4

$$E[\hat{\theta}_1] = \frac{1}{3}\left(3E[x_1] + 2E[x_2] - E[x_n]\right) = \frac{1}{3} \cdot 4E[x_i] \neq \theta$$

Sesgado

$$E[\hat{\theta}_2] = \frac{1}{5}\, 5E[x_1] - E[x_3] + E[x_n] = E[x_i] = \theta$$

Insesgado

ECM

$\hat{\theta}_1 \Rightarrow \quad V(\hat{\theta}_1) + (\text{sesgo})^2$

sesgo $\hat{\theta}_1 = \frac{4}{3} - \theta = \frac{1}{3}\theta$

$$V(\hat{\theta}_1) = \frac{1}{9} \cdot 9V[x_1] + 4V[x_2] + V[x_n] = \frac{14}{9}V[x_i]$$

$$ECM = \frac{14}{9}\theta^2 + \frac{1}{9}\theta^2$$

$\hat{\theta}_2 \Rightarrow$

$$V(\hat{\theta}_2) = \frac{1}{25} \cdot 27V[x_i] \Rightarrow \frac{27}{25}\theta^2 \quad ECM \text{ de } \hat{\theta}_2 \,//$$

ECM de $\hat{\theta}_2 <$ que el de $\hat{\theta}_1$