EXERCISE 1

A

$$\begin{cases} q_1 = 100 - 2p_1 \\ q_2 = 80 - 2p_2 \\ q_3 = 30 - p_3 \end{cases}$$

$C^1 = 200\ m^2$

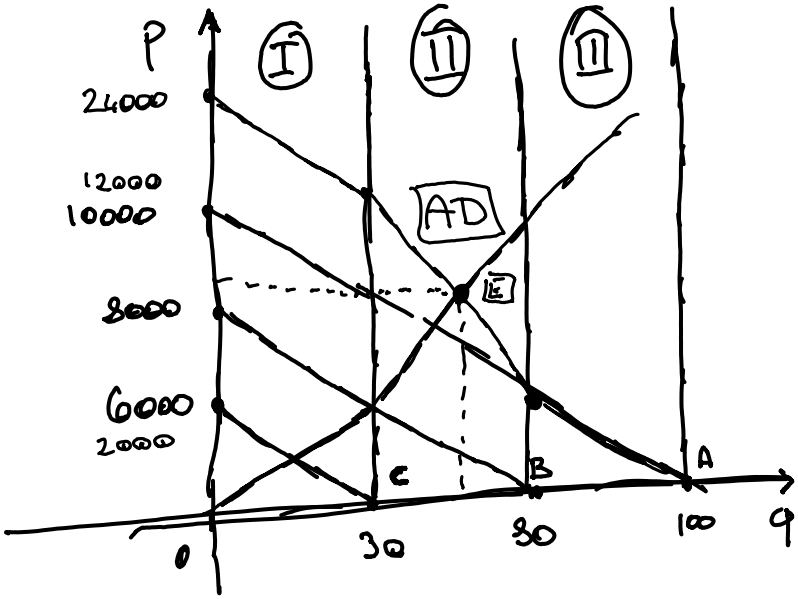
$\square = 45\ m^2$

$\square\!\square = 33\ m^2$

1 $P_1 = 50 - 0.5\,q_1 \quad \times 200 \rightarrow P_1 = 10000 - 100\,q$

$P_2 = 40 - 0.5\,q_2 \rightarrow P_2 = 8000 - 100\,q$

$P_3 = 30 - q_3 \rightarrow P_3 = 6000 - 200\,q$



(I) A+B+C

$P = 24000 - 400\,q$

↳ IF $q = 0 \rightarrow P = 24000$

IF $q = 30 \rightarrow P = 12000$

IF $q = 80 \rightarrow P = 2000$

(II) A+B

$P = 18000 - 200\,q$

(III) A

$P = 10000 - 100\,q$

- AGGREGATE DEMAND

$$P = \begin{cases} 24000 - 400\,q & \text{IF} \rightarrow 0 \leq q \leq 30 \\ 18000 - 200\,q & \text{IF} \rightarrow 30 \leq q \leq 80 \\ 10000 - 100\,q & \text{IF} \rightarrow 80 \leq q \leq 100 \end{cases}$$

