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Demand, Supply, and Government Policies

- Price ceiling
- Price Floor
- Taxes

Q: How a govt. policy affect consumers, producers, and economy as a whole?

Tools used: D&S, Elasticity, CS PS TS

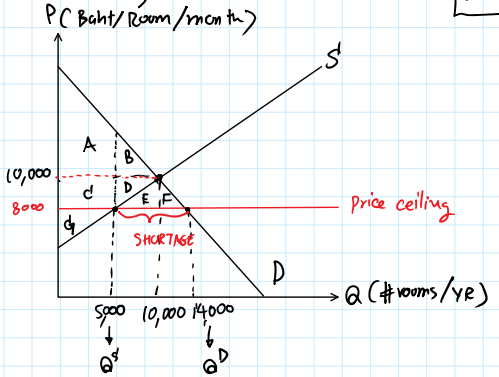
Price ceiling: a legally maximum price sellers can charge to buyers

Consider market for apartments.

Buyers: Tenants
Sellers: Landlords

Assuming that the mkt is perfectly competitive.

↳ many buyers & many sellers
non-differentiated goods



① Price ceiling leads to "shortage" as $Q^D > Q^S$.

② Who gain / who lose from this policy?

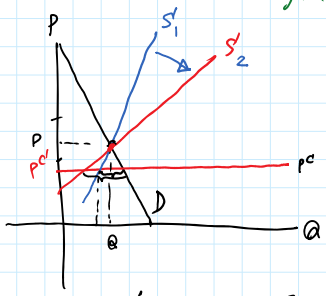
	(FREE MKT) B/F	(PRICE CEILING) A/F	Δ	
CS	A+B	A+C	+C−B >0	buyers are "better off"
PS	C+D+G	G	−C−D <0	sellers are "worse off"
TS	~~A+B+C+D+G~~	~~A+C+G~~	−B−D	

Deadweight loss due to price ceiling

Conclusion:
- Buyers gain
- Sellers lose
- DWL occurs as loss to sellers is bigger than

gain to buyers.

Application



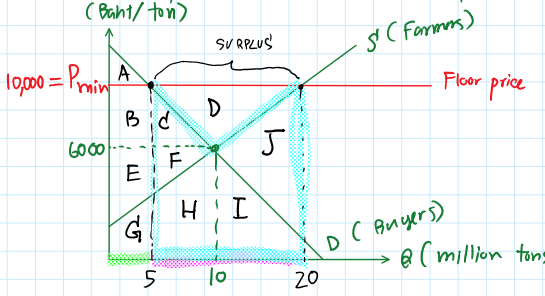
D-I-Y Who gain / who loss for the case where demand for rooms is price-inelastic?

$|\%\Delta Q| < |\%\Delta P|$

Price Floor : legally minimum price sellers MUST get when they sell.

Consider market for paddle rice
- buyers : Middlemen, Households
- sellers : rice farmers

Aim of price Floor : to help rice farmers



① At $P_{min} = 10{,}000$, $Q^S = 20$ million tons, $Q^D = 5$ million tons

As $Q^S > Q^D$, then surplus occurs...

② Unsold amount of rice = 20 − 5 = 15 million tons

③

	Free mkt	Price Floor	Δ
CS	A+B+C	A	−B−C ☹
PS	E+F	B+E−H−I−J	+B−F−H−I−J ☹☹☹
TS	A+B+C+E+F	A+B+E−H−I−J	−H−I−J−C−F

−H−I−J = cost of producing unsold amount of rice of 15 million tons

DWL or Social Welfare loss due to price Floor!

④ what if govt. helps to buy out the 15 million tons left unsold?

	Free Mkt	Price Floor + Govt Buy out	Δ
CS	A+B+C	A	−B−C
PS	E+F	B+E+C+D+F	+B+C+D
Govt	—	−C−D−F−H−I−J	−C−D−F−H−I−J
TS	A+B+C+E+F	A+B+E−H−I−J	−C−F−H−I−J = DWL or SOCIAL WELFARE LOSS

Govt budget used to buy 15 million tons of unsold rice.

