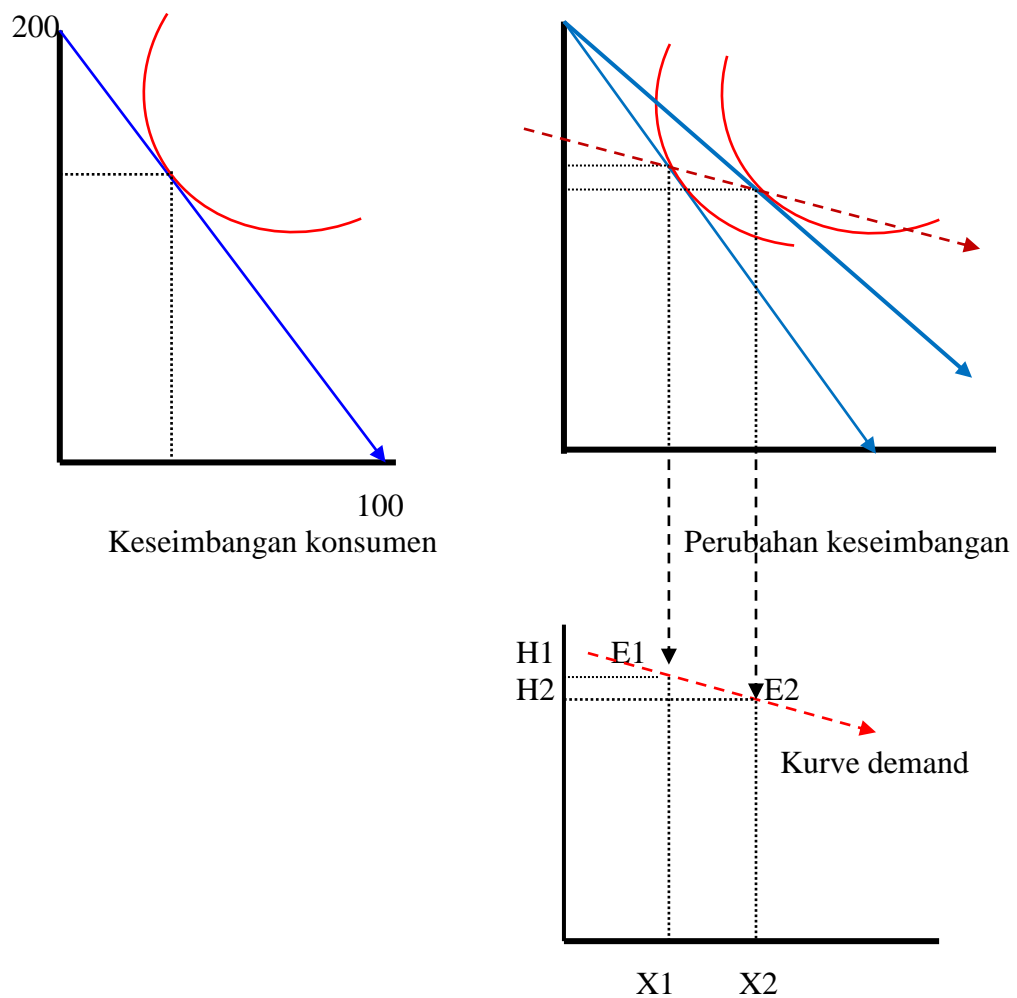
B_0/H_{0y} : intersep

$-(H_{0x}/H_{0y})X$: slope (kemiringan).

Jika diketahui B : 1000
 H_x : 10
 H_y : 5

$$\begin{aligned} \text{Maka persamaan Y} &= 1000/5 - (10/5) X \\ &= 200 - 2 X \end{aligned}$$

$$\text{Atau dalam X} = 100 - \frac{1}{2} Y$$



METODE LAGRANGE

Fungsi daya guna $U(X, Y) = X^{1/2} Y^{1/3}$
 Kendala $B_0 = H_{ox} X + H_{oy} Y$
 Fungsi majemuk $L = X^{1/2} Y^{1/3} + \lambda [(B_0 - (H_{ox} X + H_{oy} Y))]$
 λ : Lagrange

(1) $U(X, Y) = X^{1/2} Y^{1/3}$
 (2) $B_0 = H_{ox} X + H_{oy} Y$
 (3) $L = X^{1/2} Y^{1/3} + \lambda [(B_0 - (H_{ox} X + H_{oy} Y))]$

.....

.....

