HW1

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1. $Y(t) = F[K(t), A(t)L(t)]$

由 CRS，记 $y(t) = \dfrac{Y(t)}{A(t)L(t)}$，$k(t) = \dfrac{K(t)}{A(t)L(t)}$，$y(t) = F[k(t), 1] \triangleq f[k(t)]$

$\Downarrow$

$Y(t) = A(t)L(t) f(k(t))$

$$\frac{Y(t+1) - Y(t)}{Y(t)} = \frac{A(t+1)L(t+1) f[k(t+1)] - A(t)L(t) f[k(t)]}{A(t)L(t) f[k(t)]}$$

steady state: $k(t+1) = k(t) = k^*$

$\therefore$ growth rate of output $= \dfrac{A(t+1)L(t+1)}{A(t)L(t)} - 1$

$= (1+g)(1+n) - 1$

$= n + g + ng$

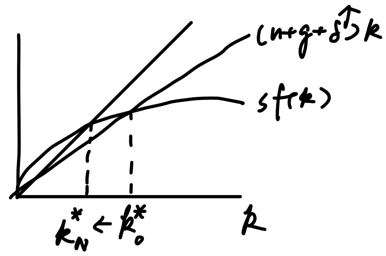
2. $\dot{k} = s f(k) - (n+g+\delta)k$

BGP上，$\dot{k} = 0$ ① if $\delta \uparrow$, then $\dot{k} < 0 \Rightarrow k(t) \downarrow$ 直到达到新的稳态

$s f(k_N^*) = (n+g+\delta_N) k_N^*$

此时 $k_N^* < k_0^*$

低于原稳态时单位有效劳动的平均资本.



② if $n \uparrow$ and $g \uparrow$, then $\dot{k} < 0 \Rightarrow k(t) \downarrow$ 直到达到新的稳态

$s f(k_N^*) = (n+g+\delta_N) k_N^*$

此时 $k_N^* < k_0^*$

低于原稳态时单位有效劳动的平均资本.

3.

a. 单位有效劳动的人均产出函数为 $y(t) = \dfrac{Y(t)}{A(t)L(t)} = \dfrac{K(t)^\alpha [A(t)L(t)]^{1-\alpha}}{A(t)L(t)} = k(t)^\alpha$

$f(k(t)) = [k(t)]^\alpha$

b. steady state: $\dot{k}(t) = 0$,

$s f(k^*) = (n+g+\delta) k^*$

$s (k^*)^\alpha = (n+g+\delta) k^*$

$k^* = \left(\dfrac{s}{n+g+\delta}\right)^{\frac{1}{1-\alpha}}$

$y^* = (k^*)^\alpha = \left(\dfrac{s}{n+g+\delta}\right)^{\frac{\alpha}{1-\alpha}}$

$c^* = (1-s) y^*$

$= (1-s)\left(\dfrac{s}{n+g+\delta}\right)^{\frac{\alpha}{1-\alpha}}$

c. 由 GR, $\frac{\partial c^*}{\partial s} = 0 \Rightarrow$ $c^* = y^* - (n+g+\delta)k^*$ (由 $sy^* = (n+g+\delta)k^*$)

$$= (k^*)^\alpha - (n+g+\delta)k^*$$

$$\frac{\partial c^*}{\partial s} = \alpha (k^*)^{\alpha-1} \cdot \frac{\partial k^*}{\partial s} - (n+g+\delta)\frac{\partial k^*}{\partial s} = 0$$

$$k^*_{gold} = \left(\frac{\alpha}{n+g+\delta}\right)^{\frac{1}{1-\alpha}}$$

d. $k^*_{gold} = \left(\frac{s}{n+g+\delta}\right)^{\frac{1}{1-\alpha}} \Rightarrow \left(\frac{\alpha}{n+g+\delta}\right)^{\frac{1}{1-\alpha}} = \left(\frac{s}{n+g+\delta}\right)^{\frac{1}{1-\alpha}}$

