(1) $C_t = \alpha_0 + \alpha_1 Y_t^e + \alpha_2 X_t + u_t$

$$Y_t^e = \lambda Y_t + \lambda^2 Y_{t-1} + \lambda^3 Y_{t-2} + \dots$$

$$\lambda Y_{t-1}^e = \lambda^2 Y_{t-1} + \lambda^3 Y_{t-2} + \lambda^4 Y_{t-3} + \dots$$

(2) $\lambda C_{t-1} = \lambda \alpha_0 + \lambda \alpha_1 Y_{t-1}^e + \lambda \alpha_2 X_{t-1} + \lambda u_{t-1}$

(1)-(2) $C_t - \lambda C_{t-1} = (1-\lambda)\alpha_0 + \alpha_1 (Y_t^e - \lambda Y_{t-1}^e) + \alpha_2 (X_t - \lambda X_{t-1})$

$$+ u_t - \lambda u_{t-1}$$

So

$$C_t = \lambda C_{t-1} + (1-\lambda)\alpha_0 + \lambda \alpha_1 Y_t + \alpha_2 (X_t - \lambda X_{t-1})$$

$$+ u_t - \lambda u_{t-1}$$