EXERCISE #2 JONES PAGE 52

SOLOW MODEL WITHOUT TECH. CHANGE & WITH POPULATION GROWTH – $\uparrow L$ (ASSUMING ECONOMY WAS AT STEADY STATE)

$Y = K^{\alpha} L^{1-\alpha}$

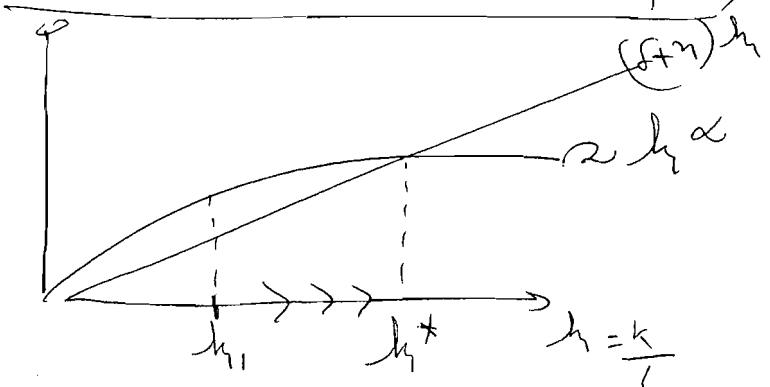
$\dot{K} = s Y - \delta K$, $\hat{K} = s\frac{Y}{K} - \delta$

MODIFIED SYSTEM:

$\frac{Y}{L} = \frac{K^{\alpha}}{L^{\alpha}} \frac{L^{1-\alpha}}{L^{1-\alpha}} \Rightarrow \boxed{y = k^{\alpha}}$ WHERE $y = \frac{Y}{L}$, $k = \frac{K}{L}$

$\hat{k} = \hat{K} - \hat{L} = s\frac{Y/L}{K/L} - (\delta + n) = s\frac{y}{k} - (\delta + n)$

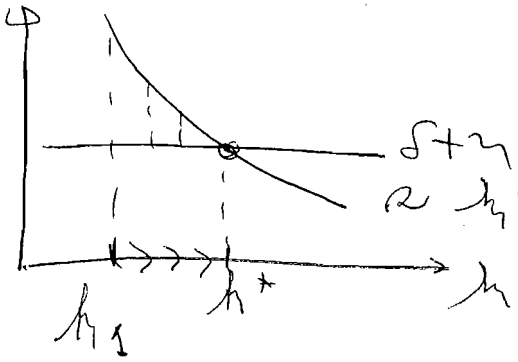
$\Rightarrow \boxed{\hat{k} = s k^{\alpha - 1} - (\delta + n)}$, $\boxed{\dot{k} = s k^{\alpha} - (\delta + n) k}$

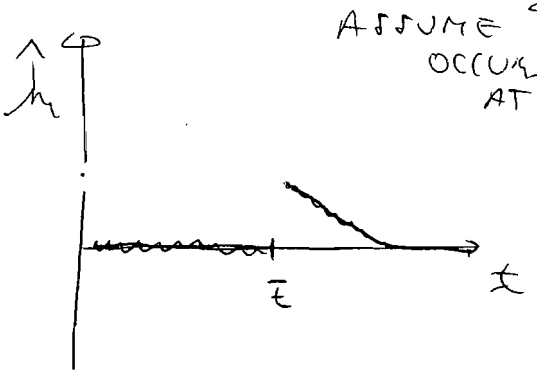


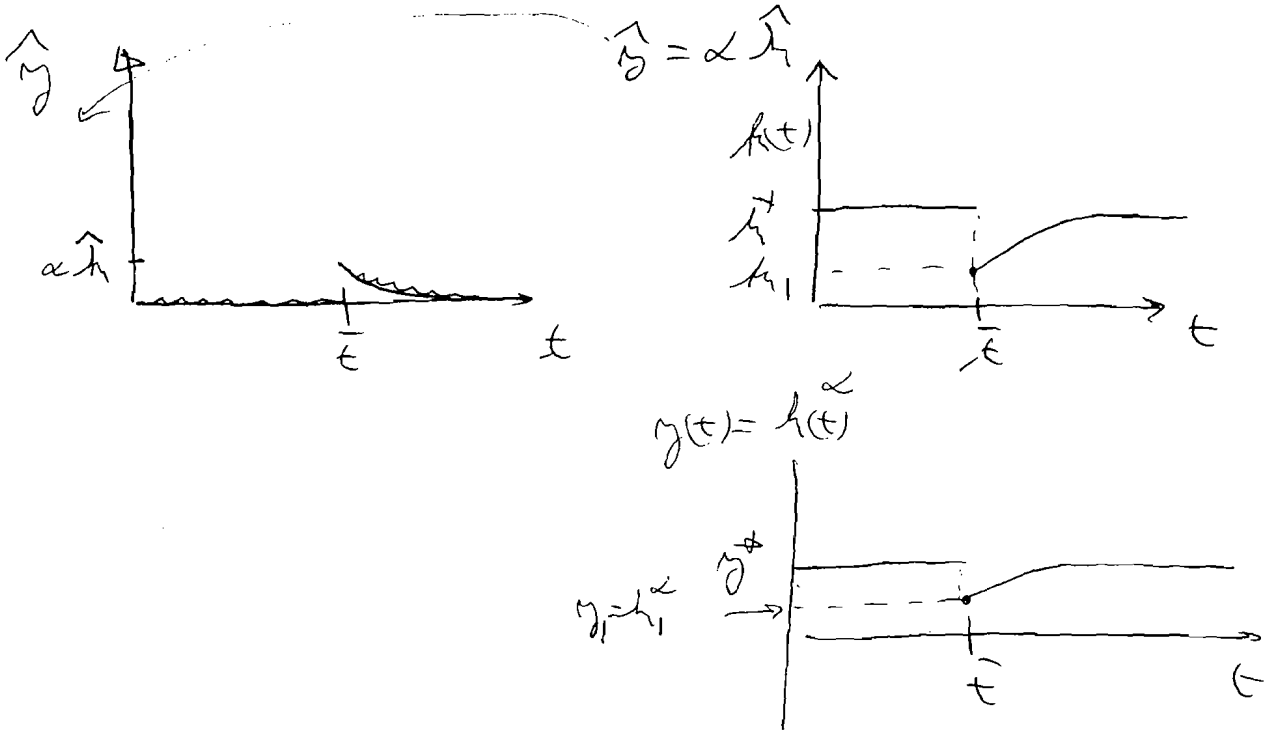
$\uparrow L \Rightarrow k \downarrow$ to k_1