- AGGREGATE SUPPLY

$C' = 200$

$P = 200\,q$

$q = 0 \rightarrow P = 0$

$q = 30 \rightarrow P = 6000$

$q = 80 \rightarrow P = 16000$

2 $P = C'$

$\hookrightarrow 18000 - 200\,q = 200\,q$

$400\,q = 18000$

$q^* = 45$

SUPPLY $\rightarrow$ $P = 200 \cdot 45 \rightarrow P^* = 9000$

3

SINCE IS A PUBLIC GOOD, EVERYBODY WILL CONSUME $q^* = 45$

4

WILLING TO PAY

- PRIVATE → $MRS_i = MRT$
- GOOD → $\sum MRS_i = MRT$

(A) $10000 - 100 \cdot 45 = 5.500$

(B) $8000 - 100 \cdot 45 = 3.500$

(C) $6000 - 200 \cdot 45 > 0$

$9000 = MRT$

C

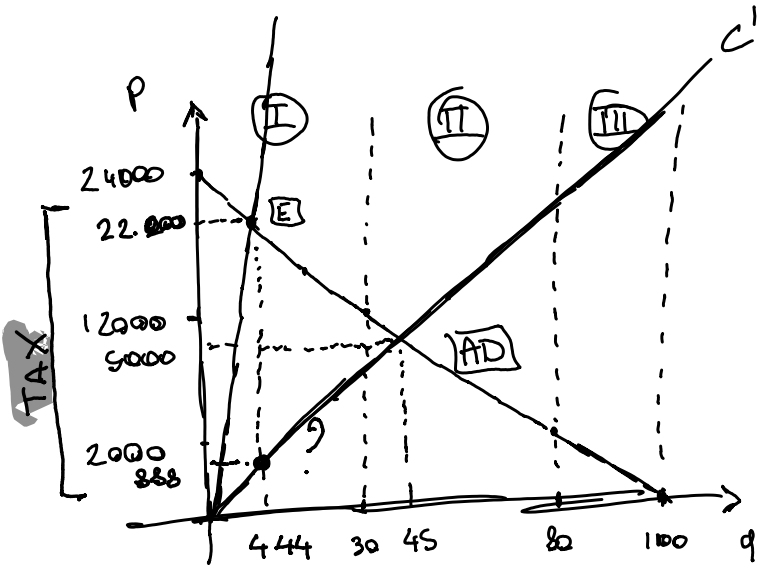
EXT = 4800 q

↳ MSC > MPC

↳ P = 200 q + 4800 q

P = 5000 q

IF ⇒ q = 30 P = 150000



$24000 - 400q = 5000q \rightarrow q^* = 4,44$

$P = 5000 \cdot 4.4 \rightarrow P^* = 22.200$

TAX = 22200 − 888 =

21312

MPC = 200 q → 200 · 4.4 = 888

D

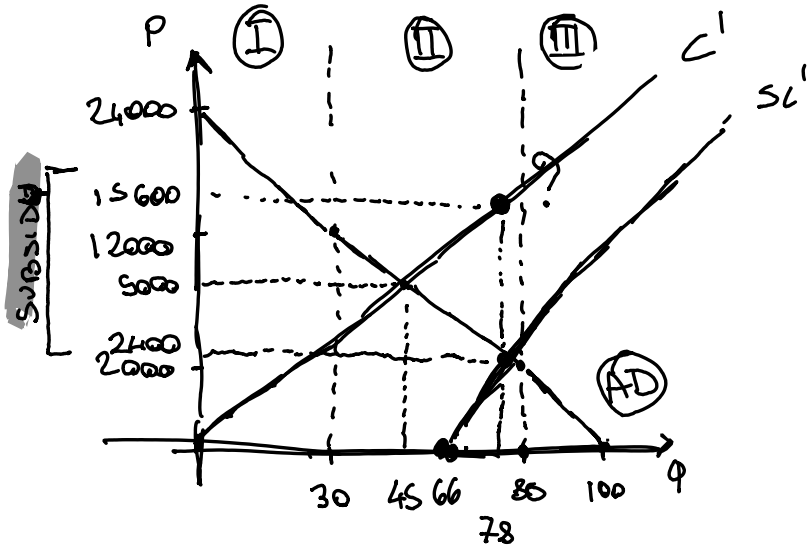
EXT = 13.200

MPC > MSC

↳ MSC = MPC − 13.200

↳ P = 200q − 13.200 IF = q = 80 P = 2400

IF = P = 0 q = 66



18000 − 100q = 200q − 13.200

$q^* = 78$

P = 200 · 78 − 13200

$P^* = 2400$

MPC = P = 200q

↓

200 · 78 = 15.600

SUBSIDY = 15.600 − 2400 = 13200

PROBLEM SET 2

①

a) PRIMARY DEFICIT = NON FINANCIAL DEFICIT − INTEREST PAYMENTS =

$100 - 20 = 80\ M$

b) GROSS SAVING = 75 M €

CAPITAL REVENUES − CAPITAL EXPENDITURES = −50 M €

$75 - 50 = 25\ M$ NEED OF FINANCING

c)

