A WARPED SELF-NORMALIZED TWO-SAMPLE TEST FOR TIME SERIES WITH STAGGERED OBSERVATION PERIODS

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Supplementary Material

S1 Technical Proofs

Proof. (Theorem 1) Recall that $N = N_x + N_y$, it suffices to show that, as $N \to \infty$,

$$\mathrm{E}[\{\hat{F}_{\mathrm{PR10}}(u) - \mathrm{pr}(Z_{\mathrm{PR10}} \leq c_{xy}u)\}^2] \to 0.$$

Note that $\mathrm{E}[\hat{F}_{\mathrm{PR10}}(u) - \mathrm{E}\{\hat{F}_{\mathrm{PR10}}(u)\}] = 0$, we can decompose the above into

$$\begin{aligned}
& \mathrm{E}[\{\hat{F}_{\mathrm{PR10}}(u) - \mathrm{pr}(Z_{\mathrm{PR10}} \leq c_{xy}u)\}^2] \\
= \; & \mathrm{E}([\hat{F}_{\mathrm{PR10}}(u) - \mathrm{E}\{\hat{F}_{\mathrm{PR10}}(u)\}]^2) + \mathrm{E}([\mathrm{E}\{\hat{F}_{\mathrm{PR10}}(u)\} - \mathrm{pr}(Z_{\mathrm{PR10}} \leq c_{xy}u)]^2) \\
= \; & \mathrm{var}\{\hat{F}_{\mathrm{PR10}}(u)\} + [\mathrm{E}\{\hat{F}_{\mathrm{PR10}}(u)\} - \mathrm{pr}(Z_{\mathrm{PR10}} \leq c_{xy}u)]^2.
\end{aligned}$$

We first deal with the term $[\mathrm{E}\{\hat{F}_{\mathrm{PR10}}(u)\} - \mathrm{pr}(Z_{\mathrm{PR10}} \leq c_{xy}u)]^2$. For this, recall that

$$\hat{F}_{\mathrm{PR10}}(u) = q_x^{-1} q_y^{-1} \sum_{i=1}^{q_x} \sum_{j=1}^{q_y} \mathrm{I}(H_{i,j} \leq u),$$

where

$$H_{i,j} = (B_x^{-1} g_x + B_y^{-1} g_y)^{-1/2} (\bar{X}_{i,i+B_x-1} - \bar{Y}_{j,j+B_y-1}).$$

Define $\mathcal{S}_1(\eta) = \{(i,j) : \ |j-i| > \eta, \ 1 \leq i \leq q_x, \ 1 \leq j \leq q_y\}$, then by the d-dependence structure we have $\mathrm{cov}(\bar{X}_{i,i+B_x-1}, \bar{Y}_{i+k,i+k+B_y-1}) = 0$ if $|k| > d + \max(B_x, B_y)$. As a result, for any index pair $(i,j) \in \mathcal{S}_1\{d + \max(B_x, B_y)\}$, we have $\mathrm{cov}(\bar{X}_{i,i+B_x-1}, \bar{Y}_{j,j+B_y-1}) = 0$, and as a result

$$\begin{aligned} & (B_x^{-1} g_x + B_y^{-1} g_y)^{-1} \mathrm{var}(\bar{X}_{i,i+B_x-1} - \bar{Y}_{j,j+B_y-1}) \\ = \ & (B_x^{-1} g_x + B_y^{-1} g_y)^{-1} \{\mathrm{var}(\bar{X}_{i,i+B_x-1}) + \mathrm{var}(\bar{Y}_{j,j+B_y-1}) \\ & \quad -2\mathrm{cov}(\bar{X}_{i,i+B_x-1}, \bar{Y}_{j,j+B_y-1})\} \\ \to \ & 1. \end{aligned}$$

Under the null hypothesis of $\mu_x = \mu_y$, one has $\mathrm{E}(\bar{X}_{i,i+B_x-1} - \bar{Y}_{j,j+B_y-1}) = 0$ and thus $H_{i,j}$ follows a standard normal asymptotic distribution for any $(i,j) \in \mathcal{S}_1\{d + \max(B_x, B_y)\}$. On the other hand, since $N_x = N_y$, the variance of the global difference satisfies

$$(N_x^{-1} g_x + N_x^{-1} g_y - N_x^{-1} a_{xy})^{-1} \mathrm{var}(\bar{X}_{k,m} - \bar{Y}_{l,n}) \to 1,$$

and as a result

$$
\begin{aligned}
c_{xy}^{-1} Z_{\mathrm{PR10}} &= \left(\frac{g_x + g_y - a_{xy}}{g_x + g_y}\right)^{-1/2} N_x^{1/2}(g_x + g_y)^{-1/2}(\bar{X}_{k,m} - \bar{Y}_{l,n}) \\
&= (g_x + g_y - a_{xy})^{-1/2} N_x^{1/2}(\bar{X}_{k,m} - \bar{Y}_{l,n})
\end{aligned}
$$

follows a standard normal asymptotic distribution. Let $|\mathcal{S}_1\{d+\max(B_x, B_y)\}|$ denote the cardinality of $\mathcal{S}_1\{d + \max(B_x, B_y)\}$, then

$$
q_x^{-1} q_y^{-1} |\mathcal{S}_1\{d + \max(B_x, B_y)\}| \to 1
$$

as $N \to \infty$ and we can write

$$
\begin{aligned}
\hat{F}_{\mathrm{PR10}}(u) &= q_x^{-1} q_y^{-1} \sum_{i=1}^{q_x} \sum_{k=-i+1}^{-i+q_y} \mathrm{I}(H_{i,i+k} \leq u) \\
&= q_x^{-1} q_y^{-1} \sum_{i=1}^{q_x} \sum_{k=\max\{-d-\max(B_x,B_y),-i+1\}}^{\min\{d+\max(B_x,B_y),-i+q_y\}} \mathrm{I}(H_{i,i+k} \leq u) \\
&\quad + q_x^{-1} q_y^{-1} \sum_{i=1}^{q_x} \sum_{j\in\{1\leq l\leq q_y:\ |l-i|>d+\max(B_x,B_y)\}} \mathrm{I}(H_{i,j} \leq u).
\end{aligned}
$$

Note that

$$
q_x^{-1} q_y^{-1} \sum_{i=1}^{q_x} \sum_{k=\max\{-d-\max(B_x,B_y),-i+1\}}^{\min\{d+\max(B_x,B_y),-i+q_y\}} \mathrm{I}(H_{i,i+k} \leq u) \leq \frac{2q_x\{d + \max(B_x, B_y)\}}{q_x q_y} \to 0,
$$

we have $[\mathrm{E}\{\hat{F}_{\mathrm{PR10}}(u)\} - \mathrm{pr}(c_{xy}^{-1} Z_{\mathrm{PR10}} \leq u)]^2 \to 0$ as $N \to \infty$. It now suffices to show that $\mathrm{var}\{\hat{F}_{\mathrm{PR10}}(u)\} \to 0$. For this, we define $\Omega = \{(i, j, i', j') : 1 \leq i,\ i' \leq q_x,\ 1 \leq j,\ j' \leq q_y\}$ and $\mathcal{S}_2(\eta) = \{(i, j, i', j') :\ \min(|i - i'|, |i - j'|, |j - i'|, |j - j'|) > \eta,\ 1 \leq i,\ i' \leq q_x,\ 1 \leq j,\ j' \leq q_y\}$. Then by the d-dependence structure, for any quadruple (i, j, i', j') that satisfies

$|i-i'|>d+B_x$, $|j-j'|>d+B_y$, $|i-j'|>d+\max(B_x,B_y)$ and $|j-i'|>d+\max(B_x,B_y)$, we have $\mathrm{cov}\{\mathrm{I}(H_{i,j}\le u),\mathrm{I}(H_{i',j'}\le u)\}=0$. As a result, $\mathrm{cov}\{\mathrm{I}(H_{i,j}\le u),\mathrm{I}(H_{i',j'}\le u)\}=0$ if $(i,j,i',j')\in\mathcal{S}_2\{d+\max(B_x,B_y)\}$. Note that $|\mathrm{cov}\{\mathrm{I}(H_{i,j}\le u),\mathrm{I}(H_{i',j'}\le u)\}|\le 1$, we have

$$\begin{aligned}
& q_x^{-2}q_y^{-2}\sum_{(i,j,i',j')\in\Omega\setminus\mathcal{S}_2\{d+\max(B_x,B_y)\}}|\mathrm{cov}\{\mathrm{I}(H_{i,j}\le u),\mathrm{I}(H_{i',j'}\le u)\}| \\
\le\ & 2q_x^{-2}q_y^{-2}\{d+\max(B_x,B_y)\}(q_xq_y^2+q_xq_y^2+q_yq_x^2+q_yq_x^2) \\
\le\ & \frac{8\{d+\max(B_x,B_y)\}}{\min\{q_x,q_y\}}\to 0.
\end{aligned}$$

Therefore,

$$\begin{aligned}
& \mathrm{var}\{\hat{F}_{\mathrm{PR10}}(u)\} \\
=\ & q_x^{-2}q_y^{-2}\sum_{i=1}^{q_x}\sum_{i'=1}^{q_x}\sum_{j=1}^{q_y}\sum_{j'=1}^{q_y}\mathrm{cov}\{\mathrm{I}(H_{i,j}\le u),\mathrm{I}(H_{i',j'}\le u)\} \\
\le\ & q_x^{-2}q_y^{-2}\sum_{(i,j,i',j')\in\mathcal{S}_2\{d+\max(B_x,B_y)\}}|\mathrm{cov}\{\mathrm{I}(H_{i,j}\le u),\mathrm{I}(H_{i',j'}\le u)\}| \\
& +q_x^{-2}q_y^{-2}\sum_{(i,j,i',j')\in\Omega\setminus\mathcal{S}_2\{d+\max(B_x,B_y)\}}|\mathrm{cov}\{\mathrm{I}(H_{i,j}\le u),\mathrm{I}(H_{i',j'}\le u)\}|
\end{aligned}$$

which goes to zero as $N\to\infty$, entailing the desired result. □

Proof. (Theorem 2) Given that $k=1$, we can write

$$D^{\star}_{i,N}=\bar{X}_{1,\lfloor iN_x/N\rfloor}-\bar{Y}_{l,l+\lfloor iN_y/N\rfloor-1},\quad i=1,\ldots,N,$$

and under the null hypothesis of $\mu_x = \mu_y$ we have

$$\begin{aligned}\frac{i}{\sqrt{N}} D^\star_{i,N} &= \left(\frac{i}{\lfloor iN_x/N \rfloor}, 0\right) N^{-1/2} \sum_{j=1}^{\lfloor iN_x/N \rfloor} \begin{pmatrix} X_j - \mu_x \\ Y_j - \mu_y \end{pmatrix} \\ &\quad - \left(0, \frac{i}{\lfloor iN_y/N \rfloor}\right) N^{-1/2} \left\{ \sum_{j=1}^{l-1+\lfloor iN_y/N \rfloor} \begin{pmatrix} X_j - \mu_x \\ Y_j - \mu_y \end{pmatrix} \right. \\ &\qquad \left. - \sum_{j=1}^{l-1} \begin{pmatrix} X_j - \mu_x \\ Y_j - \mu_y \end{pmatrix} \right\}.\end{aligned}$$

Since $p_x = p_y = 0.5$ when $N_x = N_y$, under assumption (IP) we have the weak convergence of

$$\frac{\lfloor Nt \rfloor}{\sqrt{N}} D^\star_{\lfloor Nt \rfloor, N} \Rightarrow V^\star_\ell(t; a, b, c)$$

on $t \in [0, 1]$. Note that we can write

$$\begin{aligned}& N^{-2} \sum_{i=1}^{N} i^2 (D^\star_{i,N} - D^\star_{N,N})^2 \\ &= \sum_{i=1}^{N} \frac{1}{N} \left(\frac{i}{\sqrt{N}} D^\star_{i,N} - \frac{i}{N} \frac{N}{\sqrt{N}} D^\star_{N,N} \right)^2 \\ &= \sum_{i=1}^{N} \int_{(i-1)/N}^{i/N} \left(\frac{\lfloor Nt \rfloor}{\sqrt{N}} D^\star_{\lfloor Nt \rfloor, N} - \frac{\lfloor Nt \rfloor}{N} \frac{N}{\sqrt{N}} D^\star_{N,N} \right)^2 dt \\ &= \int_0^1 \left(\frac{\lfloor Nt \rfloor}{\sqrt{N}} D^\star_{\lfloor Nt \rfloor, N} - \frac{\lfloor Nt \rfloor}{N} \frac{N}{\sqrt{N}} D^\star_{N,N} \right)^2 dt,\end{aligned}$$

then by assumption (IP) we can obtain the weak convergence of

$$N^{-2} \sum_{i=1}^{N} i^2 (D^\star_{i,N} - D^\star_{N,N})^2 \to_d \int_0^1 \left\{ V^\star_\ell(t; a, b, c) - t V^\star_\ell(1; a, b, c) \right\}^2 dt,$$

which can be made jointly with the weak convergence of $\frac{\lfloor Nt \rfloor}{\sqrt{N}} D^{\star}_{\lfloor Nt \rfloor, N}$ on $t \in [0,1]$. The result then follows by an application of the continuous mapping theorem. □

Proof. (Theorem 3) We first provide the proof for (i) that relates to the null. In particular, under the null hypothesis of $\mu_x = \mu_y$, we have

$$\begin{aligned}
&\frac{i}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,i}} - \bar{Y}_{\mathcal{I}_{y,1,i}}) \\
= &\left(\frac{i}{\lfloor iN_x/N \rfloor}, 0\right) N^{-1/2} \left\{ \sum_{j=1}^{l-\lfloor i(l-1)/N \rfloor + \lfloor iN_x/N \rfloor - 1} \begin{pmatrix} X_j - \mu_x \\ Y_j - \mu_y \end{pmatrix} \right. \\
&\qquad \left. - \sum_{j=1}^{l-\lfloor i(l-1)/N \rfloor - 1} \begin{pmatrix} X_j - \mu_x \\ Y_j - \mu_y \end{pmatrix} \right\} \\
&- \left(0, \frac{i}{\lfloor iN_y/N \rfloor}\right) N^{-1/2} \left\{ \sum_{j=1}^{l+\lfloor iN_y/N \rfloor - 1} \begin{pmatrix} X_j - \mu_x \\ Y_j - \mu_y \end{pmatrix} \right. \\
&\qquad \left. - \sum_{j=1}^{l-1} \begin{pmatrix} X_j - \mu_x \\ Y_j - \mu_y \end{pmatrix} \right\}.
\end{aligned}$$

Let

$$\begin{aligned}
U_{\ell,p_x,p_y}(t;a,b,c) &= \frac{a}{p_x}\{W_1(\ell - \ell t + p_x t) - W_1(\ell - \ell t)\} \\
&\quad + \frac{c}{p_y}\{W_1(\ell + p_y t) - W_1(\ell)\} + \frac{b}{p_y}\{W_2(\ell + p_y t) - W_2(\ell)\},
\end{aligned}$$

then by Corollary 2.2 of Phillips and Durlauf (1986) the invariance principle holds and we can obtain the weak convergence

$$\frac{\lfloor Nt \rfloor}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,\lfloor Nt \rfloor}} - \bar{Y}_{\mathcal{I}_{y,1,\lfloor Nt \rfloor}}) \Rightarrow U_{\ell,p_x,p_y}(t;a,b,c)$$

on $t \in [0,1]$. Throughout the proof of this theorem, we denote

$$A_{i,N} = N^{-2}\sum_{j=1}^{N} j^2\{(\bar{X}_{\mathcal{I}_{x,i,j}} - \bar{Y}_{\mathcal{I}_{y,i,j}}) - (\bar{X}_{\mathcal{I}_{x,i,N}} - \bar{Y}_{\mathcal{I}_{y,i,N}})\}^2,$$

and we can write

$$\begin{aligned}
& A_{1,N} \\
= \;& \sum_{j=1}^{N} \frac{1}{N}\left\{\frac{j}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,j}} - \bar{Y}_{\mathcal{I}_{y,1,j}}) - \frac{j}{N}\frac{N}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}})\right\}^2 \\
= \;& \sum_{j=1}^{N} \int_{(j-1)/N}^{j/N} \left\{\frac{\lfloor Nt \rfloor}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,\lfloor Nt \rfloor}} - \bar{Y}_{\mathcal{I}_{y,1,\lfloor Nt \rfloor}}) - \frac{\lfloor Nt \rfloor}{N}\frac{N}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}})\right\}^2 dt \\
= \;& \int_0^1 \left\{\frac{\lfloor Nt \rfloor}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,\lfloor Nt \rfloor}} - \bar{Y}_{\mathcal{I}_{y,1,\lfloor Nt \rfloor}}) - \frac{\lfloor Nt \rfloor}{N}\frac{N}{\sqrt{N}}(\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}})\right\}^2 dt.
\end{aligned}$$

Then by the invariance principle (IP) we have the weak convergence

$$A_{1,N} \to_d A := \int_0^1 \{U_{\ell,p_x,p_y}(t;a,b,c) - tU_{\ell,p_x,p_y}(1;a,b,c)\}^2 dt,$$

which can be made jointly with

$$\sqrt{N}(\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}}) \to_d U_{\ell,p_x,p_y}(1;a,b,c).$$

By applying the continuous mapping theorem, we can derive that the global time-warped self-normalized two-sample statistic satisfies

$$T_{1,N} = \frac{N(\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}})^2}{A_{1,N}} \to_d T := \frac{U^2_{\ell,p_x,p_y}(1;a,b,c)}{A}. \tag{S1.1}$$

Similarly, we can show that

$$T_{i,B_N}(0) \to_d T, \quad 1 \leq i \leq M_N.$$

Note that the proposed warped self-normalized subsampling method preserve the underlying dependence structure in each block, and the stationarity ensures that T_{i,B_N}, $1 \leq i \leq M_N$, all share the same limiting distribution. Let $F_{\text{SNTS}}(u) = \text{pr}(T \leq u)$ be the distribution function of T defined in (S1.1), $\tilde{F}_{\text{SNTS}}(u)$ be the empirical distribution function of T_{i,B_N} given by

$$\tilde{F}_{\text{SNTS}}(u) = M_N^{-1} \sum_{i=1}^{M_N} \text{I}(T_{i,B_N} \leq u),$$

and $\hat{F}_{\text{SNTS}}(u)$ be the empirical distribution function of $T_{i,B_N}(\hat{\Delta})$ given by

$$\hat{F}_{\text{SNTS}}(u) = M_N^{-1} \sum_{i=1}^{M_N} \text{I}\{T_{i,B_N}(\hat{\Delta}) \leq u\}.$$

We first show that, as $N \to \infty$,

$$\tilde{F}_{\text{SNTS}}(u) \to_p F_{\text{SNTS}}(u) \tag{S1.2}$$

for any $u \in \mathcal{C}(F_{\text{SNTS}})$, the set of continuity points of $F_{\text{SNTS}}(u)$. For this, it suffices to show that

$$\text{E}[\{\tilde{F}_{\text{SNTS}}(u) - F_{\text{SNTS}}(u)\}^2] \to 0$$

for any $u \in \mathcal{C}(F_{\text{SNTS}})$ as $N \to \infty$. Note that $\text{E}[\tilde{F}_{\text{SNTS}}(u) - \text{E}\{\tilde{F}_{\text{SNTS}}(u)\}] = 0$, we can decompose the above into

$$\begin{aligned}
& \mathrm{E}[\{\tilde{F}_{\mathrm{SNTS}}(u) - F_{\mathrm{SNTS}}(u)\}^2] \\
= & \ \mathrm{E}([\tilde{F}_{\mathrm{SNTS}}(u) - \mathrm{E}\{\tilde{F}_{\mathrm{SNTS}}(u)\}]^2) + \mathrm{E}([\mathrm{E}\{\tilde{F}_{\mathrm{SNTS}}(u)\} - F_{\mathrm{SNTS}}(u)]^2) \\
= & \ \mathrm{var}\{\tilde{F}_{\mathrm{SNTS}}(u)\} + \{\mathrm{pr}(T_{i,B_N} \le u) - \mathrm{pr}(T \le u)\}^2.
\end{aligned}$$

Since $T_{i,B_N} \to_d T$, $1 \le i \le M_N$, we have $\{\mathrm{pr}(T_{i,B_N} \le u) - \mathrm{pr}(T \le u)\}^2 \to 0$ for $u \in \mathcal{C}(F_{\mathrm{SNTS}})$ as $N \to \infty$. It remains to show $\mathrm{var}\{\tilde{F}_{\mathrm{SNTS}}(u)\} \to 0$. Note that T_{i,B_N} can be viewed as a process indexed by i, the stationarity assumption on (X_i, Y_i) implies the stationarity of T_{i,B_N}, which leads to

$$\begin{aligned}
\mathrm{var}\{\tilde{F}_{\mathrm{SNTS}}(u)\} &= M_N^{-2} \sum_{i,j=1}^{M_N} \mathrm{cov}\{\mathrm{I}(T_{i,B_N} \le u), \mathrm{I}(T_{j,B_N} \le u)\} \\
&\le M_N^{-2} \times 2 \times M_N \times \sum_{k=0}^{M_N-1} |\mathrm{cov}\{\mathrm{I}(T_{1,B_N} \le u), \mathrm{I}(T_{k+1,B_N} \le u)\}| \\
&= 2M_N^{-1} \sum_{k=0}^{B_N-1} |\mathrm{cov}\{\mathrm{I}(T_{1,B_N} \le u), \mathrm{I}(T_{k+1,B_N} \le u)\}| \\
&\quad + 2M_N^{-1} \sum_{k=B_N}^{M_N-1} |\mathrm{cov}\{\mathrm{I}(T_{1,B_N} \le u), \mathrm{I}(T_{k+1,B_N} \le u)\}|.
\end{aligned}$$

By Lemma 3.5 of Bai et al. (2016), we can obtain that

$$|\mathrm{cov}\{\mathrm{I}(T_{1,B_N} \le u), \mathrm{I}(T_{k+1,B_N} \le u)\}| \le \begin{cases} 1 & \text{if } k < B_N \\ \alpha(k - B_N + 1) & \text{if } k \ge B_N \end{cases}.$$

Note that $\lim_{N\to\infty} M_N/N > 0$ and $B_N/N \to 0$ as $N \to \infty$, we have

$$\begin{aligned}\mathrm{var}\{\tilde{F}_{\mathrm{SNTS}}(u)\} &\leq 2M_N^{-1}B_N + 2M_N^{-1}\sum_{k=B_N}^{M_N-1}\alpha(k-B_N+1)\\ &= 2M_N^{-1}B_N + 2M_N^{-1}\sum_{k=1}^{M_N-B_N}\alpha(k) \to 0,\end{aligned}$$

and (S1.2) follows. We shall now provide the proof for

$$\hat{F}_{\mathrm{SNTS}}(u) \to_p F_{\mathrm{SNTS}}(u), \tag{S1.3}$$

which differs from (S1.2) in the sense that the estimator $\hat{\Delta}$ is used when calculating the test statistic for each subsample. For this, we write

$$\begin{aligned}\hat{F}_{\mathrm{SNTS}}(u) &= M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\{T_{i,B_N}(\hat{\Delta}) \leq u\}\\ &= M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\left\{T_{i,B_N} \leq u + \frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}} - \frac{B_N\hat{\Delta}^2}{A_{i,B_N}}\right\},\end{aligned}$$

and then by the above argument on $\tilde{F}_{\mathrm{SNTS}}(u)$ it suffices to show that the additional term

$$\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}} - \frac{B_N\hat{\Delta}^2}{A_{i,B_N}}$$

is negligible in probability. To this end, for any $\epsilon > 0$, let

$$\Xi_N(\epsilon) = M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\left\{\left|\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}} - \frac{B_N\hat{\Delta}^2}{A_{i,B_N}}\right| > \epsilon\right\},$$

then we have

$$\Xi_N(\epsilon) \leq \Xi_{N,1}(\epsilon) + \Xi_{N,2}(\epsilon),$$

where

$$\Xi_{N,1}(\epsilon) = M_N^{-1} \sum_{i=1}^{M_N} \mathrm{I}\left\{\left|\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}}\right| > \frac{\epsilon}{2}\right\}$$

and

$$\Xi_{N,2}(\epsilon) = M_N^{-1} \sum_{i=1}^{M_N} \mathrm{I}\left(\left|\frac{B_N\hat{\Delta}^2}{A_{i,B_N}}\right| > \frac{\epsilon}{2}\right).$$