$$\Rightarrow s^*_{gold} = \alpha$$

4. A. $MPL = w_t = \frac{\partial F(K_t, A_t L_t)}{\partial L_t} = \frac{\partial \left[A_t L_t F\left(\frac{K_t}{A_t L_t}, 1\right)\right]}{\partial L_t}$

$$= A_t F\left(\frac{K_t}{A_t L_t}, 1\right) + \cancel{A_t L_t} F_L'\left(\frac{K_t}{A_t L_t}, 1\right)\left[\frac{-\cancel{A_t} K_t}{(\cancel{A_t} L_t)^2}\right]$$

$$= A_t f(k_t) - \frac{K_t}{L_t} f'(k_t)$$

$$= A_t \left[f(k_t) - k_t f'(k_t)\right]$$

B.

$$q_t = \frac{\partial F(K_t, A_t L_t)}{\partial K_t} = \frac{\partial \left[A_t L_t F\left(\frac{K_t}{A_t L_t}, 1\right)\right]}{\partial K_t}$$

$$= A_t L_t F_K'\left(\frac{K_t}{A_t L_t}, 1\right) \cdot \frac{1}{A_t L_t}$$

$$= f'(k_t)$$

$$w_t L_t + q_t K_t = A_t \left[f(k_t) - k_t f'(k_t)\right] L_t + f'(k_t) K_t$$

$$= F(K_t, A_t L_t) - K_t f'(k_t) + f'(k_t) K_t$$

$$= F(K_t, A_t L_t)$$

C. on BGP, $k_t = k^*$ $\quad w_t = A_t \left[f(k^*) - k^* f'(k^*)\right]$ $\quad q_t = f'(k^*)$ is constant.

$$= A_t f(k^*) \left[1 - \alpha_K(k^*)\right]$$

growth rate of w_t : $\frac{w_{t+1} - w_t}{w_t} = g$

growth rate of q_t : $\frac{q_{t+1} - q_t}{q_t} = 0$

D. 由一阶 Taylor 近似： $\dot{k}(k) \approx \dot{k}(k^*) + \left[\frac{\partial \dot{k}(k)}{\partial k}\Big|_{k=k^*}\right](k-k^*)$

$\ominus \quad \ominus$

记收敛速度 $\lambda = -\left[\frac{\partial \dot{k}(k)}{\partial k}\Big|_{k=k^*}\right]$

$= (n+g+\delta)\left[1-\alpha_k(k^*)\right] \quad , \quad \alpha_k(k^*) = \frac{k^* f'(k^*)}{f(k^*)}$

$\oplus \quad \oplus$

$\because k < k^* \quad \therefore \dot{k}(k) > 0$

$\therefore$ w_t 增长速度在起初略高于 g，到达稳态后，以 g 的速度增长.

$\because r_t = f'(k_t) \qquad f'(k_t) > 0$ 边际资本产出为正，$f''(k_t) < 0$

$\therefore$ r_t 增长速度在起初略大于0，随时间增速递减，直到稳态后为0.

HW2

1. A. $\text{Max } U(C_1, C_2) = \frac{C_1^{1-\theta}}{1-\theta} + \beta \frac{C_2^{1-\theta}}{1-\theta}$

s.t. $P_1 C_1 + P_2 C_2 = W$

Let $\mathcal{L} = \frac{C_1^{1-\theta}}{1-\theta} + \beta \frac{C_2^{1-\theta}}{1-\theta} + \lambda (P_1 C_1 + P_2 C_2 - W)$

$$\begin{cases} \frac{\partial \mathcal{L}}{\partial C_1} = C_1^{-\theta} + \lambda P_1 = 0 \\ \frac{\partial \mathcal{L}}{\partial C_2} = \beta C_2^{-\theta} + \lambda P_2 = 0 \\ \frac{\partial \mathcal{L}}{\partial \lambda} = P_1 C_1 + P_2 C_2 - W = 0 \end{cases} \Rightarrow \begin{cases} C_1 = \frac{W}{(\beta \frac{P_1}{P_2})^{\frac{1}{\theta}} P_2 + P_1} \\ C_2 = \frac{(\beta \frac{P_1}{P_2})^{\frac{1}{\theta}}}{(\beta \frac{P_1}{P_2})^{\frac{1}{\theta}} P_2 + P_1} W \end{cases}$$