$X = 3/2 (H_{oy}/H_{ox}) Y$

$Y = 2/3 (H_{ox}/H_{oy}) X$

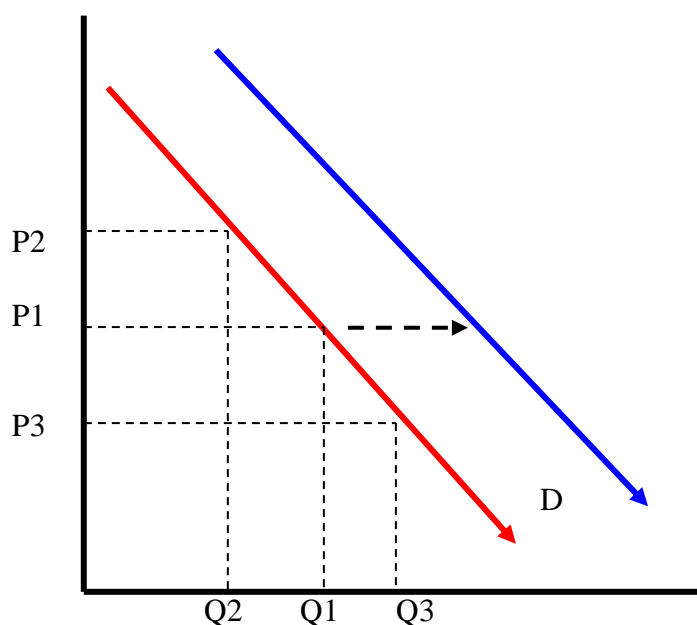
$X = (3 B_0) / 5 H_{ox}$

Jika Budget (B) = 600

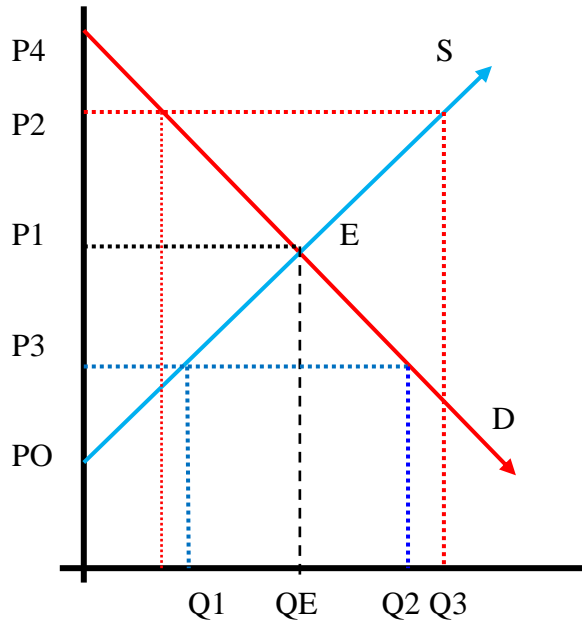
$(1800 = 600 \times 3 = 1800; 25 = 5 \times 5 = 25)$

X	$1800/25$ =72	$1800/30 =$ 60	$1800/50 =$ 36	$1800/100 =$ 18	$1800/150$ = 12
Hx	5	6	10	20	30

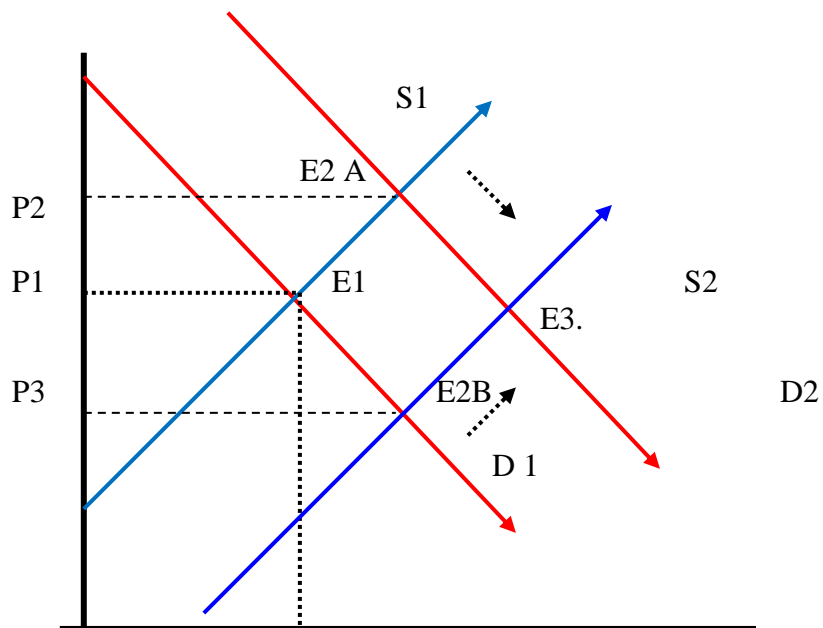
MOVING and SHIFTER DEMAND



**KESEIMBANGAN PASAR, EKSES DEMAN DAN SUPPLY
SERTA SURPLUS KONSUMEN DAN PRODUSEN**



PERUBAHAN KESEIMBANGAN



PERSAMAAN KESEDIAAN MEMBELI (DEMAND) PENDEKATAN MATEMATIKA

Titik A (X = 12 , Hx = 30) dan Titik B (X = 72, Hx = 5)

