$$MAD_t = \sum_{i \le t} |e_i| / N$$

$$MSE_t = \sum_{i \le t} (e_i)^2 / N$$

$$MAPE_t = \sum_{i \le t} 100 \frac{|e_i|}{D_i} / N$$

N: sample size

To have comparable quantities use

$$\sqrt{MSE_e}$$

$$\sigma_e^2 \ge \sigma_\epsilon^2$$

see the text to compare σ_e & σ_ϵ for exact cases

→ Estimation of σ_ϵ^2

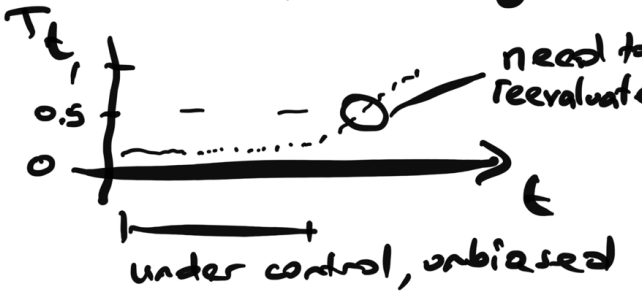
→ $1.25\, MAD \approx \hat{\sigma}_e$

$$E_t = \beta e_t + (1-\beta) E_{t-1}$$

$$M_t = \beta |e_t| + (1-\beta) M_{t-1}$$

T_t - tracking signal

$$T_t = \left| \frac{E_t}{M_t} \right| \quad \text{if } T_t \ge 0.5 \text{ change}$$



—o—

$$MAD_t = \alpha |e_t| + (1-\alpha) MAD_{t-1}$$

A reasonable way to update MAD following the same smoothing logic