Note that, as $N \to \infty$, $B_N/N \to 0$ and $\sqrt{N}\hat{\Delta} \to_d U_{\ell,p_x,p_y}(1; a, b, c)$, we have, for any $\delta > 0$,

$$\mathrm{pr}(|\sqrt{B_N}\hat{\Delta}| \le \delta) \to 1.$$

As a result,

$$\mathrm{pr}\left[\Xi_{N,1}(\epsilon) \le M_N^{-1} \sum_{i=1}^{M_N} \mathrm{I}\left\{\left|\frac{2\sqrt{B_N}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}}\right| > \frac{\epsilon}{2\delta}\right\}\right] \to 1$$

and

$$\mathrm{pr}\left\{\Xi_{N,2}(\epsilon) \le M_N^{-1} \sum_{i=1}^{M_N} \mathrm{I}\left(\left|\frac{1}{A_{i,B_N}}\right| > \frac{\epsilon}{2\delta^2}\right)\right\} \to 1.$$

Then by the joint convergence of $\sqrt{B_N}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}}) \to_d U_{\ell,p_x,p_y}(1; a, b, c)$ and $A_{i,B_N} \to_d A$, we have

$$\frac{\sqrt{B_N}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}} \to_d \frac{U_{\ell,p_x,p_y}(1; a, b, c)}{A}.$$

Following a similar argument as that for (S1.2) but replacing T_{i,B_N} by $|2A_{i,B_N}^{-1}\sqrt{B_N}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})|$ we can obtain that

$$M_N^{-1} \sum_{i=1}^{M_N} \mathrm{I}\left\{\left|\frac{2\sqrt{B_N}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}}\right| > \frac{\epsilon}{2\delta}\right\} \to_p \mathrm{pr}\left\{\left|\frac{2U_{\ell,p_x,p_y}(1; a, b, c)}{A}\right| > \frac{\epsilon}{2\delta}\right\}.$$

Similarly, we can show that

$$M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\left(\left|\frac{1}{A_{i,B_N}}\right|>\frac{\epsilon}{2\delta^2}\right)\to_p \mathrm{pr}\left(\left|\frac{1}{A}\right|>\frac{\epsilon}{2\delta^2}\right).$$

For any given $\epsilon>0$, we can choose $\delta>0$ to be arbitrarily small so that the probabilities $\mathrm{pr}\{|2U_{\ell,p_x,p_y}(1;a,b,c)/A|>\epsilon/(2\delta)\}$ and $\mathrm{pr}\{|1/A|>\epsilon/(2\delta^2)\}$ are arbitrarily close to zero. Note that $\Xi_{N,1}(\epsilon)$ and $\Xi_{N,2}(\epsilon)$ are both non-negative, we have

$$\Xi_{N,1}(\epsilon)+\Xi_{N,2}(\epsilon)\to_p 0$$

as $N\to\infty$ for any given $\epsilon>0$. Since

$$\begin{aligned}&\mathrm{I}\left\{T_{i,B_N}\le u+\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}}-\bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}}-\frac{B_N(\hat{\Delta})^2}{A_{i,B_N}}\right\}\\ \le\;&\mathrm{I}\{T_{i,B_N}\le u+\epsilon\}+\mathrm{I}\left\{\left|\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}}-\bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}}-\frac{B_N(\hat{\Delta})^2}{A_{i,B_N}}\right|>\epsilon\right\},\end{aligned}$$

we have

$$\hat{F}_{\mathrm{SNTS}}(u)\le\tilde{F}_{\mathrm{SNTS}}(u+\epsilon)+\Xi_{N,1}(\epsilon)+\Xi_{N,2}(\epsilon).$$

This, together with (S1.2), entail that $\mathrm{pr}\{\hat{F}_{\mathrm{SNTS}}(u)\le F_{\mathrm{SNTS}}(u+\epsilon)+\eta\}\to 1$ as $N\to\infty$ for any $\eta>0$ and $u+\epsilon\in\mathcal{C}(F_{\mathrm{SNTS}})$. Since $\epsilon>0$ can be chosen arbitrarily small, we have $\mathrm{pr}\{\hat{F}_{\mathrm{SNTS}}(u)\le F_{\mathrm{SNTS}}(u)+\eta'\}\to 1$ for any $\eta' > \eta > 0$. On the other hand, we can write

$$\begin{aligned}
& \mathrm{I}\{T_{i,B_N} \le u - \epsilon\} \\
\le \; & \mathrm{I}\{T_{i,B_N} \le u - \epsilon\}\mathrm{I}\left\{\left|\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}} - \frac{B_N(\hat{\Delta})^2}{A_{i,B_N}}\right| \le \epsilon\right\} \\
& \quad + \mathrm{I}\left\{\left|\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}} - \frac{B_N(\hat{\Delta})^2}{A_{i,B_N}}\right| > \epsilon\right\} \\
\le \; & \mathrm{I}\{T_{i,B_N}(\hat{\Delta}) \le u\} + \mathrm{I}\left\{\left|\frac{2B_N\hat{\Delta}(\bar{X}_{\mathcal{I}_{x,i,B_N}} - \bar{Y}_{\mathcal{I}_{y,i,B_N}})}{A_{i,B_N}} - \frac{B_N(\hat{\Delta})^2}{A_{i,B_N}}\right| > \epsilon\right\},
\end{aligned}$$

and as a result,

$$\tilde{F}_{\mathrm{SNTS}}(u - \epsilon) \le \hat{F}_{\mathrm{SNTS}}(u) + \Xi_{N,1}(\epsilon) + \Xi_{N,2}(\epsilon).$$

Then, by a similar argument, we have $\mathrm{pr}\{\hat{F}_{\mathrm{SNTS}}(u) \ge F_{\mathrm{SNTS}}(u) - \eta'\} \to 1$ for any $\eta' > 0$, and thus $\mathrm{pr}\{|\hat{F}_{\mathrm{SNTS}}(u) - F_{\mathrm{SNTS}}(u)| \le \eta'\} \to 1$ as $N \to \infty$. Since $\eta' > 0$ can be chosen arbitrarily small, (S1.3) follows. Note that

$$|\hat{F}_{\mathrm{SNTS}}(u) - \mathrm{pr}(T_{1,N} \le u)| \le |\hat{F}_{\mathrm{SNTS}}(u) - F_{\mathrm{SNTS}}(u)| + |\mathrm{pr}(T_{1,N} \le u) - F_{\mathrm{SNTS}}(u)|$$

by the triangle inequality, combining (S1.3) and the fact that $T_{1,N} \to_d T$ we have

$$|\hat{F}_{\mathrm{SNTS}}(u) - \mathrm{pr}(T_{1,N} \le u)| \to_p 0$$

for any $u \in \mathcal{C}(F_{\mathrm{SNTS}})$, and (i) follows. For (ii), by a similar argument as that for (S1.1) we can show that the centered version satisfies

$$T_{1,N}(\mu_x - \mu_y) = \frac{N\{\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}} - (\mu_x - \mu_y)\}^2}{A_{1,N}} \to_d T,$$

where

$$
\begin{aligned}
& T_{1,N} - T_{1,N}(\mu_x - \mu_y) \\
= \; & \frac{N(\mu_x - \mu_y)^2 + 2N(\mu_x - \mu_y)\{\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}} - (\mu_x - \mu_y)\}}{A_{1,N}}.
\end{aligned}
$$

In addition, note that $T_{i,B_N}(\hat{\Delta})$ uses the estimate $\hat{\Delta}$ in its construction, and therefore its distribution remains at the same regardless of what the true value of $\mu_x - \mu_y$ is. As a result, by a similar argument as that in (i), we can show that

$$
|\hat{F}_{\text{SNTS}}(u) - \text{pr}\{T_{1,N}(\mu_x - \mu_y) \leq u\}| \to_p 0
$$

continues to hold for any $u \in \mathcal{C}(F_{\text{SNTS}})$. Therefore, it suffices to show that

$$
\frac{N(\mu_x - \mu_y)^2 + 2N(\mu_x - \mu_y)\{\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}} - (\mu_x - \mu_y)\}}{A_{1,N}} \to_p \infty
$$

when $N^{1/2}|\mu_x - \mu_y| \to \infty$. For this, note that by the invariance principle (IP) and a similar argument as that in (i), we can obtain the joint convergence

$$
\left\{ \begin{array}{c} \sqrt{N}\{\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}} - (\mu_x - \mu_y)\} \\ \\ A_{1,N}^{-1} \end{array} \right\} \to_d \left\{ \begin{array}{c} U_{\ell,p_x,p_y}(1; a, b, c) \\ \\ A^{-1} \end{array} \right\},
$$

and as a result we have

$$
\frac{2N(\mu_x - \mu_y)\{\bar{X}_{\mathcal{I}_{x,1,N}} - \bar{Y}_{\mathcal{I}_{y,1,N}} - (\mu_x - \mu_y)\}}{A_{1,N}} = o_p\left\{\frac{N(\mu_x - \mu_y)^2}{A_{1,N}}\right\}
$$

as $N^{1/2}|\mu_x - \mu_y| \to \infty$. Since $A_{1,N}^{-1} \to_d A^{-1}$ has a nondegenerate limiting distribution, we have $A_{1,N}^{-1}N(\mu_x - \mu_y)^2 \to_p \infty$ and (ii) follows. □

Proof. (Theorem 4) Note that

$$\hat{\theta}_{x,\mathcal{I}_{x,i,j}} - \hat{\theta}_{y,\mathcal{I}_{y,i,j}} = \theta_x - \theta_y + \frac{1}{|\mathcal{I}_{x,i,j}|}\sum_{k\in\mathcal{I}_{x,i,j}} \mathrm{IF}_Q(X_k, F_{x,d}) + R_{x,\mathcal{I}_{x,i,j}} - \frac{1}{|\mathcal{I}_{y,i,j}|}\sum_{l\in\mathcal{I}_{y,i,j}} \mathrm{IF}_Q(Y_l, F_{y,d}) - R_{y,\mathcal{I}_{y,i,j}},$$

we can write:

$$\begin{aligned}\frac{j(\hat{\theta}_{x,\mathcal{I}_{x,i,j}} - \hat{\theta}_{y,\mathcal{I}_{y,i,j}})}{\sqrt{B_N}} = & \frac{j(\theta_x - \theta_y)}{\sqrt{B_N}} \\ & + \frac{j}{\sqrt{B_N}|\mathcal{I}_{x,i,j}|}\sum_{k\in\mathcal{I}_{x,i,j}} \mathrm{IF}_Q(X_k, F_{x,d}) \\ & + \frac{j}{\sqrt{B_N}|\mathcal{I}_{x,i,j}|}|\mathcal{I}_{x,i,j}|R_{x,\mathcal{I}_{x,i,j}} \\ & - \frac{j}{\sqrt{B_N}|\mathcal{I}_{y,i,j}|}\sum_{l\in\mathcal{I}_{y,i,j}} \mathrm{IF}_Q(Y_l, F_{y,d}) \\ & - \frac{j}{\sqrt{B_N}|\mathcal{I}_{y,i,j}|}|\mathcal{I}_{y,i,j}|R_{y,\mathcal{I}_{y,i,j}},\end{aligned}$$

Since $|\mathcal{I}_{x,i,j}| = \lfloor jN_x/N \rfloor$, we have

$$\frac{j}{|\mathcal{I}_{x,i,j}|} = \frac{j\frac{N}{N_x}}{\left\lfloor j\frac{N}{N_x}\right\rfloor} \times \frac{N}{N_x} \leq \frac{\left\lfloor j\frac{N}{N_x}\right\rfloor + 1}{\left\lfloor j\frac{N}{N_x}\right\rfloor} \times \frac{N}{N_x} \leq \frac{2N}{N_x} \to \frac{2}{p_x}$$

as $N \to +\infty$ for $\lfloor jN_x/N \rfloor \geq 1$ where $p_x \in (0,1)$. Similarly,

$$\frac{j}{|\mathcal{I}_{y,i,j}|} \leq \frac{2N}{N_y} \to \frac{2}{p_y}$$

as $N \to +\infty$ for $\lfloor jN_y/N \rfloor \geq 1$ where $p_y \in (0,1)$. Therefore, under the null hypothesis of $\theta_x = \theta_y$,

$$\begin{aligned}
&\left| \frac{j(\hat{\theta}_{x,\mathcal{I}_{x,i,j}} - \hat{\theta}_{y,\mathcal{I}_{y,i,j}})}{\sqrt{B_N}} - \left\{ \frac{j}{\sqrt{B_N}|\mathcal{I}_{x,i,j}|} \sum_{k \in \mathcal{I}_{x,i,j}} \mathrm{IF}_Q(X_k, F_{x,d}) \right.\right. \\
&\qquad \left.\left. - \frac{j}{\sqrt{B_N}|\mathcal{I}_{y,i,j}|} \sum_{l \in \mathcal{I}_{y,i,j}} \mathrm{IF}_Q(Y_l, F_{y,d}) \right\} \right| \\
= &\left| \frac{j}{\sqrt{B_N}|\mathcal{I}_{x,i,j}|} |\mathcal{I}_{x,i,j}| R_{x,\mathcal{I}_{x,i,j}} - \frac{j}{\sqrt{B_N}|\mathcal{I}_{y,i,j}|} |\mathcal{I}_{y,i,j}| R_{y,\mathcal{I}_{y,i,j}} \right| \\
\leq &\ \frac{2N}{N_x} \frac{1}{\sqrt{B_N}} |\mathcal{I}_{x,i,j}||R_{x,\mathcal{I}_{x,i,j}}| + \frac{2N}{N_y} \frac{1}{\sqrt{B_N}} |\mathcal{I}_{y,i,j}||R_{y,\mathcal{I}_{y,i,j}}| = o_p(1).
\end{aligned}$$

Then, by applying the continuous mapping argument as in the proof of Theorem 3 on the linear combination of influence functions, we can obtain that

$$T^{\theta}_{1,N} \to_d T$$

and

$$T^{\theta}_{i,B_N}(0) \to_d T$$

for each $1 \leq i \leq M_N$. Let

$$\tilde{F}^{\theta}_{\mathrm{SNTS}}(u) = M_N^{-1} \sum_{i=1}^{M_N} \mathrm{I}(T^{\theta}_{i,B_N} \leq u),$$

then by Lemma 3.5 of Bai et al. (2016),

$$|\mathrm{cov}\{\mathrm{I}(T^{\theta}_{1,B_N} \leq u), \mathrm{I}(T^{\theta}_{k+1,B_N} \leq u)\}| \leq \begin{cases} 1 & \text{if } k < B_N \\ \alpha(k - B_N + 1) & \text{if } k \geq B_N \end{cases},$$

and by a similar argument as in the proof of Theorem 3 we can show that

$$\begin{aligned}\operatorname{var}\{\tilde{F}^{\theta}_{\mathrm{SNTS}}(u)\} &\le 2M_N^{-1}\sum_{k=0}^{B_N-1}|\operatorname{cov}\{\mathrm{I}(T^{\theta}_{1,B_N}\le u),\mathrm{I}(T^{\theta}_{k+1,B_N}\le u)\}| \\ &\quad +2M_N^{-1}\sum_{k=B_N}^{M_N-1}|\operatorname{cov}\{\mathrm{I}(T^{\theta}_{1,B_N}\le u),\mathrm{I}(T^{\theta}_{k+1,B_N}\le u)\}| \\ &\le 2M_N^{-1}B_N+2M_N^{-1}\sum_{k=1}^{M_N-B_N}\alpha(k)\to 0,\end{aligned}$$

for any $u\in\mathcal{C}(F_{\mathrm{SNTS}})$. As a result, $\tilde{F}^{\theta}_{\mathrm{SNTS}}(u)\to_p F_{\mathrm{SNTS}}(u)$ for any $u\in\mathcal{C}(F_{\mathrm{SNTS}})$, and we shall now focus on

$$\hat{F}^{\theta}_{\mathrm{SNTS}}(u)=M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\{T^{\theta}_{i,B_N}(\hat{\Delta}^{\theta})\le u\}.$$

For this, let $A^{\theta}_{i,B_N}=B_N^{-2}\sum_{j=1}^{B_N}j^2\{(\hat{\theta}_{x,\mathcal{I}_{x,i,j}}-\hat{\theta}_{y,\mathcal{I}_{y,i,j}})-(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}}-\hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})\}^2$, then we can write

$$T^{\theta}_{i,B_N}(\hat{\Delta}^{\theta})=T^{\theta}_{i,B_N}-\frac{2B_N(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}}-\hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})\hat{\Delta}^{\theta}}{A^{\theta}_{i,B_N}}+\frac{B_N(\hat{\Delta}^{\theta})^2}{A^{\theta}_{i,B_N}}.$$

Similar to the proof of Theorem 3, we define the quantities

$$\Xi^{\theta}_N(\epsilon)=M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\left\{\left|\frac{2B_N(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}}-\hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})\hat{\Delta}^{\theta}}{A^{\theta}_{i,B_N}}-\frac{B_N(\hat{\Delta}^{\theta})^2}{A^{\theta}_{i,B_N}}\right|>\epsilon\right\},$$

$$\Xi^{\theta}_{N,1}(\epsilon)=M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\left\{\left|\frac{2B_N(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}}-\hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})\hat{\Delta}^{\theta}}{A^{\theta}_{i,B_N}}\right|>\frac{\epsilon}{2}\right\},$$

and

$$\Xi^{\theta}_{N,2}(\epsilon)=M_N^{-1}\sum_{i=1}^{M_N}\mathrm{I}\left\{\left|\frac{B_N(\hat{\Delta}^{\theta})^2}{A^{\theta}_{i,B_N}}\right|>\frac{\epsilon}{2}\right\},$$

then

$$\Xi^{\theta}_N(\epsilon)\le\Xi^{\theta}_{N,1}(\epsilon)+\Xi^{\theta}_{N,2}(\epsilon).$$

Note that for any $\delta > 0$, by the influence function argument,

$$\text{pr}(|\sqrt{B_N}\hat{\Delta}^\theta| \le \delta) \to 1,$$

and thus we have

$$\text{pr}\left[\Xi^\theta_{N,1}(\epsilon) \le M_N^{-1}\sum_{i=1}^{M_N} \text{I}\left\{\left|\frac{2\sqrt{B_N}(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}} - \hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})}{A^\theta_{i,B_N}}\right| > \frac{\epsilon}{2\delta}\right\}\right] \to 1$$

and

$$\text{pr}\left\{\Xi^\theta_{N,2}(\epsilon) \le M_N^{-1}\sum_{i=1}^{M_N} \text{I}\left(\left|\frac{1}{A^\theta_{i,B_N}}\right| > \frac{\epsilon}{2\delta^2}\right)\right\} \to 1.$$

By applying the influence function argument again, we can obtain that

$$\frac{\sqrt{B_N}(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}} - \hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})}{A^\theta_{i,B_N}} \to_d \frac{U_{\ell,p_x,p_y}(1;a,b,c)}{A}$$

and

$$\frac{1}{A^\theta_{i,B_N}} \to_d \frac{1}{A}.$$

Then by bounding the covariance as in the argument of (S1.2), we can show that

$$M_N^{-1}\sum_{i=1}^{M_N} \text{I}\left\{\left|\frac{2\sqrt{B_N}(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}} - \hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})}{A^\theta_{i,B_N}}\right| > \frac{\epsilon}{2\delta}\right\}$$
$$\to_p \text{pr}\left\{\left|\frac{2U_{\ell,p_x,p_y}(1;a,b,c)}{A}\right| > \frac{\epsilon}{2\delta}\right\}$$

and

$$M_N^{-1}\sum_{i=1}^{M_N} \text{I}\left\{\left|\frac{1}{A^\theta_{i,B_N}}\right| > \frac{\epsilon}{2\delta^2}\right\} \to_p \text{pr}\left(\left|\frac{1}{A}\right| > \frac{\epsilon}{2\delta^2}\right).$$

Since δ can be chosen arbitrarily small, we can obtain that

$$\Xi^{\theta}_{N,1}(\epsilon) + \Xi^{\theta}_{N,2}(\epsilon) \to_p 0$$

holds for any $\epsilon > 0$. Note that

$$\begin{aligned} & \mathrm{I}\left\{ T^{\theta}_{i,B_N} \leq u + \frac{2B_N(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}} - \hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})\hat{\Delta}^{\theta}}{A^{\theta}_{i,B_N}} - \frac{B_N(\hat{\Delta}^{\theta})^2}{A^{\theta}_{i,B_N}} \right\} \\ \leq \ & \mathrm{I}\{T^{\theta}_{i,B_N} \leq u + \epsilon\} \\ & \qquad + \mathrm{I}\left\{ \left| \frac{2B_N(\hat{\theta}_{x,\mathcal{I}_{x,i,B_N}} - \hat{\theta}_{y,\mathcal{I}_{y,i,B_N}})\hat{\Delta}^{\theta}}{A^{\theta}_{i,B_N}} - \frac{B_N(\hat{\Delta}^{\theta})^2}{A^{\theta}_{i,B_N}} \right| > \epsilon \right\}, \end{aligned}$$

we have

$$\hat{F}^{\theta}_{\mathrm{SNTS}}(u) \leq \tilde{F}^{\theta}_{\mathrm{SNTS}}(u + \epsilon) + \Xi^{\theta}_{N,1}(\epsilon) + \Xi^{\theta}_{N,2}(\epsilon).$$

Since ϵ can be chosen arbitrarily small, we have for any $\eta' > 0$, $\mathrm{pr}\{\hat{F}^{\theta}_{\mathrm{SNTS}}(u) \leq F_{\mathrm{SNTS}}(u) + \eta'\} \to 1$. Similarly, we can show that $\mathrm{pr}\{\hat{F}^{\theta}_{\mathrm{SNTS}}(u) \geq F_{\mathrm{SNTS}}(u) - \eta'\} \to 1$, and (i) follows by applying the triangle inequality. For (ii), by a similar argument as that in (i) we can show that the centered version satisfies

$$T^{\theta}_{1,N}(\theta_x - \theta_y) \to_d T,$$

and the empirical distribution of time-warped self-normalized subsamples satisfies

$$|\hat{F}^{\theta}_{\mathrm{SNTS}}(u) - \mathrm{pr}\{T^{\theta}_{1,N}(\theta_x - \theta_y) \leq u\}| \to_p 0$$

for any $u \in \mathcal{C}(F_{\mathrm{SNTS}})$. Note that we can write

$$\begin{aligned} & N(\hat{\theta}_{x,\mathcal{I}_{x,1,N}} - \hat{\theta}_{y,\mathcal{I}_{y,1,N}})^2 - N\{\hat{\theta}_{x,\mathcal{I}_{x,1,N}} - \hat{\theta}_{y,\mathcal{I}_{y,1,N}} - (\theta_x - \theta_y)\}^2 \\ = \; & N(\theta_x - \theta_y)^2 + 2N(\theta_x - \theta_y)\{\hat{\theta}_{x,\mathcal{I}_{x,1,N}} - \hat{\theta}_{y,\mathcal{I}_{y,1,N}} - (\theta_x - \theta_y)\}, \end{aligned}$$

by a similar argument as that in the proof of Theorem 3 we have

$$T^{\theta}_{1,N} - T^{\theta}_{1,N}(\theta_x - \theta_y) \to \infty$$

under the alternative when $N^{1/2}|\theta_x - \theta_y| \to \infty$, and (ii) follows. □

Proof. (Corollary 1) Note that

$$T^{\theta}_{1,N}(\Delta) = \frac{N(\hat{\theta}_{x,\mathcal{I}_{x,1,N}} - \hat{\theta}_{y,\mathcal{I}_{y,1,N}} - \Delta)^2}{N^{-2}\sum_{j=1}^{N} j^2\{(\hat{\theta}_{x,\mathcal{I}_{x,1,j}} - \hat{\theta}_{y,\mathcal{I}_{y,1,j}}) - (\hat{\theta}_{x,\mathcal{I}_{x,1,N}} - \hat{\theta}_{y,\mathcal{I}_{y,1,N}})\}^2},$$

which, under the null hypothesis of $\theta_x - \theta_y = \Delta$, satisfies

$$T^{\theta}_{1,N}(\theta_x - \theta_y) \to_d T$$

by the proof of Theorem 4. In addition, due to the use of $\hat{\Delta}^{\theta}$ for centering, the time-warped self-normalized subsamples $T^{\theta}_{i,B_N}(\hat{\Delta}^{\theta})$, $i = 1, \ldots, M_N$, are invariant with respect to what the true value of $\theta_x - \theta_y$ is, and as a result

$$|\hat{F}^{\theta}_{\mathrm{SNTS}}(u) - \mathrm{pr}\{T^{\theta}_{1,N}(\theta_x - \theta_y) \le u\}| \to_p 0$$

holds for any $u \in \mathcal{C}(F_{\mathrm{SNTS}})$ by a similar argument as in the proof of Theorem 4. Corollary 1 then follows. □

S2 Additional Simulation Results

We in Tables 1–54 of this supplementary material provide simulation results for Scenarios 1–3 with $\rho \in \{0.3, 0.6\}$, $B_N \in \{50, 100, 150\}$, and $r \in \{0, 0.4, 0.8\}$. The observations made in Section 4.1 about the simulation results continue to hold, and similar to the PR10 subsampling method of Politis and Romano (2010) the proposed WSNS method seems to be reasonably robust to different choices of the bandwidth.