$$\frac{Hx - Hx1}{Hx.2 - Hx.1} = \frac{X - X1}{X2 - X1} \dots\dots\dots 1)$$

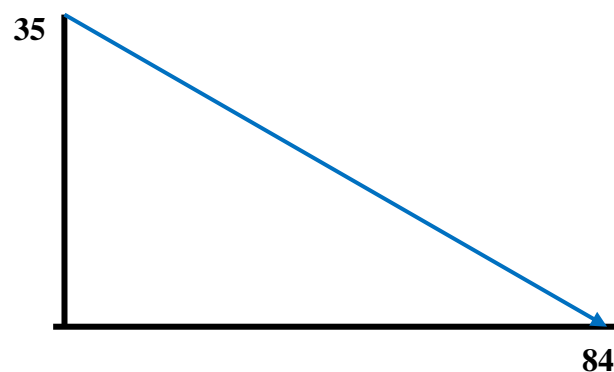
Hx = harga (P = price)
 X = jumlah barang X (Q =quantity)
 Hx1 = harga pada titik (A)
 Hx2 = harga pada titik (B)
 X1 = jumlah barang pada titik (A)
 X2 = jumlah barang pada titik (B)

$$\frac{Hx - 30}{5 - 30} = \frac{X - 12}{72 - 12} \dots\dots\dots 2)$$

$$60 (Hx - 30) = - 25 (X - 12) \dots\dots\dots 3)$$

$$X = 84 - 2,4 Hx \dots\dots\dots 4)$$

$$Q = 84 - 2,4 Px \dots\dots\dots 5)$$



Pada harga 100 jumlah yang dibeli 10 dan pada harga 10 jumlah yang dibeli 100. Buat persamaan dan kurve kesediaan membeli (demand) ?

PENAWARAN (SUPPLY)

$$Q = 10 K^{0,5} L^{0,25} F^{0,5} \dots\dots\dots 1)$$

Asumsi F adalah tetap = 16

$$Q = 40 K^{0,5} L^{0,25} \dots\dots\dots 2)$$

$$\begin{aligned} \text{Profit } \Pi &= P \cdot Q - TC \\ &= P (40 K^{0,5} L^{0,25}) - vK - wL - R \dots 3) \end{aligned}$$

V = harga kapital

W = harga tenaga kerja (upah)

R = biaya tetap.

$$\text{Profit maks } \delta\Pi = \delta TR - \delta TC; \quad MR = MC$$

$$\delta\Pi/\delta K = \dots\dots\dots 4)$$

$$\delta\Pi/\delta L = \dots\dots\dots 5)$$

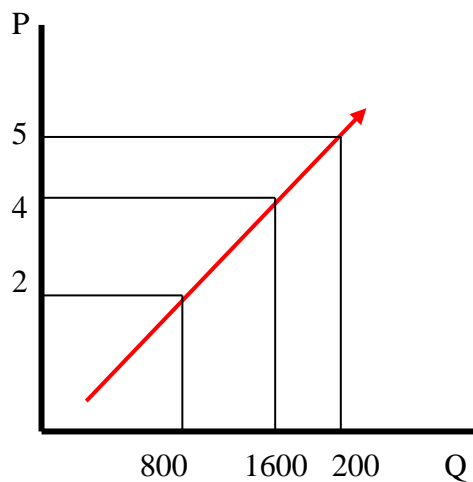
$$K = (10 P)^2 / v^{1,5} w^{0,5} \dots\dots\dots 16)$$

$$L = (10 P)^2 / v^{0,5} w^{1,5} \dots\dots\dots 17)$$

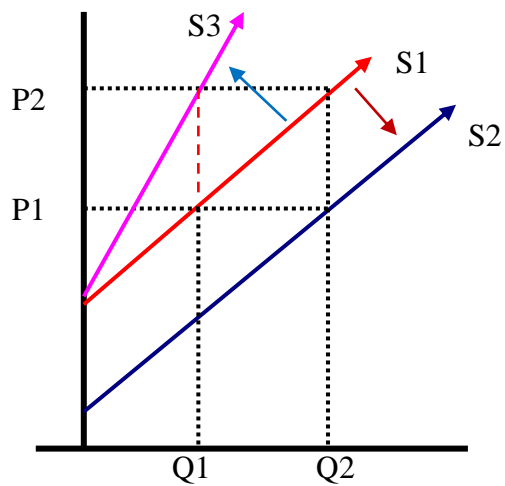
$$Q = 400 P / (vw)^{0,5} \dots\dots\dots 18)$$

Hubungan antara harga dan jumlah yang ditawarkan.

P	1	2	3	4	5
Q	400	800	1200	1600	2000



Grafik. Hubungan harga dan Jumlah



Grafik . Perubahan Kurve Penawaran

CONTOH :

