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Chapter 17 *Time Series*

Proof that $F_{t+1} = \alpha A_t + \alpha(1-\alpha)A_{t-1} + \alpha(1-\alpha)^2 A_{t-2} + \quad ...$ **can be written as** $F_{t+1} = F_t + \alpha E_t$

$F_{t+1} = \alpha A_t + \alpha(1-\alpha)A_{t-1} + \alpha(1-\alpha)^2 A_{t-2} + \quad ...$ can be written as

$$F_{t+1} = \alpha A_t + (1-\alpha)[\alpha A_{t-1} + \alpha(1-\alpha)A_{t-2} + \quad ...$$

$$F_{t+1} = \alpha A_t + (1-\alpha)F_t$$

$$F_{t+1} = \alpha A_t + F_t - \alpha F_t$$

$$F_{t+1} = F_t + \alpha(A_t - F_t)$$

The difference between the actual and forecast in the last bracketed term is the error in period t.

$$F_{t+1} = F_t + \alpha E_t$$