Table 1: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with standard normal innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.879	0.933	0.980	0.907	0.953	0.985	0.861	0.922	0.966
		PR10	0.872	0.927	0.982	0.880	0.933	0.989	0.875	0.945	0.985
		S15	0.887	0.952	0.991	0.911	0.953	0.992	0.896	0.948	0.989
	1000	WSNS	0.900	0.944	0.990	0.886	0.949	0.990	0.869	0.917	0.983
		PR10	0.877	0.941	0.983	0.874	0.932	0.986	0.881	0.950	0.990
		S15	0.894	0.943	0.987	0.888	0.944	0.991	0.894	0.954	0.994
	1500	WSNS	0.912	0.955	0.993	0.904	0.970	0.996	0.877	0.925	0.977
		PR10	0.884	0.937	0.988	0.886	0.947	0.993	0.886	0.943	0.992
		S15	0.898	0.951	0.991	0.904	0.958	0.995	0.896	0.954	0.990
0.4	500	WSNS	0.888	0.943	0.983	0.896	0.952	0.988	0.872	0.923	0.969
		PR10	0.956	0.980	0.997	0.943	0.981	0.995	0.910	0.955	0.990
		S15	0.895	0.951	0.992	0.917	0.964	0.992	0.904	0.950	0.988
	1000	WSNS	0.894	0.949	0.986	0.889	0.940	0.992	0.871	0.927	0.983
		PR10	0.963	0.982	0.999	0.938	0.974	0.998	0.913	0.964	0.996
		S15	0.891	0.943	0.989	0.901	0.941	0.993	0.899	0.956	0.995
	1500	WSNS	0.909	0.953	0.993	0.907	0.956	0.994	0.874	0.926	0.973
		PR10	0.963	0.989	0.998	0.955	0.982	0.997	0.918	0.959	0.993
		S15	0.900	0.947	0.992	0.913	0.959	0.991	0.902	0.947	0.987
0.8	500	WSNS	0.903	0.947	0.985	0.890	0.941	0.980	0.861	0.919	0.969
		PR10	0.998	1.000	1.000	0.994	0.997	0.999	0.984	0.996	1.000
		S15	0.912	0.956	0.991	0.928	0.966	0.995	0.897	0.953	0.987
	1000	WSNS	0.889	0.950	0.989	0.888	0.947	0.988	0.868	0.931	0.979
		PR10	1.000	1.000	1.000	0.995	1.000	1.000	0.986	0.999	1.000
		S15	0.884	0.955	0.992	0.926	0.958	0.990	0.903	0.950	0.992
	1500	WSNS	0.901	0.952	0.992	0.884	0.952	0.991	0.880	0.930	0.976
		PR10	1.000	1.000	1.000	0.997	0.999	1.000	0.985	0.997	1.000
		S15	0.890	0.946	0.994	0.925	0.964	0.997	0.903	0.944	0.992

Table 2: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with standard normal innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.917	0.957	0.992	0.927	0.958	0.994	0.885	0.936	0.980
		PR10	0.867	0.918	0.979	0.864	0.926	0.979	0.833	0.922	0.976
		S15	0.890	0.939	0.988	0.903	0.947	0.991	0.892	0.945	0.990
	1000	WSNS	0.931	0.970	0.995	0.933	0.970	0.996	0.893	0.953	0.987
		PR10	0.872	0.932	0.985	0.863	0.927	0.978	0.841	0.932	0.989
		S15	0.892	0.941	0.987	0.908	0.952	0.987	0.903	0.959	0.989
	1500	WSNS	0.941	0.978	1.000	0.934	0.978	0.996	0.893	0.934	0.985
		PR10	0.872	0.924	0.986	0.872	0.937	0.985	0.850	0.920	0.986
		S15	0.891	0.951	0.990	0.901	0.950	0.992	0.900	0.947	0.989
0.4	500	WSNS	0.919	0.964	0.995	0.903	0.953	0.994	0.882	0.941	0.985
		PR10	0.939	0.975	0.994	0.937	0.970	0.995	0.865	0.935	0.981
		S15	0.889	0.949	0.993	0.887	0.941	0.992	0.886	0.947	0.991
	1000	WSNS	0.937	0.967	0.997	0.926	0.972	0.995	0.900	0.940	0.986
		PR10	0.962	0.985	0.999	0.947	0.978	0.996	0.883	0.955	0.988
		S15	0.898	0.943	0.992	0.913	0.953	0.989	0.904	0.948	0.991
	1500	WSNS	0.936	0.974	0.997	0.930	0.974	0.999	0.885	0.933	0.984
		PR10	0.955	0.987	0.997	0.949	0.974	0.998	0.881	0.935	0.991
		S15	0.896	0.945	0.992	0.900	0.950	0.993	0.897	0.947	0.989
0.8	500	WSNS	0.920	0.967	0.991	0.913	0.955	0.989	0.872	0.934	0.985
		PR10	0.998	1.000	1.000	0.994	0.999	1.000	0.968	0.990	1.000
		S15	0.899	0.951	0.990	0.931	0.965	0.994	0.879	0.947	0.989
	1000	WSNS	0.937	0.971	0.996	0.911	0.961	0.994	0.894	0.929	0.982
		PR10	1.000	1.000	1.000	0.996	1.000	1.000	0.985	0.996	1.000
		S15	0.910	0.947	0.993	0.920	0.960	0.995	0.892	0.941	0.986
	1500	WSNS	0.935	0.970	0.998	0.913	0.958	0.993	0.871	0.915	0.968
		PR10	1.000	1.000	1.000	0.997	0.999	1.000	0.972	0.992	1.000
		S15	0.883	0.944	0.992	0.920	0.960	0.991	0.883	0.925	0.978

Table 3: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with standard normal innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.855	0.911	0.954	0.873	0.923	0.966	0.852	0.908	0.957
		PR10	0.852	0.915	0.966	0.863	0.912	0.976	0.867	0.928	0.975
		S15	0.887	0.952	0.991	0.911	0.953	0.992	0.896	0.948	0.989
	1000	WSNS	0.878	0.928	0.976	0.874	0.922	0.976	0.866	0.924	0.973
		PR10	0.873	0.933	0.982	0.868	0.923	0.984	0.877	0.942	0.989
		S15	0.894	0.943	0.987	0.888	0.944	0.991	0.894	0.954	0.994
	1500	WSNS	0.893	0.937	0.982	0.895	0.950	0.992	0.874	0.925	0.979
		PR10	0.884	0.934	0.985	0.879	0.945	0.991	0.882	0.942	0.986
		S15	0.898	0.951	0.991	0.904	0.958	0.995	0.896	0.954	0.990
0.4	500	WSNS	0.861	0.911	0.966	0.857	0.921	0.977	0.846	0.914	0.965
		PR10	0.941	0.972	0.992	0.936	0.967	0.990	0.901	0.944	0.985
		S15	0.895	0.951	0.992	0.917	0.964	0.992	0.904	0.950	0.988
	1000	WSNS	0.875	0.923	0.978	0.878	0.921	0.978	0.871	0.919	0.974
		PR10	0.965	0.980	0.997	0.927	0.973	0.995	0.908	0.960	0.992
		S15	0.891	0.943	0.989	0.901	0.941	0.993	0.899	0.956	0.995
	1500	WSNS	0.889	0.938	0.983	0.894	0.944	0.981	0.871	0.927	0.972
		PR10	0.965	0.989	0.998	0.950	0.976	0.997	0.916	0.960	0.989
		S15	0.900	0.947	0.992	0.913	0.959	0.991	0.902	0.947	0.987
0.8	500	WSNS	0.867	0.920	0.968	0.864	0.914	0.964	0.843	0.907	0.962
		PR10	0.995	0.997	1.000	0.986	0.997	0.999	0.976	0.993	1.000
		S15	0.912	0.956	0.991	0.928	0.966	0.995	0.897	0.953	0.987
	1000	WSNS	0.883	0.936	0.980	0.882	0.931	0.978	0.869	0.925	0.971
		PR10	1.000	1.000	1.000	0.993	1.000	1.000	0.989	0.997	1.000
		S15	0.884	0.955	0.992	0.926	0.958	0.990	0.903	0.950	0.992
	1500	WSNS	0.887	0.926	0.983	0.868	0.929	0.984	0.887	0.928	0.974
		PR10	1.000	1.000	1.000	0.998	0.999	1.000	0.984	0.995	1.000
		S15	0.890	0.946	0.994	0.925	0.964	0.997	0.903	0.944	0.992

Table 4: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with standard normal innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.883	0.931	0.960	0.890	0.932	0.972	0.859	0.912	0.964
		PR10	0.852	0.908	0.970	0.859	0.910	0.971	0.848	0.917	0.976
		S15	0.890	0.939	0.988	0.903	0.947	0.991	0.892	0.945	0.990
	1000	WSNS	0.898	0.949	0.982	0.899	0.943	0.987	0.892	0.943	0.983
		PR10	0.867	0.936	0.981	0.871	0.929	0.978	0.866	0.936	0.985
		S15	0.892	0.941	0.987	0.908	0.952	0.987	0.903	0.959	0.989
	1500	WSNS	0.908	0.951	0.989	0.908	0.955	0.992	0.890	0.936	0.981
		PR10	0.872	0.930	0.985	0.878	0.939	0.985	0.877	0.935	0.977
		S15	0.891	0.951	0.990	0.901	0.950	0.992	0.900	0.947	0.989
0.4	500	WSNS	0.880	0.927	0.968	0.863	0.920	0.974	0.859	0.919	0.971
		PR10	0.936	0.971	0.992	0.928	0.965	0.991	0.877	0.930	0.978
		S15	0.889	0.949	0.993	0.887	0.941	0.992	0.886	0.947	0.991
	1000	WSNS	0.908	0.940	0.990	0.891	0.942	0.986	0.900	0.935	0.978
		PR10	0.962	0.984	0.996	0.944	0.978	0.995	0.908	0.965	0.993
		S15	0.898	0.943	0.992	0.913	0.953	0.989	0.904	0.948	0.991
	1500	WSNS	0.903	0.953	0.990	0.904	0.952	0.987	0.880	0.927	0.980
		PR10	0.956	0.988	0.997	0.952	0.976	0.996	0.894	0.943	0.990
		S15	0.896	0.945	0.992	0.900	0.950	0.993	0.897	0.947	0.989
0.8	500	WSNS	0.877	0.931	0.972	0.876	0.928	0.970	0.849	0.911	0.963
		PR10	0.995	0.999	1.000	0.988	0.998	1.000	0.964	0.989	0.999
		S15	0.899	0.951	0.990	0.931	0.965	0.994	0.879	0.947	0.989
	1000	WSNS	0.912	0.950	0.990	0.879	0.938	0.984	0.883	0.925	0.975
		PR10	1.000	1.000	1.000	0.996	1.000	1.000	0.989	0.995	1.000
		S15	0.910	0.947	0.993	0.920	0.960	0.995	0.892	0.941	0.986
	1500	WSNS	0.899	0.947	0.984	0.888	0.941	0.986	0.871	0.918	0.969
		PR10	1.000	1.000	1.000	0.998	0.999	1.000	0.977	0.993	0.999
		S15	0.883	0.944	0.992	0.920	0.960	0.991	0.883	0.925	0.978

Table 5: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with standard normal innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.830	0.889	0.947	0.849	0.908	0.956	0.826	0.881	0.940
		PR10	0.837	0.894	0.953	0.849	0.901	0.959	0.849	0.904	0.964
		S15	0.887	0.952	0.991	0.911	0.953	0.992	0.896	0.948	0.989
	1000	WSNS	0.862	0.911	0.962	0.858	0.916	0.969	0.860	0.909	0.967
		PR10	0.869	0.925	0.978	0.869	0.914	0.978	0.873	0.932	0.987
		S15	0.894	0.943	0.987	0.888	0.944	0.991	0.894	0.954	0.994
	1500	WSNS	0.886	0.925	0.976	0.885	0.932	0.987	0.877	0.923	0.975
		PR10	0.878	0.932	0.986	0.881	0.945	0.990	0.875	0.938	0.983
		S15	0.898	0.951	0.991	0.904	0.958	0.995	0.896	0.954	0.990
0.4	500	WSNS	0.841	0.887	0.947	0.847	0.904	0.961	0.833	0.882	0.943
		PR10	0.926	0.961	0.983	0.924	0.960	0.983	0.881	0.935	0.973
		S15	0.895	0.951	0.992	0.917	0.964	0.992	0.904	0.950	0.988
	1000	WSNS	0.868	0.914	0.963	0.867	0.913	0.972	0.859	0.917	0.968
		PR10	0.957	0.978	0.993	0.927	0.971	0.993	0.896	0.955	0.989
		S15	0.891	0.943	0.989	0.901	0.941	0.993	0.899	0.956	0.995
	1500	WSNS	0.882	0.928	0.975	0.882	0.936	0.979	0.863	0.924	0.971
		PR10	0.958	0.988	0.999	0.948	0.974	0.997	0.914	0.954	0.985
		S15	0.900	0.947	0.992	0.913	0.959	0.991	0.902	0.947	0.987
0.8	500	WSNS	0.845	0.895	0.945	0.855	0.905	0.953	0.831	0.890	0.943
		PR10	0.995	0.996	0.999	0.978	0.992	0.998	0.972	0.985	0.997
		S15	0.912	0.956	0.991	0.928	0.966	0.995	0.897	0.953	0.987
	1000	WSNS	0.861	0.922	0.972	0.877	0.922	0.969	0.863	0.926	0.968
		PR10	0.999	1.000	1.000	0.991	0.997	1.000	0.984	0.997	1.000
		S15	0.884	0.955	0.992	0.926	0.958	0.990	0.903	0.950	0.992
	1500	WSNS	0.869	0.923	0.980	0.857	0.926	0.981	0.877	0.924	0.971
		PR10	1.000	1.000	1.000	0.996	0.999	1.000	0.979	0.993	1.000
		S15	0.890	0.946	0.994	0.925	0.964	0.997	0.903	0.944	0.992

Table 6: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with standard normal innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.848	0.902	0.952	0.851	0.919	0.964	0.839	0.885	0.947
		PR10	0.834	0.894	0.959	0.848	0.898	0.962	0.849	0.906	0.962
		S15	0.890	0.939	0.988	0.903	0.947	0.991	0.892	0.945	0.990
	1000	WSNS	0.882	0.931	0.972	0.867	0.930	0.978	0.882	0.934	0.978
		PR10	0.865	0.931	0.976	0.868	0.918	0.972	0.867	0.933	0.980
		S15	0.892	0.941	0.987	0.908	0.952	0.987	0.903	0.959	0.989
	1500	WSNS	0.891	0.933	0.982	0.893	0.944	0.990	0.881	0.938	0.979
		PR10	0.877	0.927	0.984	0.875	0.938	0.985	0.880	0.931	0.977
		S15	0.891	0.951	0.990	0.901	0.950	0.992	0.900	0.947	0.989
0.4	500	WSNS	0.853	0.909	0.949	0.841	0.899	0.957	0.844	0.887	0.952
		PR10	0.926	0.958	0.985	0.912	0.950	0.990	0.864	0.922	0.959
		S15	0.889	0.949	0.993	0.887	0.941	0.992	0.886	0.947	0.991
	1000	WSNS	0.887	0.929	0.974	0.869	0.929	0.975	0.886	0.932	0.973
		PR10	0.958	0.980	0.995	0.937	0.975	0.994	0.905	0.956	0.991
		S15	0.898	0.943	0.992	0.913	0.953	0.989	0.904	0.948	0.991
	1500	WSNS	0.890	0.933	0.985	0.885	0.940	0.987	0.874	0.923	0.976
		PR10	0.957	0.985	0.998	0.953	0.978	0.996	0.898	0.939	0.987
		S15	0.896	0.945	0.992	0.900	0.950	0.993	0.897	0.947	0.989
0.8	500	WSNS	0.847	0.903	0.959	0.847	0.908	0.958	0.821	0.882	0.943
		PR10	0.991	0.995	0.997	0.985	0.995	0.999	0.958	0.981	0.994
		S15	0.899	0.951	0.990	0.931	0.965	0.994	0.879	0.947	0.989
	1000	WSNS	0.889	0.944	0.981	0.867	0.923	0.974	0.870	0.923	0.972
		PR10	0.999	1.000	1.000	0.994	0.998	1.000	0.984	0.994	1.000
		S15	0.910	0.947	0.993	0.920	0.960	0.995	0.892	0.941	0.986
	1500	WSNS	0.885	0.936	0.984	0.880	0.935	0.980	0.862	0.917	0.963
		PR10	1.000	1.000	1.000	0.997	0.999	1.000	0.977	0.994	0.999
		S15	0.883	0.944	0.992	0.920	0.960	0.991	0.883	0.925	0.978

Table 7: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with standard normal innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.887	0.938	0.983	0.902	0.947	0.990	0.847	0.903	0.959
		PR10	0.869	0.933	0.981	0.881	0.933	0.981	0.854	0.923	0.982
		S15	0.888	0.946	0.989	0.906	0.948	0.990	0.886	0.941	0.986
	1000	WSNS	0.903	0.952	0.989	0.908	0.960	0.996	0.858	0.919	0.977
		PR10	0.891	0.941	0.981	0.885	0.942	0.986	0.884	0.945	0.990
		S15	0.905	0.948	0.989	0.901	0.955	0.991	0.901	0.952	0.987
	1500	WSNS	0.915	0.959	0.991	0.921	0.963	0.993	0.871	0.929	0.980
		PR10	0.898	0.943	0.983	0.896	0.943	0.985	0.892	0.945	0.995
		S15	0.901	0.940	0.989	0.907	0.958	0.991	0.887	0.948	0.992
0.4	500	WSNS	0.901	0.942	0.990	0.891	0.941	0.989	0.870	0.925	0.971
		PR10	0.932	0.978	0.997	0.926	0.961	0.992	0.896	0.941	0.984
		S15	0.927	0.972	0.996	0.928	0.972	0.996	0.907	0.946	0.988
	1000	WSNS	0.911	0.953	0.990	0.914	0.963	0.994	0.875	0.933	0.984
		PR10	0.943	0.975	0.998	0.940	0.972	0.994	0.915	0.962	0.996
		S15	0.935	0.968	0.996	0.937	0.971	0.995	0.924	0.971	0.994
	1500	WSNS	0.927	0.964	0.993	0.928	0.973	0.993	0.878	0.937	0.985
		PR10	0.953	0.978	0.998	0.945	0.979	0.997	0.917	0.959	0.995
		S15	0.942	0.973	0.999	0.939	0.973	0.995	0.896	0.960	0.993
0.8	500	WSNS	0.919	0.964	0.996	0.902	0.948	0.988	0.902	0.945	0.983
		PR10	0.995	0.999	1.000	0.973	0.993	0.999	0.970	0.991	1.000
		S15	0.980	0.996	1.000	0.966	0.986	0.998	0.958	0.981	0.997
	1000	WSNS	0.934	0.978	0.997	0.915	0.958	0.993	0.901	0.951	0.988
		PR10	0.994	0.999	1.000	0.981	0.997	1.000	0.982	0.996	0.999
		S15	0.981	0.999	1.000	0.968	0.990	1.000	0.970	0.989	0.999
	1500	WSNS	0.940	0.981	0.996	0.918	0.959	0.997	0.892	0.936	0.983
		PR10	0.994	0.998	1.000	0.980	0.992	1.000	0.981	0.998	1.000
		S15	0.989	0.995	1.000	0.970	0.988	0.999	0.973	0.991	0.999

Table 8: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with standard normal innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.933	0.968	0.994	0.925	0.972	0.996	0.891	0.935	0.980
		PR10	0.864	0.929	0.979	0.858	0.930	0.976	0.812	0.900	0.972
		S15	0.878	0.941	0.989	0.897	0.939	0.988	0.889	0.949	0.989
	1000	WSNS	0.946	0.980	0.997	0.940	0.972	0.995	0.889	0.939	0.988
		PR10	0.881	0.938	0.977	0.887	0.933	0.980	0.849	0.918	0.979
		S15	0.902	0.943	0.985	0.908	0.949	0.986	0.898	0.952	0.988
	1500	WSNS	0.955	0.977	0.996	0.948	0.982	0.998	0.898	0.942	0.990
		PR10	0.888	0.939	0.983	0.896	0.939	0.981	0.827	0.922	0.990
		S15	0.904	0.941	0.987	0.902	0.944	0.986	0.896	0.943	0.989
0.4	500	WSNS	0.944	0.974	0.997	0.922	0.959	0.993	0.879	0.940	0.981
		PR10	0.927	0.976	0.996	0.915	0.959	0.989	0.873	0.928	0.979
		S15	0.925	0.969	0.997	0.931	0.967	0.993	0.910	0.956	0.991
	1000	WSNS	0.952	0.985	0.997	0.951	0.974	0.996	0.905	0.953	0.992
		PR10	0.940	0.975	0.995	0.919	0.963	0.995	0.881	0.933	0.991
		S15	0.928	0.971	0.996	0.938	0.969	0.997	0.931	0.972	0.994
	1500	WSNS	0.958	0.990	1.000	0.947	0.983	0.998	0.910	0.957	0.988
		PR10	0.947	0.977	0.998	0.934	0.965	0.995	0.867	0.941	0.993
		S15	0.935	0.971	1.000	0.937	0.965	0.995	0.907	0.957	0.990
0.8	500	WSNS	0.961	0.987	0.999	0.936	0.976	0.998	0.906	0.955	0.991
		PR10	0.992	0.998	1.000	0.984	0.995	0.999	0.952	0.984	0.998
		S15	0.985	0.995	1.000	0.976	0.994	1.000	0.976	0.985	1.000
	1000	WSNS	0.971	0.994	0.999	0.943	0.973	0.999	0.924	0.971	0.995
		PR10	0.991	0.998	1.000	0.985	0.997	1.000	0.959	0.988	0.999
		S15	0.983	0.999	1.000	0.984	0.995	1.000	0.977	0.992	0.999
	1500	WSNS	0.974	0.994	0.999	0.954	0.983	0.998	0.927	0.966	0.994
		PR10	0.993	0.998	1.000	0.985	0.995	1.000	0.965	0.991	0.999
		S15	0.989	0.997	1.000	0.978	0.994	0.999	0.967	0.990	0.998