$$P_{dx} = 25 - 0,6 Q_x$$

$$P_{sx} = 5 + 0,4 Q_x$$

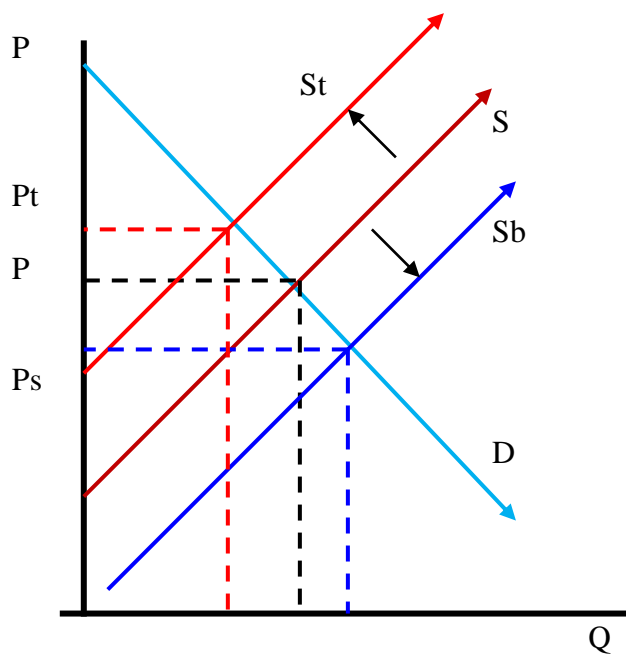
$$Eq_x = (Q = 20; \quad P = 13)$$

$$P_{stx} = 5 + 0,4Q + 5 = 10 + 0,4 Q$$

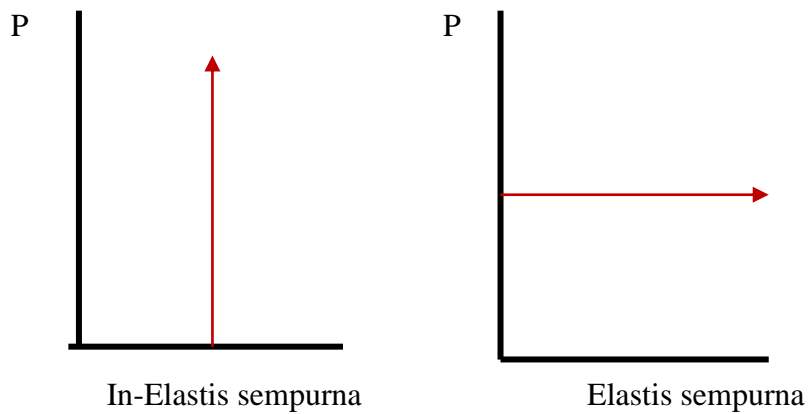
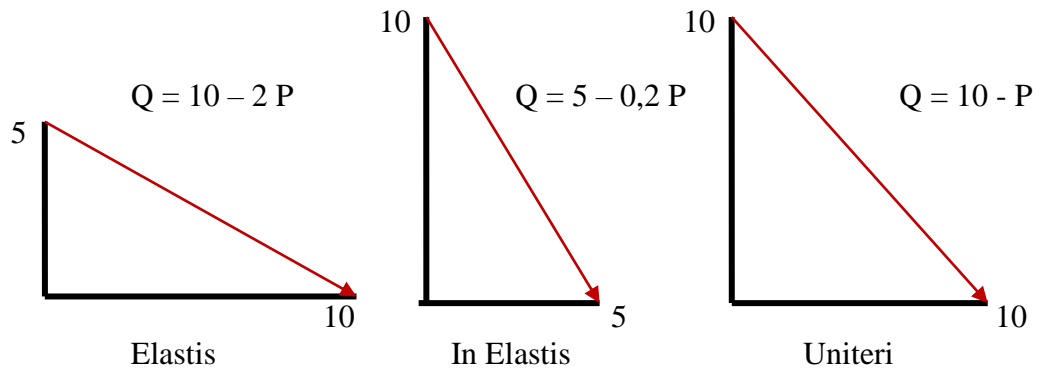
$$Eq_{xt} = (Q = 15; \quad P = 16)$$

$$P_{ssbx} = 5 + 0,4 Q - 3 = 2 + 0,4 Q$$

$$Eq_{xs} = (Q = 23; \quad P = 11,2)$$



ELASTISITAS



a. Elastisitas Harga Pada Suatu Titik (Point)

$$\varepsilon = \frac{\Delta Q/Q}{\Delta P/P} \quad \Delta Q/ \Delta P \times P/Q = \delta Q/ \delta P \times P/Q$$

b. Elastisitas Harga Antara Dua Titik (Busur)

$$\varepsilon = \delta Q/ \delta P \times \frac{(P_1 + P_2)/2}{(Q_1 + Q_2)/2}$$

c. Elastisitas Pendapatan Pada Satu Titik (Point)

$$\Theta = \delta Q/ \delta I \times I/Q$$

d. Elastisitas Pendapatan Antara Dua Titik (Busur/arch)

$$\Theta = \frac{(Q_1 - Q_2)}{(I_1 - I_2)} \cdot \frac{(I_1 + I_2)}{(Q_1 + Q_2)}$$

e. Elastisitas Silang Pada Satu Titik (Point)

$$\eta = \delta Q / \delta P_y \times P_y / Q$$

f. Elastisitas Silang Antara Dua Titik (Busur/arch)

$$\eta = \frac{(Q_{x1} - Q_{x2})}{(P_{y1} - P_{y2})} \cdot \frac{(P_{y1} + P_{y2})}{(Q_{x1} + Q_{x2})}$$

$$Q_x = \gamma P_x^\alpha I^\beta \text{ atau}$$

$$Q_x = 0,75 P_x^{-0,4} I^{0,5}$$

Q_x = jumlah barang yang diminta

P_x = harga barang X

I = Pendapatan .

