

Chap 4.

4.1



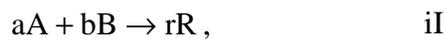
1. : ,
2. : , 가
3. : .



- 1.
2. ()

$$\text{Input} = \text{Output} + \text{Generation} + \text{Accumulation}$$

- 가 Generation
- Accumulation = 0
- Input = Output = 0



1. Case 1. 가 , $\epsilon_A = 0$

$$X_A = 1 - \frac{C_A}{C_{A0}}, \quad dX_A = -\frac{dC_A}{C_{A0}}$$

$$\frac{C_A}{C_{A0}} = 1 - X_A, \quad dC_A = -C_{A0} dX_A$$

$$\frac{C_{A0} - C_A}{a} = \frac{C_{B0} - C_B}{b} = \frac{C_R - C_{R0}}{r} \quad \frac{C_{A0} X_A}{a} = \frac{C_{B0} X_B}{b}$$

2. Case 2. 가 ,

, $\epsilon_A \neq 0$

$$X_A = \frac{C_{A0} - C_A}{C_{A0} + \epsilon_A C_A}, \quad dX_A = -\frac{C_{A0}(1 + \epsilon_A)}{(C_{A0} + \epsilon_A C_A)^2} dC_A$$

$$\frac{C_A}{C_{A0}} = \frac{1 - X_A}{1 + \epsilon_A X_A}, \quad \frac{dC_A}{C_{A0}} = -\frac{1 + \epsilon_A}{(1 + \epsilon_A X_A)^2} dX_A$$

$$\epsilon_A X_A = \epsilon_B X_B; \quad \mathbf{A} \quad \mathbf{B}$$

$$\frac{a\epsilon_A}{C_{A0}} = \frac{b\epsilon_B}{C_{B0}}; \quad \frac{N_{A0}X_A}{a} = \frac{N_{B0}X_B}{b} \quad \epsilon_A X_A = \epsilon_B X_B$$

$$\frac{C_R}{C_{A0}} = \frac{(r/a)X_A + C_{R0}/C_{A0}}{1 + \epsilon_A X_A}; \quad N_R = N_{R0} + \frac{rN_{A0}X_A}{a}$$

$$\frac{C_I}{C_{I0}} = \frac{1}{1 + \epsilon_A X_A};$$

3. Case 3.

$$X_A = \frac{N_{A0} - N_A}{N_{A0}} = \frac{N_{A0}/V_0(T_0, \pi_0) - N_A/V_0(T_0, \pi_0)}{N_{A0}/V_0(T_0, \pi_0)}$$

$$V(T_0, \pi_0) = V_0(T_0, \pi_0)(1 + \epsilon_A X_A)$$

$$X_A = \frac{N_{A0} - N_A}{N_{A0}} = \frac{N_{A0}/V_0(T_0, \pi_0) - N_A(1 + \epsilon_A X_A)/V(T_0, \pi_0)}{N_{A0}/V_0(T_0, \pi_0)}$$

$$C_{A0} = \frac{N_{A0}}{V_0(T_0, \pi_0)}, \quad C_A = \frac{N_A}{V(T_0, \pi_0)} \quad \text{Case 2} \quad \text{가}$$

$$\frac{V(T, \pi)}{V(T_0, \pi_0)} = \frac{T\pi_0}{T_0\pi} \quad C_A = \frac{N_A}{V(T, \pi)}$$

$$X_A = \frac{N_{A0} - N_A}{N_{A0}} = \frac{N_{A0}/V_0(T_0, \pi_0) - N_A(1 + \epsilon_A X_A)(T\pi_0/T_0\pi)/V(T, \pi)}{N_{A0}/V_0(T_0, \pi_0)}$$

$$X_A = \frac{N_{A0} - N_A}{N_{A0}} = \frac{C_{A0} - C_A(1 + \epsilon_A X_A)(T\pi_0/T_0\pi)}{C_{A0}}$$

$$X_A = 1 - \frac{C_A(1 + \epsilon_A X_A)(T\pi_0/T_0\pi)}{C_{A0}}$$

$$X_A = \frac{1 - \frac{C_A}{C_{A0}} \left(\frac{T\pi_0}{T_0\pi} \right)}{1 + \varepsilon_A \frac{C_A}{C_{A0}} \left(\frac{T\pi_0}{T_0\pi} \right)}$$

가 .

가

$$X_A = \frac{N_{A0} - N_A}{N_{A0}}, \quad X_B = \frac{N_{B0} - N_B}{N_{B0}}, \quad \frac{N_{A0} X_A}{a} = \frac{N_{B0} X_B}{b},$$

$$\varepsilon_A X_A = \varepsilon_B X_B$$