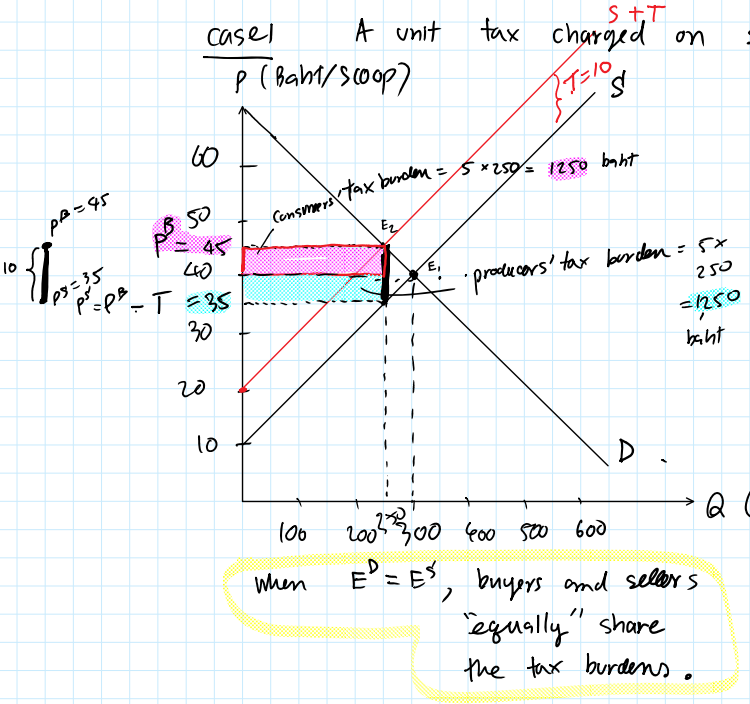
Taxes

- Taxes
  - Tax per unit or Unit tax (Ex: wine tax, cigarette tax)
  - Percentage tax (like VAT 7%)

our lesson covers unit tax

- Taxes can be charged either on buyers or on sellers.

Case1 A unit tax charged on sellers



When $E^D = E^S$, buyers and sellers "equally" share the tax burdens.

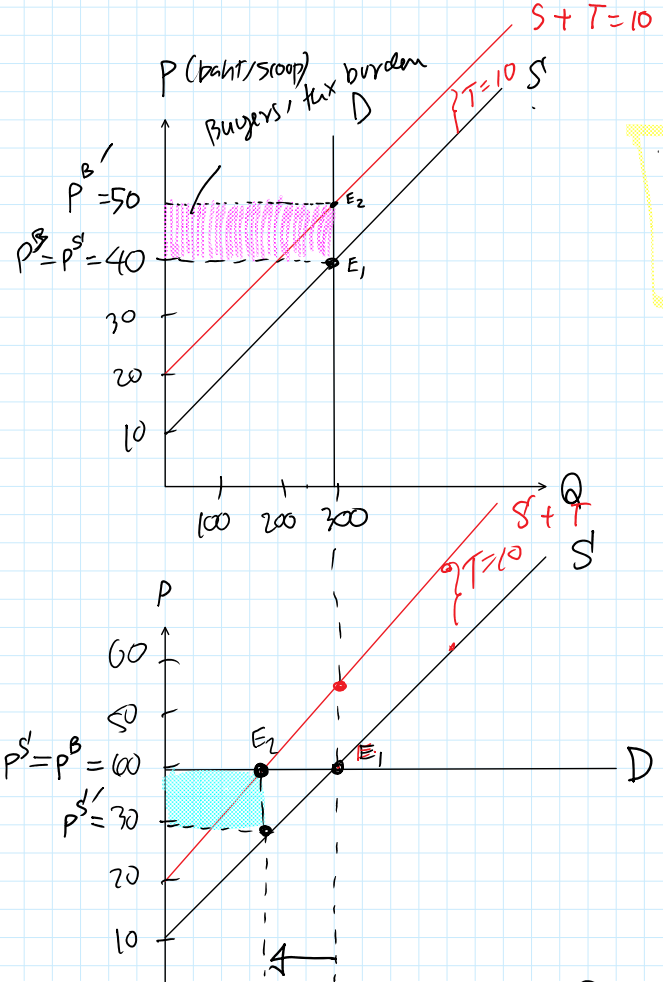
① B/F tax: P = 40 Q = 300

② Suppose T = 10 baht/scoop is imposed to sellers.

- supply curve shifts upward by the size of unit tax (T=10)
- new price of icecream = 45 baht/scoop
- new quantity reduces to 250 scoops/wk
- buyers pay a higher price?