α, β = Elastisitas.

Elastisitas harga : $\delta Q_x / \delta P_x \cdot P_x / Q_x$

$$= \frac{\alpha \gamma P_x^{\alpha-1} I^\beta \cdot P_x}{\gamma P_x^\alpha I^\beta}$$

$$= \frac{\alpha \gamma P_x^{\alpha-1} \cdot P_x^1 I^\beta}{\gamma P_x^\alpha I^\beta}$$

$$= \frac{\alpha \gamma P_x^{\alpha-1} I^\beta}{\gamma P_x^\alpha I^\beta}$$

Elastisitas harga = α (terbukti)

CONTOH :

$$Q_x = 8 - 1,6 P_x$$

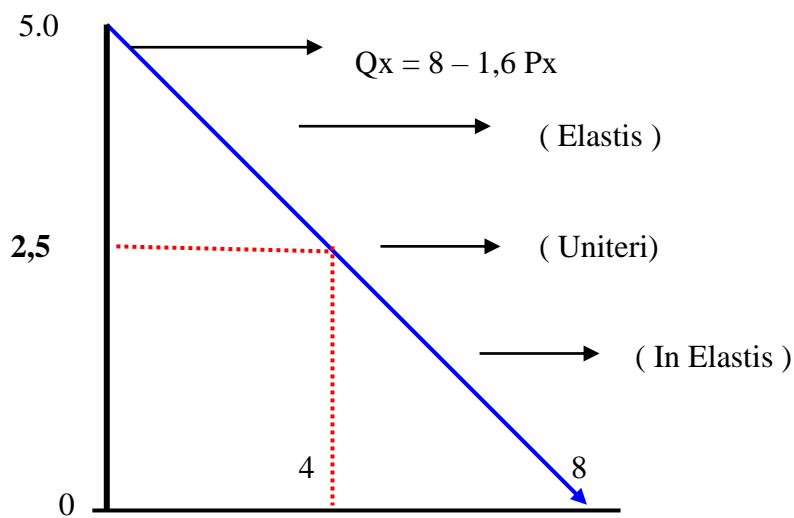
Elastisitas harga : $P_x = 2$; $P_x = 2,5$ dan $P_x = 3$