Table 9: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with standard normal innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.861	0.914	0.967	0.876	0.923	0.975	0.825	0.893	0.957
		PR10	0.858	0.929	0.974	0.866	0.918	0.976	0.846	0.919	0.973
		S15	0.888	0.946	0.989	0.906	0.948	0.990	0.886	0.941	0.986
	1000	WSNS	0.895	0.937	0.979	0.884	0.938	0.988	0.863	0.918	0.967
		PR10	0.887	0.940	0.979	0.881	0.941	0.984	0.889	0.945	0.984
		S15	0.905	0.948	0.989	0.901	0.955	0.991	0.901	0.952	0.987
	1500	WSNS	0.900	0.953	0.988	0.902	0.954	0.987	0.881	0.932	0.983
		PR10	0.903	0.942	0.982	0.892	0.950	0.982	0.888	0.941	0.993
		S15	0.901	0.940	0.989	0.907	0.958	0.991	0.887	0.948	0.992
0.4	500	WSNS	0.885	0.929	0.970	0.862	0.922	0.975	0.840	0.908	0.965
		PR10	0.922	0.965	0.994	0.919	0.950	0.989	0.887	0.943	0.976
		S15	0.927	0.972	0.996	0.928	0.972	0.996	0.907	0.946	0.988
	1000	WSNS	0.902	0.942	0.984	0.896	0.951	0.990	0.871	0.929	0.981
		PR10	0.936	0.973	0.994	0.930	0.973	0.992	0.918	0.958	0.992
		S15	0.935	0.968	0.996	0.937	0.971	0.995	0.924	0.971	0.994
	1500	WSNS	0.909	0.954	0.991	0.908	0.961	0.994	0.876	0.937	0.985
		PR10	0.953	0.978	0.996	0.936	0.977	0.996	0.915	0.963	0.994
		S15	0.942	0.973	0.999	0.939	0.973	0.995	0.896	0.960	0.993
0.8	500	WSNS	0.895	0.938	0.984	0.878	0.927	0.981	0.893	0.938	0.975
		PR10	0.992	0.999	1.000	0.971	0.987	0.998	0.962	0.986	0.997
		S15	0.980	0.996	1.000	0.966	0.986	0.998	0.958	0.981	0.997
	1000	WSNS	0.915	0.960	0.994	0.899	0.948	0.986	0.897	0.949	0.982
		PR10	0.995	0.998	1.000	0.980	0.994	1.000	0.982	0.994	0.999
		S15	0.981	0.999	1.000	0.968	0.990	1.000	0.970	0.989	0.999
	1500	WSNS	0.922	0.964	0.993	0.892	0.957	0.994	0.890	0.937	0.981
		PR10	0.991	0.998	1.000	0.980	0.994	1.000	0.980	0.996	1.000
		S15	0.989	0.995	1.000	0.970	0.988	0.999	0.973	0.991	0.999

Table 10: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with standard normal innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.891	0.943	0.976	0.888	0.934	0.982	0.872	0.927	0.975
		PR10	0.859	0.920	0.973	0.852	0.920	0.971	0.831	0.906	0.965
		S15	0.878	0.941	0.989	0.897	0.939	0.988	0.889	0.949	0.989
	1000	WSNS	0.921	0.953	0.990	0.909	0.949	0.985	0.886	0.933	0.982
		PR10	0.881	0.931	0.976	0.888	0.934	0.979	0.872	0.933	0.976
		S15	0.902	0.943	0.985	0.908	0.949	0.986	0.898	0.952	0.988
	1500	WSNS	0.931	0.963	0.993	0.925	0.964	0.994	0.895	0.939	0.988
		PR10	0.893	0.941	0.986	0.899	0.944	0.980	0.861	0.934	0.988
		S15	0.904	0.941	0.987	0.902	0.944	0.986	0.896	0.943	0.989
0.4	500	WSNS	0.910	0.946	0.982	0.881	0.927	0.976	0.859	0.914	0.971
		PR10	0.919	0.970	0.994	0.916	0.952	0.984	0.879	0.932	0.972
		S15	0.925	0.969	0.997	0.931	0.967	0.993	0.910	0.956	0.991
	1000	WSNS	0.918	0.964	0.995	0.924	0.958	0.987	0.894	0.946	0.987
		PR10	0.937	0.976	0.993	0.924	0.963	0.993	0.895	0.942	0.986
		S15	0.928	0.971	0.996	0.938	0.969	0.997	0.931	0.972	0.994
	1500	WSNS	0.932	0.970	0.996	0.927	0.961	0.997	0.905	0.953	0.988
		PR10	0.948	0.977	0.997	0.936	0.969	0.994	0.885	0.949	0.989
		S15	0.935	0.971	1.000	0.937	0.965	0.995	0.907	0.957	0.990
0.8	500	WSNS	0.927	0.957	0.993	0.906	0.949	0.990	0.895	0.943	0.979
		PR10	0.986	0.998	1.000	0.980	0.996	0.999	0.954	0.984	0.999
		S15	0.985	0.995	1.000	0.976	0.994	1.000	0.976	0.985	1.000
	1000	WSNS	0.950	0.983	0.999	0.917	0.960	0.995	0.913	0.968	0.993
		PR10	0.992	0.998	1.000	0.984	0.996	1.000	0.973	0.990	1.000
		S15	0.983	0.999	1.000	0.984	0.995	1.000	0.977	0.992	0.999
	1500	WSNS	0.947	0.981	0.999	0.931	0.968	0.996	0.916	0.959	0.993
		PR10	0.994	0.998	0.999	0.987	0.993	1.000	0.975	0.992	0.999
		S15	0.989	0.997	1.000	0.978	0.994	0.999	0.967	0.990	0.998

Table 11: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with standard normal innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.836	0.899	0.953	0.841	0.896	0.960	0.804	0.872	0.940
		PR10	0.847	0.907	0.965	0.856	0.907	0.967	0.829	0.899	0.967
		S15	0.888	0.946	0.989	0.906	0.948	0.990	0.886	0.941	0.986
	1000	WSNS	0.883	0.929	0.969	0.870	0.929	0.982	0.857	0.913	0.966
		PR10	0.882	0.933	0.975	0.878	0.937	0.982	0.882	0.939	0.980
		S15	0.905	0.948	0.989	0.901	0.955	0.991	0.901	0.952	0.987
	1500	WSNS	0.900	0.937	0.982	0.893	0.948	0.984	0.876	0.924	0.977
		PR10	0.897	0.940	0.978	0.895	0.952	0.983	0.885	0.936	0.990
		S15	0.901	0.940	0.989	0.907	0.958	0.991	0.887	0.948	0.992
0.4	500	WSNS	0.859	0.914	0.957	0.851	0.907	0.967	0.832	0.897	0.949
		PR10	0.912	0.952	0.987	0.901	0.944	0.983	0.870	0.923	0.972
		S15	0.927	0.972	0.996	0.928	0.972	0.996	0.907	0.946	0.988
	1000	WSNS	0.884	0.930	0.975	0.882	0.941	0.979	0.871	0.925	0.979
		PR10	0.930	0.973	0.994	0.933	0.967	0.990	0.905	0.956	0.991
		S15	0.935	0.968	0.996	0.937	0.971	0.995	0.924	0.971	0.994
	1500	WSNS	0.902	0.946	0.987	0.899	0.949	0.989	0.871	0.938	0.983
		PR10	0.951	0.973	0.996	0.938	0.977	0.996	0.910	0.956	0.992
		S15	0.942	0.973	0.999	0.939	0.973	0.995	0.896	0.960	0.993
0.8	500	WSNS	0.889	0.933	0.974	0.874	0.920	0.968	0.871	0.923	0.970
		PR10	0.980	0.997	1.000	0.966	0.982	0.997	0.951	0.977	0.996
		S15	0.980	0.996	1.000	0.966	0.986	0.998	0.958	0.981	0.997
	1000	WSNS	0.909	0.948	0.992	0.897	0.940	0.988	0.892	0.948	0.978
		PR10	0.995	0.999	1.000	0.976	0.992	1.000	0.980	0.991	0.999
		S15	0.981	0.999	1.000	0.968	0.990	1.000	0.970	0.989	0.999
	1500	WSNS	0.913	0.955	0.990	0.891	0.946	0.995	0.891	0.934	0.983
		PR10	0.991	0.999	1.000	0.980	0.993	1.000	0.977	0.996	1.000
		S15	0.989	0.995	1.000	0.970	0.988	0.999	0.973	0.991	0.999

Table 12: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with standard normal innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.857	0.912	0.958	0.848	0.908	0.962	0.847	0.896	0.954
		PR10	0.849	0.898	0.967	0.842	0.906	0.960	0.822	0.891	0.956
		S15	0.878	0.941	0.989	0.897	0.939	0.988	0.889	0.949	0.989
	1000	WSNS	0.896	0.939	0.979	0.894	0.930	0.979	0.876	0.930	0.976
		PR10	0.877	0.927	0.975	0.885	0.930	0.978	0.873	0.926	0.975
		S15	0.902	0.943	0.985	0.908	0.949	0.986	0.898	0.952	0.988
	1500	WSNS	0.916	0.957	0.991	0.921	0.955	0.991	0.890	0.934	0.980
		PR10	0.897	0.939	0.982	0.901	0.945	0.977	0.866	0.934	0.987
		S15	0.904	0.941	0.987	0.902	0.944	0.986	0.896	0.943	0.989
0.4	500	WSNS	0.880	0.920	0.967	0.860	0.912	0.954	0.848	0.902	0.951
		PR10	0.909	0.955	0.989	0.902	0.942	0.981	0.871	0.925	0.963
		S15	0.925	0.969	0.997	0.931	0.967	0.993	0.910	0.956	0.991
	1000	WSNS	0.903	0.944	0.987	0.900	0.943	0.983	0.881	0.940	0.987
		PR10	0.936	0.973	0.993	0.925	0.963	0.993	0.891	0.944	0.986
		S15	0.928	0.971	0.996	0.938	0.969	0.997	0.931	0.972	0.994
	1500	WSNS	0.917	0.964	0.992	0.918	0.955	0.992	0.901	0.943	0.987
		PR10	0.943	0.977	0.996	0.941	0.970	0.993	0.894	0.947	0.987
		S15	0.935	0.971	1.000	0.937	0.965	0.995	0.907	0.957	0.990
0.8	500	WSNS	0.906	0.941	0.981	0.880	0.930	0.979	0.875	0.926	0.971
		PR10	0.982	0.996	1.000	0.972	0.991	0.999	0.948	0.978	0.998
		S15	0.985	0.995	1.000	0.976	0.994	1.000	0.976	0.985	1.000
	1000	WSNS	0.923	0.975	0.998	0.905	0.945	0.990	0.900	0.958	0.989
		PR10	0.993	0.998	1.000	0.985	0.997	1.000	0.973	0.990	1.000
		S15	0.983	0.999	1.000	0.984	0.995	1.000	0.977	0.992	0.999
	1500	WSNS	0.935	0.970	0.999	0.919	0.964	0.992	0.915	0.953	0.991
		PR10	0.996	0.998	1.000	0.988	0.994	0.999	0.975	0.993	0.999
		S15	0.989	0.997	1.000	0.978	0.994	0.999	0.967	0.990	0.998

Table 13: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with standard normal innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.884	0.935	0.985	0.898	0.941	0.984	0.866	0.919	0.970
		PR10	0.872	0.931	0.980	0.868	0.928	0.974	0.882	0.935	0.983
		S15	0.893	0.945	0.991	0.887	0.930	0.987	0.896	0.937	0.992
	1000	WSNS	0.910	0.958	0.989	0.897	0.958	0.991	0.874	0.934	0.979
		PR10	0.892	0.936	0.983	0.876	0.938	0.986	0.880	0.944	0.993
		S15	0.898	0.947	0.988	0.901	0.949	0.986	0.902	0.950	0.995
	1500	WSNS	0.919	0.959	0.996	0.920	0.968	0.997	0.869	0.929	0.983
		PR10	0.893	0.944	0.984	0.884	0.933	0.987	0.883	0.943	0.994
		S15	0.896	0.951	0.989	0.917	0.962	0.989	0.894	0.949	0.990
0.4	500	WSNS	0.892	0.942	0.984	0.890	0.939	0.981	0.866	0.908	0.976
		PR10	0.939	0.976	0.998	0.921	0.968	0.996	0.901	0.944	0.988
		S15	0.938	0.973	0.994	0.934	0.968	0.998	0.914	0.957	0.991
	1000	WSNS	0.903	0.947	0.989	0.891	0.945	0.995	0.874	0.935	0.976
		PR10	0.936	0.980	0.996	0.932	0.965	0.992	0.914	0.953	0.988
		S15	0.941	0.967	0.996	0.916	0.962	0.989	0.910	0.962	0.991
	1500	WSNS	0.891	0.952	0.993	0.904	0.954	0.995	0.865	0.929	0.978
		PR10	0.951	0.980	0.994	0.933	0.974	0.996	0.913	0.966	0.994
		S15	0.940	0.976	0.997	0.933	0.971	0.997	0.908	0.960	0.998
0.8	500	WSNS	0.900	0.947	0.984	0.871	0.918	0.978	0.874	0.923	0.969
		PR10	0.993	0.996	1.000	0.972	0.994	1.000	0.971	0.993	1.000
		S15	0.981	0.995	1.000	0.961	0.987	1.000	0.958	0.982	0.999
	1000	WSNS	0.896	0.948	0.990	0.886	0.941	0.991	0.849	0.911	0.969
		PR10	0.992	0.998	1.000	0.980	0.993	1.000	0.968	0.989	0.997
		S15	0.977	0.994	1.000	0.972	0.993	1.000	0.958	0.982	0.998
	1500	WSNS	0.900	0.956	0.991	0.880	0.943	0.991	0.854	0.917	0.968
		PR10	0.992	0.999	1.000	0.982	0.993	1.000	0.974	0.991	1.000
		S15	0.982	0.994	1.000	0.971	0.988	1.000	0.964	0.987	0.998

Table 14: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with standard normal innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.932	0.972	0.995	0.921	0.967	0.991	0.884	0.936	0.986
		PR10	0.855	0.927	0.976	0.857	0.910	0.976	0.842	0.905	0.982
		S15	0.882	0.940	0.994	0.884	0.927	0.986	0.898	0.942	0.988
	1000	WSNS	0.946	0.980	0.997	0.945	0.982	0.997	0.905	0.952	0.988
		PR10	0.873	0.934	0.981	0.862	0.940	0.978	0.842	0.917	0.983
		S15	0.892	0.955	0.985	0.903	0.954	0.990	0.900	0.952	0.992
	1500	WSNS	0.952	0.990	1.000	0.942	0.986	0.998	0.889	0.941	0.989
		PR10	0.892	0.938	0.982	0.877	0.935	0.985	0.831	0.908	0.985
		S15	0.900	0.952	0.989	0.902	0.943	0.993	0.887	0.936	0.988
0.4	500	WSNS	0.931	0.977	0.995	0.921	0.964	0.993	0.895	0.938	0.981
		PR10	0.934	0.968	0.998	0.914	0.957	0.993	0.865	0.923	0.983
		S15	0.924	0.972	0.996	0.917	0.952	0.993	0.910	0.959	0.991
	1000	WSNS	0.947	0.982	0.996	0.950	0.977	0.994	0.894	0.944	0.987
		PR10	0.931	0.974	0.995	0.923	0.961	0.995	0.875	0.931	0.989
		S15	0.929	0.965	0.998	0.926	0.964	0.996	0.906	0.955	0.991
	1500	WSNS	0.947	0.985	0.999	0.933	0.972	1.000	0.902	0.950	0.986
		PR10	0.946	0.975	0.993	0.926	0.971	0.995	0.871	0.940	0.989
		S15	0.939	0.976	0.998	0.932	0.971	0.997	0.898	0.953	0.994
0.8	500	WSNS	0.945	0.976	0.998	0.906	0.964	0.994	0.892	0.939	0.980
		PR10	0.990	0.998	1.000	0.980	0.998	1.000	0.943	0.982	0.997
		S15	0.981	0.995	0.999	0.969	0.990	1.000	0.953	0.983	0.999
	1000	WSNS	0.954	0.980	0.998	0.916	0.961	0.992	0.888	0.936	0.987
		PR10	0.987	0.996	1.000	0.986	0.994	1.000	0.946	0.981	0.999
		S15	0.981	0.994	1.000	0.975	0.992	0.999	0.954	0.985	0.998
	1500	WSNS	0.957	0.985	0.999	0.919	0.963	0.997	0.902	0.939	0.979
		PR10	0.990	0.999	1.000	0.977	0.994	1.000	0.956	0.983	1.000
		S15	0.983	0.994	1.000	0.966	0.988	0.997	0.970	0.991	0.999

Table 15: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with standard normal innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.851	0.906	0.970	0.869	0.923	0.971	0.856	0.907	0.959
		PR10	0.860	0.920	0.975	0.865	0.921	0.972	0.878	0.932	0.966
		S15	0.893	0.945	0.991	0.887	0.930	0.987	0.896	0.937	0.992
	1000	WSNS	0.886	0.939	0.977	0.874	0.934	0.984	0.876	0.932	0.977
		PR10	0.893	0.933	0.980	0.881	0.935	0.982	0.884	0.939	0.988
		S15	0.898	0.947	0.988	0.901	0.949	0.986	0.902	0.950	0.995
	1500	WSNS	0.894	0.945	0.992	0.903	0.961	0.991	0.866	0.933	0.986
		PR10	0.896	0.940	0.980	0.884	0.933	0.985	0.881	0.939	0.988
		S15	0.896	0.951	0.989	0.917	0.962	0.989	0.894	0.949	0.990
0.4	500	WSNS	0.873	0.929	0.972	0.860	0.931	0.975	0.863	0.905	0.960
		PR10	0.933	0.970	0.994	0.919	0.964	0.993	0.896	0.939	0.982
		S15	0.938	0.973	0.994	0.934	0.968	0.998	0.914	0.957	0.991
	1000	WSNS	0.882	0.943	0.986	0.872	0.927	0.988	0.884	0.938	0.972
		PR10	0.935	0.976	0.995	0.925	0.965	0.992	0.910	0.951	0.986
		S15	0.941	0.967	0.996	0.916	0.962	0.989	0.910	0.962	0.991
	1500	WSNS	0.877	0.938	0.988	0.896	0.948	0.990	0.866	0.931	0.982
		PR10	0.947	0.979	0.992	0.932	0.969	0.997	0.913	0.961	0.994
		S15	0.940	0.976	0.997	0.933	0.971	0.997	0.908	0.960	0.998
0.8	500	WSNS	0.895	0.942	0.980	0.870	0.920	0.971	0.879	0.925	0.965
		PR10	0.991	0.997	1.000	0.967	0.990	1.000	0.968	0.987	0.998
		S15	0.981	0.995	1.000	0.961	0.987	1.000	0.958	0.982	0.999
	1000	WSNS	0.887	0.947	0.988	0.884	0.935	0.982	0.865	0.923	0.972
		PR10	0.989	0.998	1.000	0.980	0.996	1.000	0.967	0.986	0.998
		S15	0.977	0.994	1.000	0.972	0.993	1.000	0.958	0.982	0.998
	1500	WSNS	0.895	0.952	0.990	0.877	0.936	0.989	0.869	0.927	0.973
		PR10	0.992	0.999	1.000	0.981	0.994	1.000	0.974	0.991	1.000
		S15	0.982	0.994	1.000	0.971	0.988	1.000	0.964	0.987	0.998

Table 16: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with standard normal innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.878	0.931	0.975	0.873	0.927	0.975	0.866	0.922	0.970
		PR10	0.852	0.909	0.974	0.848	0.908	0.968	0.855	0.914	0.963
		S15	0.882	0.940	0.994	0.884	0.927	0.986	0.898	0.942	0.988
	1000	WSNS	0.908	0.955	0.991	0.917	0.958	0.991	0.891	0.944	0.985
		PR10	0.878	0.930	0.982	0.871	0.937	0.981	0.865	0.922	0.981
		S15	0.892	0.955	0.985	0.903	0.954	0.990	0.900	0.952	0.992
	1500	WSNS	0.917	0.969	0.996	0.918	0.964	0.993	0.894	0.937	0.984
		PR10	0.894	0.941	0.980	0.879	0.937	0.984	0.855	0.922	0.984
		S15	0.900	0.952	0.989	0.902	0.943	0.993	0.887	0.936	0.988
0.4	500	WSNS	0.896	0.944	0.984	0.893	0.931	0.983	0.876	0.932	0.972
		PR10	0.927	0.962	0.992	0.911	0.954	0.987	0.875	0.929	0.973
		S15	0.924	0.972	0.996	0.917	0.952	0.993	0.910	0.959	0.991
	1000	WSNS	0.913	0.961	0.992	0.913	0.958	0.986	0.894	0.942	0.984
		PR10	0.937	0.976	0.994	0.925	0.962	0.994	0.891	0.939	0.985
		S15	0.929	0.965	0.998	0.926	0.964	0.996	0.906	0.955	0.991
	1500	WSNS	0.918	0.965	0.996	0.907	0.955	0.990	0.900	0.947	0.984
		PR10	0.947	0.977	0.992	0.932	0.969	0.993	0.901	0.950	0.988
		S15	0.939	0.976	0.998	0.932	0.971	0.997	0.898	0.953	0.994
0.8	500	WSNS	0.932	0.965	0.991	0.889	0.941	0.985	0.876	0.933	0.982
		PR10	0.989	0.995	1.000	0.978	0.994	1.000	0.947	0.977	0.999
		S15	0.981	0.995	0.999	0.969	0.990	1.000	0.953	0.983	0.999
	1000	WSNS	0.926	0.971	0.997	0.897	0.951	0.991	0.893	0.942	0.987
		PR10	0.988	0.997	1.000	0.986	0.994	1.000	0.961	0.984	0.998
		S15	0.981	0.994	1.000	0.975	0.992	0.999	0.954	0.985	0.998
	1500	WSNS	0.936	0.975	0.998	0.911	0.952	0.994	0.903	0.941	0.977
		PR10	0.989	0.998	1.000	0.982	0.993	1.000	0.963	0.985	0.999
		S15	0.983	0.994	1.000	0.966	0.988	0.997	0.970	0.991	0.999

Table 17: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with standard normal innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.835	0.888	0.954	0.846	0.902	0.958	0.837	0.892	0.942
		PR10	0.848	0.903	0.967	0.858	0.910	0.957	0.863	0.924	0.954
		S15	0.893	0.945	0.991	0.887	0.930	0.987	0.896	0.937	0.992
	1000	WSNS	0.872	0.928	0.965	0.856	0.924	0.974	0.872	0.926	0.973
		PR10	0.878	0.935	0.981	0.875	0.936	0.981	0.879	0.936	0.984
		S15	0.898	0.947	0.988	0.901	0.949	0.986	0.902	0.950	0.995
	1500	WSNS	0.879	0.934	0.986	0.883	0.951	0.988	0.866	0.925	0.980
		PR10	0.892	0.937	0.981	0.882	0.936	0.984	0.878	0.938	0.985
		S15	0.896	0.951	0.989	0.917	0.962	0.989	0.894	0.949	0.990
0.4	500	WSNS	0.863	0.913	0.958	0.844	0.904	0.961	0.853	0.901	0.951
		PR10	0.921	0.959	0.989	0.912	0.956	0.990	0.880	0.925	0.972
		S15	0.938	0.973	0.994	0.934	0.968	0.998	0.914	0.957	0.991
	1000	WSNS	0.870	0.929	0.974	0.863	0.915	0.978	0.873	0.928	0.974
		PR10	0.935	0.973	0.995	0.920	0.958	0.994	0.901	0.944	0.985
		S15	0.941	0.967	0.996	0.916	0.962	0.989	0.910	0.962	0.991
	1500	WSNS	0.872	0.934	0.985	0.893	0.940	0.985	0.867	0.925	0.979
		PR10	0.945	0.979	0.994	0.931	0.970	0.997	0.908	0.956	0.993
		S15	0.940	0.976	0.997	0.933	0.971	0.997	0.908	0.960	0.998
0.8	500	WSNS	0.891	0.938	0.980	0.856	0.905	0.965	0.875	0.915	0.966
		PR10	0.980	0.995	1.000	0.954	0.985	0.997	0.958	0.986	0.996
		S15	0.981	0.995	1.000	0.961	0.987	1.000	0.958	0.982	0.999
	1000	WSNS	0.885	0.938	0.985	0.872	0.931	0.980	0.868	0.916	0.972
		PR10	0.991	0.998	1.000	0.982	0.993	1.000	0.965	0.984	0.998
		S15	0.977	0.994	1.000	0.972	0.993	1.000	0.958	0.982	0.998
	1500	WSNS	0.893	0.946	0.989	0.874	0.931	0.989	0.880	0.927	0.975
		PR10	0.991	0.997	1.000	0.977	0.996	1.000	0.973	0.986	1.000
		S15	0.982	0.994	1.000	0.971	0.988	1.000	0.964	0.987	0.998

