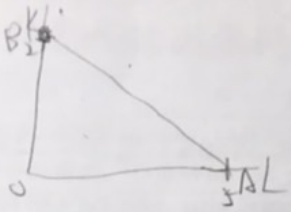
1. 线性生产函数

$Q = \alpha L + \beta K$

$\Rightarrow Q = A + B$

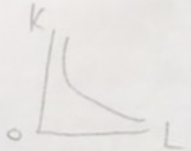
$\Delta x \Rightarrow Q = \Delta A + B$

$|MRTS| = \frac{-dk}{dL} = \frac{-dB}{dA}$



2. 完全完全替代性

3.



替代性高

⇒曲线越弯

$|MRTS| = \frac{-dk}{dL} = \frac{MP_L}{MP_K}$

$MP_L = \frac{dQ}{dL} = A\alpha L^{(\alpha-1)} K^{\beta}$

$MP_K = \frac{dQ}{dK} = AL^{\alpha} \beta K^{(\beta-1)}$

$|MRTS| = \frac{A\alpha L^{(\alpha-1)} K^{\beta}}{A L^{\alpha} \beta K^{(\beta-1)}} = \frac{\alpha K}{\beta L}$

① $Q = \alpha L + \beta L$ ② $Q = \min(\alpha L, \beta K)$ ③ $Q = AL^{\alpha} K^{\beta}$

A: 若干 $\Rightarrow Q = \Delta A + \Delta B$

B: $Q = \min\{\frac{1}{2}, K\}$

⇒A 完全替代(线性)

例 $Q = 21L + 9L^2 - L^3$

① $MP_L = -3L^2 + 18L + 21$

$\frac{dMP_L}{dL} = 18 - 6L = 0 \quad L = 3$ *

② 设 $MPL = 0$

$0 = -3L^2 + 18L + 21$

$0 = (L-1)(L+7)$

$L = 1$ or $-7 \Rightarrow L = 7$ *

③ $AP_L = 21 + 9L - L^2$

$\frac{dAP_L}{dL} = 9 - 2L = 0$

$\Rightarrow L = 4.5$ *

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邓仲宏