$$\epsilon = \delta Q / \delta P \cdot P/Q \text{ (nilai mutlak)}$$

$$\epsilon P (2) = - 1,6 \cdot 2/4,8 = 0,67 \quad (\text{In Elastis})$$

$$\epsilon P (2,5) = - 1,6 \cdot 2,5/4 = 1,00 \quad (\text{Uniteri})$$

$$\epsilon P (3) = - 1,6 \cdot 3/3,2 = 1,50 \quad (\text{Elastis})$$



Posisi dan Nilai Elastisitas

HUBUNGAN ELASTISITAS DENGAN PENERIMAAN

$$\text{Permintaan } P_x = 5 - 0,625 Q_x$$

$$\text{Penerimaan } TR = P \times Q$$

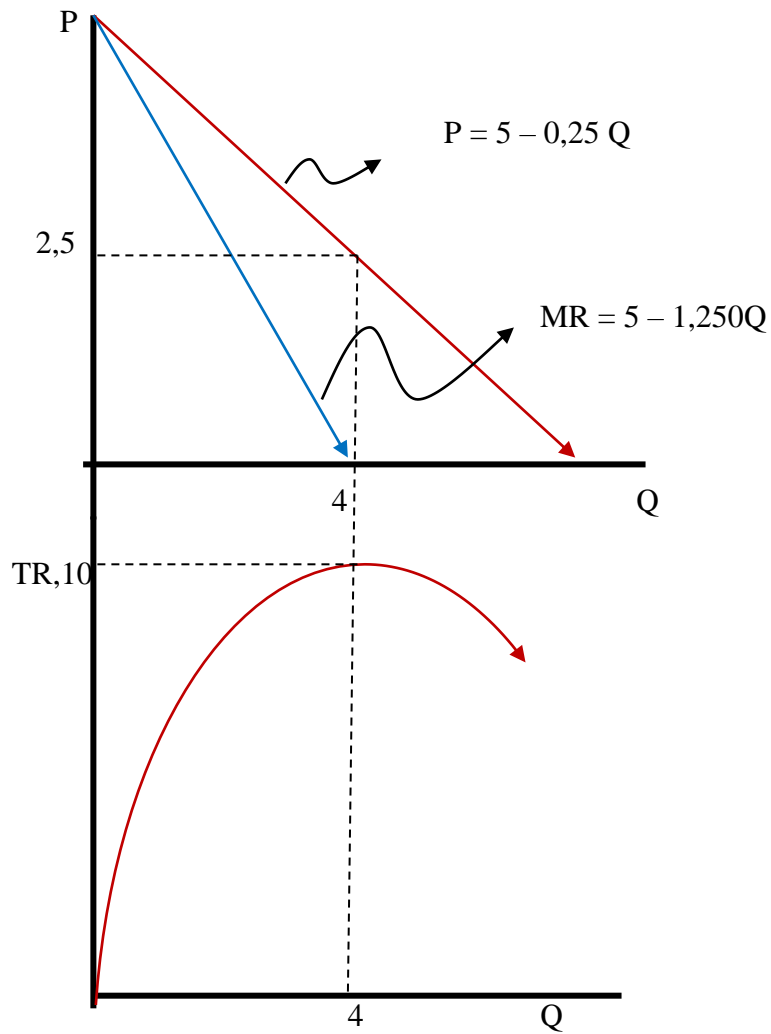
$$P_x = (5 - 0,625 Q_x) \cdot Q$$

$$TR_x = 5Q - 0,625 Q^2_x$$

$$\begin{aligned} \text{TR maksimum} &= \delta TR / \delta Q = MR = 0 \\ &= 5 - 1,250 Q = 0 \\ &= Q = 4 \quad \text{dan } P = 2,5 \end{aligned}$$

$$\text{TR maksimum} = 2,5 \cdot 4 = 10$$

$$\text{Elastisitas harga (P)} = 4, \quad \epsilon = 1 \text{ (Uniteri)}$$



Grafik . Elastisitas dan Penerimaan maksimum

Note :

BIAYA

$$TC = TFC + TVC$$

$$ATC = AFC + AVC$$

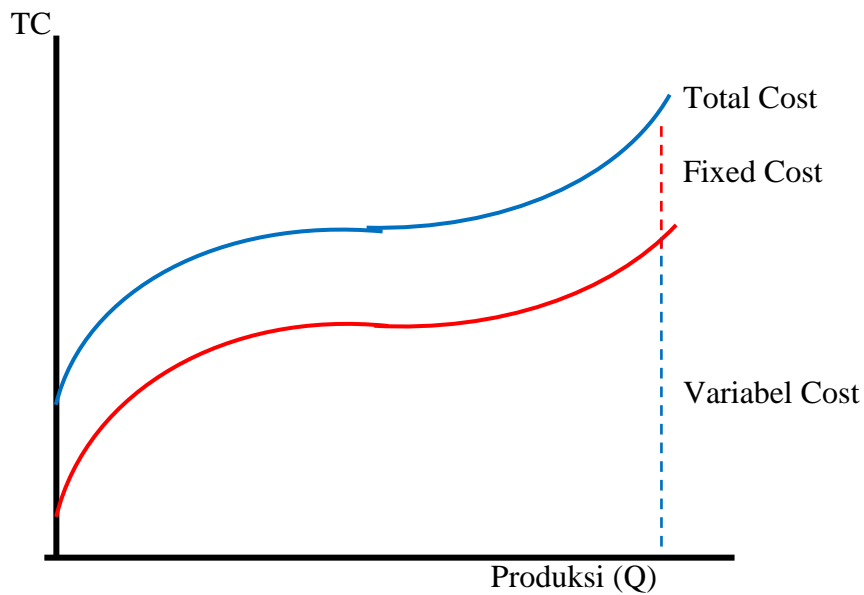
$$ATC = TC/Q; \quad Q = \text{total produksi}$$

$$AFC = TFC/Q$$

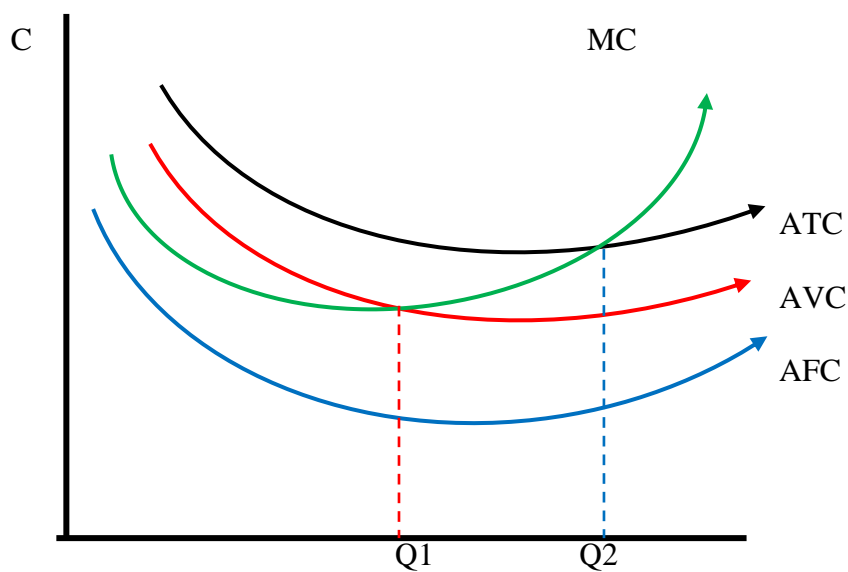
$$AVC = TVC/Q$$

$$MC = \partial TVC / \partial Q; \quad (\text{turunan pertama biaya variabel})$$