FINANCIAL SOURCES	NON-FINANCIAL SOURCES
• DIRECT TAXES	
• INDIRECT TAXES	
• FEE	

②

A) REV : CH3
B) REV : CH1
C) EXP : CH7
D) REV : CH4
E) REV : CH9
F) EXP : CH8
G) REV : CH2
H) REV : CH2
I) EXP : CH2
J) REV : CH3

(3) { . CURRENT REVENUES = 12.000 $
. CURRENT EXPENDITURES = 10.000 $

CAPITAL EXPENDITURE = 15.000 $
CAPITAL REVENUES = 5.000 $

a) NON-FINANCIAL DEFICIT = 17.000 $ - 25.000 $
↳ + 8000 $

PRIMARY DEFICIT = +8000 $ - 1000 $ ← NEED TO FINANCE
↳ 7.000 $

b) GROSS SAVINGS ≥ 10.000

* NFD = GROSS SAVINGS + CR - CE ≥ 0

c) 8000 $

PROBLEM SET 3

A) TAX BASE = 24000 + 100000 = 12400 $

B) NET TAX BASE = TAX BASE - EXEPTIONS

↳ 12.400 $

C) $M_g T$ = 15%

D) TAX BURDEN

↳ $(1000 \times 0) + (5000 - 1000) \times 0.1 + (12.400 - 5000) \times 0.15$

↳ 1510 $

E) $AVT = \frac{\text{GROSS TAX LIAB}}{\text{NET TAX BASE}} = \frac{1510}{12.400} = 12.18\%$

F) $EFR = \frac{\text{NET TAX LIAB}}{\text{TAX BASE}} = \frac{1110}{12.400} = 8,95\%$

G) AFTER TAX INCOME = TAX BASE - NET TAX LIABILITIES

↳ 12400 - 1110 = 11.290 $

PROBLEM SET 4

①

	JIMENEZ	LEPEZ
INCOME	100.000	250.000
NET INCOME	98763.76	248763.76
TAX BURDEN	38731.5	70452.34
↓		
NET	SAME	SAME

NTR → 43 %
NTR → 49 %

THIS IS PROPORTIONAL

ATR → 38731.5 / 98763.76
ATR → 70452.34 / 248763.76

EFR → 38771.5 / 100.000
EFR → 70452.34 / 250000

② $$C = 1000 + \frac{4}{5} \cdot Y$$

$Y_R = 100.000$

$Y_P = 10.000$

a)

- CONSUMPTION OF 20%

$$C_P = 1000 + \frac{4}{5} \cdot 10000 \rightarrow C_P = 9000$$

$$C_P = 1000 + \frac{4}{5} \cdot 100000 \rightarrow C_R = 81.000$$

$TAX_P = 1800$ $\quad$ $TAX_R = 16.200$

$$\mathcal{E} = \frac{\frac{\Delta T}{T}}{\frac{\Delta R}{R}} = \frac{\frac{16.200 - 1800}{1800}}{\frac{81000 - 9000}{9000}} = \frac{8}{8} = \boxed{1}$$

PROPORTIONAL

- CONTINUOUS INCOME IS %

PROPORTIONAL

$C_P = 10000 \times 0.15 \Rightarrow 1500 \rightarrow N1$

$C_R = 100000 \times 0.15 \Rightarrow 15000 \rightarrow N1$

b) TAX = 5000 $

NET INCOME = 10000 − 5000 = 5000 $_P$

NET INCOME = 100000 − 5000 = 95000 $_R$

(2)

$$\frac{\frac{14250 - 750}{750}}{\frac{100000 - 10000}{10000}} = \frac{12}{9} = \frac{4}{3}$$