B/F: 40
A/F: 45
) +5 baht

- sellers get a lower price
  B/F : 40 ↘ - 5 baht
  A/F : 35 ↙
- Icecream tax creates buyers' tax burden and sellers' tax burden.
- Govt. gets tax revenue = 2500 baht ($\overset{T \times Q}{10 \times 250}$)
  - 1250 From buyers' pocket
  - 1250 From sellers' pocket



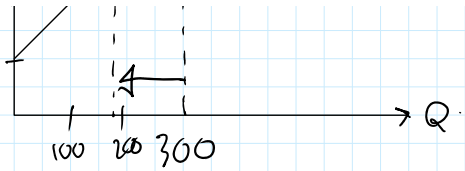
When D is perfectly price-inelastic, all tax burdens fall to buyers

B/F		A/F (w/ T=10 baht/sca)
P^B = 40		$P^{B'}$ = 50
P^S = 40	NO CHANGE	P^S = 40
Q = 300		Q = 300

When D is perfectly price elastic, (C = extremely price-sensitive sellers)

Fact #1 Icecream tax reduces market activity

Fact #1 (B/F) (A/F)



Fact#1

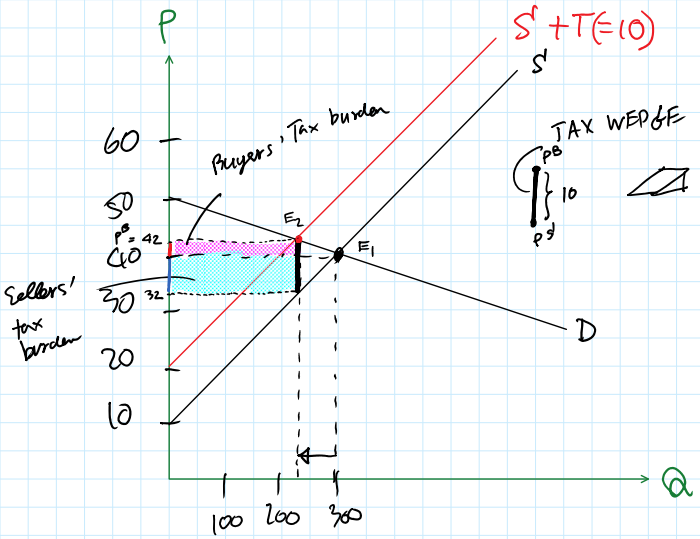
B/F
$P^B = 40$
$P^S = 40$

-10

A/F
$P^B = 40$ ☺
$P^S = 30$ ☹

Fact#3 when D is perfectly price elastic, sellers bear all tax burdens.

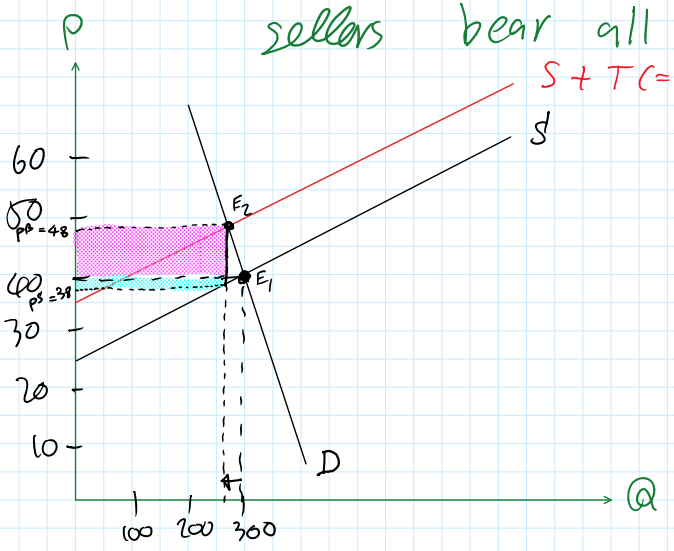
$\frac{1}{\text{SLOPE}} \cdot \frac{P}{Q}$



(a)

D is relatively flatter than S'

$E^D > E^{S'}$



(b)

D is relatively steeper than S

$E^D < E^{S'}$

Shape

Meaning

outcome

When demand is more price-elastic than supply, most of burdens fall to sellers.

B/F
$P^B = 40$

$+2$

A/F
$P^B = 42$

When supply is more price-elastic than demand, Most of burdens fall to buyers!