Table 18: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with standard normal innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.851	0.900	0.959	0.845	0.904	0.962	0.851	0.902	0.954
		PR10	0.845	0.897	0.957	0.843	0.905	0.956	0.850	0.910	0.954
		S15	0.882	0.940	0.994	0.884	0.927	0.986	0.898	0.942	0.988
	1000	WSNS	0.879	0.940	0.977	0.897	0.944	0.985	0.877	0.935	0.981
		PR10	0.875	0.927	0.982	0.867	0.936	0.978	0.869	0.917	0.981
		S15	0.892	0.955	0.985	0.903	0.954	0.990	0.900	0.952	0.992
	1500	WSNS	0.905	0.949	0.992	0.899	0.951	0.991	0.883	0.928	0.981
		PR10	0.894	0.940	0.979	0.878	0.936	0.983	0.862	0.930	0.986
		S15	0.900	0.952	0.989	0.902	0.943	0.993	0.887	0.936	0.988
0.4	500	WSNS	0.872	0.923	0.967	0.868	0.916	0.963	0.862	0.914	0.960
		PR10	0.919	0.953	0.989	0.902	0.947	0.982	0.868	0.927	0.966
		S15	0.924	0.972	0.996	0.917	0.952	0.993	0.910	0.959	0.991
	1000	WSNS	0.894	0.943	0.984	0.897	0.947	0.980	0.884	0.937	0.979
		PR10	0.938	0.974	0.994	0.927	0.961	0.994	0.894	0.941	0.984
		S15	0.929	0.965	0.998	0.926	0.964	0.996	0.906	0.955	0.991
	1500	WSNS	0.898	0.953	0.993	0.892	0.944	0.990	0.888	0.941	0.983
		PR10	0.945	0.977	0.992	0.932	0.967	0.993	0.905	0.948	0.986
		S15	0.939	0.976	0.998	0.932	0.971	0.997	0.898	0.953	0.994
0.8	500	WSNS	0.914	0.958	0.982	0.875	0.934	0.978	0.872	0.925	0.973
		PR10	0.981	0.994	1.000	0.976	0.994	1.000	0.944	0.974	0.995
		S15	0.981	0.995	0.999	0.969	0.990	1.000	0.953	0.983	0.999
	1000	WSNS	0.909	0.957	0.990	0.878	0.942	0.984	0.896	0.938	0.985
		PR10	0.987	0.997	1.000	0.987	0.994	1.000	0.963	0.986	0.997
		S15	0.981	0.994	1.000	0.975	0.992	0.999	0.954	0.985	0.998
	1500	WSNS	0.929	0.968	0.992	0.901	0.948	0.992	0.902	0.942	0.980
		PR10	0.990	0.996	1.000	0.982	0.993	1.000	0.961	0.986	0.999
		S15	0.983	0.994	1.000	0.966	0.988	0.997	0.970	0.991	0.999

Table 19: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with t_5 innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.886	0.941	0.982	0.873	0.932	0.978	0.894	0.948	0.985
		PR10	0.875	0.929	0.976	0.878	0.934	0.976	0.852	0.953	0.993
		S15	0.894	0.953	0.991	0.889	0.943	0.983	0.911	0.958	0.994
	1000	WSNS	0.893	0.949	0.985	0.903	0.957	0.992	0.902	0.944	0.990
		PR10	0.874	0.930	0.985	0.886	0.938	0.986	0.851	0.938	0.997
		S15	0.892	0.946	0.988	0.906	0.957	0.989	0.918	0.948	0.994
	1500	WSNS	0.928	0.965	0.993	0.901	0.951	0.988	0.901	0.934	0.980
		PR10	0.891	0.946	0.987	0.897	0.956	0.988	0.843	0.924	0.994
		S15	0.915	0.959	0.990	0.905	0.951	0.985	0.906	0.951	0.987
0.4	500	WSNS	0.887	0.936	0.980	0.871	0.935	0.979	0.891	0.940	0.977
		PR10	0.948	0.975	0.992	0.947	0.981	0.994	0.891	0.972	0.996
		S15	0.890	0.947	0.989	0.904	0.954	0.990	0.902	0.952	0.992
	1000	WSNS	0.890	0.946	0.986	0.898	0.950	0.992	0.910	0.951	0.987
		PR10	0.955	0.982	0.997	0.949	0.986	0.998	0.894	0.966	1.000
		S15	0.896	0.943	0.988	0.907	0.959	0.991	0.916	0.958	0.993
	1500	WSNS	0.919	0.962	0.990	0.890	0.941	0.990	0.890	0.934	0.981
		PR10	0.965	0.988	0.999	0.955	0.986	0.999	0.874	0.948	0.997
		S15	0.918	0.957	0.991	0.909	0.950	0.989	0.910	0.954	0.988
0.8	500	WSNS	0.896	0.938	0.983	0.865	0.938	0.985	0.875	0.927	0.978
		PR10	0.995	0.998	1.000	0.991	0.996	1.000	0.992	0.996	1.000
		S15	0.898	0.952	0.989	0.927	0.966	0.996	0.901	0.949	0.994
	1000	WSNS	0.885	0.944	0.985	0.888	0.956	0.994	0.905	0.948	0.987
		PR10	0.999	1.000	1.000	0.996	0.999	1.000	0.996	1.000	1.000
		S15	0.883	0.938	0.989	0.931	0.975	0.997	0.921	0.961	0.994
	1500	WSNS	0.907	0.956	0.992	0.879	0.939	0.992	0.870	0.930	0.982
		PR10	1.000	1.000	1.000	0.995	1.000	1.000	0.990	1.000	1.000
		S15	0.908	0.951	0.988	0.914	0.960	0.995	0.895	0.953	0.989

Table 20: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with t_5 innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.924	0.964	0.988	0.919	0.959	0.990	0.926	0.974	0.996
		PR10	0.880	0.926	0.972	0.860	0.922	0.974	0.816	0.919	0.985
		S15	0.900	0.945	0.987	0.897	0.943	0.988	0.903	0.961	0.995
	1000	WSNS	0.926	0.976	0.993	0.920	0.965	0.994	0.921	0.961	0.994
		PR10	0.863	0.921	0.983	0.867	0.935	0.978	0.805	0.916	0.991
		S15	0.892	0.943	0.989	0.881	0.943	0.987	0.906	0.950	0.993
	1500	WSNS	0.953	0.982	0.996	0.945	0.977	0.995	0.912	0.955	0.987
		PR10	0.886	0.935	0.986	0.901	0.949	0.986	0.800	0.905	0.990
		S15	0.915	0.958	0.992	0.912	0.959	0.990	0.910	0.948	0.987
0.4	500	WSNS	0.925	0.969	0.988	0.923	0.963	0.992	0.915	0.962	0.994
		PR10	0.941	0.969	0.991	0.936	0.974	0.996	0.862	0.942	0.990
		S15	0.901	0.947	0.987	0.901	0.959	0.993	0.902	0.958	0.991
	1000	WSNS	0.936	0.971	0.996	0.920	0.965	0.996	0.913	0.963	0.989
		PR10	0.946	0.980	0.997	0.939	0.973	0.996	0.847	0.937	0.998
		S15	0.892	0.948	0.989	0.899	0.946	0.990	0.902	0.954	0.989
	1500	WSNS	0.945	0.983	0.996	0.936	0.976	0.997	0.912	0.948	0.992
		PR10	0.965	0.987	0.998	0.960	0.983	0.998	0.854	0.932	0.994
		S15	0.908	0.949	0.990	0.902	0.961	0.995	0.912	0.949	0.990
0.8	500	WSNS	0.932	0.964	0.990	0.921	0.958	0.991	0.910	0.954	0.990
		PR10	0.996	0.997	1.000	0.992	0.998	0.999	0.978	0.998	1.000
		S15	0.907	0.948	0.991	0.928	0.963	0.993	0.895	0.948	0.991
	1000	WSNS	0.924	0.964	0.995	0.908	0.960	0.993	0.910	0.953	0.982
		PR10	0.999	0.999	1.000	0.998	1.000	1.000	0.986	0.999	1.000
		S15	0.875	0.935	0.991	0.917	0.961	0.995	0.893	0.950	0.991
	1500	WSNS	0.942	0.976	0.996	0.921	0.967	0.995	0.927	0.965	0.987
		PR10	1.000	1.000	1.000	0.997	1.000	1.000	0.981	1.000	1.000
		S15	0.904	0.944	0.989	0.928	0.967	0.992	0.921	0.963	0.989

Table 21: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with t_5 innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.864	0.918	0.961	0.850	0.911	0.961	0.886	0.935	0.977
		PR10	0.864	0.921	0.972	0.859	0.924	0.972	0.878	0.932	0.976
		S15	0.894	0.953	0.991	0.889	0.943	0.983	0.911	0.958	0.994
	1000	WSNS	0.884	0.926	0.979	0.883	0.945	0.986	0.907	0.942	0.983
		PR10	0.869	0.926	0.980	0.881	0.932	0.982	0.875	0.951	0.991
		S15	0.892	0.946	0.988	0.906	0.957	0.989	0.918	0.948	0.994
	1500	WSNS	0.910	0.956	0.987	0.894	0.942	0.981	0.894	0.935	0.981
		PR10	0.890	0.939	0.985	0.894	0.946	0.984	0.864	0.936	0.990
		S15	0.915	0.959	0.990	0.905	0.951	0.985	0.906	0.951	0.987
0.4	500	WSNS	0.863	0.917	0.965	0.847	0.907	0.962	0.879	0.922	0.967
		PR10	0.935	0.970	0.991	0.929	0.965	0.989	0.911	0.961	0.985
		S15	0.890	0.947	0.989	0.904	0.954	0.990	0.902	0.952	0.992
	1000	WSNS	0.880	0.931	0.977	0.873	0.925	0.982	0.909	0.952	0.984
		PR10	0.955	0.979	0.997	0.942	0.980	0.995	0.909	0.970	0.998
		S15	0.896	0.943	0.988	0.907	0.959	0.991	0.916	0.958	0.993
	1500	WSNS	0.908	0.955	0.987	0.877	0.932	0.983	0.886	0.934	0.978
		PR10	0.963	0.986	0.999	0.954	0.982	0.999	0.889	0.960	0.994
		S15	0.918	0.957	0.991	0.909	0.950	0.989	0.910	0.954	0.988
0.8	500	WSNS	0.876	0.922	0.967	0.845	0.913	0.970	0.866	0.919	0.957
		PR10	0.993	0.997	0.999	0.983	0.994	0.999	0.985	0.996	0.998
		S15	0.898	0.952	0.989	0.927	0.966	0.996	0.901	0.949	0.994
	1000	WSNS	0.874	0.926	0.983	0.874	0.939	0.988	0.913	0.946	0.982
		PR10	0.999	1.000	1.000	0.995	0.998	1.000	0.997	1.000	1.000
		S15	0.883	0.938	0.989	0.931	0.975	0.997	0.921	0.961	0.994
	1500	WSNS	0.901	0.943	0.987	0.870	0.932	0.985	0.879	0.928	0.982
		PR10	1.000	1.000	1.000	0.996	1.000	1.000	0.991	1.000	1.000
		S15	0.908	0.951	0.988	0.914	0.960	0.995	0.895	0.953	0.989

Table 22: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with t_5 innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.881	0.936	0.974	0.875	0.934	0.974	0.906	0.946	0.987
		PR10	0.871	0.917	0.969	0.864	0.911	0.969	0.854	0.907	0.975
		S15	0.900	0.945	0.987	0.897	0.943	0.988	0.903	0.961	0.995
	1000	WSNS	0.898	0.947	0.984	0.878	0.937	0.982	0.909	0.950	0.988
		PR10	0.861	0.917	0.979	0.873	0.926	0.975	0.844	0.936	0.989
		S15	0.892	0.943	0.989	0.881	0.943	0.987	0.906	0.950	0.993
	1500	WSNS	0.926	0.966	0.990	0.921	0.963	0.991	0.911	0.947	0.987
		PR10	0.889	0.939	0.987	0.899	0.948	0.985	0.838	0.922	0.988
		S15	0.915	0.958	0.992	0.912	0.959	0.990	0.910	0.948	0.987
0.4	500	WSNS	0.890	0.946	0.973	0.877	0.933	0.977	0.892	0.937	0.983
		PR10	0.935	0.967	0.991	0.930	0.965	0.992	0.880	0.937	0.981
		S15	0.901	0.947	0.987	0.901	0.959	0.993	0.902	0.958	0.991
	1000	WSNS	0.907	0.949	0.985	0.892	0.941	0.982	0.904	0.956	0.987
		PR10	0.944	0.977	0.996	0.932	0.972	0.996	0.882	0.951	0.994
		S15	0.892	0.948	0.989	0.899	0.946	0.990	0.902	0.954	0.989
	1500	WSNS	0.917	0.964	0.990	0.893	0.957	0.990	0.907	0.951	0.986
		PR10	0.966	0.985	0.999	0.959	0.981	0.998	0.880	0.949	0.993
		S15	0.908	0.949	0.990	0.902	0.961	0.995	0.912	0.949	0.990
0.8	500	WSNS	0.888	0.942	0.978	0.887	0.935	0.978	0.889	0.928	0.972
		PR10	0.991	0.997	1.000	0.988	0.995	0.999	0.985	0.997	1.000
		S15	0.907	0.948	0.991	0.928	0.963	0.993	0.895	0.948	0.991
	1000	WSNS	0.891	0.934	0.984	0.877	0.938	0.980	0.897	0.939	0.981
		PR10	0.999	0.999	1.000	0.996	0.999	1.000	0.993	1.000	1.000
		S15	0.875	0.935	0.991	0.917	0.961	0.995	0.893	0.950	0.991
	1500	WSNS	0.915	0.956	0.991	0.892	0.952	0.984	0.923	0.964	0.988
		PR10	1.000	1.000	1.000	0.998	0.999	1.000	0.991	0.999	1.000
		S15	0.904	0.944	0.989	0.928	0.967	0.992	0.921	0.963	0.989

Table 23: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with t_5 innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.829	0.896	0.940	0.836	0.877	0.947	0.869	0.919	0.963
		PR10	0.846	0.905	0.962	0.850	0.906	0.964	0.853	0.912	0.958
		S15	0.894	0.953	0.991	0.889	0.943	0.983	0.911	0.958	0.994
	1000	WSNS	0.861	0.922	0.967	0.877	0.936	0.979	0.896	0.938	0.980
		PR10	0.861	0.916	0.974	0.880	0.925	0.981	0.868	0.945	0.985
		S15	0.892	0.946	0.988	0.906	0.957	0.989	0.918	0.948	0.994
	1500	WSNS	0.904	0.948	0.984	0.881	0.930	0.971	0.893	0.929	0.974
		PR10	0.899	0.935	0.984	0.891	0.946	0.984	0.865	0.946	0.987
		S15	0.915	0.959	0.990	0.905	0.951	0.985	0.906	0.951	0.987
0.4	500	WSNS	0.834	0.894	0.947	0.830	0.881	0.942	0.860	0.906	0.957
		PR10	0.922	0.959	0.984	0.916	0.956	0.987	0.895	0.937	0.977
		S15	0.890	0.947	0.989	0.904	0.954	0.990	0.902	0.952	0.992
	1000	WSNS	0.867	0.919	0.969	0.857	0.918	0.974	0.908	0.947	0.980
		PR10	0.952	0.975	0.995	0.937	0.971	0.994	0.909	0.963	0.993
		S15	0.896	0.943	0.988	0.907	0.959	0.991	0.916	0.958	0.993
	1500	WSNS	0.895	0.949	0.981	0.864	0.930	0.974	0.883	0.938	0.972
		PR10	0.960	0.982	0.999	0.954	0.981	0.998	0.894	0.964	0.992
		S15	0.918	0.957	0.991	0.909	0.950	0.989	0.910	0.954	0.988
0.8	500	WSNS	0.849	0.895	0.953	0.821	0.892	0.967	0.847	0.893	0.941
		PR10	0.990	0.994	0.999	0.973	0.992	0.998	0.975	0.984	0.997
		S15	0.898	0.952	0.989	0.927	0.966	0.996	0.901	0.949	0.994
	1000	WSNS	0.856	0.911	0.970	0.865	0.931	0.983	0.902	0.935	0.976
		PR10	0.995	0.999	1.000	0.993	0.998	1.000	0.992	1.000	1.000
		S15	0.883	0.938	0.989	0.931	0.975	0.997	0.921	0.961	0.994
	1500	WSNS	0.890	0.935	0.980	0.863	0.921	0.981	0.869	0.930	0.975
		PR10	1.000	1.000	1.000	0.994	1.000	1.000	0.993	1.000	1.000
		S15	0.908	0.951	0.988	0.914	0.960	0.995	0.895	0.953	0.989

Table 24: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with t_5 innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.854	0.905	0.951	0.853	0.905	0.952	0.874	0.925	0.969
		PR10	0.850	0.907	0.950	0.844	0.897	0.953	0.838	0.897	0.958
		S15	0.900	0.945	0.987	0.897	0.943	0.988	0.903	0.961	0.995
	1000	WSNS	0.884	0.928	0.977	0.864	0.923	0.978	0.899	0.949	0.983
		PR10	0.856	0.910	0.976	0.870	0.921	0.973	0.855	0.933	0.980
		S15	0.892	0.943	0.989	0.881	0.943	0.987	0.906	0.950	0.993
	1500	WSNS	0.914	0.953	0.985	0.896	0.951	0.984	0.901	0.940	0.980
		PR10	0.892	0.942	0.984	0.898	0.948	0.987	0.855	0.940	0.981
		S15	0.915	0.958	0.992	0.912	0.959	0.990	0.910	0.948	0.987
0.4	500	WSNS	0.857	0.912	0.957	0.853	0.908	0.964	0.871	0.919	0.970
		PR10	0.920	0.955	0.986	0.915	0.961	0.986	0.870	0.920	0.972
		S15	0.901	0.947	0.987	0.901	0.959	0.993	0.902	0.958	0.991
	1000	WSNS	0.878	0.933	0.973	0.867	0.926	0.976	0.891	0.944	0.981
		PR10	0.945	0.975	0.995	0.935	0.972	0.995	0.884	0.948	0.985
		S15	0.892	0.948	0.989	0.899	0.946	0.990	0.902	0.954	0.989
	1500	WSNS	0.904	0.955	0.984	0.883	0.934	0.984	0.901	0.941	0.980
		PR10	0.963	0.983	0.998	0.957	0.981	0.998	0.894	0.953	0.992
		S15	0.908	0.949	0.990	0.902	0.961	0.995	0.912	0.949	0.990
0.8	500	WSNS	0.860	0.910	0.959	0.865	0.907	0.959	0.853	0.913	0.961
		PR10	0.991	0.997	0.999	0.979	0.990	0.998	0.980	0.995	0.999
		S15	0.907	0.948	0.991	0.928	0.963	0.993	0.895	0.948	0.991
	1000	WSNS	0.860	0.921	0.971	0.862	0.928	0.975	0.888	0.936	0.978
		PR10	0.998	0.999	1.000	0.994	0.999	1.000	0.993	0.998	1.000
		S15	0.875	0.935	0.991	0.917	0.961	0.995	0.893	0.950	0.991
	1500	WSNS	0.903	0.942	0.983	0.886	0.938	0.977	0.913	0.954	0.986
		PR10	1.000	1.000	1.000	0.997	0.999	1.000	0.993	0.999	1.000
		S15	0.904	0.944	0.989	0.928	0.967	0.992	0.921	0.963	0.989

Table 25: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with t_5 innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.893	0.946	0.986	0.899	0.953	0.986	0.894	0.942	0.980
		PR10	0.886	0.936	0.974	0.885	0.934	0.981	0.840	0.930	0.983
		S15	0.900	0.939	0.979	0.907	0.947	0.987	0.897	0.954	0.988
	1000	WSNS	0.905	0.947	0.985	0.908	0.951	0.993	0.887	0.937	0.986
		PR10	0.880	0.942	0.983	0.887	0.942	0.985	0.836	0.929	0.994
		S15	0.897	0.941	0.992	0.890	0.942	0.990	0.895	0.955	0.988
	1500	WSNS	0.924	0.961	0.993	0.931	0.971	0.995	0.886	0.944	0.983
		PR10	0.894	0.940	0.988	0.902	0.948	0.989	0.832	0.930	0.997
		S15	0.917	0.960	0.992	0.911	0.964	0.993	0.891	0.945	0.989
0.4	500	WSNS	0.913	0.951	0.988	0.908	0.952	0.983	0.897	0.943	0.983
		PR10	0.938	0.968	0.993	0.931	0.971	0.993	0.874	0.950	0.991
		S15	0.937	0.969	0.994	0.940	0.971	0.990	0.918	0.962	0.993
	1000	WSNS	0.920	0.957	0.990	0.921	0.960	0.993	0.893	0.945	0.980
		PR10	0.943	0.982	0.997	0.948	0.974	0.997	0.883	0.954	0.996
		S15	0.945	0.972	0.996	0.937	0.968	0.994	0.913	0.961	0.993
	1500	WSNS	0.926	0.964	0.993	0.905	0.966	0.999	0.889	0.940	0.981
		PR10	0.947	0.980	0.996	0.943	0.971	0.998	0.854	0.945	0.998
		S15	0.941	0.975	0.999	0.938	0.968	0.997	0.906	0.951	0.992
0.8	500	WSNS	0.932	0.966	0.994	0.923	0.970	0.995	0.908	0.956	0.994
		PR10	0.992	0.998	1.000	0.982	0.994	0.999	0.970	0.991	0.999
		S15	0.984	0.997	1.000	0.976	0.992	1.000	0.975	0.991	1.000
	1000	WSNS	0.936	0.969	0.998	0.918	0.960	0.995	0.924	0.960	0.992
		PR10	0.998	0.999	1.000	0.985	0.995	0.999	0.973	0.994	1.000
		S15	0.986	0.996	1.000	0.970	0.989	0.999	0.978	0.993	0.999
	1500	WSNS	0.943	0.971	0.995	0.912	0.962	0.995	0.892	0.958	0.991
		PR10	0.992	0.999	1.000	0.986	0.996	0.999	0.968	0.994	1.000
		S15	0.982	0.996	1.000	0.977	0.992	0.999	0.973	0.988	0.998