B. $\frac{C_1}{C_2} = \left(\beta \frac{P_1}{P_2}\right)^{-\frac{1}{\theta}}$

$$\varepsilon(c) = -\frac{P_1/P_2}{C_1/C_2} \cdot \frac{\partial \frac{C_1}{C_2}}{\partial \frac{P_1}{P_2}} = -\frac{\frac{P_1}{P_2}}{(\beta \frac{P_1}{P_2})^{-\frac{1}{\theta}}} \cdot \left[-\frac{1}{\theta} \beta^{-\frac{1}{\theta}} \left(\frac{P_1}{P_2}\right)^{-\frac{1}{\theta}-1}\right] = \frac{1}{\theta}$$

2. $\text{Min } (w_t A_t L_t + q_t K_t)$

s.t. $Y_t = K_t^{\alpha} (A_t L_t)^{1-\alpha} = A_t L_t (k_t)^{\alpha}$

Let $\mathcal{L} = w_t A_t L_t + q_t K_t + \lambda [Y_t - K_t^{\alpha} (A_t L_t)^{1-\alpha}]$

$$\begin{cases} \frac{\partial \mathcal{L}}{\partial K_t} = q_t - \lambda \alpha k_t^{\alpha-1} = 0 \\ \frac{\partial \mathcal{L}}{\partial A_t L_t} = w_t - \lambda (1-\alpha) k_t^{\alpha} = 0 \\ \frac{\partial \mathcal{L}}{\partial \lambda} = Y_t - K_t^{\alpha} (A_t L_t)^{1-\alpha} = 0 \end{cases} \Rightarrow k_t^* = \frac{\alpha}{1-\alpha} \cdot \frac{w_t}{q_t}$$

$$\frac{\cancel{\lambda} \alpha k_t^{\alpha-1} = q_t}{\cancel{\lambda} (1-\alpha) k_t^{\alpha} = w_t}$$

$$\frac{q_t}{w_t} = \frac{\alpha}{1-\alpha} \frac{1}{k_t}$$

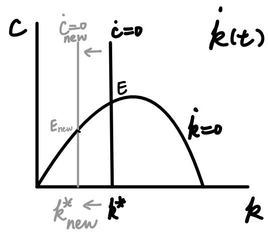
3. A. $c_{t+1} - c_t \approx \frac{\dot{c}(t)}{c(t)} = \frac{(1-\tau) f'(k_t) - \rho - \theta g}{\theta}$

on BGP, $\dot{c}(t) = 0 \Leftrightarrow (1-\tau) f'(k_t) = \underbrace{\rho + \theta g}_{\text{不变}}$

