

$$\begin{aligned} \text{I: } x_I &= 0.391 + 0.67 = 1.061 \\ m_I &= (0.2 \times 0.391 - 0.3 \times 0.67) / (0.2 + 0.3) \\ &= -0.246 \\ v_{IK} &= 0.1 + 0.12 = 0.22 \\ \ln L_I &= -1.698 \end{aligned}$$

$$\begin{aligned} \text{J: } x_J &= -0.9 + 0.95 = 0.05 \\ m_J &= (-0.4 \times 0.95 - 0.5 \times 0.9) / (0.4 + 0.5) \\ &= -0.922 \\ v_{JK} &= 0.1 + 0.222 = 0.322 \\ \ln L_J &= -0.868 \end{aligned}$$

$$\begin{aligned} \text{K: } x_K &= -0.246 + 0.922 = 0.676 \\ m_K &= (-0.322 \times 0.246 - 0.22 \times 0.922) / (0.322 + 0.22) \\ &= -0.520 \\ v_{KA} &= 0.25 + 0.131 = 0.381 \\ \ln L_K &= -1.035 - 5.173 = -6.208 \end{aligned}$$

$$\ln L = -1.698 - 0.868 - 6.208 = -8.77$$

(no missing state)

$$\begin{aligned} \text{K': } m_E &= -0.67 \\ m_C &= -0.9 \\ m_A &= 1.379 \\ v_{EK} &= 0.2 + 0.1 = 0.3 \\ v_{CK} &= 0.4 + 0.1 = 0.5 \\ v_{AK} &= 0.25 \\ \ln L' &= -6.56 \\ &\text{(B and D are missing)} \end{aligned}$$