- $TAX_P = 750$ $

$TAX_R = 14250$ $

PROGRESSIVE

AVT → 750/5000 = 0.15

AVT → 14250/95000 = 0.15

EFT → 750/10000 = 0.075

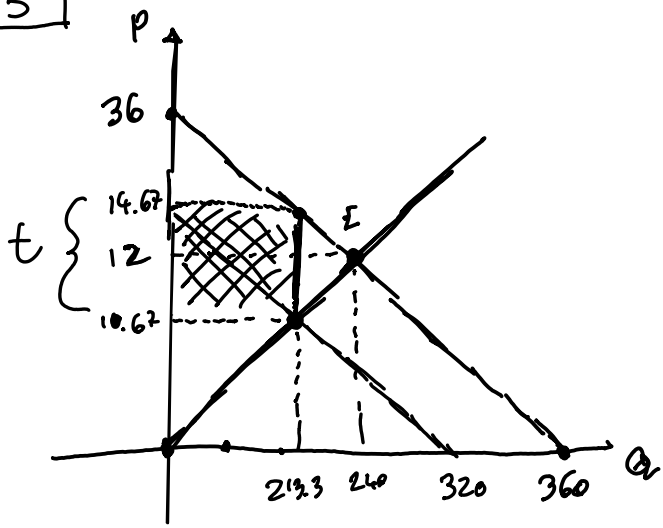
EFT → 14250/100000 = 0.1425

PROBLEM SET 5

1)

$Q_D = 360 - 10P$

$Q_S = 20P$



2) $Q_D = Q_S$

↳ $360 - 10P = 20P$

$30P = 360 \rightarrow P^* = 12 \quad Q^* = 240$

b) $Q_D = 360 - 10(P+T)$

↳ $360 - 10P - 40 \rightarrow 320 - 10P$

$t = 4$

EQ = $320 - 10P = 20P \rightarrow P_S = 10.67$

$Q^* = 213.3$

c) TAX REVENUE = 853.2

d) TAX BORNE

- CONSUMER

$\frac{12 - 10.67}{4} = 0.33$

- SUPPLIER

$\frac{14.67 - 12}{4} = 0.66$

e) SAME CONCEPT OF PREVIOUS EXERCISE BUT WITH THIS DEMAND CURVE.

$Q^D = 360 - 10(1 + 0.2)P$

↳ $[360 - 12P]$

2) $Q^D = 25 - 0.5P$

2) $Q^S = -5 + 0.5P$

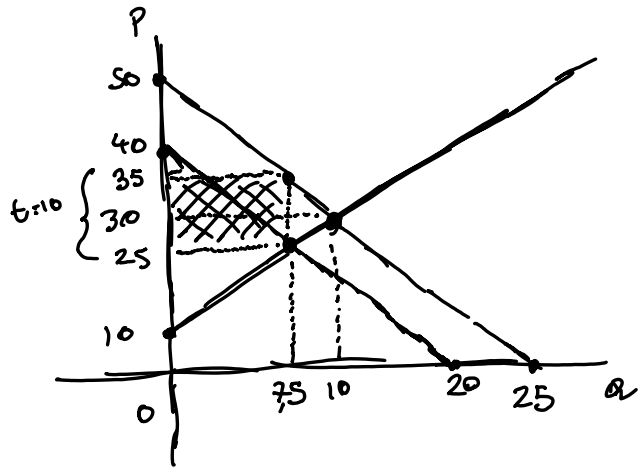
THE ELASTICITY IS EQUAL IF YOU LOOK AT THE COEFFICIENT OF P

↓

$E = 25 - 0.5P = -5 + 0.5P$

$P^* = 30$

$Q^* = 10$



$t = 10$

b) $Q_t^D = 25 - 0.5(P + 10)$

↳ $25 - 0.5P = -5 + 0.5P$

$P = 25$

TAX REVENUE → 75 $

TAX BURDEN

① CONSUMER → $5/10 = 1/2$

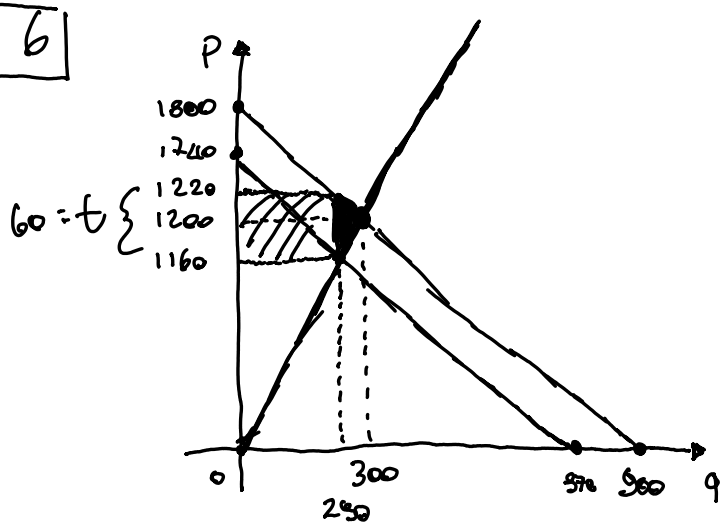
② SUPPLIER → $5/10 = 1/2$

PROBLEM SET 6

(9)