$\because f''(k_t) < 0$

$\therefore k_t \downarrow \Rightarrow f'(k_t) \uparrow$

$\dot{k}(t) = f(k_t) - c(t) - (n+g) k_t$

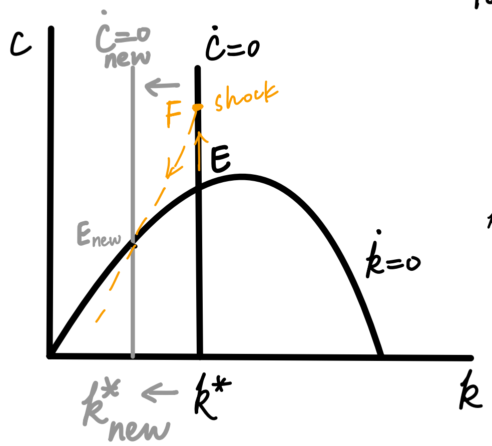


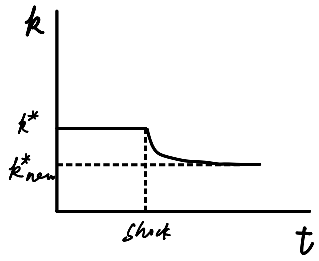
$\therefore$ $c_{t+1} - c_t$ curve 左移

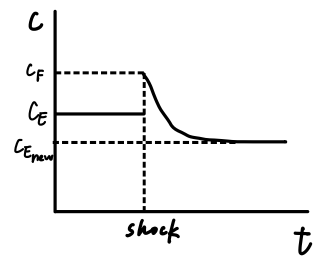
$k_{t+1} - k_t$ curve 不变 .

B.

征税 ⇒ $g_t=(1-\tau)f(k_t)\downarrow$ ⇒ 储蓄↓，当期消费↑

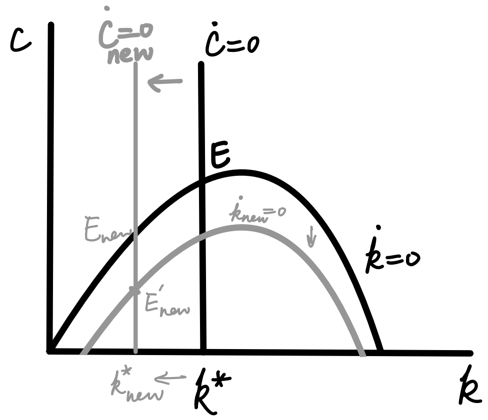






∴ on new BGP, c^*_{new} 和 k^*_{new} 均更低.

C. $\dot{k}(t)=f(k_t)-c(t)-\underline{G(t)}-(n+g)k_t\ \downarrow$



(A) $c_{t+1}-c_t$ curve 左移

而 $k_{t+1}-k_t$ curve 会下移

(B) on new BGP, $c^{*\prime}_{new}$ 和 $k^{*\prime}_{new}$ 均更低

$c^{*\prime}_{new}$ 较返还税收时更低.

HW3

1. 第t+1期资本 = t期青年人储蓄 + t期政府储蓄

即 $K_{t+1} = s_t w_t L_t + s_t^g L_t$

同除以 L_{t+1} ： $k_{t+1} = \frac{1}{1+n}(s_t w_t + s_t^g)$

2. $$s(r) = \frac{(1+r)^{\frac{1-\theta}{\theta}}}{(1+\rho)^{\frac{1}{\theta}} + (1+r)^{\frac{1-\theta}{\theta}}}$$

令 $\theta = 1$,

$$\begin{cases} k_{t+1} = \frac{1}{(1+n)(1+g)} s(r_{t+1}) w_t \\ k_{t+1} = k_t \end{cases} \Rightarrow k^* = \left[\frac{1-\alpha}{(1+n)(1+g)(2+\rho)}\right]^{\frac{1}{1-\alpha}}$$

A. $n\uparrow$: $$\frac{\partial k^*}{\partial n} = \left[\frac{1-\alpha}{(1+g)(2+\rho)}\right]^{\frac{1}{1-\alpha}} \left(-\frac{1}{1-\alpha}\right)\left(\frac{1}{1+n}\right)^{\frac{2-\alpha}{1-\alpha}}$$

B. $B\downarrow$: if $f(k_t) = Bk_t^\alpha$, then $w_t = (1-\alpha)Bk_t^\alpha$

$$k^* = \frac{1}{(1+n)(1+g)} \cdot \frac{1}{2+\rho} \cdot (1-\alpha)Bk^{*\alpha} \Rightarrow k^* = \left[\frac{B(1-\alpha)}{(1+n)(1+g)(2+\rho)}\right]^{\frac{1}{1-\alpha}}$$

$$\frac{\partial k^*}{\partial B} = \left[\frac{1-\alpha}{(1+n)(1+g)(2+\rho)}\right]^{\frac{1}{1-\alpha}} \frac{1}{1-\alpha} B^{\frac{\alpha}{1-\alpha}}$$

