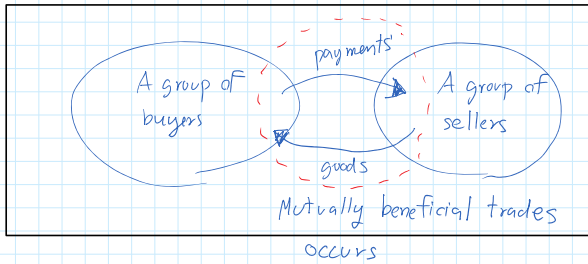


Consumer Surplus, Producer Surplus, and Market Efficiency



Market
for
used textbooks
├ online
└ offline

- Main Questions
- ① Why do people trade/exchange in a market?
 - ② Can we measure benefits/gains buyers and sellers obtain when they exchange or trade?
 - ③ If price changes (↑ or ↓), what will happen to benefits/gains buyers and sellers obtain?
 - ④ Market Efficiency → What does it mean?
→ Under which conditions mkt is efficient?

Consumer Surplus: net benefits/gains a consumer obtains from the purchase of a good.

$$\text{Consumer Surplus (CS)} = \underbrace{\text{willingness to pay (WTP)}}_{\substack{= \text{maximum price} \\ \text{a consumer is willing} \\ \text{to pay for a unit of} \\ \text{a good} \\ \text{or} \\ \text{reservation price (резервная)}}} - \underbrace{\text{Price actually paid}}_{(P)}$$

In short,

$$CS = WTP - P$$

Ex:

$$WTP = 300 \text{ baht/T-shirt}$$

$$P = 150 \text{ baht/T-shirt}$$

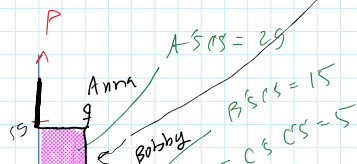
$$CS = WTP - P = 300 - 150 = 150 \text{ baht/T-shirt}$$

Next, let's consider 5 potential buyers/consumers/demanders ...

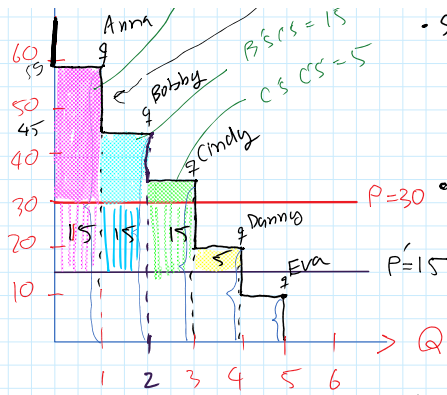
Buyers	WTP (€ / book)
A	59
B	45
C	35
D	20
E	10

Price	Quantity demanded
$P > 59$	0
$45 < P \leq 59$	1
$35 < P \leq 45$	2
$20 < P \leq 35$	3
$10 < P \leq 20$	4
$P \leq 10$	5

A
A, B
A, B, C
A, B, C, D
A, B, C, D, E



• Step-Shaped Demand Curve
(for 5 buyers)
is constructed by the



"Demand Curve for used texts"

• Step-Shaped Demand Curve (for 5 buyers) is constructed by the table above.

• Distance from the ground to the roof of the demand curve = WTP of the buyer.

• Next, suppose price is announced. Let's say $P = 30 \text{ € / Book}$.

At $P = 30$, A, B, C will buy.
D, E will not buy.

$$A's \text{ CS} = WTP - P = 59 - 30 = 29 \text{ €}$$

$$B's \text{ CS} = WTP - P = 45 - 30 = 15 \text{ €}$$

$$C's \text{ CS} = WTP - P = 35 - 30 = 5 \text{ €}$$

$$D's \text{ CS} = 0$$

$$E's \text{ CS} = 0$$

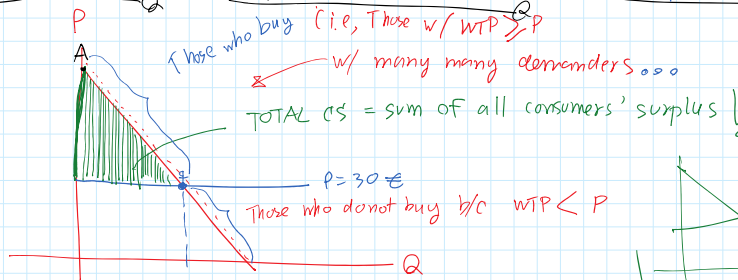
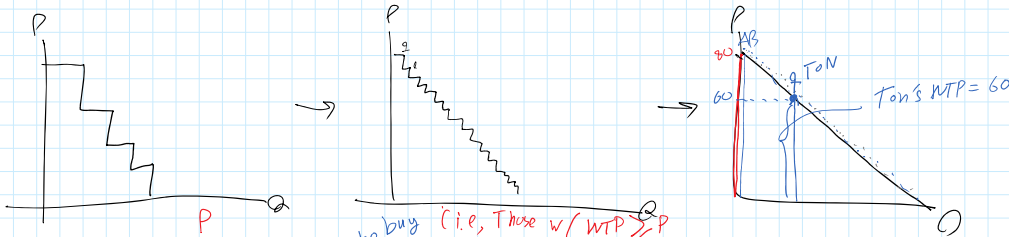
→ Individual consumer surplus

$$\text{Total CS} = 29 + 15 + 5 = 49 \text{ €}$$

= Sum of individual consumer surplus.

