$$E_t[roe_{t+1}] = 0.05 + 0.9(roe_t - 0.05) - 0.6\varepsilon_t + \varepsilon_{t+1}$$

$$= 0.005 + 0.9(\underbrace{roe_t - 0.06}_{= \alpha})$$

$$E_t[roe_{t+2}] = 0.05 + 0.9E_t[roe_{t+1}] - 0.045$$

$$= 0.005 + 0.9(0.005 + 0.9\alpha)$$

$$= 0.005(1 + 0.9) + 0.9^2\alpha$$

$$E_t[roe_{t+3}] = 0.05 + 0.9E_t[roe_{t+2}] - 0.045$$

$$= 0.005 + 0.9(0.005(1+0.9) + 0.9^2\alpha)$$

$$= 0.005(1 + 0.9 + 0.9^2) + 0.9^3\alpha$$

$$E_t[roe_{t+j}] = 0.005 \cdot \sum_{i=0}^{j} 0.9^{i-1} + 0.9^{j-1}\alpha$$

$$= 0.005 \cdot \frac{(1-0.9)^{j-1}}{1-0.9} + 0.9^{j-1}\alpha$$

$\therefore$

$$CF_t = E_t \sum_{j=1}^{\infty} x^{j-1} \cdot roe_{t+j}$$

$$= \sum_{j=1}^{\infty} x^{j-1} \left\{ 0.005 \cdot \frac{(1-0.9)^{j-1}}{1-0.9} + 0.9^{j-1}\alpha \right\}$$

$$= \frac{0.005}{0.1} \sum_{j=1}^{\infty} x^{j-1} \cdot 0.1^{j-1} + \sum_{j=1}^{\infty} x^{j-1} \cdot 0.9^{j-1}\alpha$$

$$= 0.05 \cdot \frac{1}{1-0.1\alpha} + \frac{\alpha}{1-\alpha \cdot 0.9}$$

$$= \frac{0.05}{0.903} + \frac{0.1223216}{0.127}$$

$$= 0.05537099 + 0.9631622$$

$$= \underline{1.01853319}$$ //