C. $\alpha\uparrow$:

$$k^* = \left[\frac{B(1-\alpha)}{(1+n)(1+g)(2+\rho)}\right]^{\frac{1}{1-\alpha}}$$

$$\ln k^* = \frac{1}{1-\alpha}\left[\ln B + \ln(1-\alpha) - \ln(1+n) - \ln(1+g) - \ln(2+\rho)\right]$$

$$\frac{\partial \ln k^*}{\partial \alpha} = \frac{1}{(1-\alpha)^2}\left[\ln B + \ln(1-\alpha) - \ln(1+n) - \ln(1+g) - \ln(2+\rho)\right] + \frac{1}{1-\alpha} \cdot \frac{-1}{1-\alpha}$$

$$= \frac{1}{(1-\alpha)^2}\left[\ln B + \ln(1-\alpha) - \ln(1+n) - \ln(1+g) - \ln(2+\rho) - 1\right]$$

young(t)

3. $\text{Max } u(C_{t+1}, L_t) = C_{t+1} - \frac{L_t^2}{2}$

$Y_t = 2(K_t L_t)^{\frac{1}{2}}$

$w_t = f(k_t) - k_t f'(k_t) = MPL = \left(\frac{K_t}{L_t}\right)^{\frac{1}{2}} = k_t^{\frac{1}{2}}$

s.t. $C_t + \frac{1}{1+r_{t+1}} C_{t+1} = w_t$

$$\mathcal{L} = C_{t+1} - \frac{L_t^2}{2} + \lambda\left(\frac{K_t^{\frac{1}{2}}}{L_t^{\frac{1}{2}}} - C_t - \frac{1}{1+r_{t+1}} C_{t+1}\right)$$

$$\begin{cases} \frac{\partial \mathcal{L}}{\partial C_{t+1}} = 1 - \frac{\lambda}{1+r_{t+1}} = 0 \\ \frac{\partial \mathcal{L}}{\partial L_t} = -L_t - \frac{\lambda}{2} K_t^{\frac{1}{2}} L_t^{-\frac{3}{2}} = 0 \\ \frac{\partial \mathcal{L}}{\partial \lambda} = K_t^{\frac{1}{2}} L_t^{\frac{1}{2}} - C_t - \frac{1}{1+r_{t+1}} C_{t+1} = 0 \end{cases}$$

$C_t = (1-s_t) w_t$

$Y_t = 2(K_t L_t)^{\frac{1}{2}}$

$\frac{1}{2} Y_t = C_t + \frac{1}{1+r_{t+1}} C_{t+1}$

?

$K_{t+1} = s_t w_t L_t$

同除以 L_{t+1}

$$\begin{cases} k_{t+1} = s_t w_t \cdot \frac{1}{1+n} = \frac{1}{1+n} s_t k_t^{\frac{1}{2}} \\ k_{t+1} = k_t \end{cases}$$

?

$k^* = \left[\frac{s_t}{1+n}\right]^2$

HW 4

1. on BGP: $dG^A=0 \Leftrightarrow g_K(t) = \frac{1-\theta}{\beta} g_A(t) - \frac{\gamma n}{\beta}$

$dG^K=0 \Leftrightarrow g_K(t) = g_A(t) + n$

$\beta+\theta<1 \Rightarrow \frac{1-\theta}{\beta}>1$, $n>0$, $\beta\geq 0$

$1-\theta>0$

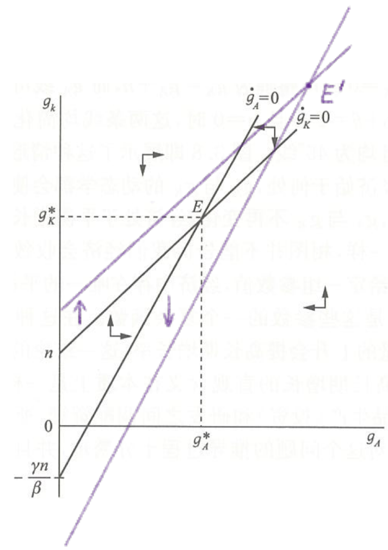
$$g_K(t) = s(1-a_K)^{\alpha}(1-a_L)^{1-\alpha}\left[\frac{A(t)L(t)}{K(t)}\right]^{1-\alpha}$$

$$g_A(t) = B a_K^{\beta} a_L^{\gamma} K(t)^{\beta} L(t)^{\gamma} A(t)^{\theta-1}$$