(A C F M V T = Average; Cost; Fixed; Marginal; Variable; Total)



Grafik . Biaya Produksi



Grafik . Biaya Rata-rata dan Biaya Marjinal

- a) Jika $MC < AVC$, maka AVC dan ATC cenderung menurun
 b) Jika $MC > AVC$, maka AVC dan ATC cenderung meningkat
 c) Jika $MC = AVC$, maka AVC dan ATC minimum, kapan biaya minimum terjadi ? pada saat turunan biaya (*derivatifnya*) sama dengan nol (seperti : $\delta MC/\delta Q$ dan $\delta AVC/\delta Q = 0$)

Persamaan biaya produksi adalah : $TC = 10 + 50 Q - 1,5 Q^2 + 0,1 Q^3$

Biaya tetap (fixed Cost)	FC	= 10
Biaya variabel (Variable Cost)	VC	= $50 Q - 1,5 Q^2 + 0,1 Q^3$
Biaya marjinal (Marginal Cost)	MC	= $50 - 3 Q + 0,3 Q^2$
Biaya rata-rata variabel	AVC	= $50 - 1,5 Q + 0,1 Q^2$

Biaya rata-rata variabel minimum, $MC = AVC$

$$50 - 3 Q + 0,3 Q^2 = 50 - 1,5 Q + 0,1 Q^2$$

$$0,2 Q^2 = 1,5 Q$$

$$Q = 7,5$$

$$AVC \text{ min} = 50 - 1,5 (7,5) + 0,1 (7,5)^2 = 44,375$$

Elastisitas produksi dalam biaya (EQ_{10}) = MC/AC

$$MC_{10} = 50 - 3 Q + 0,3 Q^2 = 50 - 3 (10) + 0,3 (10)^2$$

$$= 50 - 30 + 30 = 50$$

$$AC = TC/Q = \frac{10 + 50 Q - 1,5 Q^2 + 0,1 Q^3}{Q}$$

$$= \frac{(10 + 50 (10) - 1,5 (10)^2 + 0,1 (10)^3)}{10}$$

$$= (460)/10 = 46$$

$$(EQ_{10}) = 50/46 = 1,09 \text{ (Elastis)}$$

Tabel. Hubungan antara Biaya dengan Produksi

Q	FC	VC	TC	AVC	ATC	MC
1	10	48,60	58,60	48,60	58,60	0
2	10	94,80	104,80	47,40	52,40	46,2
3	10	139,20	149,20	46,40	49,73	44,4
4	10	182,40	192,40	45,60	48,10	43,2
5	10	225,00	235,00	45,00	47,00	42,6
6	10	267,60	277,60	44,60	46,27	42,6
7	10	310,80	320,80	44,40	45,83	43,2
8	10	355,20	365,20	44,40	45,65	44,4
9	10	401,40	411,40	44,60	45,71	46,2
10	10	450,00	460,00	45,00	46,00	48,6
11	10	501,60	511,60	45,60	46,51	51,6
12	10	556,80	566,80	46,40	47,23	55,2

Data : Ilustrasi

PRODUKSI

$$Q = f(A, K, L, T)$$

Q = hasil produksi

A = Alam

K = Kapital/Modal

L = Tenaga kerja.