$Q^D = 900 - 0.5P$

$Q^S = 0.25P$



a) $900 - 0.5P = 0.25P$

↳ $0.75P = 900$ $\quad P^* = 1200$

$Q^* = 300$

b) $Q^D = 900 - 0.5(P + 60)$

↳ $Q^D_N = 870 - 0.5P = 0.25P$

$P = 1160 \quad Q^* = 290$

EXCESS BURDEN $= 100 + 200 = \boxed{300}$

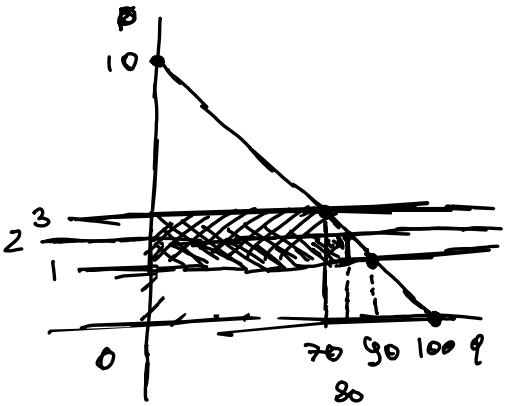
TAX REVENUE $= 11600$

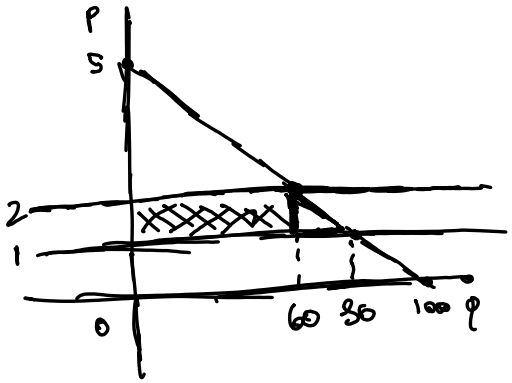
MARGINAL COST OF PUBLIC FUNDS $= \dfrac{300}{11600} = 2.58\%$

(2)

$q_p = 100 - 10p$ | $q_c = 100 - 20p$

$t = 2$





a) $q_p = 100 - 30$

$\hookrightarrow 70$

$TR = 2 \times 70 = 140\$$

$EB = \frac{2 \times 20}{2} = 20\$$

b) $TR_{PIZZA} = 80\$$

$TR_{COLL} = 60\$$

c) $EB_{PIZZA} = 5\$$

$EB_{COLL} = 10\$$

d) TAX ON BOTH, BECAUSE THE EXCESS BURDEN IS LOWER

PROBLEM SET 2

(1)

a) STRAIGHT LINE METHOD : DEPRECIATION = $\frac{400000\ \$}{6}$

↳ **66.666 $**

FISCAL BENEFIT = 0.3 · 66.666 $

↳ **20000 $**

HERE, IT IS MISSING THE INTEREST RATE IN ORDER TO CALCULATE.

IF $i = 10\%$

$$NPV = 20000 \cdot \frac{1-(1+0.10)^{-6}}{0.1}$$

↳ **87.105 $**

APPROX 22% OF ACQUISITION COSTS.

b) $NPV = \dfrac{t_c \cdot D_{(1)}}{1+i}$ .....

DIFFERENT METHODS, THEY PRODUCE DIFFERENT STREAMS.