A. $n\uparrow$: $dG^A=0$ 向下平移, $dG^K=0$ 向上平移

$g_K(t), g_A(t)$ 不变.

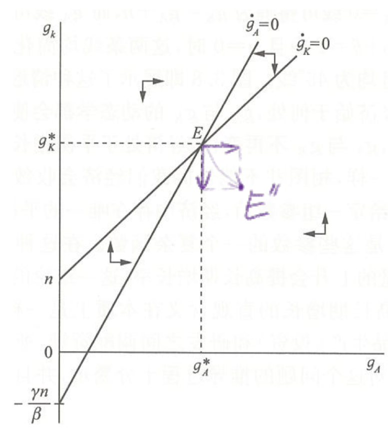
经济体在 (g_A, g_K) 空间中到达新均衡点 E'.



B. $a_K\uparrow$: $dG^A=0$ 与 $dG^K=0$ 不变

$g_K(t)\downarrow$, $g_A(t)\uparrow$

经济体在 (g_A, g_K) 空间中到达新均衡点 E''.



C. $\theta\uparrow$: $dG^K=0$ 不变, $dG^A=0$ 截距不变, 斜率更小, 更平缓.

$g_K(t)$ 不变

$g_A(t) = C_A K(t)^{\beta} L(t)^{\gamma} A(t)^{\theta-1}$, $C_A = B a_K^{\beta} a_L^{\gamma}$

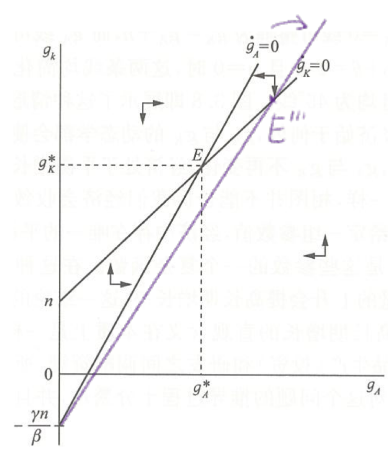
$\ln g_A(t) = \ln C_A + \beta \ln K(t) + \gamma \ln L(t) + (\theta-1)\ln A(t)$

$\frac{\partial \ln g_A(t)}{\partial \theta} = \ln A(t)$

if $\ln A(t)<0$, then $\theta\uparrow$, $g_A(t)\downarrow$

if $\ln A(t)>0$, then $\theta\uparrow$, $g_A(t)\uparrow$

if $\ln A(t)=1$, then $g_A(t)$ 不变.



2.

A. $\beta+\theta=1$, $n=0$

$$g_K(t)=C_K\left[\frac{A(t)L(t)}{K(t)}\right]^{1-\alpha},\quad C_K=s(1-a_K)^{\alpha}(1-a_L)^{1-\alpha}$$

$$g_A(t)=K(t)^{\beta}L(t)^{\gamma}A(t)^{\theta-1},\quad C_A=Ba_K^{\beta}a_L^{\gamma}$$

$$\Rightarrow\quad g_K(t)=C_K L^{1-\alpha}\left[\frac{A(t)}{K(t)}\right]^{1-\alpha}$$

$$g_A(t)=C_A L^{\gamma}\left[\frac{K(t)}{A(t)}\right]^{\beta}$$

$$g_K(t)=g_A(t)\ \Rightarrow\ \left[\frac{A(t)}{K(t)}\right]^{1-\alpha+\beta}=\frac{C_A}{C_K}L^{\gamma+\alpha-1}$$

$$\frac{A(t)}{K(t)}=\left(\frac{C_A}{C_K}L^{\gamma+\alpha-1}\right)^{\frac{1}{1-\alpha+\beta}}$$