Total CS = area under the demand curve but above the price line (or level)

w/ many many buyers, demand curve will become smooth...



Now, suppose price reduces from $P = 30$ to $P' = 15$.
What will happen to Total consumer surplus?

Let's use the diagram above to analyze...

At $p' = 15$, A, B, C, D will make a purchase

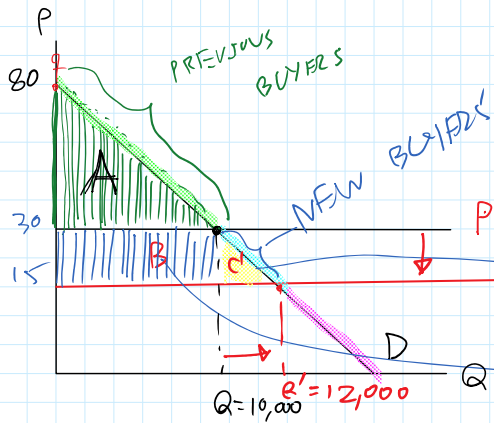
	B/F ($P=30$)	A/F ($P'=15$)	Δ
A	$CS = 59 - 30 = 29$	$CS' = 55 - 15 = 44$	$\Delta CS = 44 - 25 = +15$ 😊
B	$CS = 45 - 30 = 15$	$CS' = 45 - 15 = 30$	$\Delta CS = 30 - 15 = +15$ 😊
C	$CS = 35 - 30 = 5$	$CS' = 35 - 15 = 20$	$\Delta CS = 20 - 5 = +15$ 😊
D	$CS = 0$	$CS' = 20 - 15 = 5$	$\Delta CS = 5 - 0 = +5$ 😊
E	$CS = 0$	$CS' = 0$	
TOTAL CS	49	99	$\Delta CS = 99 - 49 = +50$ 😊

→ obtained by the previous buyers

→ obtained by the new buyer.

Let's look at a smooth dem

let's look at a smooth demand curve ... (w/ many many buyers)



• Total CS = sum of all buyers' CS.

• At $P = 30$, $CS = A$

• At $P' = 15$, $CS' = A + B + C'$

$$\Delta CS = (A + B + C') - A$$

$$= \Delta + B + C'$$

obtained
by
previous buyers

obtained
by new
buyers

Producer Surplus : net gains/benefits producers/sellers obtained from selling a good or service.

$$PS = \text{Price a seller gets} - \text{his cost}$$

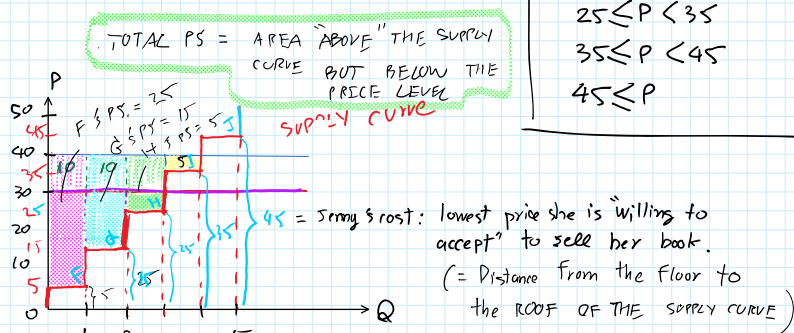
= minimum price that the seller is willing to ACCEPT to sell his good.

Consider a market w/ 5 sellers: F & H I S

Sellers	Costs (€/Book)
F	5
G	15
H	25
I	35
J	45

Let's make another Table:

P	Q
$P < 5$	0
$5 \leq P < 15$	1 (F)
$15 \leq P < 25$	2 (F, G)
$25 \leq P < 35$	3 (F, G, H)
$35 \leq P < 45$	4 (F, G, H, I)
$45 \leq P$	5 (ALL)



Suppose $P = 30 \text{ €}$. F, G, H will sell.

$$\begin{aligned} F's \text{ PS} &= P - \text{cost} = 30 - 5 = 25 \text{ €} \\ G's \text{ PS} &= P - \text{cost} = 30 - 15 = 15 \text{ €} \\ H's \text{ PS} &= P - \text{cost} = 30 - 25 = 5 \text{ €} \end{aligned}$$

