

A_1 = Assets of company 1 in \$

r_1 = Returns on A_1 in %

D_1 = Debt of company 1 in \$

i_1 = interest rate on D_1 in %

S_1 = number of shares of company 1,

C_1 = cash flow to shareholders of co1

A_2 = Assets of company 2 in \$

r_2 = Returns on A_2 in %

D_2 = Debt of company 2 in \$

i_2 = interest rate on D_2 in %

S_2 = number of shares of company 2

C_2 = cash flow to shareholders of company 2

$$C_1 = A_1 r_1 - D_1 i_1$$

$$\frac{C_1}{S_1} = \frac{A_1 r_1 - D_1 i_1}{S_1} \quad \text{--- ①}$$

if we add ① and ② we get

$$\begin{aligned} \frac{C_1}{S_1} + \frac{C_2}{S_2} &= \frac{A_1 r_1 - D_1 i_1}{S_1} + \frac{A_2 r_2 - D_2 i_2}{S_2} \\ &= \frac{S_2 (A_1 r_1 - D_1 i_1)}{S_1 S_2} + \frac{S_1 (A_2 r_2 - D_2 i_2)}{S_1 S_2} \end{aligned}$$

Let's assume

$$\frac{C_1}{S_1} + \frac{C_2}{S_2} = \frac{C}{S}$$

$$\frac{C}{S} = \frac{S_2}{S_1 \cdot S_2} (A_1 r_1 - D_1 i_1) + \frac{S_1}{S_1 \cdot S_2} (A_2 r_2 - D_2 i_2) \quad \text{--- ③}$$