B.
$$g_A(t)=g_K(t)=C_K L^{1-\alpha}\left(\frac{C_A}{C_K}L^{\gamma+\alpha-1}\right)^{\frac{1-\alpha}{1-\alpha+\beta}}$$

$$=\left[C_A^{1-\alpha}C_K^{\beta}L^{(1-\alpha)(\beta+\gamma)}\right]^{\frac{1}{1-\alpha+\beta}}$$

C.
$$g_A=g_K=\left\{\left(B a_K^{\beta}a_L^{\gamma}\right)^{1-\alpha}\left[s(1-a_K)^{\alpha}(1-a_L)^{1-\alpha}\right]^{\beta}L^{(1-\alpha)(\beta+\gamma)}\right\}^{\frac{1}{1-\alpha+\beta}}$$

记 $g^*=\left[s^{\beta}B^{1-\alpha}a_K^{\beta(1-\alpha)}a_L^{\gamma(1-\alpha)}(1-a_K)^{\alpha\beta}(1-a_L)^{\beta(1-\alpha)}L^{(1-\alpha)(\beta+\gamma)}\right]^{\frac{1}{1-\alpha+\beta}}$

$$\ln g^*=\frac{1}{1-\alpha+\beta}\Big[\beta\ln s+(1-\alpha)\ln B+\beta(1-\alpha)\ln a_K+\gamma(1-\alpha)\ln a_L$$
$$+\alpha\beta\ln(1-a_K)+\beta(1-\alpha)\ln(1-a_L)+(1-\alpha)(\beta+\gamma)\ln L\Big]$$

$$\frac{\partial\ln g^*}{\partial\ln s}=\frac{\beta}{1-\alpha+\beta}>0$$

$\therefore$ $s\uparrow\ \Rightarrow\ g^*\uparrow$ 经济长期增长率增加.

D.
$$\frac{\partial\ln g^*}{\partial a_K}=\frac{1}{1-\alpha+\beta}\left[\alpha\beta\frac{-1}{1-a_K}+\beta(1-\alpha)\frac{1}{a_K}\right]=0$$

$$a_K^*=1-\alpha$$

3. $Y(t) = K(t)^{\alpha}\left[A(t)L(t)\right]^{1-\alpha}$

$A(t) = BK(t)^{\phi}$, $B>0$, $0<\phi<1$.

$Y(t) = B^{1-\alpha} K(t)^{\alpha+\phi(1-\alpha)} L(t)^{1-\alpha}$

$\dot{K}(t) = sY(t) = sB^{1-\alpha} K(t)^{\alpha+\phi(1-\alpha)} L(t)^{1-\alpha}$