T = Teknologi

Bentuk kuadrat

$$Q = a + bL + bL^2$$

Bentuk kubik,

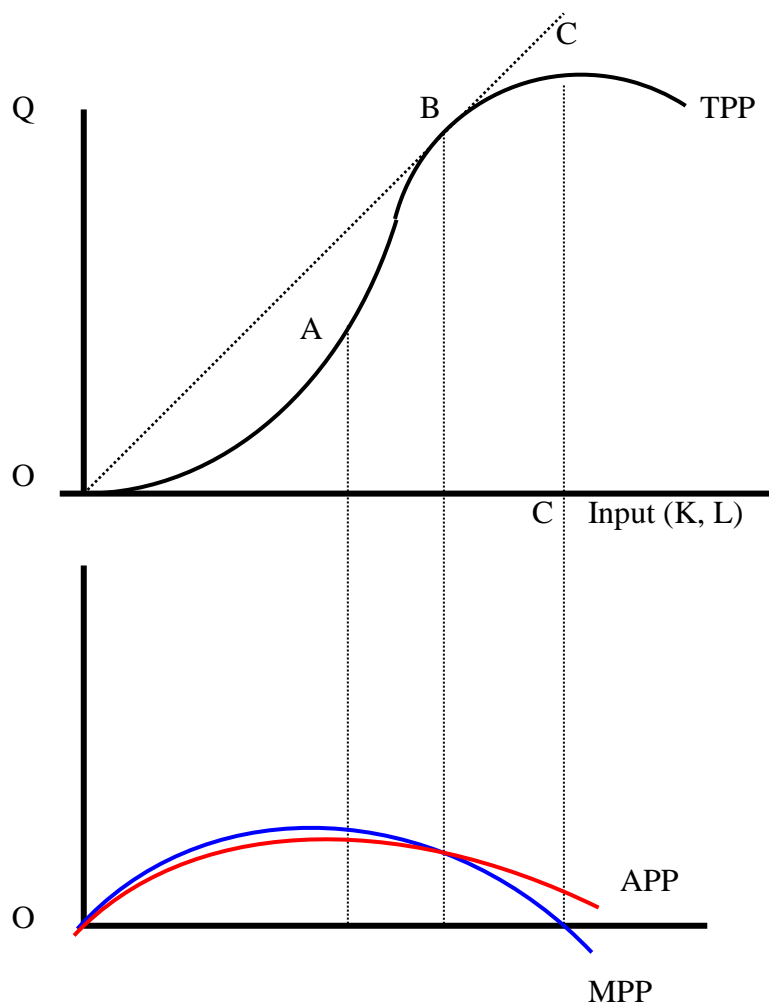
$$Q = a + bL + cL^2 + dL^3$$

Bentuk Coob-Douglas

$$Q = \gamma K^\alpha L^\beta$$

Linier Coob-Douglas

$$\ln Q = \ln \gamma + \alpha \ln K + \beta \ln L$$



Grafik . Hubungan TP dan MP serta AP

Tabel.Hubungan input (L), TPL, MPL, APL

INPUT L	TPL	MPL	APL
0	0		
1	76	76	76
2	248	172	124
3	492	244	164
4	784	292	196
5	1.100	316	220
6	1.416	316	236
7	1.708	292	244
8	1.952	244	244
9	2.124	172	236
10	2.200	76	220
11	2.156	-44	196

Sumber data : Baye (2006:158)

CONTOH :

$$Q = 20 L + 60 L^2 - 4 L^3$$

Nilai $L_1 = 10,46$ dan $L_2 = \text{negatif (ABC)}$

a. Produksi Maksimum :

$$Q = 20 (10,46) + 60 (10,46)^2 - 4 (10,46)^3 = 2.196,115$$

b. Rata-rata produksi maksimum

$$Q/L = 20 + 60 L - 4 L^2$$

$$\partial AP / \partial L = 0; \quad 60 - 8L = 0 \quad \text{dan} \quad L = 7,5$$

$$Q = 20 + 60 (7,5) - 4 (7,5)^2 = \text{unit}$$

Atau : $AP = MP$

$$20 + 60 L - 4 L^2 = 20 + 120 L - 12L^2$$

$$60 L = 8 L^2 \quad \text{dan} \quad L = 7,5.$$

c. Marjinal Produksi Maksimum

$$\text{Marjinal produk (MP)} = 20 + 120L - 12L^2$$

$$\partial MP / \partial L = 0; \quad 120 - 24 L = 0 \quad \text{dan} \quad L = 5$$

$$Q = 20 + 120 (5) - 12 (5)^2 = \text{unit.}$$

$$\begin{aligned}
 \text{d. Elastisitas tenaga kerja (EL)} &= \frac{\Delta Q/Q}{\Delta L/L} \\
 &= \Delta Q/Q \cdot L/\Delta L \\
 &= \Delta Q/\Delta L \cdot L/Q \\
 &= \text{MPL} \cdot 1/\text{APL} \\
 (\text{EQL}) \text{ Tenaga kerja: } 7,5 &= \text{MPL/APL} \\
 &= \mathbf{1 \text{ (uniteri)}}
 \end{aligned}$$

COBB-DOUGLAS

$$\begin{aligned}
 Q &= \gamma K^\alpha L^\beta \\
 \text{Ln } Q &= \text{Ln } \gamma + \alpha \text{ Ln } K + \beta \text{ Ln } L \text{ (perubahan dalam bentuk linier)}
 \end{aligned}$$

K : Modal/ Kapital
 L : Tenaga kerja / Labour
 α : elastisitas
 β : elastisitas

$$\text{MPK} : \delta Q/\delta K = \alpha \gamma K^{\alpha-1} L^\beta = \alpha Q/K$$

$$\text{MPL} : \delta Q/\delta L = \beta \gamma K^\alpha L^{\beta-1} = \beta Q/L$$

$$*(K^{\alpha-1}) = (K^\alpha \cdot K^{-1}) \text{ dan } L^{\beta-1} = (L^\beta \cdot L^{-1})$$

$$\text{MRTS} = \text{MPL}/\text{MPK} = (\beta \gamma \cdot K^\alpha / L^{\beta-1}) / (\alpha \gamma K^{\alpha-1} L^\beta)$$

$$\text{MRTS} = (\beta Q/L) / (\alpha Q/K)$$

= $(\beta/\alpha) \cdot (K/L)$. Besarnya jumlah modal yang dapat digantikan oleh setiap satuan tenaga kerja

$$\text{MRTS} = \text{MPK}/\text{MPL} = (\alpha \gamma K^{\alpha-1} L^\beta) / (\beta \gamma K^\alpha L^{\beta-1})$$

= $(\alpha/\beta) \cdot (L/K)$. Besarnya jumlah tenaga kerja yang dapat digantikan oleh setiap satuan modal