Price Ceiling: Rent Control
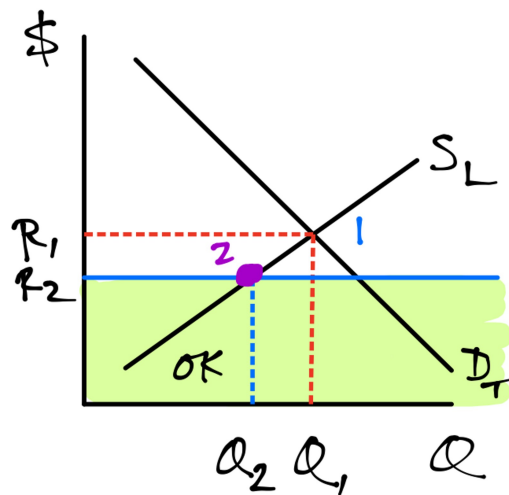
Model:

    Suppliers: Landlords (L)

    Demanders: Tenants (T)

    Price: Rent (R)

Policy:

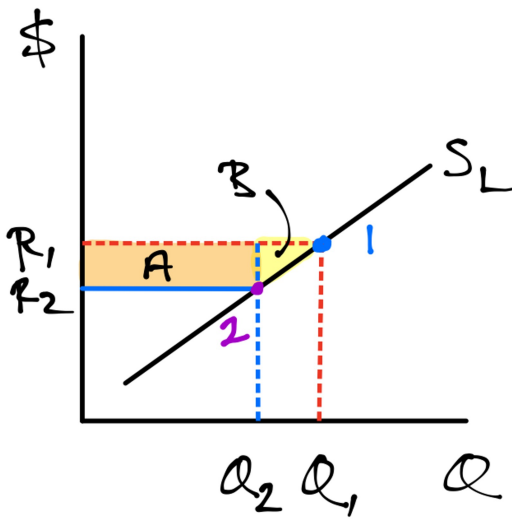   Sets maximum rent to $R_2 < R_1$

New apartments: Q_2

Two groups of tenants:

    Stayers: Q_2

    Leavers: $Q_1 - Q_2$
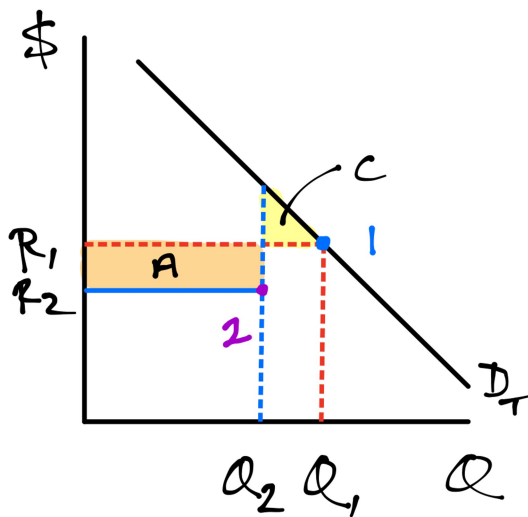
Impact on welfare:

Landlords:

$$\Delta PS = -(A + B)$$

A: Transfer to stayers
B: Lost gains on leavers

Tenants:

$$\Delta CS = +A - C$$

A: Transfer from landlords
C: Lost gains to leavers

Total ΔSS:

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

Numerical example:

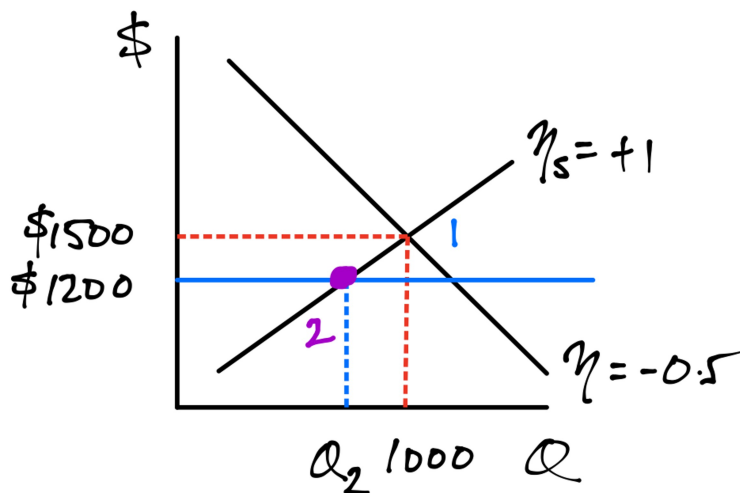Case 1: BAU with no rent control

$R_1 = \$1500$
$Q_1 = 1000$
$\eta = -0.5$
$\eta_S = +1$

Case 2: Rent control

$R_2 = \$1200$

Impact on Q:

