

Time series

$$X_t, t \in \{1, \dots, n\}$$

Estimation of $\hat{\Gamma}$ and $\hat{\Delta}$

$$\hat{\Gamma} = \sum_{k=-M}^M \lambda(k/M) k^2 \hat{R}_{IF}(k) \frac{(w*w)''(0)}{2(w*w)(0)}$$

$$\hat{\Delta} = 2\hat{\sigma}_\infty^4 \int_{-1}^1 \frac{(w*w)^2(x)}{(w*w)^2(0)} dx$$

$$\hat{\sigma}_\infty^2 = \sum_{k=-M}^M \lambda(k/M) \hat{R}_{IF}(k)$$

Calculate Optimal Block Length

$$\hat{\ell}_{TBB}^{opt} = \hat{\ell}_{ETBB}^{opt} = \left[\frac{4\hat{\Gamma}^2}{\hat{\Delta}} \right]^{\frac{1}{5}} n^{\frac{1}{5}}$$

Definition of $\hat{R}(k)$

$$\hat{R}_{IF}(k) = n^{-1} \sum_{i=1}^{n-|k|} (X_i - \bar{X}_n)(X_{i+|k|} - \bar{X}_n)$$

where, $k \in \{-M, \dots, M\}$

Definition of $\lambda(t)$

$$\lambda(t) = \begin{cases} 1 & |t| \in [0, 1/2] \\ 2(1 - |t|) & |t| \in [1/2, 1] \\ 0 & otherwise \end{cases}$$

Definition of $w_c(t)$

$$w \equiv w_c^{TRAP}(t) = \begin{cases} t/c & |t| \in [0, c] \\ 1 & |t| \in [c, 1 - c] \\ (1 - t)/c & |t| \in [1 - c, 1] \end{cases}$$