Table 26: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with t_5 innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.933	0.975	0.994	0.933	0.970	0.996	0.921	0.964	0.991
		PR10	0.875	0.923	0.977	0.871	0.920	0.978	0.820	0.912	0.981
		S15	0.891	0.939	0.987	0.892	0.941	0.988	0.910	0.949	0.986
	1000	WSNS	0.940	0.974	0.998	0.935	0.977	0.996	0.918	0.958	0.989
		PR10	0.872	0.936	0.981	0.873	0.934	0.988	0.801	0.905	0.991
		S15	0.897	0.939	0.992	0.895	0.946	0.991	0.901	0.940	0.988
	1500	WSNS	0.953	0.980	1.000	0.956	0.987	0.998	0.907	0.952	0.994
		PR10	0.884	0.937	0.984	0.891	0.938	0.983	0.796	0.906	0.996
		S15	0.916	0.958	0.994	0.903	0.958	0.993	0.901	0.953	0.990
0.4	500	WSNS	0.947	0.976	0.995	0.939	0.974	0.998	0.921	0.960	0.991
		PR10	0.931	0.966	0.991	0.925	0.961	0.990	0.834	0.916	0.987
		S15	0.938	0.973	0.997	0.930	0.966	0.993	0.903	0.958	0.988
	1000	WSNS	0.950	0.983	0.997	0.942	0.983	0.999	0.909	0.959	0.992
		PR10	0.940	0.981	0.998	0.954	0.976	0.998	0.845	0.928	0.991
		S15	0.938	0.975	0.998	0.945	0.980	0.997	0.919	0.959	0.992
	1500	WSNS	0.962	0.984	0.999	0.952	0.977	0.999	0.914	0.960	0.994
		PR10	0.941	0.972	0.996	0.929	0.968	0.997	0.840	0.927	0.996
		S15	0.942	0.979	0.999	0.937	0.973	0.996	0.914	0.965	0.995
0.8	500	WSNS	0.972	0.986	0.998	0.954	0.979	0.997	0.925	0.975	0.997
		PR10	0.990	0.997	1.000	0.980	0.996	0.998	0.943	0.984	0.998
		S15	0.984	0.994	1.000	0.975	0.992	0.999	0.966	0.992	1.000
	1000	WSNS	0.975	0.992	1.000	0.947	0.976	0.999	0.930	0.963	0.995
		PR10	0.997	0.999	1.000	0.990	0.998	1.000	0.957	0.989	1.000
		S15	0.983	0.994	1.000	0.972	0.993	1.000	0.966	0.991	0.998
	1500	WSNS	0.969	0.990	0.998	0.962	0.981	0.999	0.944	0.975	0.996
		PR10	0.991	0.999	1.000	0.989	0.997	1.000	0.965	0.992	1.000
		S15	0.986	0.995	1.000	0.981	0.994	1.000	0.982	0.995	1.000

Table 27: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with t_5 innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.872	0.929	0.968	0.861	0.924	0.972	0.889	0.928	0.968
		PR10	0.872	0.924	0.970	0.861	0.922	0.974	0.855	0.925	0.975
		S15	0.900	0.939	0.979	0.907	0.947	0.987	0.897	0.954	0.988
	1000	WSNS	0.894	0.935	0.978	0.889	0.930	0.984	0.894	0.938	0.984
		PR10	0.878	0.937	0.982	0.879	0.939	0.981	0.856	0.934	0.989
		S15	0.897	0.941	0.992	0.890	0.942	0.990	0.895	0.955	0.988
	1500	WSNS	0.908	0.952	0.989	0.917	0.961	0.992	0.884	0.943	0.986
		PR10	0.894	0.939	0.984	0.899	0.944	0.986	0.848	0.937	0.993
		S15	0.917	0.960	0.992	0.911	0.964	0.993	0.891	0.945	0.989
0.4	500	WSNS	0.887	0.926	0.976	0.887	0.934	0.969	0.882	0.922	0.975
		PR10	0.933	0.962	0.990	0.930	0.963	0.989	0.888	0.941	0.980
		S15	0.937	0.969	0.994	0.940	0.971	0.990	0.918	0.962	0.993
	1000	WSNS	0.897	0.942	0.981	0.906	0.952	0.990	0.894	0.945	0.982
		PR10	0.946	0.979	0.998	0.937	0.967	0.994	0.890	0.952	0.992
		S15	0.945	0.972	0.996	0.937	0.968	0.994	0.913	0.961	0.993
	1500	WSNS	0.909	0.955	0.989	0.891	0.948	0.994	0.883	0.943	0.984
		PR10	0.950	0.972	0.996	0.943	0.970	0.996	0.875	0.948	0.994
		S15	0.941	0.975	0.999	0.938	0.968	0.997	0.906	0.951	0.992
0.8	500	WSNS	0.907	0.952	0.987	0.904	0.957	0.988	0.906	0.949	0.985
		PR10	0.984	0.998	0.999	0.976	0.995	0.999	0.971	0.986	0.998
		S15	0.984	0.997	1.000	0.976	0.992	1.000	0.975	0.991	1.000
	1000	WSNS	0.914	0.958	0.993	0.901	0.948	0.988	0.917	0.957	0.992
		PR10	0.996	0.999	1.000	0.975	0.994	0.999	0.978	0.995	1.000
		S15	0.986	0.996	1.000	0.970	0.989	0.999	0.978	0.993	0.999
	1500	WSNS	0.925	0.960	0.991	0.902	0.954	0.989	0.891	0.950	0.987
		PR10	0.992	0.999	1.000	0.986	0.996	0.999	0.973	0.993	1.000
		S15	0.982	0.996	1.000	0.977	0.992	0.999	0.973	0.988	0.998

Table 28: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with t_5 innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.890	0.933	0.979	0.881	0.941	0.979	0.897	0.951	0.985
		PR10	0.859	0.917	0.969	0.868	0.921	0.975	0.850	0.916	0.966
		S15	0.891	0.939	0.987	0.892	0.941	0.988	0.910	0.949	0.986
	1000	WSNS	0.922	0.954	0.988	0.914	0.960	0.990	0.920	0.954	0.985
		PR10	0.875	0.936	0.978	0.870	0.932	0.986	0.837	0.917	0.985
		S15	0.897	0.939	0.992	0.895	0.946	0.991	0.901	0.940	0.988
	1500	WSNS	0.933	0.964	0.994	0.922	0.974	0.995	0.904	0.954	0.991
		PR10	0.891	0.935	0.983	0.893	0.946	0.984	0.836	0.932	0.992
		S15	0.916	0.958	0.994	0.903	0.958	0.993	0.901	0.953	0.990
0.4	500	WSNS	0.905	0.951	0.986	0.896	0.959	0.982	0.898	0.938	0.980
		PR10	0.922	0.961	0.991	0.921	0.958	0.989	0.860	0.924	0.975
		S15	0.938	0.973	0.997	0.930	0.966	0.993	0.903	0.958	0.988
	1000	WSNS	0.929	0.963	0.993	0.910	0.958	0.995	0.904	0.946	0.988
		PR10	0.940	0.979	0.998	0.952	0.978	0.997	0.881	0.941	0.987
		S15	0.938	0.975	0.998	0.945	0.980	0.997	0.919	0.959	0.992
	1500	WSNS	0.934	0.970	0.996	0.927	0.969	0.996	0.907	0.957	0.990
		PR10	0.945	0.973	0.994	0.935	0.967	0.996	0.869	0.947	0.999
		S15	0.942	0.979	0.999	0.937	0.973	0.996	0.914	0.965	0.995
0.8	500	WSNS	0.935	0.971	0.994	0.920	0.962	0.990	0.911	0.956	0.988
		PR10	0.988	0.997	0.999	0.982	0.994	0.998	0.952	0.984	0.994
		S15	0.984	0.994	1.000	0.975	0.992	0.999	0.966	0.992	1.000
	1000	WSNS	0.946	0.981	0.999	0.928	0.967	0.992	0.920	0.953	0.988
		PR10	0.996	0.999	1.000	0.988	0.997	0.998	0.974	0.993	1.000
		S15	0.983	0.994	1.000	0.972	0.993	1.000	0.966	0.991	0.998
	1500	WSNS	0.948	0.977	0.997	0.935	0.973	0.995	0.931	0.973	0.995
		PR10	0.991	0.999	1.000	0.991	0.997	1.000	0.979	0.995	1.000
		S15	0.986	0.995	1.000	0.981	0.994	1.000	0.982	0.995	1.000

Table 29: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with t_5 innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.848	0.906	0.952	0.851	0.906	0.962	0.867	0.908	0.959
		PR10	0.855	0.916	0.965	0.848	0.913	0.972	0.852	0.909	0.958
		S15	0.900	0.939	0.979	0.907	0.947	0.987	0.897	0.954	0.988
	1000	WSNS	0.887	0.927	0.965	0.882	0.932	0.973	0.887	0.937	0.976
		PR10	0.874	0.931	0.978	0.880	0.932	0.979	0.860	0.938	0.983
		S15	0.897	0.941	0.992	0.890	0.942	0.990	0.895	0.955	0.988
	1500	WSNS	0.897	0.948	0.986	0.907	0.956	0.987	0.883	0.940	0.983
		PR10	0.893	0.937	0.983	0.897	0.944	0.987	0.852	0.941	0.991
		S15	0.917	0.960	0.992	0.911	0.964	0.993	0.891	0.945	0.989
0.4	500	WSNS	0.880	0.913	0.962	0.862	0.922	0.959	0.863	0.915	0.958
		PR10	0.924	0.959	0.984	0.916	0.958	0.978	0.882	0.929	0.969
		S15	0.937	0.969	0.994	0.940	0.971	0.990	0.918	0.962	0.993
	1000	WSNS	0.886	0.933	0.978	0.897	0.941	0.977	0.879	0.942	0.978
		PR10	0.935	0.975	0.995	0.936	0.967	0.991	0.896	0.954	0.988
		S15	0.945	0.972	0.996	0.937	0.968	0.994	0.913	0.961	0.993
	1500	WSNS	0.908	0.952	0.986	0.887	0.942	0.990	0.880	0.935	0.979
		PR10	0.945	0.972	0.995	0.943	0.967	0.997	0.883	0.951	0.990
		S15	0.941	0.975	0.999	0.938	0.968	0.997	0.906	0.951	0.992
0.8	500	WSNS	0.891	0.936	0.978	0.896	0.946	0.984	0.898	0.937	0.973
		PR10	0.987	0.996	0.999	0.972	0.994	0.999	0.961	0.984	0.997
		S15	0.984	0.997	1.000	0.976	0.992	1.000	0.975	0.991	1.000
	1000	WSNS	0.906	0.949	0.989	0.901	0.946	0.984	0.918	0.955	0.988
		PR10	0.993	0.999	1.000	0.976	0.993	0.999	0.979	0.991	1.000
		S15	0.986	0.996	1.000	0.970	0.989	0.999	0.978	0.993	0.999
	1500	WSNS	0.921	0.953	0.988	0.891	0.949	0.990	0.890	0.946	0.985
		PR10	0.991	0.998	1.000	0.986	0.997	0.999	0.974	0.992	1.000
		S15	0.982	0.996	1.000	0.977	0.992	0.999	0.973	0.988	0.998

Table 30: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with t_5 innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.866	0.912	0.966	0.858	0.915	0.953	0.874	0.928	0.970
		PR10	0.851	0.906	0.962	0.852	0.910	0.961	0.854	0.909	0.955
		S15	0.891	0.939	0.987	0.892	0.941	0.988	0.910	0.949	0.986
	1000	WSNS	0.908	0.941	0.978	0.898	0.940	0.982	0.900	0.950	0.983
		PR10	0.870	0.924	0.978	0.865	0.932	0.986	0.847	0.929	0.980
		S15	0.897	0.939	0.992	0.895	0.946	0.991	0.901	0.940	0.988
	1500	WSNS	0.922	0.957	0.988	0.907	0.962	0.994	0.897	0.946	0.990
		PR10	0.891	0.932	0.981	0.890	0.945	0.980	0.848	0.929	0.992
		S15	0.916	0.958	0.994	0.903	0.958	0.993	0.901	0.953	0.990
0.4	500	WSNS	0.889	0.930	0.972	0.876	0.927	0.973	0.878	0.927	0.971
		PR10	0.911	0.956	0.987	0.909	0.950	0.982	0.867	0.911	0.959
		S15	0.938	0.973	0.997	0.930	0.966	0.993	0.903	0.958	0.988
	1000	WSNS	0.905	0.950	0.985	0.901	0.946	0.987	0.895	0.942	0.988
		PR10	0.933	0.976	0.995	0.949	0.977	0.997	0.884	0.948	0.985
		S15	0.938	0.975	0.998	0.945	0.980	0.997	0.919	0.959	0.992
	1500	WSNS	0.922	0.962	0.989	0.911	0.954	0.991	0.905	0.953	0.987
		PR10	0.939	0.972	0.995	0.939	0.967	0.994	0.887	0.946	0.996
		S15	0.942	0.979	0.999	0.937	0.973	0.996	0.914	0.965	0.995
0.8	500	WSNS	0.914	0.951	0.983	0.899	0.944	0.984	0.895	0.937	0.978
		PR10	0.987	0.995	0.999	0.976	0.994	0.997	0.953	0.976	0.994
		S15	0.984	0.994	1.000	0.975	0.992	0.999	0.966	0.992	1.000
	1000	WSNS	0.927	0.972	0.991	0.917	0.962	0.988	0.915	0.943	0.985
		PR10	0.994	0.999	1.000	0.990	0.996	1.000	0.976	0.993	1.000
		S15	0.983	0.994	1.000	0.972	0.993	1.000	0.966	0.991	0.998
	1500	WSNS	0.938	0.967	0.992	0.925	0.967	0.993	0.927	0.966	0.994
		PR10	0.989	0.999	1.000	0.990	0.997	1.000	0.982	0.995	1.000
		S15	0.986	0.995	1.000	0.981	0.994	1.000	0.982	0.995	1.000

Table 31: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with t_5 innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.902	0.947	0.980	0.911	0.949	0.984	0.895	0.946	0.982
		PR10	0.883	0.924	0.979	0.882	0.935	0.984	0.833	0.945	0.993
		S15	0.886	0.942	0.982	0.915	0.963	0.993	0.907	0.949	0.987
	1000	WSNS	0.906	0.947	0.987	0.893	0.955	0.990	0.883	0.940	0.988
		PR10	0.878	0.939	0.986	0.875	0.933	0.989	0.831	0.918	0.994
		S15	0.914	0.955	0.986	0.898	0.952	0.995	0.906	0.951	0.993
	1500	WSNS	0.923	0.976	0.995	0.907	0.970	0.995	0.893	0.938	0.978
		PR10	0.898	0.954	0.988	0.878	0.942	0.985	0.843	0.940	0.998
		S15	0.911	0.955	0.990	0.906	0.951	0.992	0.909	0.964	0.991
0.4	500	WSNS	0.907	0.946	0.979	0.890	0.939	0.986	0.885	0.933	0.981
		PR10	0.932	0.971	0.993	0.946	0.976	0.999	0.872	0.955	0.993
		S15	0.926	0.969	0.994	0.932	0.971	0.998	0.915	0.955	0.994
	1000	WSNS	0.888	0.951	0.989	0.884	0.952	0.995	0.863	0.924	0.982
		PR10	0.946	0.980	0.996	0.934	0.969	0.997	0.859	0.943	0.995
		S15	0.940	0.975	0.996	0.927	0.969	0.993	0.911	0.959	0.997
	1500	WSNS	0.908	0.959	0.993	0.898	0.962	0.996	0.877	0.928	0.982
		PR10	0.950	0.978	0.998	0.935	0.978	0.995	0.879	0.952	1.000
		S15	0.942	0.976	0.994	0.933	0.974	0.996	0.925	0.964	0.996
0.8	500	WSNS	0.897	0.951	0.990	0.886	0.935	0.987	0.862	0.919	0.973
		PR10	0.985	0.997	1.000	0.977	0.995	0.999	0.969	0.993	0.999
		S15	0.970	0.992	1.000	0.958	0.982	0.999	0.972	0.991	0.999
	1000	WSNS	0.889	0.950	0.986	0.876	0.941	0.991	0.852	0.919	0.974
		PR10	0.995	0.999	1.000	0.978	0.996	1.000	0.966	0.991	1.000
		S15	0.977	0.996	1.000	0.960	0.986	0.999	0.976	0.990	0.998
	1500	WSNS	0.881	0.940	0.991	0.892	0.946	0.987	0.859	0.917	0.973
		PR10	0.991	0.999	1.000	0.982	0.996	1.000	0.972	0.991	1.000
		S15	0.983	0.993	0.999	0.963	0.986	0.999	0.979	0.993	1.000

Table 32: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with t_5 innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.938	0.967	0.989	0.932	0.970	0.996	0.925	0.959	0.992
		PR10	0.872	0.916	0.974	0.877	0.930	0.977	0.796	0.912	0.989
		S15	0.881	0.936	0.986	0.903	0.948	0.990	0.904	0.947	0.984
	1000	WSNS	0.942	0.973	0.992	0.944	0.975	0.998	0.913	0.953	0.992
		PR10	0.866	0.930	0.984	0.867	0.934	0.983	0.799	0.892	0.984
		S15	0.907	0.949	0.988	0.903	0.951	0.990	0.900	0.949	0.989
	1500	WSNS	0.971	0.990	1.000	0.944	0.987	0.999	0.911	0.951	0.987
		PR10	0.893	0.948	0.986	0.873	0.931	0.991	0.808	0.911	0.995
		S15	0.909	0.954	0.991	0.895	0.954	0.986	0.900	0.961	0.994
0.4	500	WSNS	0.933	0.963	0.995	0.937	0.971	0.995	0.903	0.939	0.990
		PR10	0.926	0.963	0.993	0.921	0.960	0.994	0.826	0.932	0.987
		S15	0.917	0.968	0.995	0.933	0.967	0.995	0.910	0.958	0.992
	1000	WSNS	0.938	0.971	0.996	0.938	0.972	0.996	0.912	0.947	0.992
		PR10	0.938	0.974	0.995	0.941	0.972	0.995	0.824	0.926	0.993
		S15	0.938	0.971	1.000	0.939	0.973	0.994	0.920	0.957	0.991
	1500	WSNS	0.948	0.982	1.000	0.937	0.979	0.999	0.912	0.951	0.989
		PR10	0.951	0.976	0.998	0.935	0.973	0.999	0.838	0.932	1.000
		S15	0.945	0.973	0.998	0.925	0.971	0.996	0.914	0.957	0.996
0.8	500	WSNS	0.942	0.980	0.997	0.916	0.959	0.991	0.905	0.950	0.984
		PR10	0.981	0.995	1.000	0.977	0.992	1.000	0.947	0.982	0.999
		S15	0.965	0.994	1.000	0.959	0.986	1.000	0.966	0.987	0.999
	1000	WSNS	0.951	0.981	0.998	0.919	0.970	0.997	0.891	0.937	0.985
		PR10	0.992	0.999	1.000	0.981	0.993	1.000	0.947	0.990	1.000
		S15	0.982	0.996	1.000	0.981	0.991	0.998	0.972	0.986	0.999
	1500	WSNS	0.946	0.982	0.999	0.926	0.971	0.995	0.911	0.951	0.989
		PR10	0.987	0.998	1.000	0.978	0.995	1.000	0.957	0.988	1.000
		S15	0.984	0.994	0.999	0.971	0.987	0.998	0.976	0.992	0.999

Table 33: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with t_5 innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.876	0.924	0.971	0.892	0.931	0.978	0.884	0.931	0.978
		PR10	0.871	0.916	0.971	0.877	0.930	0.978	0.852	0.940	0.985
		S15	0.886	0.942	0.982	0.915	0.963	0.993	0.907	0.949	0.987
	1000	WSNS	0.890	0.939	0.979	0.888	0.940	0.987	0.873	0.925	0.984
		PR10	0.881	0.934	0.984	0.870	0.933	0.985	0.843	0.927	0.988
		S15	0.914	0.955	0.986	0.898	0.952	0.995	0.906	0.951	0.993
	1500	WSNS	0.901	0.958	0.995	0.896	0.957	0.990	0.893	0.934	0.982
		PR10	0.899	0.952	0.984	0.884	0.942	0.982	0.862	0.943	0.992
		S15	0.911	0.955	0.990	0.906	0.951	0.992	0.909	0.964	0.991
0.4	500	WSNS	0.888	0.931	0.969	0.879	0.921	0.970	0.877	0.927	0.971
		PR10	0.924	0.954	0.987	0.939	0.974	0.995	0.887	0.956	0.986
		S15	0.926	0.969	0.994	0.932	0.971	0.998	0.915	0.955	0.994
	1000	WSNS	0.881	0.938	0.981	0.874	0.930	0.991	0.867	0.919	0.982
		PR10	0.951	0.979	0.995	0.931	0.971	0.995	0.874	0.947	0.990
		S15	0.940	0.975	0.996	0.927	0.969	0.993	0.911	0.959	0.997
	1500	WSNS	0.901	0.951	0.990	0.889	0.947	0.994	0.883	0.934	0.987
		PR10	0.951	0.974	0.997	0.938	0.977	0.995	0.897	0.960	0.995
		S15	0.942	0.976	0.994	0.933	0.974	0.996	0.925	0.964	0.996
0.8	500	WSNS	0.884	0.948	0.987	0.877	0.936	0.984	0.868	0.919	0.973
		PR10	0.981	0.995	1.000	0.970	0.993	0.999	0.970	0.989	0.999
		S15	0.970	0.992	1.000	0.958	0.982	0.999	0.972	0.991	0.999
	1000	WSNS	0.893	0.953	0.991	0.887	0.939	0.985	0.871	0.932	0.974
		PR10	0.994	0.999	1.000	0.980	0.997	1.000	0.975	0.994	1.000
		S15	0.977	0.996	1.000	0.960	0.986	0.999	0.976	0.990	0.998
	1500	WSNS	0.886	0.946	0.989	0.892	0.941	0.987	0.869	0.927	0.978
		PR10	0.989	0.999	1.000	0.981	0.993	1.000	0.979	0.991	1.000
		S15	0.983	0.993	0.999	0.963	0.986	0.999	0.979	0.993	1.000

Table 34: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with t_5 innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.899	0.940	0.974	0.897	0.945	0.979	0.904	0.951	0.985
		PR10	0.867	0.908	0.967	0.878	0.927	0.970	0.834	0.929	0.980
		S15	0.881	0.936	0.986	0.903	0.948	0.990	0.904	0.947	0.984
	1000	WSNS	0.916	0.957	0.986	0.909	0.960	0.991	0.907	0.944	0.987
		PR10	0.873	0.927	0.986	0.867	0.932	0.982	0.838	0.913	0.981
		S15	0.907	0.949	0.988	0.903	0.951	0.990	0.900	0.949	0.989
	1500	WSNS	0.933	0.977	0.997	0.917	0.964	0.999	0.908	0.945	0.983
		PR10	0.897	0.946	0.987	0.876	0.937	0.988	0.851	0.927	0.992
		S15	0.909	0.954	0.991	0.895	0.954	0.986	0.900	0.961	0.994
0.4	500	WSNS	0.907	0.941	0.974	0.902	0.949	0.984	0.886	0.925	0.976
		PR10	0.923	0.956	0.985	0.923	0.960	0.992	0.864	0.944	0.986
		S15	0.917	0.968	0.995	0.933	0.967	0.995	0.910	0.958	0.992
	1000	WSNS	0.921	0.957	0.992	0.908	0.951	0.985	0.894	0.946	0.989
		PR10	0.938	0.973	0.993	0.938	0.975	0.993	0.857	0.946	0.989
		S15	0.938	0.971	1.000	0.939	0.973	0.994	0.920	0.957	0.991
	1500	WSNS	0.929	0.959	0.995	0.905	0.961	0.996	0.902	0.943	0.991
		PR10	0.951	0.977	0.995	0.942	0.975	0.998	0.872	0.944	0.998
		S15	0.945	0.973	0.998	0.925	0.971	0.996	0.914	0.957	0.996
0.8	500	WSNS	0.929	0.965	0.993	0.900	0.947	0.986	0.901	0.949	0.976
		PR10	0.978	0.993	1.000	0.975	0.991	1.000	0.965	0.990	0.999
		S15	0.965	0.994	1.000	0.959	0.986	1.000	0.966	0.987	0.999
	1000	WSNS	0.935	0.972	0.997	0.910	0.961	0.993	0.894	0.940	0.983
		PR10	0.992	0.998	1.000	0.985	0.995	1.000	0.964	0.993	1.000
		S15	0.982	0.996	1.000	0.981	0.991	0.998	0.972	0.986	0.999
	1500	WSNS	0.918	0.976	0.996	0.901	0.956	0.992	0.916	0.950	0.989
		PR10	0.988	0.998	1.000	0.983	0.996	1.000	0.973	0.993	0.999
		S15	0.984	0.994	0.999	0.971	0.987	0.998	0.976	0.992	0.999