B/F

$P^B = 40 \xrightarrow{+2} P^{B'} = 42$

$P^S = 40 \xrightarrow{-8} P^{S'} = 32$

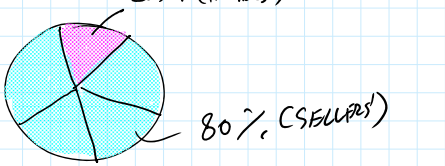
A/F

Buyers' burden

$$\frac{P^{B'} - P^B}{T} = \frac{42-40}{10} = \frac{2}{10} = \frac{1}{5}$$

Sellers' burden

$$\frac{P^S - P^{S'}}{T} = \frac{40-32}{10} = \frac{8}{10} = \frac{4}{5}$$



Case 2: Icecream Tax imposed on Sellers

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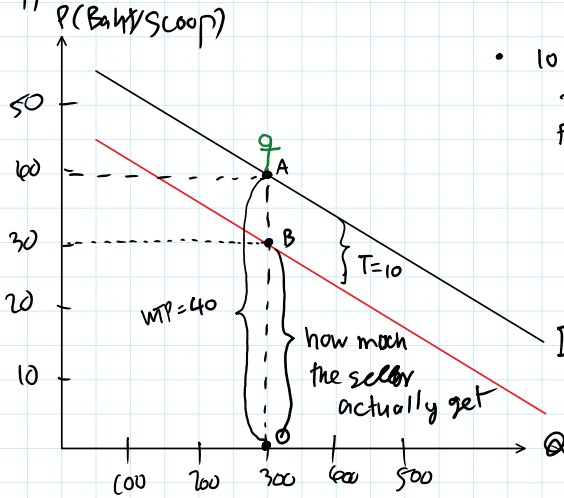
Case 2 Icecream tax charged on buyers

Now, Buyers are "legally" responsible to pay ice cream tax.

Suppose T = 10 baht/scoop.

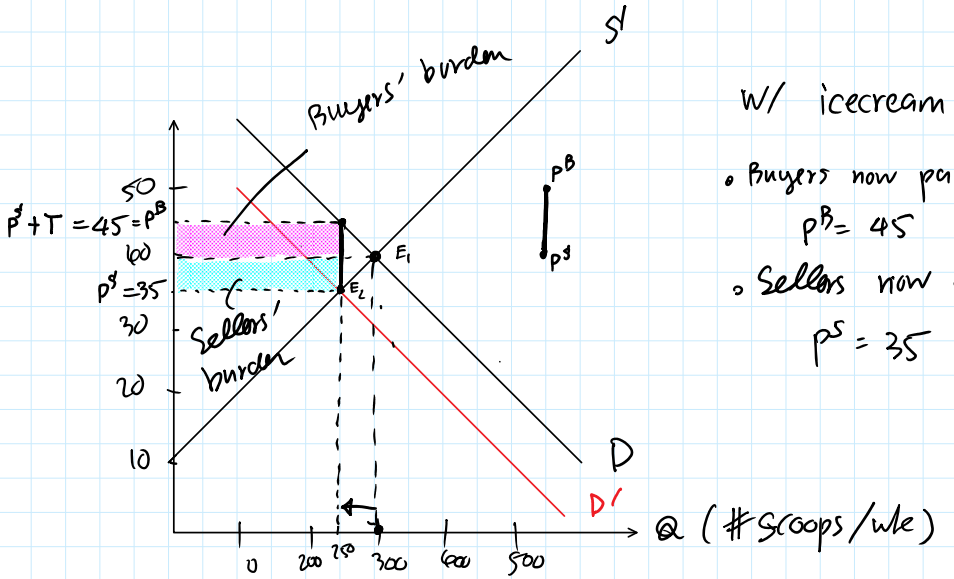


- 10 baht icecream tax will shift the demand curve downward From D to D' by the size of 10 baht/scoop.

OA = WTP of the green buyer

OB = money that the seller "actually" gets!

so called "D curve perceived by sellers"