$$g_K(t) = \frac{n}{1-\phi}$$

$$g_A(t) = \phi\, g_K(t) = \frac{\phi n}{1-\phi}$$

$$g_Y(t) = \alpha g_K(t) + (1-\alpha) g_A(t) + (1-\alpha) g_L(t)$$

$$= \alpha\frac{n}{1-\phi} + (1-\alpha)\frac{\phi n}{1-\phi} + (1-\alpha) n$$

4. $Y(t) = K(t)^{\alpha}\left[A(t)L(t)\right]^{1-\alpha}$, $L(t)=1$

$\dot{K}(t) = sY(t)$

$\dot{A}(t) = BY(t)$

A. $Y(t) = K(t)^{\alpha} A(t)^{1-\alpha}$

$\dot{A}(t) = BK(t)^{\alpha} A(t)^{1-\alpha}$

$$g_A(t) = \frac{\dot{A}(t)}{A(t)} = B\left[\frac{K(t)}{A(t)}\right]^{\alpha}$$

$\dot{K}(t) = sK(t)^{\alpha} A(t)^{1-\alpha}$

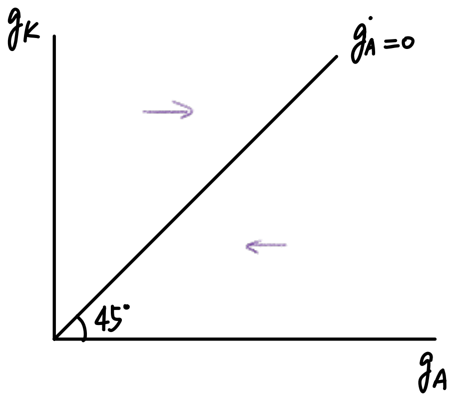
$$g_K(t) = \frac{\dot{K}(t)}{K(t)} = s\left[\frac{A(t)}{K(t)}\right]^{1-\alpha}$$

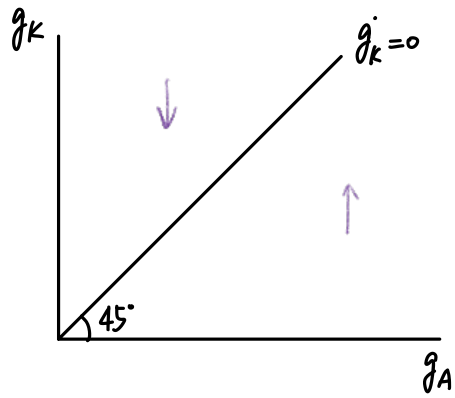
B. $$\frac{\dot{g}_A(t)}{g_A(t)} = \alpha g_K(t) - \alpha g_A(t) \Rightarrow \dot{g}_A(t) = \alpha\left[g_K(t) - g_A(t)\right] g_A(t)$$

$$\dot{g}_A(t) = 0 \Rightarrow g_K(t) = g_A(t)$$

$$\frac{\dot{g}_K(t)}{g_K(t)} = (1-\alpha) g_A(t) - (1-\alpha) g_K(t) \Rightarrow \dot{g}_K(t) = (1-\alpha)\left[g_A(t) - g_K(t)\right] g_K(t)$$

$$\dot{g}_K(t) = 0 \Rightarrow g_K(t) = g_A(t)$$





C. $\dot{g}_A(t) = \alpha[g_K(t) - g_A(t)]g_A(t)$, $\dot{g}_K(t) = (1-\alpha)[g_A(t) - g_K(t)]g_K(t)$

if $g_A > g_K$, $\dot{g}_A < 0$, $\dot{g}_K > 0$

if $g_A = g_K$, $\dot{g}_A = \dot{g}_K = 0$

if $g_A < g_K$, $\dot{g}_A > 0$, $\dot{g}_K < 0$

∴ 收敛于 BGP.

$$\begin{cases} g_A(t) = \dfrac{\dot{A}(t)}{A(t)} = B\left[\dfrac{K(t)}{A(t)}\right]^{\alpha} \\ g_K(t) = \dfrac{\dot{K}(t)}{K(t)} = s\left[\dfrac{A(t)}{K(t)}\right]^{1-\alpha} \end{cases} \Rightarrow \frac{A(t)}{K(t)} = \frac{B}{s}$$

$\Rightarrow$ on BGP

$$g_A(t) = B\left(\frac{s}{B}\right)^{\alpha} = s^{\alpha}B^{1-\alpha}$$

$$g_K(t) = s\left(\frac{B}{s}\right)^{1-\alpha} = s^{\alpha}B^{1-\alpha}$$

$$g_Y = \alpha g_K + (1-\alpha)g_A = s^{\alpha}B^{1-\alpha}$$

D. $s\uparrow \Rightarrow g_K(t)\uparrow$ ，经济体先有瞬时快速的增长到达点A.（$\dot{g}_K<0$，$\dot{g}_A>0$）随后达到新均衡 E'（$\dot{g}_A=0$，$\dot{g}_K=0$）