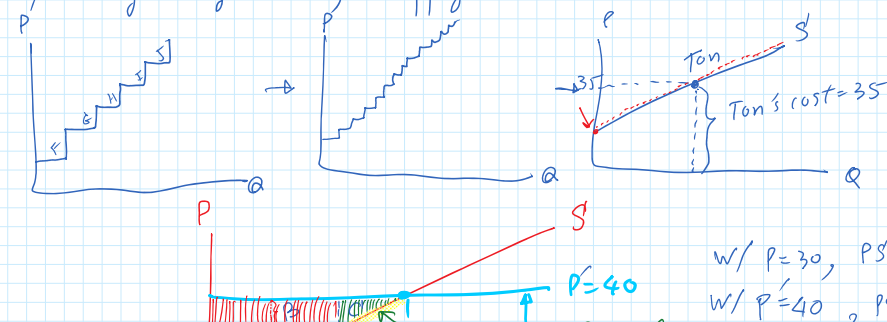
$$\text{TOTAL PS} = 25 + 15 + 5 = 45 \text{ €}$$

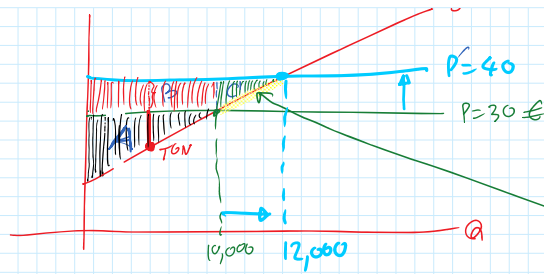
Next, What happens if price increases from 30 to 40 €?

	OLD PS (P=30)	NEW PS (P=40)	$\Delta PS'$	
F	25	35	$35 - 25 = +10 \text{ €}$	😊
G	15	25	$25 - 15 = +10 \text{ €}$	😊
H	5	15	$15 - 5 = +10 \text{ €}$	😊
I	0	5	$+5 \text{ €}$	😊
J	0	0	0	😊

obtained by all previous sellers
→ obtained by new seller.

w/ many many sellers supply curve becomes smooth...

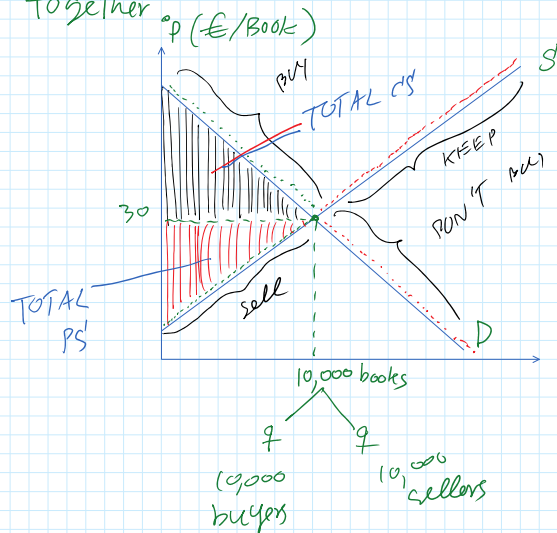




$w/ P=30, PS = A$
 $w/ P=40, PS' = A+B+C'$
 $\Delta PS = PS' - PS$
 $= (A+B+C') - A$
 $= +B + C'$

obtained by previous sellers
 obtained by NEW sellers

Let's bring Demand and Supply curves to put together

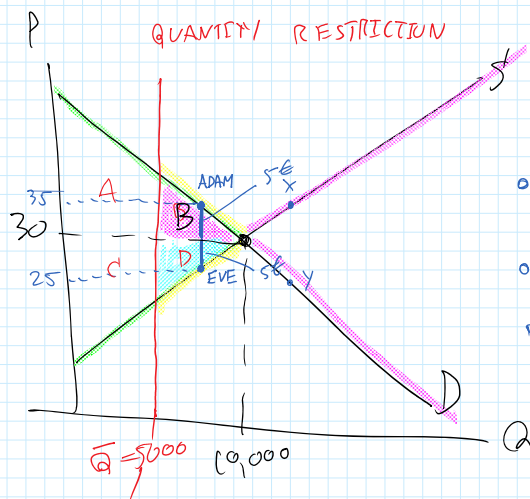


$\triangle \begin{matrix} CS \\ PS \end{matrix} = \text{TOTAL SURPLUS}$

$TS = CS + PS$

economic pie which is a measurement of market efficiency.

- Market is said to be "efficient" if market creates the biggest possible size of economic pie.
- The greatest size only occurs when market is free to move toward a market equilibrium



- CS'
- PS'
- TS'

(FREE MKT) (W/ QUANTITY RESTRICTION)

B/F

A/F

Δ

A+B

A

-B

??

C+D

C

-D

??

~~A+B+C+D~~

~~A+C~~

$\rightarrow -B - D$

loss in consumer surplus

loss in producer surplus

(-B - D) together so called "DEADWEIGHT LOSS"

worse off

worse off

on
cor
us

is

RIGHT LOSS" : WELFARE
(DWL) LOSS

so called DEADWE

(

DEADWEIGHT LOSS : WELFARE
(DWL) LOSS
DUE TO
THE GOVT.
INTERVENTION