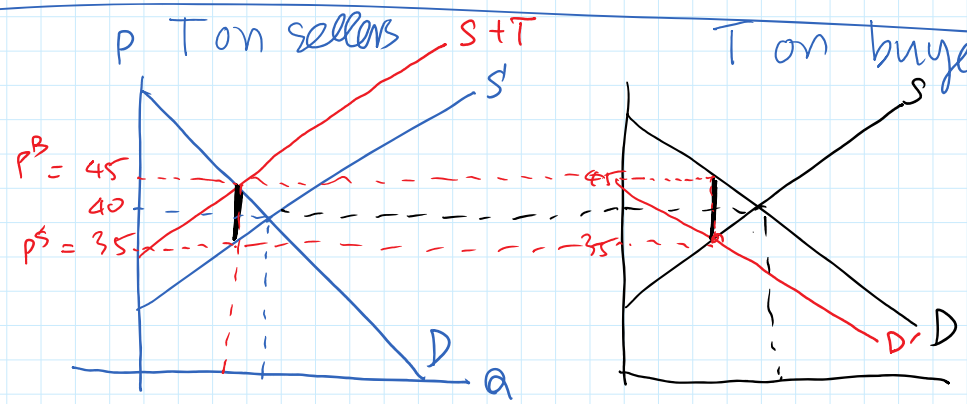


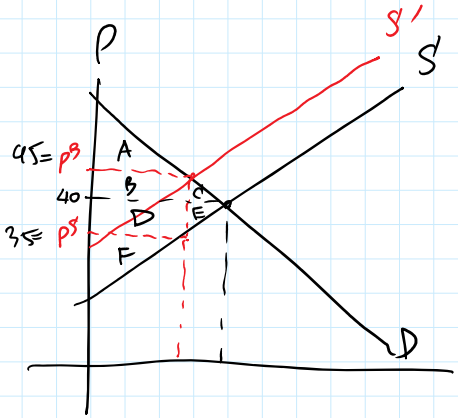
W/ icecream tax on buyers ...

- Buyers now pay a higher price
  $P^B = 45$ ☹
- Sellers now get a lower price
  $P^S = 35$ ☹

Observe that

Regardless of who is legally responsible to pay icecream tax, economic outcomes are "equivalent" ∴

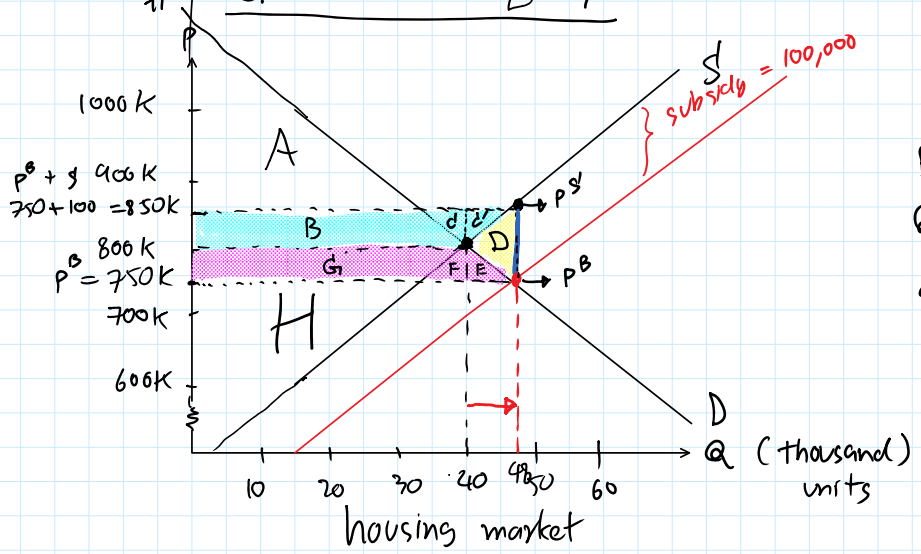




	FREE MARKET (B/F)	W/TAX (A/F)	Δ
C'S	A+B+C	0	a
P$	D+E+F	0	0
Govt	—	0	b
TS	A+B+C+D+E+F	0	c

D-I-Y ON WELFARE ANALYSIS!

GOVERNMENT SUBSIDY



W/O subsidy

P = 800,000 baht/house

Q = 40,000 houses/year

Suppose govt. gives production subsidy to the sellers = 100,000 baht

Fact#1 housing subsidy increases Q.
(Q↑ from 40 → 48)

	FREE MKT	SUBSIDY	Δ
CS	A+B	A+B+G+F+E	+G+F+E
PS	G+H	B+C+C'+G+H	B+C+C'
Govt	−	−(B+C+C'+D+E+F+G)	−B−C−C'−D−E−F−G
TS	A+B+G+H	A+B+G+H−D	−D

FACT#2 (B/F) P = 800 K

(A/F) P^B = 750K

$P^{S'} = P^B + SUBSIDY$
$= 750 + 100$
$= 850K$

- buyers pay lower price when they buy a house.
- sellers get a higher

- sellers get a higher price, i.e., p^B + SUBSIDY. ☺