ECON 360
SPRING 2007

EXAM I KEY

(1) $Y = K^{\alpha} L^{1-\alpha}$ (GIVEN IN HANDOUT)

(1) $\frac{Y}{L} = \frac{K^{\alpha} L^{1-\alpha}}{L} \Rightarrow y = k^{\alpha}$

$\Delta k = s y - (\delta + n) k$ (GIVEN IN HANDOUT)

$\Rightarrow$

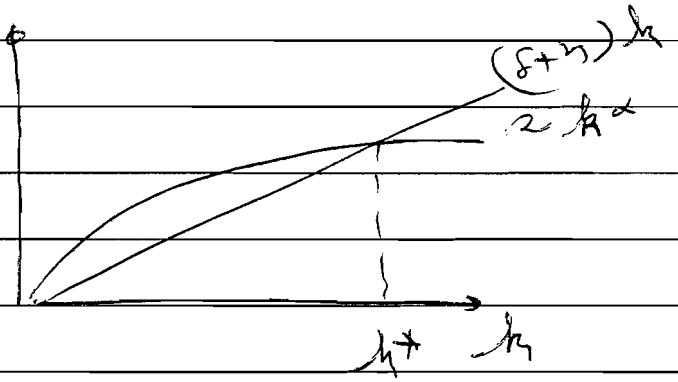
$\Delta k = s k^{\alpha} - (\delta + n) k$

(2) AT BGP ALL VARIABLES GROW AT CONSTANT RATES i.e.

$\vec{Y}$, $\vec{K}$, ETC CONSTANT

OR IN MODIFIED SYSTEM WE HAVE A STEADY STATE WHEN

$\Delta k = 0$ OR $\hat{k} = 0$



$\downarrow$ $\frac{K}{L}$ AT BGP (OR AT S. STATE OF MODIFIED SYSTEM)

(3) AT BGP $\hat{y} = 0$ $\rightarrow$ OUTPUT PER WORKER GROWTH

i.e $\left(\frac{\hat{Y}}{L}\right) = 0$

THEN $\boxed{\hat{Y} = \hat{C} = n}$ TOTAL OUTPUT GROWTH

(4) ↑ $s_A > s_B \Rightarrow$ AT S.S. : $k^*_A > k^*_B$

AND SINCE

$$y^*_A = k^{*\alpha}_A \quad , \quad y^*_B = k^{*\alpha}_B$$

$$y_A > y_B$$

HOWEVER: $c^*_A = (1-s_A) y^*_A \qquad c^*_B = (1-s_B) y^*_B$

AND HIGHER $s \Rightarrow$ HIGHER y^*

BUT A LOWER $(1-s_A)$

i.e.

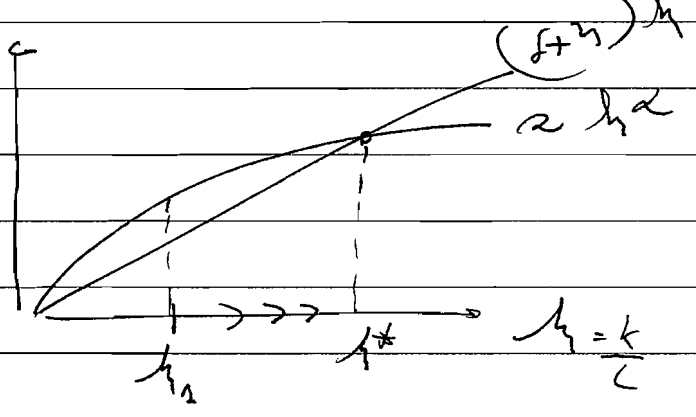
$\uparrow s \Rightarrow (1-s) \downarrow$ & $y \uparrow$

THEREFORE WE CAN'T SAY WHETHER

$$c^*_A \gtrless c^*_B$$

(IT WILL DEPEND ON WHAT THE GOLDEN RATE OF SAVINGS IS)

(5) ↑ L



(1) IF $L \uparrow \Rightarrow k \downarrow$ TO k_1 i.e. capital per worker $(k) \downarrow$

AT TIME t

see diagram

AT $k = k_1$, $\hat{k} > 0$ so $k \uparrow$

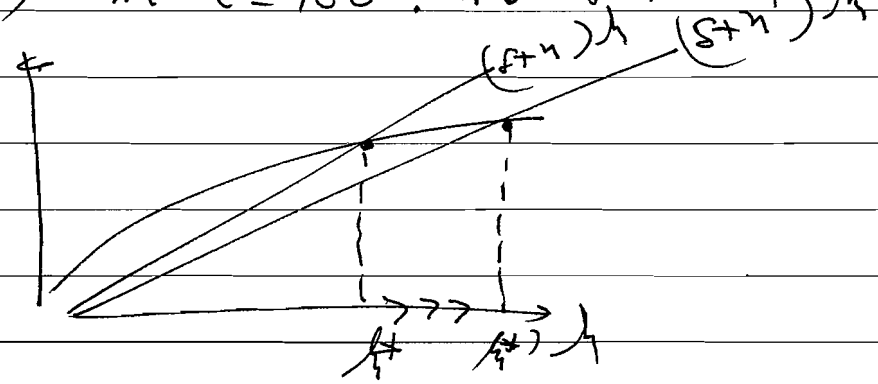
SUMMARY: AT $t = \bar{t}$: k^* DROPS TO k_1,
AT FOLLOWING PERIODS: $k \uparrow$

