

Given:

$$e_x = 8.83$$

$$e_{x+1} = 8.29$$

$$\ddot{\alpha}_x = 5.6$$

$$\ddot{\alpha}_{\overline{x:\overline{2}|}} = 5.6459$$

Find  $i$

$$e_x = p_x + {}_2p_x + {}_3p_x + \dots$$

$$= p_x(1 + p_{x+1} + {}_2p_{x+1} + {}_3p_{x+1} + \dots)$$

$$e_{x+1} = p_{x+1} + {}_2p_{x+1} + {}_3p_{x+1} + \dots$$

$$\Rightarrow e_x - p_x e_{x+1} = p_x$$

$$e_x = p_x + p_x e_{x+1}$$

$$p_x = \frac{e_x}{1 + e_{x+1}} = \frac{8.83}{1 + 8.29} = 0.95048$$

$$\ddot{\alpha}_x = 1 + v p_x + v^2 {}_2p_x + v^3 {}_3p_x + \dots$$

$$\ddot{\alpha}_{\overline{x:\overline{2}|}} = 1 + v + v^2 p_x + v^3 p_x + \dots$$

$$\ddot{\alpha}_x - \ddot{\alpha}_{\overline{x:\overline{2}|}} = v p_x - v$$

$$5.6 - 5.6459 = v(p_x - 1)$$

$$\frac{-0.0459}{(0.95048 - 1)} = v$$

$$\Rightarrow v = 0.9269$$

$$\frac{1}{1+i} = 0.9269$$

$$\frac{1}{0.9269} = 1+i$$

$$i = 0.0789$$

(B)