Rent Control / Land use Restriction Example

Suppose the rental market for San Diego is given by the following

Demand : $R_D = 50 - 3H_D^*$

Supply : $R_S = (1+K)\cdot H_S + a$

[Exogenous] $K \equiv$ factor of land use restrictions

$a \equiv$ factor of construction costs

(1) Solve for the Eq price & quantity (H^*, r^*) in terms of k & a

$$50 - 3H = (1+K)\cdot H + a$$

$(1+K)H = H + HK$
$+ 3H$
$= 4H + HK$
$= (4+K)H$

Solve for H $\Rightarrow$

$$50 - a = (1+K)\cdot H + 3H$$
$$= (4+K)\cdot H$$

$$\boxed{H^* = \frac{50 - a}{4+K}}$$

$$r^* = 50 - 3\left[\frac{50-a}{4+K}\right]$$

$$= \frac{50(4+K) - 150 + 3a}{4+K}$$

$$\boxed{r^* = \frac{50 + 50k + 3a}{4+K}}$$

(ii) What happens to Eq (H^*, r^*) when $a\uparrow$? $k\uparrow$?

$50(2) = 100$
$4+2 = 6$

$$\uparrow r^* = \frac{50 + 50k + 3a}{4+k}$$

$\frac{4}{4} > \text{or } \frac{4}{5}$

$\frac{4}{4} > \text{or } \frac{3}{4}$

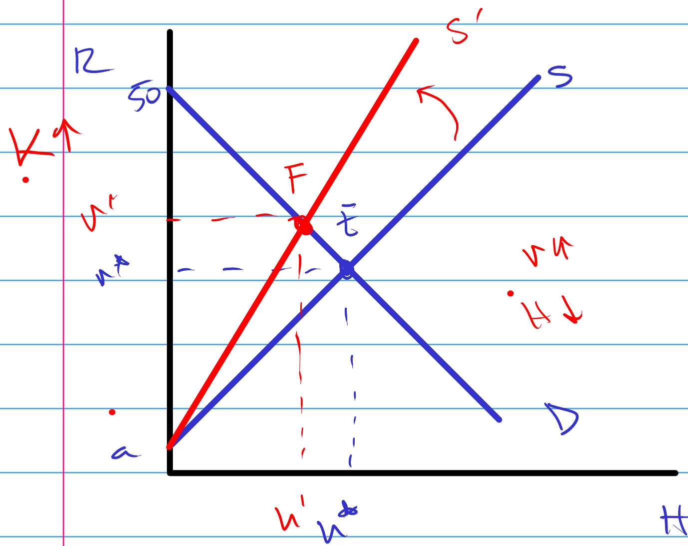
$$H^* = \frac{50 - a\uparrow}{4+k\uparrow}$$

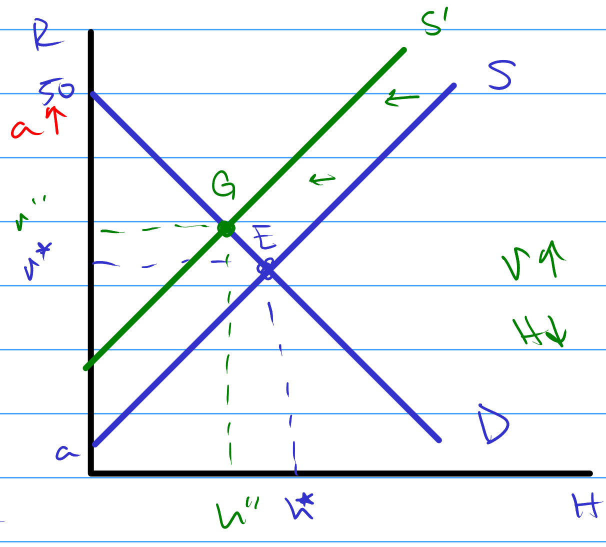
$k\uparrow \rightarrow H^*\downarrow$
$a\uparrow \rightarrow H^*\downarrow$

$k\uparrow \rightarrow r^*\uparrow$
$a\uparrow \rightarrow r^*\uparrow$

$[k\downarrow \rightarrow H\uparrow]$ $k\downarrow \rightarrow r\downarrow$

(iii) Graphically illustrate changes in k, a





Demand: $R_D = 50 - 3H_D^*$

Supply: $R_S = (1+k)\cdot H_S + a$

Suppose $a = k = 2$

(v) Suppose politicians set a rent control ceiling to no more than $r^{max} = \$20$

Calculate the shortage

Demand: $R_D = 50 - 3H_D$

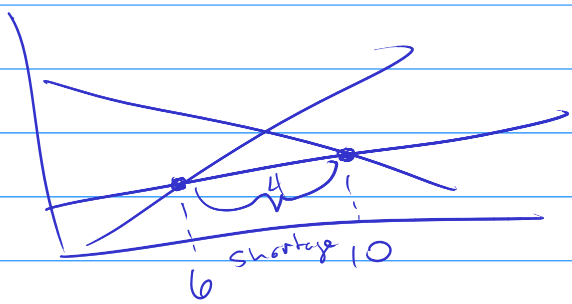
Supply: $R_S = 3 \cdot H_S + 2$

$20 = 50 - 3H_D$ $\qquad$ $20 = 3 \cdot H_S + 2$

$3H_D = 30$ $\qquad$ $3H_S = 18$

$\rightarrow H_D = 10$ $\qquad$ $H_S = 6$

Shortage $= H_D - H_S = 4$



(VI) How could the local government achieve the same rental price w/out losing any efficiency?

How much would we have to reduce LUR (k) to achieve the same $r = \$20$

$$r^* = \frac{50 + 50k + 3a}{4+k} = 20$$

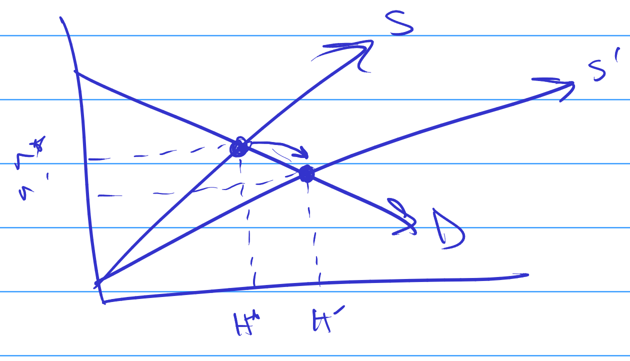
$$50 + 50k + 3(2) = 80 + 20k$$

$$30k = 24$$

$$k^* = \frac{24}{30} = 0.8$$

K↓

Height ↑



\$20

Rent Control or Lower LUR