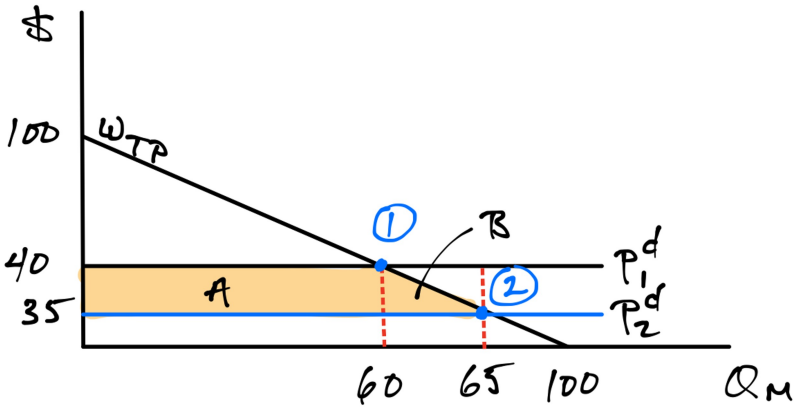
Impacts on Welfare

Impact on buyers:



A = 5*60 = 300

B = 0.5*5*5 = 12.5

ΔCS = A + B

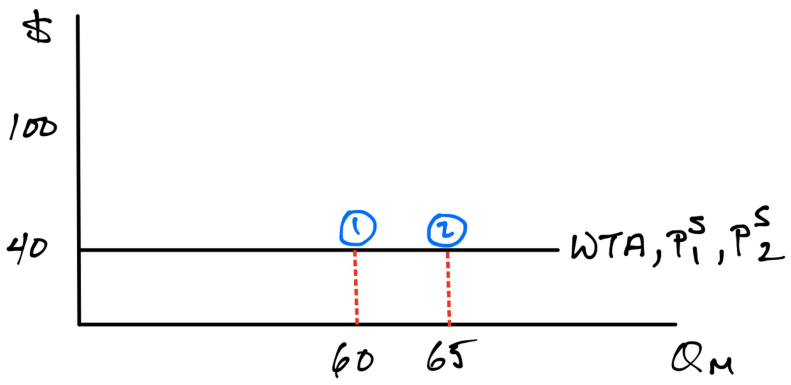
ΔCS = 300 + 12.5 = +312.5

Notes two groups of buyers:

Group	Q	ΔCS
Existing buyers	60	A = 300
New buyers	5	B = 12.5

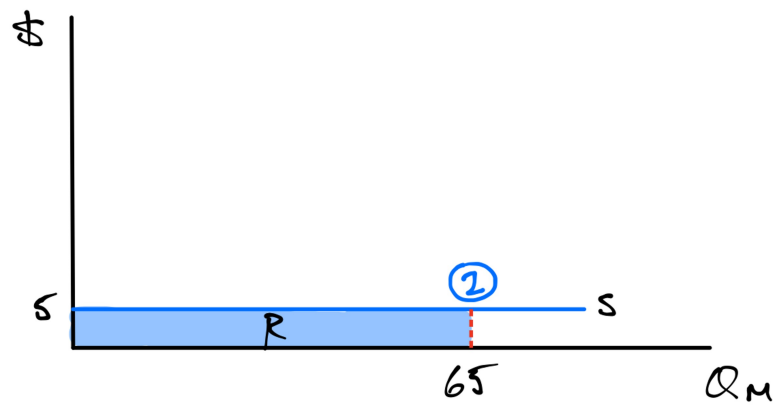
Most of gains go to existing "inframarginal" buyers

Impact on sellers:



$\Delta PS = 0$

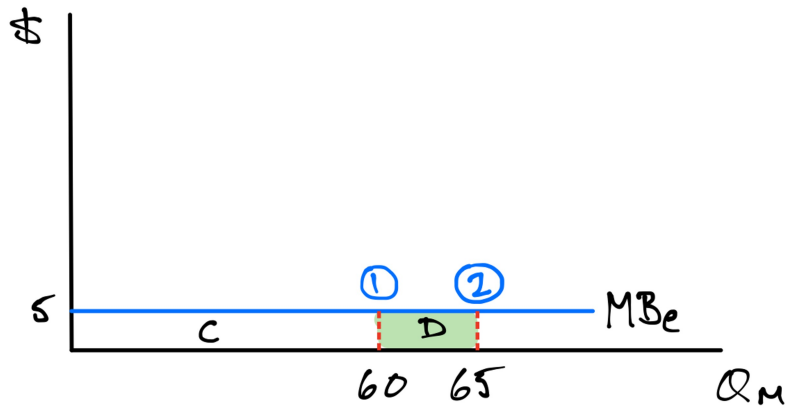
Impact on the government:



R = 5*65 = 325

$\Delta Rev = -R$
$\Delta Rev = -325$

Impact on the externality:



Old benefits: C

New benefits: C+D

Gain: +D

D = 5*(65-60) = 25

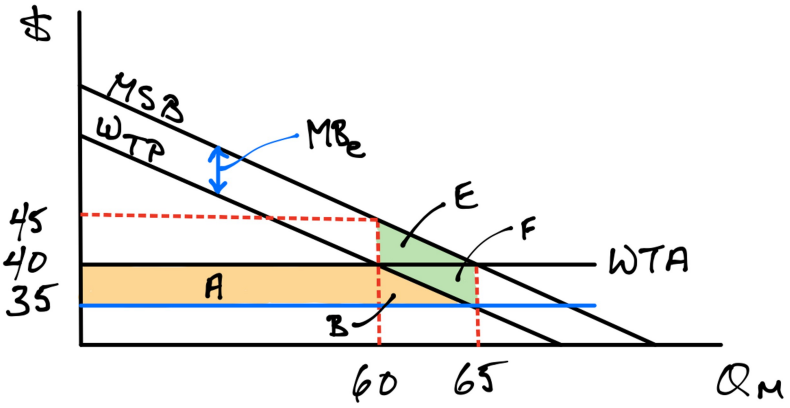
$\Delta Ext = +25$

Overall impact on SS:

Buyers:	+312.5
Sellers:	0
Government:	-325
Externality:	+25

$\Delta SS = +12.5$

Putting everything in a single diagram:



$$\Delta CS = A + B$$
$$\Delta PS = 0$$
$$\Delta Rev = -(A + B + F)$$
$$\Delta Ext = E + F$$

$$\Delta SS = +E$$

Check:

E = 0.5*5*5 = 12.5 ✔