Table 35: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with t_5 innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.858	0.904	0.959	0.866	0.914	0.956	0.862	0.914	0.965
		PR10	0.859	0.905	0.956	0.870	0.922	0.967	0.855	0.927	0.970
		S15	0.886	0.942	0.982	0.915	0.963	0.993	0.907	0.949	0.987
	1000	WSNS	0.882	0.929	0.970	0.880	0.927	0.983	0.870	0.924	0.977
		PR10	0.875	0.930	0.982	0.867	0.925	0.982	0.850	0.932	0.981
		S15	0.914	0.955	0.986	0.898	0.952	0.995	0.906	0.951	0.993
	1500	WSNS	0.897	0.953	0.991	0.894	0.949	0.987	0.885	0.935	0.983
		PR10	0.902	0.943	0.983	0.884	0.937	0.982	0.871	0.944	0.990
		S15	0.911	0.955	0.990	0.906	0.951	0.992	0.909	0.964	0.991
0.4	500	WSNS	0.882	0.919	0.964	0.854	0.903	0.961	0.859	0.918	0.971
		PR10	0.914	0.950	0.982	0.931	0.971	0.996	0.889	0.946	0.980
		S15	0.926	0.969	0.994	0.932	0.971	0.998	0.915	0.955	0.994
	1000	WSNS	0.870	0.929	0.980	0.859	0.924	0.987	0.863	0.917	0.977
		PR10	0.938	0.974	0.996	0.925	0.965	0.994	0.885	0.952	0.989
		S15	0.940	0.975	0.996	0.927	0.969	0.993	0.911	0.959	0.997
	1500	WSNS	0.898	0.942	0.985	0.885	0.941	0.991	0.878	0.937	0.987
		PR10	0.946	0.973	0.996	0.933	0.972	0.993	0.903	0.962	0.995
		S15	0.942	0.976	0.994	0.933	0.974	0.996	0.925	0.964	0.996
0.8	500	WSNS	0.884	0.941	0.986	0.863	0.925	0.975	0.872	0.924	0.974
		PR10	0.975	0.993	1.000	0.971	0.990	0.998	0.970	0.990	0.998
		S15	0.970	0.992	1.000	0.958	0.982	0.999	0.972	0.991	0.999
	1000	WSNS	0.885	0.945	0.989	0.883	0.937	0.980	0.876	0.929	0.976
		PR10	0.994	0.997	1.000	0.973	0.997	1.000	0.975	0.995	1.000
		S15	0.977	0.996	1.000	0.960	0.986	0.999	0.976	0.990	0.998
	1500	WSNS	0.875	0.942	0.989	0.895	0.945	0.986	0.873	0.936	0.975
		PR10	0.988	0.998	1.000	0.978	0.993	1.000	0.979	0.992	1.000
		S15	0.983	0.993	0.999	0.963	0.986	0.999	0.979	0.993	1.000

Table 36: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with t_5 innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.878	0.922	0.964	0.871	0.918	0.968	0.888	0.929	0.971
		PR10	0.854	0.900	0.952	0.864	0.918	0.960	0.852	0.919	0.969
		S15	0.881	0.936	0.986	0.903	0.948	0.990	0.904	0.947	0.984
	1000	WSNS	0.899	0.948	0.981	0.892	0.946	0.987	0.892	0.933	0.987
		PR10	0.867	0.925	0.980	0.872	0.932	0.979	0.854	0.926	0.977
		S15	0.907	0.949	0.988	0.903	0.951	0.990	0.900	0.949	0.989
	1500	WSNS	0.918	0.970	0.991	0.903	0.950	0.992	0.898	0.943	0.982
		PR10	0.898	0.945	0.982	0.871	0.931	0.986	0.859	0.936	0.989
		S15	0.909	0.954	0.991	0.895	0.954	0.986	0.900	0.961	0.994
0.4	500	WSNS	0.888	0.936	0.970	0.894	0.928	0.973	0.859	0.920	0.961
		PR10	0.904	0.947	0.982	0.914	0.950	0.984	0.870	0.928	0.975
		S15	0.917	0.968	0.995	0.933	0.967	0.995	0.910	0.958	0.992
	1000	WSNS	0.898	0.950	0.987	0.891	0.939	0.983	0.885	0.937	0.980
		PR10	0.936	0.974	0.994	0.935	0.972	0.993	0.879	0.947	0.987
		S15	0.938	0.971	1.000	0.939	0.973	0.994	0.920	0.957	0.991
	1500	WSNS	0.919	0.952	0.993	0.891	0.952	0.990	0.894	0.941	0.986
		PR10	0.945	0.974	0.995	0.942	0.970	0.998	0.883	0.952	0.996
		S15	0.945	0.973	0.998	0.925	0.971	0.996	0.914	0.957	0.996
0.8	500	WSNS	0.911	0.958	0.990	0.876	0.932	0.977	0.906	0.942	0.979
		PR10	0.975	0.991	1.000	0.966	0.987	0.998	0.966	0.986	0.998
		S15	0.965	0.994	1.000	0.959	0.986	1.000	0.966	0.987	0.999
	1000	WSNS	0.919	0.973	0.994	0.903	0.954	0.993	0.893	0.940	0.978
		PR10	0.991	0.998	1.000	0.983	0.998	1.000	0.966	0.992	0.999
		S15	0.982	0.996	1.000	0.981	0.991	0.998	0.972	0.986	0.999
	1500	WSNS	0.906	0.963	0.990	0.892	0.956	0.991	0.921	0.951	0.988
		PR10	0.988	0.997	1.000	0.982	0.993	0.999	0.974	0.994	1.000
		S15	0.984	0.994	0.999	0.971	0.987	0.998	0.976	0.992	0.999

Table 37: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with Uniform$(-2,2)$ innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.877	0.938	0.983	0.888	0.938	0.985	0.864	0.921	0.968
		PR10	0.879	0.940	0.978	0.867	0.929	0.979	0.896	0.937	0.983
		S15	0.898	0.947	0.994	0.895	0.935	0.988	0.919	0.956	0.993
	1000	WSNS	0.898	0.954	0.990	0.910	0.957	0.996	0.836	0.890	0.963
		PR10	0.891	0.936	0.987	0.888	0.944	0.986	0.890	0.934	0.986
		S15	0.897	0.947	0.993	0.903	0.948	0.990	0.884	0.936	0.988
	1500	WSNS	0.911	0.960	0.993	0.928	0.967	0.999	0.856	0.912	0.972
		PR10	0.910	0.948	0.993	0.891	0.948	0.987	0.900	0.947	0.983
		S15	0.906	0.955	0.989	0.911	0.956	0.997	0.902	0.946	0.981
0.4	500	WSNS	0.892	0.942	0.985	0.884	0.942	0.989	0.873	0.922	0.967
		PR10	0.955	0.977	0.999	0.916	0.969	0.991	0.913	0.948	0.988
		S15	0.904	0.945	0.990	0.899	0.942	0.994	0.911	0.953	0.986
	1000	WSNS	0.908	0.954	0.992	0.911	0.960	0.996	0.851	0.905	0.969
		PR10	0.958	0.985	0.999	0.938	0.977	0.995	0.921	0.957	0.991
		S15	0.895	0.955	0.990	0.914	0.956	0.995	0.894	0.940	0.987
	1500	WSNS	0.909	0.957	0.994	0.916	0.961	0.991	0.873	0.927	0.974
		PR10	0.972	0.997	1.000	0.943	0.976	0.997	0.922	0.959	0.990
		S15	0.902	0.947	0.990	0.912	0.953	0.988	0.908	0.949	0.986
0.8	500	WSNS	0.891	0.945	0.987	0.883	0.937	0.987	0.861	0.912	0.962
		PR10	1.000	1.000	1.000	0.995	0.998	1.000	0.966	0.991	1.000
		S15	0.905	0.949	0.997	0.913	0.962	0.991	0.906	0.947	0.989
	1000	WSNS	0.906	0.958	0.995	0.909	0.954	0.986	0.865	0.923	0.974
		PR10	1.000	1.000	1.000	0.995	0.999	1.000	0.979	0.991	1.000
		S15	0.896	0.953	0.995	0.933	0.963	0.993	0.904	0.953	0.990
	1500	WSNS	0.907	0.953	0.990	0.885	0.937	0.984	0.873	0.921	0.978
		PR10	1.000	1.000	1.000	0.996	0.999	1.000	0.982	0.992	0.999
		S15	0.903	0.943	0.994	0.908	0.948	0.988	0.903	0.947	0.992

Table 38: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with Uniform$(-2, 2)$ innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.924	0.955	0.992	0.915	0.952	0.994	0.881	0.932	0.980
		PR10	0.865	0.921	0.977	0.871	0.926	0.976	0.839	0.902	0.976
		S15	0.892	0.942	0.991	0.892	0.943	0.987	0.904	0.948	0.993
	1000	WSNS	0.939	0.973	0.996	0.943	0.974	0.994	0.876	0.928	0.981
		PR10	0.877	0.931	0.985	0.882	0.940	0.986	0.846	0.927	0.980
		S15	0.893	0.946	0.993	0.897	0.955	0.984	0.892	0.948	0.988
	1500	WSNS	0.947	0.980	0.998	0.938	0.983	0.997	0.880	0.934	0.980
		PR10	0.887	0.941	0.992	0.885	0.944	0.989	0.849	0.927	0.975
		S15	0.906	0.950	0.988	0.914	0.949	0.987	0.900	0.946	0.989
0.4	500	WSNS	0.919	0.960	0.991	0.908	0.954	0.989	0.873	0.926	0.983
		PR10	0.943	0.978	0.997	0.931	0.973	0.996	0.856	0.915	0.985
		S15	0.894	0.934	0.988	0.894	0.950	0.985	0.883	0.936	0.992
	1000	WSNS	0.942	0.976	0.995	0.916	0.966	0.996	0.898	0.944	0.979
		PR10	0.954	0.982	0.998	0.938	0.979	0.999	0.868	0.944	0.994
		S15	0.898	0.947	0.991	0.893	0.947	0.988	0.911	0.958	0.991
	1500	WSNS	0.945	0.985	0.999	0.944	0.974	0.996	0.885	0.938	0.988
		PR10	0.960	0.992	1.000	0.952	0.982	0.999	0.883	0.939	0.989
		S15	0.902	0.953	0.992	0.906	0.964	0.991	0.901	0.956	0.996
0.8	500	WSNS	0.917	0.965	0.991	0.894	0.944	0.985	0.886	0.932	0.975
		PR10	1.000	1.000	1.000	0.994	1.000	1.000	0.962	0.986	0.997
		S15	0.887	0.936	0.990	0.909	0.957	0.991	0.900	0.948	0.991
	1000	WSNS	0.939	0.979	0.998	0.896	0.966	0.994	0.885	0.941	0.984
		PR10	1.000	1.000	1.000	0.997	1.000	1.000	0.975	0.996	0.999
		S15	0.903	0.949	0.990	0.908	0.963	0.994	0.896	0.950	0.990
	1500	WSNS	0.943	0.976	0.998	0.904	0.957	0.993	0.882	0.935	0.985
		PR10	1.000	1.000	1.000	0.998	1.000	1.000	0.977	0.996	1.000
		S15	0.901	0.955	0.994	0.910	0.957	0.995	0.897	0.948	0.993

Table 39: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.853	0.900	0.957	0.859	0.907	0.954	0.869	0.907	0.960
		PR10	0.858	0.919	0.970	0.861	0.913	0.970	0.888	0.931	0.978
		S15	0.898	0.947	0.994	0.895	0.935	0.988	0.919	0.956	0.993
	1000	WSNS	0.874	0.938	0.984	0.891	0.941	0.986	0.841	0.886	0.958
		PR10	0.882	0.933	0.984	0.884	0.941	0.985	0.884	0.931	0.981
		S15	0.897	0.947	0.993	0.903	0.948	0.990	0.884	0.936	0.988
	1500	WSNS	0.891	0.949	0.985	0.905	0.951	0.996	0.869	0.916	0.968
		PR10	0.897	0.944	0.992	0.895	0.951	0.988	0.899	0.940	0.984
		S15	0.906	0.955	0.989	0.911	0.956	0.997	0.902	0.946	0.981
0.4	500	WSNS	0.863	0.908	0.966	0.860	0.911	0.961	0.867	0.914	0.956
		PR10	0.941	0.972	0.998	0.905	0.949	0.985	0.914	0.945	0.977
		S15	0.904	0.945	0.990	0.899	0.942	0.994	0.911	0.953	0.986
	1000	WSNS	0.892	0.940	0.982	0.886	0.946	0.987	0.857	0.911	0.961
		PR10	0.958	0.983	0.997	0.938	0.968	0.994	0.916	0.955	0.989
		S15	0.895	0.955	0.990	0.914	0.956	0.995	0.894	0.940	0.987
	1500	WSNS	0.895	0.940	0.992	0.893	0.947	0.984	0.877	0.925	0.967
		PR10	0.965	0.992	1.000	0.944	0.977	0.997	0.915	0.955	0.991
		S15	0.902	0.947	0.990	0.912	0.953	0.988	0.908	0.949	0.986
0.8	500	WSNS	0.865	0.915	0.963	0.852	0.913	0.966	0.857	0.910	0.957
		PR10	1.000	1.000	1.000	0.988	0.998	1.000	0.962	0.980	0.997
		S15	0.905	0.949	0.997	0.913	0.962	0.991	0.906	0.947	0.989
	1000	WSNS	0.889	0.943	0.984	0.878	0.941	0.981	0.876	0.929	0.978
		PR10	0.999	1.000	1.000	0.993	0.998	1.000	0.980	0.989	0.997
		S15	0.896	0.953	0.995	0.933	0.963	0.993	0.904	0.953	0.990
	1500	WSNS	0.894	0.943	0.988	0.871	0.917	0.982	0.876	0.934	0.979
		PR10	1.000	1.000	1.000	0.995	0.999	1.000	0.984	0.991	0.999
		S15	0.903	0.943	0.994	0.908	0.948	0.988	0.903	0.947	0.992

Table 40: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with Uniform$(-2,2)$ innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.859	0.920	0.963	0.866	0.918	0.965	0.868	0.921	0.971
		PR10	0.853	0.903	0.965	0.858	0.915	0.964	0.842	0.907	0.969
		S15	0.892	0.942	0.991	0.892	0.943	0.987	0.904	0.948	0.993
	1000	WSNS	0.896	0.950	0.987	0.903	0.953	0.982	0.877	0.920	0.979
		PR10	0.876	0.932	0.981	0.878	0.941	0.983	0.865	0.933	0.981
		S15	0.893	0.946	0.993	0.897	0.955	0.984	0.892	0.948	0.988
	1500	WSNS	0.923	0.963	0.991	0.913	0.956	0.989	0.881	0.935	0.977
		PR10	0.887	0.940	0.990	0.883	0.943	0.989	0.873	0.933	0.978
		S15	0.906	0.950	0.988	0.914	0.949	0.987	0.900	0.946	0.989
0.4	500	WSNS	0.874	0.919	0.963	0.869	0.914	0.964	0.858	0.917	0.969
		PR10	0.934	0.967	0.994	0.925	0.967	0.992	0.865	0.922	0.979
		S15	0.894	0.934	0.988	0.894	0.950	0.985	0.883	0.936	0.992
	1000	WSNS	0.906	0.952	0.990	0.891	0.944	0.984	0.892	0.941	0.979
		PR10	0.950	0.982	0.998	0.946	0.976	0.997	0.899	0.960	0.993
		S15	0.898	0.947	0.991	0.893	0.947	0.988	0.911	0.958	0.991
	1500	WSNS	0.921	0.963	0.994	0.908	0.962	0.991	0.892	0.940	0.987
		PR10	0.963	0.990	1.000	0.954	0.982	1.000	0.897	0.948	0.989
		S15	0.902	0.953	0.992	0.906	0.964	0.991	0.901	0.956	0.996
0.8	500	WSNS	0.867	0.917	0.970	0.865	0.914	0.964	0.869	0.922	0.968
		PR10	0.999	1.000	1.000	0.989	0.999	1.000	0.967	0.983	0.999
		S15	0.887	0.936	0.990	0.909	0.957	0.991	0.900	0.948	0.991
	1000	WSNS	0.912	0.960	0.990	0.860	0.935	0.984	0.888	0.935	0.982
		PR10	0.999	1.000	1.000	0.997	1.000	1.000	0.983	0.996	0.999
		S15	0.903	0.949	0.990	0.908	0.963	0.994	0.896	0.950	0.990
	1500	WSNS	0.923	0.961	0.993	0.887	0.938	0.982	0.886	0.939	0.983
		PR10	1.000	1.000	1.000	0.997	1.000	1.000	0.983	0.996	1.000
		S15	0.901	0.955	0.994	0.910	0.957	0.995	0.897	0.948	0.993

Table 41: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.824	0.876	0.942	0.829	0.882	0.941	0.847	0.898	0.944
		PR10	0.830	0.900	0.958	0.847	0.906	0.956	0.867	0.924	0.966
		S15	0.898	0.947	0.994	0.895	0.935	0.988	0.919	0.956	0.993
	1000	WSNS	0.865	0.913	0.972	0.874	0.935	0.970	0.840	0.901	0.956
		PR10	0.875	0.925	0.980	0.883	0.937	0.982	0.874	0.925	0.978
		S15	0.897	0.947	0.993	0.903	0.948	0.990	0.884	0.936	0.988
	1500	WSNS	0.885	0.936	0.981	0.894	0.944	0.991	0.872	0.911	0.963
		PR10	0.890	0.942	0.992	0.897	0.951	0.985	0.892	0.936	0.981
		S15	0.906	0.955	0.989	0.911	0.956	0.997	0.902	0.946	0.981
0.4	500	WSNS	0.830	0.883	0.939	0.828	0.891	0.939	0.847	0.909	0.952
		PR10	0.926	0.960	0.987	0.891	0.943	0.980	0.897	0.932	0.968
		S15	0.904	0.945	0.990	0.899	0.942	0.994	0.911	0.953	0.986
	1000	WSNS	0.875	0.922	0.971	0.868	0.932	0.982	0.847	0.902	0.961
		PR10	0.954	0.978	0.996	0.936	0.971	0.993	0.912	0.952	0.983
		S15	0.895	0.955	0.990	0.914	0.956	0.995	0.894	0.940	0.987
	1500	WSNS	0.883	0.930	0.984	0.886	0.937	0.984	0.878	0.922	0.969
		PR10	0.965	0.990	0.999	0.942	0.977	0.996	0.911	0.955	0.987
		S15	0.902	0.947	0.990	0.912	0.953	0.988	0.908	0.949	0.986
0.8	500	WSNS	0.843	0.893	0.940	0.830	0.887	0.952	0.850	0.893	0.946
		PR10	0.993	0.998	1.000	0.981	0.995	1.000	0.956	0.974	0.991
		S15	0.905	0.949	0.997	0.913	0.962	0.991	0.906	0.947	0.989
	1000	WSNS	0.873	0.928	0.976	0.875	0.928	0.972	0.879	0.917	0.973
		PR10	0.998	0.999	1.000	0.990	0.999	1.000	0.976	0.985	0.994
		S15	0.896	0.953	0.995	0.933	0.963	0.993	0.904	0.953	0.990
	1500	WSNS	0.883	0.934	0.978	0.861	0.909	0.975	0.872	0.923	0.977
		PR10	1.000	1.000	1.000	0.993	0.999	1.000	0.976	0.991	0.999
		S15	0.903	0.943	0.994	0.908	0.948	0.988	0.903	0.947	0.992

Table 42: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 1 with Uniform$(-2, 2)$ innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.830	0.888	0.940	0.835	0.886	0.945	0.844	0.896	0.953
		PR10	0.831	0.892	0.953	0.840	0.909	0.952	0.836	0.894	0.952
		S15	0.892	0.942	0.991	0.892	0.943	0.987	0.904	0.948	0.993
	1000	WSNS	0.873	0.929	0.978	0.875	0.935	0.981	0.868	0.917	0.966
		PR10	0.866	0.925	0.978	0.877	0.935	0.982	0.871	0.933	0.971
		S15	0.893	0.946	0.993	0.897	0.955	0.984	0.892	0.948	0.988
	1500	WSNS	0.899	0.953	0.986	0.904	0.940	0.986	0.877	0.929	0.978
		PR10	0.885	0.939	0.991	0.890	0.946	0.986	0.880	0.932	0.974
		S15	0.906	0.950	0.988	0.914	0.949	0.987	0.900	0.946	0.989
0.4	500	WSNS	0.842	0.892	0.940	0.842	0.891	0.949	0.839	0.891	0.951
		PR10	0.923	0.954	0.988	0.913	0.959	0.987	0.855	0.909	0.962
		S15	0.894	0.934	0.988	0.894	0.950	0.985	0.883	0.936	0.992
	1000	WSNS	0.887	0.936	0.978	0.880	0.924	0.970	0.881	0.931	0.977
		PR10	0.951	0.978	0.998	0.941	0.973	0.995	0.902	0.952	0.991
		S15	0.898	0.947	0.991	0.893	0.947	0.988	0.911	0.958	0.991
	1500	WSNS	0.911	0.950	0.987	0.891	0.955	0.985	0.885	0.932	0.981
		PR10	0.963	0.988	1.000	0.954	0.980	0.998	0.901	0.952	0.990
		S15	0.902	0.953	0.992	0.906	0.964	0.991	0.901	0.956	0.996
0.8	500	WSNS	0.844	0.891	0.944	0.847	0.890	0.945	0.850	0.904	0.947
		PR10	0.993	0.997	1.000	0.988	0.997	1.000	0.954	0.974	0.993
		S15	0.887	0.936	0.990	0.909	0.957	0.991	0.900	0.948	0.991
	1000	WSNS	0.897	0.939	0.982	0.849	0.921	0.980	0.878	0.930	0.976
		PR10	0.997	1.000	1.000	0.997	0.999	1.000	0.984	0.994	0.999
		S15	0.903	0.949	0.990	0.908	0.963	0.994	0.896	0.950	0.990
	1500	WSNS	0.906	0.954	0.986	0.872	0.919	0.975	0.883	0.932	0.984
		PR10	1.000	1.000	1.000	0.999	1.000	1.000	0.984	0.997	1.000
		S15	0.901	0.955	0.994	0.910	0.957	0.995	0.897	0.948	0.993

Table 43: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.898	0.950	0.987	0.915	0.952	0.990	0.856	0.918	0.969
		PR10	0.872	0.924	0.984	0.883	0.927	0.976	0.890	0.945	0.987
		S15	0.887	0.941	0.988	0.894	0.949	0.985	0.910	0.957	0.989
	1000	WSNS	0.915	0.953	0.993	0.930	0.971	0.996	0.845	0.906	0.964
		PR10	0.891	0.945	0.992	0.898	0.945	0.990	0.887	0.932	0.982
		S15	0.906	0.945	0.991	0.912	0.956	0.989	0.886	0.928	0.986
	1500	WSNS	0.907	0.961	0.992	0.924	0.969	0.992	0.852	0.906	0.976
		PR10	0.880	0.938	0.990	0.885	0.932	0.979	0.896	0.940	0.987
		S15	0.886	0.954	0.987	0.903	0.958	0.992	0.892	0.941	0.987
0.4	500	WSNS	0.909	0.962	0.988	0.906	0.957	0.988	0.861	0.912	0.964
		PR10	0.936	0.974	0.994	0.915	0.951	0.988	0.900	0.951	0.987
		S15	0.931	0.968	0.994	0.926	0.962	0.989	0.909	0.958	0.993
	1000	WSNS	0.920	0.964	0.998	0.931	0.972	0.996	0.864	0.918	0.974
		PR10	0.952	0.986	1.000	0.940	0.976	0.993	0.909	0.961	0.992
		S15	0.939	0.973	0.999	0.938	0.969	0.995	0.916	0.960	0.992
	1500	WSNS	0.915	0.963	0.992	0.922	0.959	0.995	0.870	0.924	0.974
		PR10	0.945	0.981	0.996	0.916	0.961	0.992	0.915	0.958	0.993
		S15	0.933	0.973	0.993	0.922	0.963	0.996	0.923	0.958	0.993
0.8	500	WSNS	0.934	0.968	0.992	0.907	0.953	0.990	0.874	0.923	0.982
		PR10	0.987	0.995	0.999	0.973	0.991	0.999	0.954	0.982	0.999
		S15	0.981	0.994	0.999	0.958	0.977	0.997	0.961	0.982	1.000
	1000	WSNS	0.936	0.979	0.999	0.917	0.964	0.994	0.878	0.929	0.976
		PR10	0.997	1.000	1.000	0.982	0.996	1.000	0.968	0.989	1.000
		S15	0.987	0.999	1.000	0.979	0.991	0.998	0.948	0.986	1.000
	1500	WSNS	0.928	0.969	0.994	0.905	0.967	0.994	0.879	0.938	0.981
		PR10	0.995	0.999	1.000	0.983	0.993	0.999	0.957	0.986	0.999
		S15	0.980	0.989	1.000	0.969	0.990	1.000	0.946	0.977	0.997