- LIMIT CASES OF OF LARGER FISCAL BENEFITS

EXPENSING

- FIRMS WOULD ALWAYS PREFER TO HAVE A HIGHER D_i IN EARLIER PERIODS. (IF $i > 0$)

$$\left(\frac{400\,000 \cdot 0.3}{1+i}\right) = \boxed{109091\ \$}$$

$$\frac{109091}{400000} = 27\%$$

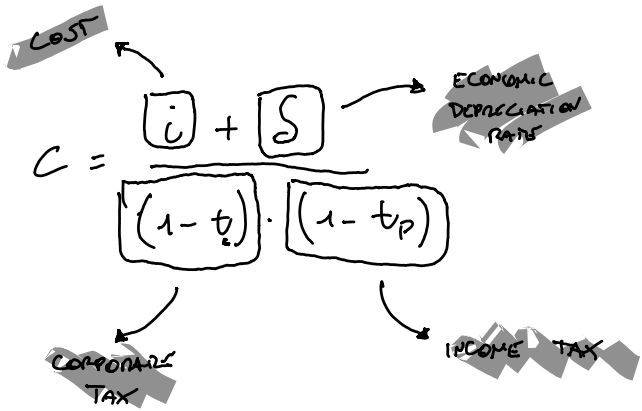
CLEARLY, THIS IS MORE EXPENSIVE.

(2)

a)

READ THAT PAGE 

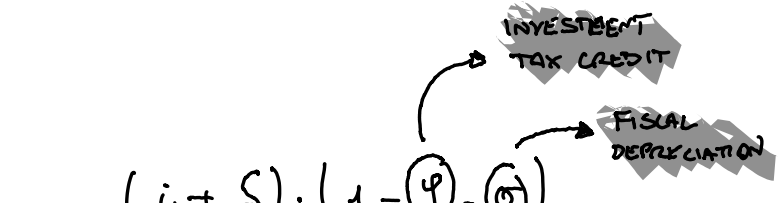
b)



IF $\begin{cases} i = 10\% \\ \delta = 2\% \\ t_c = 35\% \\ t_p = 25\% \end{cases}$

$$C = \frac{0.1 + 0.02}{(1 - 0.35)(1 - 0.25)} = \boxed{0.25}$$

c)



$$\boxed{0.17}$$

(3)

IF
- $D = 3\%$
- $t_c = 35\%$
- $i_{FIXED} = 11\%$
- $MTR = 30\%$

$$\boxed{0.307} = \frac{0.11 + 0.03}{(1 - 0.35)(1 - 0.3)}$$

DO NOT INVEST

PROBLEM SET 7

(1)

a) THE AMOUNT OF MONEY THAT AN INDIVIDUAL CAN CONSUME BY KEEPING HER WEALTH CONSTANT.

b) THE TOTAL INCOME OR ASSETS THAT CAN BE TAXED BY A GOVERNMENT.

c) GROSS TAXABLE INCOME − DEDUCTIONS.

d) PERCENT OF INCOME THAT AN INDIVIDUAL OR A CORPORATION PAYS IN TAXES.

e) EQUALIZATION OF MARGINAL TAX RATE WITHIN A HOUSEHOLD.

(2) a) $28000 + 200 + 10000 = 38200$ $

b) $(5000 \cdot 0.15) + (5000 \cdot 0.2) + (15000 \cdot 0.25) + (13200 \cdot 0.3)$

$\rightarrow 750 + 1000 + 3750 + 3960 = 9460$ $

c) $10000 \cdot 0.1 = 1000$ $

d) $9460 - 1000 = \boxed{8460\ \$}$ NET TAX PAYABLE

e) $8460 / 38200 = \boxed{22.1\ \%}$

(3) a) $500000 \cdot (1 + 0.1)^5 = 805255$ −

$500000 =$

$305255 \rightarrow$ TAX AT 20% $\rightarrow 24424$ $

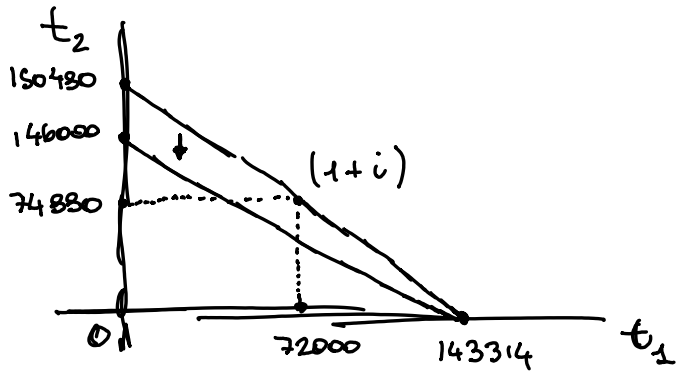
b) $500000 \cdot (1 + 0.1(1 - 0.2))^5 - 500000 = \boxed{234664.04\ \$}$

