

**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  $w_c(t)$** 

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