

$$\text{替代弹性 } \sigma = \frac{\% \Delta (K/L)}{\% \Delta MRTS_{LK}} = \frac{\Delta (K/L)}{\Delta MRTS_{LK}} \cdot \frac{MRTS_{LK}}{(K/L)} = \frac{d \ln K}{d \ln MRTS} = \frac{\frac{dK/L}{K/L}}{\frac{dMRTS}{MRTS}} =$$

$$MRTS_{LK} = \frac{MP_L}{MP_K}$$

$$5. (a) MRTS_{LK} = \frac{K}{L}, \quad \frac{\Delta (K/L)}{\Delta MRTS_{LK}} = 1 \quad MP_L = \frac{1}{2} L^{-\frac{1}{2}} K^{\frac{1}{2}} \quad MP_K = \frac{1}{2} L^{\frac{1}{2}} K^{-\frac{1}{2}}$$

$$F(K, L) = K^{\frac{1}{2}} L^{\frac{1}{2}} \quad \sigma = 1 \times \frac{\Delta MRTS_{LK}}{(K/L)} = 1 \quad L^{-1} K$$

$$(b) MRTS_{LK} = \frac{1}{2}, \quad \Delta MRTS_{LK} = \frac{\frac{1}{2}}{\frac{1}{2}} = \frac{0}{\frac{1}{2}} = 0$$

$$F(K, L) = 2K + L \quad \text{因 } MRTS_{LK} \text{ 为固定常数, 所以}$$

$$\sigma = \frac{\Delta (K/L)}{\Delta MRTS_{LK}} \times \frac{MRTS_{LK}}{K/L} = \frac{\% \Delta (K/L)}{0} = \infty$$

⑦

$$q = 2L + 3K$$

$$\textcircled{1} MP_L = 2 \quad MP_K = 3$$

$$\textcircled{2} MRTS = \frac{MP_L}{MP_K} = \frac{2}{3}$$

$$\textcircled{3} RTS = 2(\lambda L) + 3(\lambda K) = \lambda Q$$

$$\textcircled{4} \text{产量弹性} \quad E_L = \frac{MP_L}{AP_L} = \frac{2}{\frac{2L+3K}{L}} \quad E_K = \frac{MP_K}{AP_K} = \frac{3}{\frac{2L+3K}{K}}$$

$$\textcircled{5} E_n = E_L + E_K = \frac{2L+3K}{2L+3K} = 1$$

$$(b) \sigma = \frac{d \ln K}{d \ln MRTS} = \frac{\frac{d \ln K}{\frac{1}{2}}}{\frac{d \ln 2}{0}} = \frac{d \ln K}{0} = \infty$$

生产函数	$q = 5LK$	$q = 2L + 3K$	$q = \min(L, K)$	$q = (0.2L^{0.5} + 0.8K^{0.5})^2$
边际产量	$MP_L = 5 \quad MP_K = 5$	$MP_L = 2 \quad MP_K = 3$	折衷无弹性	$MP_L = 0.2(\Delta)^{-1.5} L^{-0.5} K^{0.5}$ $MP_K = 0.8(\Delta)^{-1.5} L^{0.5} K^{-0.5}$ $\Delta = 0.2L^{0.5} + 0.8K^{0.5}$
边际技术替代率	K/L	$2/3$	1, 0, ∞	$0.25 \left(\frac{K}{L}\right)^{1.5}$
规模报酬	IRS	CRS	CRS	CRS
产量弹性	$E_L = E_K = 1$	$E_L = \frac{2L}{2L+3K}$ $E_K = \frac{3K}{2L+3K}$	折衷无弹性	$E_L = \frac{0.2L^{-0.5}}{\Delta}$ $E_K = \frac{0.8K^{-0.5}}{\Delta}$
弹性弹性	2	1	1	1
替代弹性	1	∞	0	$2/3$