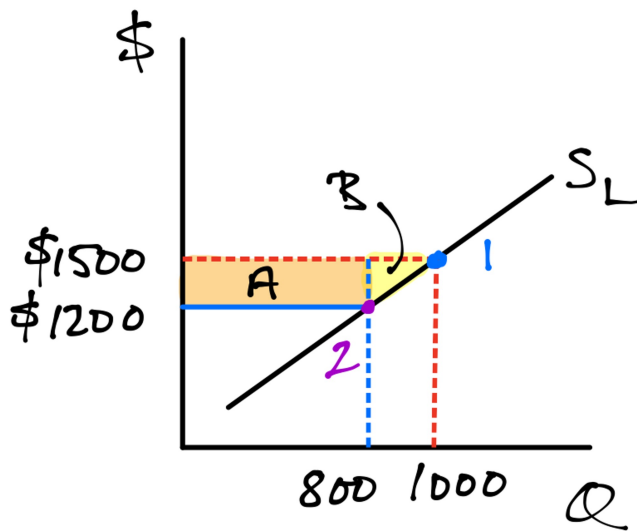$$\%\Delta P = \frac{-300}{1500} = -20\%$$

$\%\Delta Q = \eta_S * \%\Delta P$
$\%\Delta Q = (+1)(-20\%)$
$\%\Delta Q = -20\%$
$\Delta Q = -200$

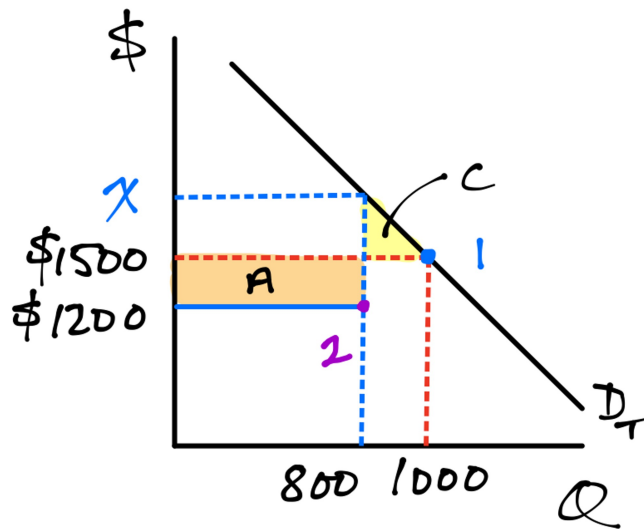$Q_2 = 800$

Landlords:

$$\Delta PS = -(A + B)$$

A = 300*800 = 240,000
B = 0.5*300*200 = 30,000

$$\Delta PS = -270,000$$

Tenants:

$$\Delta CS = +A - C$$

A = $240,000
C = 0.5*(X-1500)*200

Need X

Interpretation of X:
   Rent control lowers supply to 800
   X = rent that would drive **demand** down to 800
   Roughly the black market price

Calculating X:

$$\frac{\%\Delta Q}{\%\Delta P} = \eta$$

$$\frac{-20\%}{\%\Delta P} = -0.5$$

$$\%\Delta P = \frac{-20\%}{-0.5} = +40\%$$

$$\Delta P = 0.4 * 1500 = 600$$

$$X = 1500 + 600 = 2100$$

Area C:

$$C = 0.5*600*200 = 60{,}000$$

$$\Delta CS = +\$240{,}000 - \$60{,}000 = \$180{,}000$$

Total ΔSS:

$$\Delta SS = \Delta CS + \Delta PS$$
$$\Delta SS = +\$180{,}000 - \$270{,}000$$
$$\Delta SS = -\$90{,}000$$

Check:
  B = \$30,000
  C = \$60,000
  B+C = \$90,000 ✔

Analysis with algebraic equations is similar

Daily exercise 2 on Google Classroom