(ii) SINCE $y = k^{\alpha}$ IF $k \uparrow \Rightarrow y \uparrow$
SO
OUTPUT PER WORKER (y) IS GROWING
IN THE PERIODS IMMEDIATELY FOLLOWING
THE ARRIVAL.

(iii) AFTER ADJUSTMENT ENDS k GOES
BACK TO k^* & THEREFORE y GOES
BACK TO $y^* = k^{*\alpha}$
SO THE LEVEL OF OUTPUT PER WORKER GOES
BACK TO ITS PREVIOUS LEVEL.

(iv) $\hat{k}^* = 0$ WHEN SYSTEM RETURNS TO
k^*, RATE OF GROWTH OF k^*
IS AGAIN ZERO (SEE DIAGRAM).

(6) At $t = 100$: $n \downarrow$ do n'



(i) $k \uparrow$ in periods 100, 102, etc since $\Leftrightarrow \hat{k} > 0$ or $\hat{k} > 0$ (see diagram)

(ii) $\hat{k} > 0$ in periods 100, 101, etc

but growth rate of growth is decreasing

(iii) After adjustment takes place

$k \rightarrow k^{*'} \Rightarrow y^{*'} = k^{*'^{\alpha}} > y^* = k^{*\alpha}$

i.e. output per worker $\uparrow$ at BGP

(iv) Growth rate of capital per worker at BGP is still zero

(since $k^{*'}$ is constant once we get there)

(II) Solow without tech. change

At BGP $\hat{y}^* = 0$ i.e. $\left(\frac{\hat{Y}}{\hat{L}}\right) = 0$ (output p/ worker does not grow)

$\Rightarrow \hat{Y} = \hat{L} = n^{=0}$ (not needed)

Solow with tech. change

At BGP $\hat{\tilde{y}} = \left(\frac{\hat{Y}}{\hat{AL}}\right) = 0$

$\Rightarrow \left(\frac{\hat{Y}}{\hat{L}}\right) = \hat{A} = g$ (output p/ worker grows at rate of tech. change)

(not needed) $\Rightarrow \hat{Y} = \hat{L}^{=n=0} + g = g$

(III) (1) $Y = AK^{\alpha}L^{1-\alpha} \Rightarrow \hat{Y} = \hat{A} + \alpha\hat{K} + (1-\alpha)\hat{L}$

$\Rightarrow \hat{A} = \hat{Y} - \alpha\hat{K} - (1-\alpha)\hat{L}$

Singapore:

$$\hat{A} = 0.3 - \underbrace{0.53 \times 0.474}_{\alpha_S} - (1-0.53) \times 0.249$$

$$= -0.06825 \quad (0.25122)$$

H-K

$$\hat{A} = 0.294 - \underbrace{0.38 \times 0.374}_{\alpha_{HK}} - (1-0.38) \times 0.108$$

$$= 0.008492 \quad (0.14212)$$

(2) $A = u \cdot A^*$ (local technology; foreign technology)

$\Rightarrow \hat{A} = \hat{u} + \hat{A}^* \Rightarrow \hat{u} = \hat{A} - \hat{A}^*$ (0.08)

Singapore: $\hat{u} = -0.07 - 0.08 < 0$ "FALLING BEHIND"

H-K: $\hat{u} = 0.00492 > 0$ "CATCHING UP"

(IK)

(1) WEAK FINANCIAL SYSTEM : WHY? (ONLY A COUPLE NEEDED)

- LACK OF REGULATION + AVAILABILITY OF FOREIGN FUNDS
  ⇒ UNSUPERVISED INSTITUTIONS TAKING BIG RISKS
- LONG TERM INVESTMENT FINANCED BY SHORT TERM FUNDS
- FIXED EXCH. RATE + EASY ACCESS TO FOREIGN CAPITAL ⇒ DOMESTIC CREDIT BOOM
- CLOSED TIES BETWEEN GOVERNMENT OFFICIALS & BANKING BUSINESS OWNERS
- NON PERFORMING LOANS & AS A % OF TOTAL LOANS (COMPARISON GIVEN IN PRESUMPTION 2005-1998)

(2) ↓ WORLD TRADE

↓ II INCOME

ENGLAND MAIN POWER

AVAILABILITY OF FOREIGN CAPITAL