AT k_1, $\dot{k} > 0 \Rightarrow k \uparrow$ to REACH BACK k^*

ASSUME $\uparrow L$ OCCURS AT $\bar{t}$







EXERCISE 3 - AN INCOME TAX

GOV. TAKES $(T y)$ AND THROWS IT AWAY
$\Rightarrow S = s(1-T)Y$

ASSUME WE START AT BGP

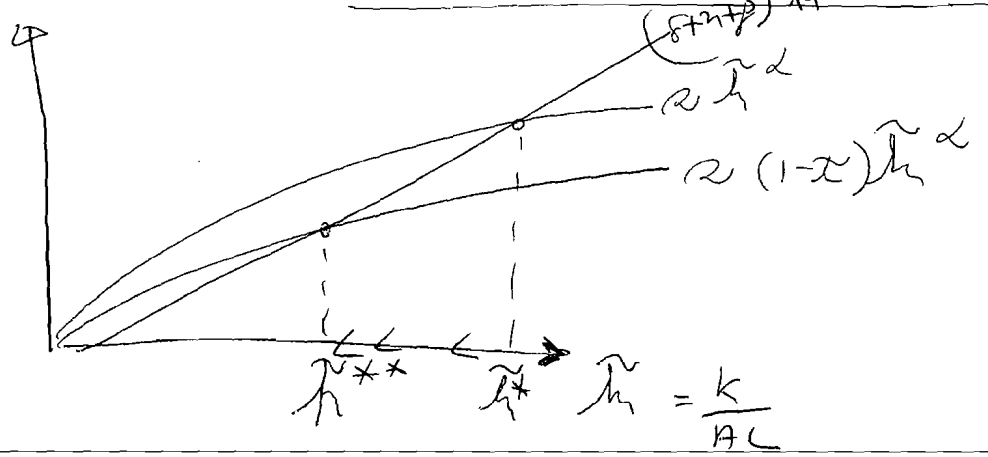
MODIFIED MOD SYSTEM

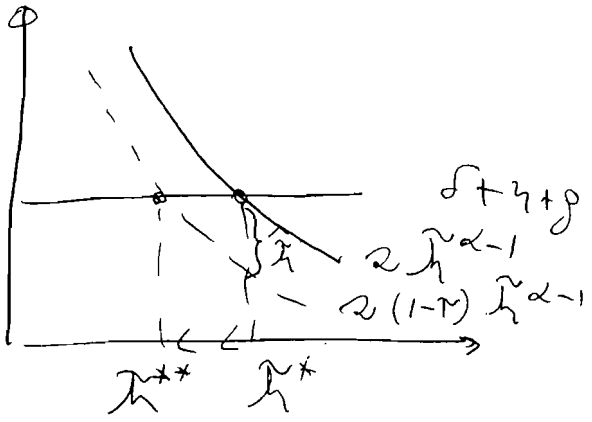
$$\frac{Y}{AL} = \frac{K^\alpha (AL)^{1-\alpha}}{AL}$$

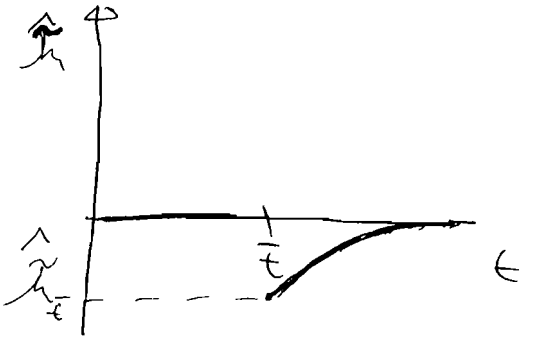
$$\Rightarrow \tilde{y} = \tilde{k}^\alpha$$

$$\dot{\tilde{k}} = s\tilde{k}^\alpha - (\delta + n + g)\tilde{k}$$

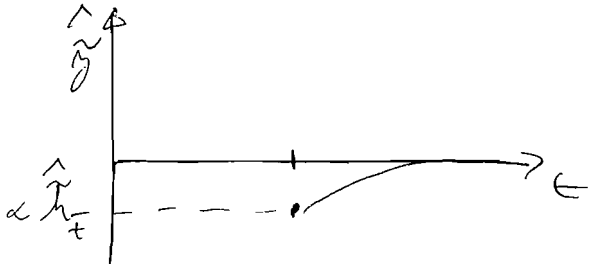
$$\text{or} \quad \boxed{\dot{\tilde{k}} = s\tilde{k}^{\alpha-1} - (\delta + n + g)}$$







$$\tilde{y} = \tilde{k}^{\alpha} \Rightarrow \hat{\tilde{y}} = \alpha \hat{\tilde{k}}$$



. . . . SAME NEXT STEPS AS ↓ α (EX. 1)