TAX → ADJUSTED EVERY YEAR ⚠

c) METHOD [A] IS BETTER BECAUSE IT SAVES 10.000 $.

④ $t_1 = 72000\ \$$ $t_2 = 74880\ \$$

- $t_1 \rightarrow \left(72000 + \frac{74880}{1.05}\right) = \boxed{143314\ \$}$ BORROWING FROM THE FUTURE
- $t_2 \rightarrow (72000 \cdot (1.05) + 74880) = \boxed{150480\ \$}$ IF HE CAPITALIZE



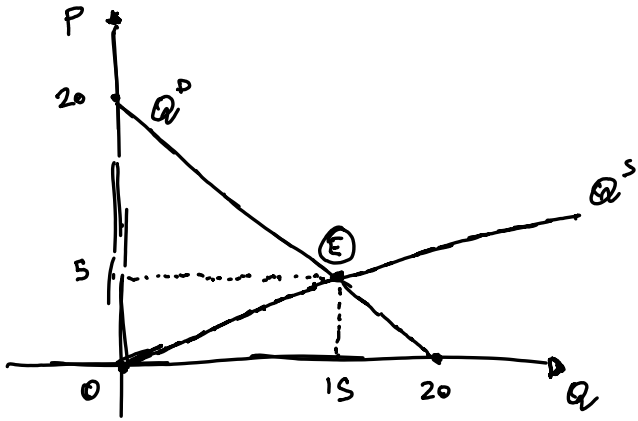
⑤

PRO	CONS
• (CAPITAL MOBILE) HIGH TAX MIGHT CAUSE CAPITAL MIGRATION.	• CAPITAL INCOME CONCENTRATED AMONG WEALTHY PEOPLE (EQUITY EFFECTS)
LOW CAPITAL TAXES DEFILE SAVINGS DECISIONS	• (HORIZONTAL EQUITY)

PROBLEM SET 3

② $Q^D = 20 - P$ $\quad Q^S = 3P$

a)



$Q^D = Q^S \rightarrow 20 - P = 3P$

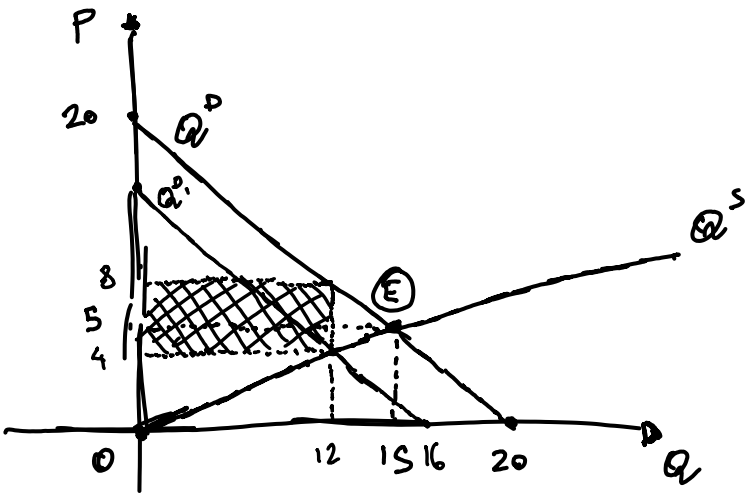
$4P = 20 \rightarrow P = 5 \quad Q^D = 15$

$Q^S = 15$

b) $P^D = 20 - (Q + 4)$ $\quad Q^S = 3P$

$P^D = 16 - q^D$ $\quad Q^S = 3P$

$Q^D = 16 - P^D$ $\quad Q^S = 3P$



$16 - P = 3P$

$4P = 16$

$P = 4$ $\quad Q^D = 12$

$Q^S = 12$

$P = 20 - 12$

$P^0 = 8$

c) TAX REVENUE $= 4 \cdot 12 = 48$ \$

d) DWL (EB) $= \dfrac{(4 \cdot 3)}{2} =$ **6**

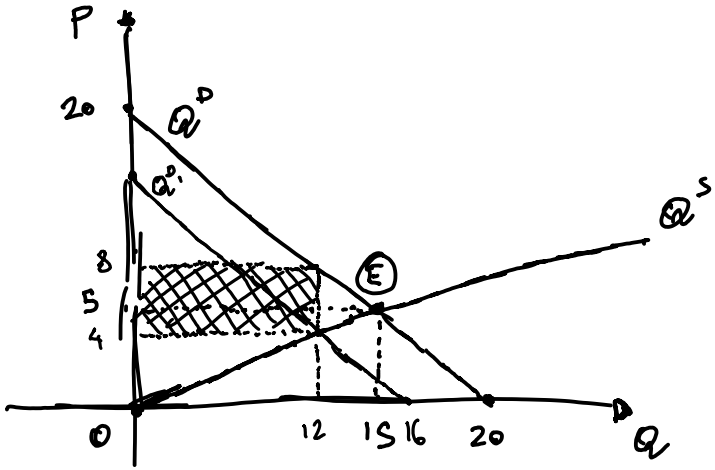
CONSUMER

$\dfrac{(3 \cdot 3)}{2} = 4.5$

SUPPLIER

$\dfrac{(1 \cdot 3)}{2} = 1.5$

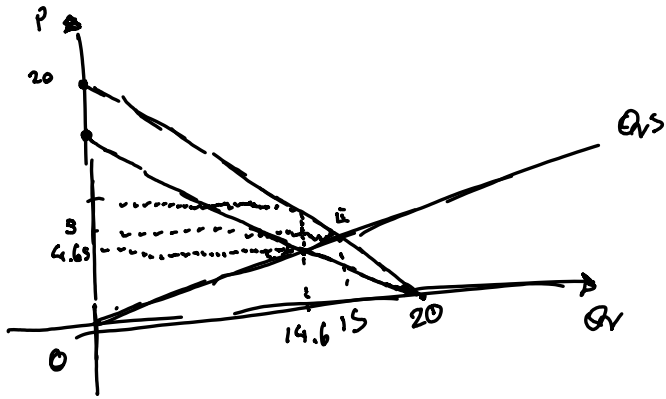
e)



IF $t = 20\%$

$Q_V^D = 20 - P(1 + 0.2)$

$Q_V^D = 20 - 1.2P$ $\quad Q^S = 3P$



CLEARLY, THERE'S AN INCREMENT OF EFFICIENCY CAUSED BY A REDUCTION OF EXCESS BORDED.

(1) WITHIN THE COUNTRY VERSION :

V_{IN}	V_{OUT}	VAT_{IN}	VAT_{OUT}	PAY
0	15217,4	0	3500	3500
15217,4	50000	3500	11500	8000
50000	65217,4	11500	15000	3500
65217,4	130434,8	15000	30000	15000

VAT = 23 %

I OBTAINED IT BY

$$\frac{11500}{50000} = 0{,}23$$

(1A) WITH AN EXPORT STAGE PROCESS :

V_{INP}	V_{OUT}	VAT_{INP}	VAT_{OUT}	PAY
∅	15217,4	∅	3500	3500
15217,4	50000	3500	∅	-3500
ABROAD				
50000	65217,4	0	15000	15000

GOING ABROAD, IT RESETS THE OUTSTANDING VAT AMOUNT IN REGION A

(2)

a) INCOME EFFECT = A ↑ B ↑

SUBSTITUTION EFFECT = A WEIGHTS MORE THAN B

OVERALL = A GAINS PROPORTION.

b) INCOME EFFECT INCREASES

c) LEISURE NOT VALUED

SO NO ADJUSTMENTS