Table 44: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with Uniform$(-2, 2)$ innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.940	0.973	0.994	0.927	0.969	0.995	0.901	0.939	0.976
		PR10	0.869	0.925	0.980	0.871	0.930	0.979	0.857	0.918	0.977
		S15	0.889	0.947	0.992	0.890	0.950	0.986	0.906	0.953	0.986
	1000	WSNS	0.954	0.980	0.998	0.946	0.979	0.997	0.888	0.933	0.985
		PR10	0.876	0.939	0.987	0.875	0.948	0.985	0.838	0.915	0.985
		S15	0.909	0.945	0.987	0.894	0.947	0.994	0.887	0.943	0.993
	1500	WSNS	0.941	0.981	0.996	0.942	0.975	0.998	0.867	0.931	0.988
		PR10	0.874	0.929	0.983	0.859	0.929	0.977	0.850	0.918	0.983
		S15	0.892	0.949	0.987	0.893	0.950	0.986	0.896	0.956	0.994
0.4	500	WSNS	0.949	0.981	0.994	0.941	0.977	0.995	0.901	0.946	0.985
		PR10	0.937	0.970	0.994	0.925	0.966	0.991	0.875	0.932	0.986
		S15	0.934	0.976	0.996	0.928	0.968	0.991	0.918	0.966	0.996
	1000	WSNS	0.966	0.987	0.999	0.950	0.983	1.000	0.886	0.936	0.986
		PR10	0.944	0.986	0.999	0.928	0.972	0.998	0.870	0.937	0.990
		S15	0.946	0.972	1.000	0.935	0.974	0.997	0.913	0.959	0.994
	1500	WSNS	0.956	0.976	0.999	0.949	0.976	0.996	0.898	0.944	0.986
		PR10	0.938	0.976	0.996	0.916	0.958	0.994	0.880	0.941	0.989
		S15	0.933	0.969	0.993	0.933	0.967	0.994	0.928	0.960	0.994
0.8	500	WSNS	0.966	0.984	0.998	0.943	0.974	0.996	0.903	0.948	0.989
		PR10	0.987	0.993	1.000	0.980	0.992	0.999	0.957	0.981	0.998
		S15	0.984	0.994	0.998	0.985	0.994	0.999	0.959	0.987	0.999
	1000	WSNS	0.973	0.993	1.000	0.946	0.980	1.000	0.913	0.954	0.990
		PR10	0.996	1.000	1.000	0.984	0.997	1.000	0.949	0.978	0.996
		S15	0.989	0.998	1.000	0.971	0.993	1.000	0.967	0.986	0.998
	1500	WSNS	0.966	0.982	1.000	0.941	0.979	0.999	0.908	0.945	0.988
		PR10	0.990	1.000	1.000	0.981	0.993	1.000	0.960	0.984	0.998
		S15	0.975	0.989	1.000	0.973	0.988	0.998	0.961	0.991	0.999

Table 45: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.868	0.924	0.969	0.874	0.923	0.971	0.851	0.905	0.961
		PR10	0.863	0.917	0.974	0.875	0.926	0.969	0.883	0.933	0.975
		S15	0.887	0.941	0.988	0.894	0.949	0.985	0.910	0.957	0.989
	1000	WSNS	0.884	0.945	0.983	0.901	0.952	0.990	0.849	0.912	0.966
		PR10	0.891	0.938	0.991	0.900	0.946	0.990	0.893	0.926	0.981
		S15	0.906	0.945	0.991	0.912	0.956	0.989	0.886	0.928	0.986
	1500	WSNS	0.893	0.943	0.986	0.896	0.953	0.988	0.863	0.920	0.977
		PR10	0.878	0.937	0.991	0.885	0.935	0.980	0.888	0.934	0.987
		S15	0.886	0.954	0.987	0.903	0.958	0.992	0.892	0.941	0.987
0.4	500	WSNS	0.877	0.931	0.972	0.874	0.929	0.974	0.853	0.908	0.960
		PR10	0.932	0.960	0.987	0.904	0.950	0.981	0.890	0.940	0.984
		S15	0.931	0.968	0.994	0.926	0.962	0.989	0.909	0.958	0.993
	1000	WSNS	0.898	0.948	0.990	0.911	0.952	0.986	0.870	0.920	0.978
		PR10	0.945	0.984	1.000	0.935	0.979	0.994	0.908	0.956	0.987
		S15	0.939	0.973	0.999	0.938	0.969	0.995	0.916	0.960	0.992
	1500	WSNS	0.899	0.950	0.984	0.890	0.945	0.990	0.874	0.933	0.977
		PR10	0.945	0.979	0.995	0.916	0.960	0.994	0.912	0.954	0.989
		S15	0.933	0.973	0.993	0.922	0.963	0.996	0.923	0.958	0.993
0.8	500	WSNS	0.905	0.953	0.986	0.887	0.925	0.975	0.864	0.918	0.968
		PR10	0.986	0.993	0.998	0.967	0.983	0.998	0.952	0.976	0.998
		S15	0.981	0.994	0.999	0.958	0.977	0.997	0.961	0.982	1.000
	1000	WSNS	0.916	0.967	0.995	0.892	0.945	0.989	0.877	0.929	0.980
		PR10	0.997	1.000	1.000	0.982	0.995	1.000	0.963	0.989	1.000
		S15	0.987	0.999	1.000	0.979	0.991	0.998	0.948	0.986	1.000
	1500	WSNS	0.913	0.956	0.984	0.885	0.948	0.991	0.886	0.937	0.981
		PR10	0.994	0.999	1.000	0.982	0.994	0.999	0.955	0.983	0.999
		S15	0.980	0.989	1.000	0.969	0.990	1.000	0.946	0.977	0.997

Table 46: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with Uniform$(-2, 2)$ innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.896	0.941	0.978	0.889	0.934	0.975	0.880	0.930	0.968
		PR10	0.862	0.919	0.973	0.860	0.919	0.971	0.865	0.923	0.971
		S15	0.889	0.947	0.992	0.890	0.950	0.986	0.906	0.953	0.986
	1000	WSNS	0.911	0.962	0.989	0.912	0.954	0.991	0.889	0.939	0.981
		PR10	0.885	0.936	0.988	0.879	0.950	0.986	0.865	0.923	0.983
		S15	0.909	0.945	0.987	0.894	0.947	0.994	0.887	0.943	0.993
	1500	WSNS	0.918	0.955	0.991	0.903	0.952	0.991	0.871	0.937	0.981
		PR10	0.880	0.932	0.983	0.862	0.933	0.977	0.875	0.933	0.983
		S15	0.892	0.949	0.987	0.893	0.950	0.986	0.896	0.956	0.994
0.4	500	WSNS	0.904	0.949	0.983	0.904	0.946	0.982	0.895	0.930	0.972
		PR10	0.932	0.962	0.987	0.921	0.955	0.988	0.878	0.934	0.986
		S15	0.934	0.976	0.996	0.928	0.968	0.991	0.918	0.966	0.996
	1000	WSNS	0.924	0.967	0.992	0.914	0.963	0.994	0.894	0.938	0.982
		PR10	0.942	0.984	0.999	0.934	0.975	0.997	0.881	0.950	0.988
		S15	0.946	0.972	1.000	0.935	0.974	0.997	0.913	0.959	0.994
	1500	WSNS	0.930	0.960	0.993	0.921	0.960	0.992	0.898	0.938	0.985
		PR10	0.937	0.974	0.995	0.921	0.960	0.995	0.906	0.955	0.991
		S15	0.933	0.969	0.993	0.933	0.967	0.994	0.928	0.960	0.994
0.8	500	WSNS	0.933	0.969	0.991	0.927	0.959	0.986	0.888	0.937	0.979
		PR10	0.983	0.992	0.999	0.979	0.990	0.999	0.956	0.983	0.995
		S15	0.984	0.994	0.998	0.985	0.994	0.999	0.959	0.987	0.999
	1000	WSNS	0.942	0.984	0.998	0.926	0.968	0.997	0.903	0.949	0.989
		PR10	0.995	1.000	1.000	0.983	0.997	1.000	0.955	0.984	0.997
		S15	0.989	0.998	1.000	0.971	0.993	1.000	0.967	0.986	0.998
	1500	WSNS	0.942	0.968	0.995	0.920	0.959	0.993	0.901	0.946	0.986
		PR10	0.990	1.000	1.000	0.981	0.996	1.000	0.969	0.984	0.999
		S15	0.975	0.989	1.000	0.973	0.988	0.998	0.961	0.991	0.999

Table 47: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.839	0.902	0.951	0.853	0.900	0.964	0.835	0.897	0.939
		PR10	0.851	0.900	0.964	0.868	0.918	0.965	0.860	0.922	0.971
		S15	0.887	0.941	0.988	0.894	0.949	0.985	0.910	0.957	0.989
	1000	WSNS	0.872	0.931	0.978	0.891	0.939	0.981	0.843	0.907	0.959
		PR10	0.882	0.937	0.986	0.889	0.942	0.991	0.884	0.919	0.978
		S15	0.906	0.945	0.991	0.912	0.956	0.989	0.886	0.928	0.986
	1500	WSNS	0.879	0.934	0.983	0.883	0.941	0.981	0.862	0.914	0.974
		PR10	0.876	0.934	0.990	0.884	0.936	0.978	0.884	0.933	0.983
		S15	0.886	0.954	0.987	0.903	0.958	0.992	0.892	0.941	0.987
0.4	500	WSNS	0.853	0.914	0.962	0.849	0.908	0.958	0.840	0.891	0.952
		PR10	0.921	0.954	0.983	0.903	0.936	0.979	0.876	0.919	0.980
		S15	0.931	0.968	0.994	0.926	0.962	0.989	0.909	0.958	0.993
	1000	WSNS	0.889	0.942	0.985	0.897	0.939	0.982	0.859	0.914	0.967
		PR10	0.942	0.980	0.999	0.934	0.979	0.994	0.900	0.955	0.986
		S15	0.939	0.973	0.999	0.938	0.969	0.995	0.916	0.960	0.992
	1500	WSNS	0.884	0.944	0.979	0.874	0.942	0.984	0.863	0.932	0.972
		PR10	0.940	0.979	0.995	0.915	0.960	0.994	0.910	0.954	0.989
		S15	0.933	0.973	0.993	0.922	0.963	0.996	0.923	0.958	0.993
0.8	500	WSNS	0.887	0.941	0.981	0.868	0.917	0.970	0.853	0.905	0.959
		PR10	0.979	0.991	0.999	0.962	0.982	0.996	0.937	0.968	0.994
		S15	0.981	0.994	0.999	0.958	0.977	0.997	0.961	0.982	1.000
	1000	WSNS	0.900	0.957	0.994	0.889	0.943	0.985	0.874	0.927	0.972
		PR10	0.996	1.000	1.000	0.983	0.994	0.999	0.956	0.986	1.000
		S15	0.987	0.999	1.000	0.979	0.991	0.998	0.948	0.986	1.000
	1500	WSNS	0.892	0.944	0.981	0.885	0.939	0.990	0.885	0.927	0.981
		PR10	0.994	0.999	1.000	0.982	0.994	0.998	0.954	0.981	1.000
		S15	0.980	0.989	1.000	0.969	0.990	1.000	0.946	0.977	0.997

Table 48: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 2 with Uniform$(-2, 2)$ innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.853	0.916	0.957	0.861	0.902	0.957	0.859	0.904	0.955
		PR10	0.848	0.898	0.965	0.853	0.911	0.960	0.862	0.920	0.957
		S15	0.889	0.947	0.992	0.890	0.950	0.986	0.906	0.953	0.986
	1000	WSNS	0.896	0.954	0.983	0.893	0.941	0.980	0.875	0.917	0.974
		PR10	0.882	0.936	0.985	0.876	0.946	0.984	0.865	0.916	0.979
		S15	0.909	0.945	0.987	0.894	0.947	0.994	0.887	0.943	0.993
	1500	WSNS	0.899	0.947	0.989	0.885	0.940	0.987	0.871	0.928	0.984
		PR10	0.879	0.933	0.982	0.864	0.930	0.979	0.879	0.937	0.984
		S15	0.892	0.949	0.987	0.893	0.950	0.986	0.896	0.956	0.994
0.4	500	WSNS	0.869	0.930	0.966	0.871	0.916	0.971	0.872	0.919	0.957
		PR10	0.919	0.954	0.984	0.916	0.953	0.977	0.880	0.922	0.971
		S15	0.934	0.976	0.996	0.928	0.968	0.991	0.918	0.966	0.996
	1000	WSNS	0.900	0.953	0.991	0.900	0.949	0.989	0.874	0.938	0.979
		PR10	0.941	0.984	0.998	0.927	0.973	0.998	0.881	0.952	0.986
		S15	0.946	0.972	1.000	0.935	0.974	0.997	0.913	0.959	0.994
	1500	WSNS	0.911	0.954	0.989	0.902	0.952	0.989	0.894	0.938	0.982
		PR10	0.934	0.974	0.996	0.921	0.957	0.994	0.912	0.955	0.992
		S15	0.933	0.969	0.993	0.933	0.967	0.994	0.928	0.960	0.994
0.8	500	WSNS	0.914	0.948	0.983	0.899	0.944	0.979	0.876	0.917	0.972
		PR10	0.977	0.988	0.999	0.972	0.986	0.997	0.945	0.981	0.994
		S15	0.984	0.994	0.998	0.985	0.994	0.999	0.959	0.987	0.999
	1000	WSNS	0.925	0.970	0.996	0.906	0.960	0.995	0.885	0.941	0.983
		PR10	0.997	1.000	1.000	0.984	0.997	1.000	0.954	0.986	0.996
		S15	0.989	0.998	1.000	0.971	0.993	1.000	0.967	0.986	0.998
	1500	WSNS	0.922	0.965	0.986	0.904	0.949	0.989	0.899	0.941	0.985
		PR10	0.990	1.000	1.000	0.981	0.996	1.000	0.967	0.985	0.998
		S15	0.975	0.989	1.000	0.973	0.988	0.998	0.961	0.991	0.999

Table 49: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.883	0.946	0.991	0.896	0.944	0.995	0.846	0.902	0.968
		PR10	0.882	0.942	0.983	0.864	0.925	0.982	0.887	0.941	0.986
		S15	0.898	0.954	0.988	0.897	0.950	0.990	0.899	0.947	0.986
	1000	WSNS	0.911	0.962	0.993	0.922	0.964	0.993	0.854	0.914	0.971
		PR10	0.908	0.953	0.990	0.882	0.933	0.987	0.891	0.939	0.988
		S15	0.908	0.952	0.995	0.909	0.956	0.989	0.897	0.949	0.989
	1500	WSNS	0.918	0.961	0.993	0.918	0.967	0.996	0.862	0.928	0.982
		PR10	0.901	0.952	0.985	0.882	0.938	0.978	0.903	0.948	0.991
		S15	0.905	0.954	0.989	0.902	0.957	0.990	0.906	0.947	0.987
0.4	500	WSNS	0.886	0.950	0.989	0.887	0.944	0.988	0.845	0.909	0.966
		PR10	0.947	0.975	0.995	0.914	0.958	0.988	0.909	0.955	0.988
		S15	0.934	0.967	0.996	0.916	0.965	0.996	0.903	0.945	0.993
	1000	WSNS	0.913	0.958	0.986	0.916	0.962	0.992	0.854	0.918	0.974
		PR10	0.959	0.985	0.998	0.919	0.962	0.994	0.906	0.957	0.986
		S15	0.939	0.970	0.997	0.930	0.967	0.993	0.901	0.945	0.984
	1500	WSNS	0.911	0.961	0.992	0.912	0.958	0.992	0.868	0.928	0.982
		PR10	0.951	0.978	0.995	0.922	0.969	0.988	0.924	0.961	0.992
		S15	0.944	0.974	0.996	0.937	0.967	0.994	0.922	0.965	0.992
0.8	500	WSNS	0.896	0.949	0.987	0.887	0.945	0.991	0.847	0.904	0.963
		PR10	0.989	0.997	1.000	0.977	0.994	0.999	0.953	0.988	0.996
		S15	0.980	0.995	0.999	0.963	0.984	0.998	0.947	0.981	0.999
	1000	WSNS	0.899	0.942	0.991	0.887	0.949	0.991	0.850	0.908	0.973
		PR10	0.994	1.000	1.000	0.985	0.999	1.000	0.963	0.986	0.997
		S15	0.980	0.991	0.999	0.969	0.989	1.000	0.940	0.967	0.997
	1500	WSNS	0.893	0.954	0.989	0.901	0.953	0.989	0.855	0.923	0.975
		PR10	0.988	0.998	1.000	0.984	0.995	0.999	0.957	0.983	1.000
		S15	0.986	0.995	0.999	0.968	0.992	1.000	0.948	0.978	0.997

Table 50: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with Uniform$(-2, 2)$ innovation, $\rho = 0.6$ and $B_N = 50$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.942	0.983	0.997	0.946	0.979	0.997	0.882	0.924	0.975
		PR10	0.866	0.928	0.983	0.863	0.928	0.978	0.836	0.909	0.975
		S15	0.898	0.948	0.988	0.885	0.949	0.991	0.892	0.948	0.993
	1000	WSNS	0.951	0.980	0.999	0.949	0.984	0.998	0.889	0.941	0.984
		PR10	0.897	0.947	0.989	0.889	0.936	0.982	0.842	0.905	0.976
		S15	0.912	0.957	0.990	0.907	0.955	0.986	0.895	0.952	0.993
	1500	WSNS	0.956	0.985	0.998	0.946	0.982	0.996	0.890	0.946	0.986
		PR10	0.891	0.946	0.984	0.880	0.933	0.981	0.855	0.924	0.986
		S15	0.906	0.955	0.992	0.905	0.959	0.989	0.899	0.947	0.987
0.4	500	WSNS	0.949	0.984	0.998	0.940	0.970	0.995	0.886	0.933	0.977
		PR10	0.935	0.972	0.991	0.928	0.969	0.988	0.871	0.927	0.982
		S15	0.927	0.964	0.992	0.920	0.971	0.993	0.913	0.957	0.991
	1000	WSNS	0.947	0.975	0.996	0.955	0.979	0.994	0.893	0.939	0.984
		PR10	0.949	0.984	0.997	0.942	0.976	0.995	0.861	0.918	0.983
		S15	0.939	0.965	0.994	0.935	0.971	0.995	0.900	0.948	0.992
	1500	WSNS	0.960	0.983	0.996	0.941	0.978	0.998	0.903	0.948	0.993
		PR10	0.945	0.978	0.995	0.935	0.964	0.993	0.877	0.942	0.993
		S15	0.945	0.973	0.995	0.933	0.974	0.996	0.919	0.963	0.994
0.8	500	WSNS	0.949	0.983	0.994	0.917	0.962	0.995	0.873	0.926	0.980
		PR10	0.988	0.996	1.000	0.983	0.995	1.000	0.939	0.976	0.994
		S15	0.981	0.994	0.999	0.972	0.990	1.000	0.953	0.985	0.996
	1000	WSNS	0.940	0.976	0.999	0.930	0.971	0.998	0.882	0.937	0.983
		PR10	0.993	1.000	1.000	0.996	0.999	1.000	0.934	0.980	0.999
		S15	0.981	0.993	0.999	0.974	0.995	0.999	0.946	0.979	0.998
	1500	WSNS	0.948	0.981	0.996	0.919	0.972	0.995	0.899	0.946	0.990
		PR10	0.989	0.998	1.000	0.983	0.996	1.000	0.956	0.990	1.000
		S15	0.983	0.996	1.000	0.974	0.989	0.999	0.966	0.992	1.000

Table 51: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.856	0.918	0.976	0.870	0.918	0.979	0.843	0.894	0.958
		PR10	0.862	0.929	0.979	0.871	0.924	0.979	0.872	0.923	0.978
		S15	0.898	0.954	0.988	0.897	0.950	0.990	0.899	0.947	0.986
	1000	WSNS	0.898	0.945	0.988	0.904	0.948	0.982	0.858	0.909	0.966
		PR10	0.900	0.952	0.989	0.888	0.941	0.985	0.887	0.931	0.985
		S15	0.908	0.952	0.995	0.909	0.956	0.989	0.897	0.949	0.989
	1500	WSNS	0.903	0.951	0.989	0.903	0.955	0.994	0.879	0.928	0.981
		PR10	0.899	0.951	0.980	0.896	0.943	0.982	0.902	0.946	0.987
		S15	0.905	0.954	0.989	0.902	0.957	0.990	0.906	0.947	0.987
0.4	500	WSNS	0.864	0.921	0.972	0.862	0.918	0.975	0.834	0.895	0.956
		PR10	0.937	0.975	0.990	0.915	0.955	0.984	0.898	0.951	0.980
		S15	0.934	0.967	0.996	0.916	0.965	0.996	0.903	0.945	0.993
	1000	WSNS	0.902	0.945	0.980	0.904	0.943	0.982	0.861	0.918	0.972
		PR10	0.957	0.983	0.996	0.922	0.964	0.993	0.905	0.954	0.982
		S15	0.939	0.970	0.997	0.930	0.967	0.993	0.901	0.945	0.984
	1500	WSNS	0.900	0.947	0.987	0.896	0.946	0.989	0.875	0.938	0.984
		PR10	0.948	0.976	0.995	0.922	0.969	0.990	0.923	0.959	0.989
		S15	0.944	0.974	0.996	0.937	0.967	0.994	0.922	0.965	0.992
0.8	500	WSNS	0.893	0.945	0.986	0.872	0.933	0.984	0.851	0.901	0.954
		PR10	0.986	0.993	0.999	0.976	0.993	0.999	0.953	0.974	0.994
		S15	0.980	0.995	0.999	0.963	0.984	0.998	0.947	0.981	0.999
	1000	WSNS	0.897	0.944	0.987	0.890	0.943	0.984	0.866	0.915	0.971
		PR10	0.994	0.998	1.000	0.985	0.999	1.000	0.961	0.982	0.998
		S15	0.980	0.991	0.999	0.969	0.989	1.000	0.940	0.967	0.997
	1500	WSNS	0.893	0.950	0.991	0.902	0.944	0.984	0.864	0.924	0.979
		PR10	0.988	0.996	1.000	0.987	0.993	1.000	0.959	0.979	0.999
		S15	0.986	0.995	0.999	0.968	0.992	1.000	0.948	0.978	0.997

Table 52: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with Uniform$(-2, 2)$ innovation, $\rho = 0.6$ and $B_N = 100$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.894	0.943	0.988	0.894	0.957	0.986	0.861	0.921	0.966
		PR10	0.861	0.925	0.978	0.857	0.933	0.983	0.854	0.904	0.976
		S15	0.898	0.948	0.988	0.885	0.949	0.991	0.892	0.948	0.993
	1000	WSNS	0.923	0.959	0.993	0.916	0.960	0.990	0.895	0.944	0.980
		PR10	0.900	0.951	0.986	0.888	0.941	0.984	0.864	0.922	0.975
		S15	0.912	0.957	0.990	0.907	0.955	0.986	0.895	0.952	0.993
	1500	WSNS	0.928	0.963	0.993	0.918	0.964	0.992	0.886	0.943	0.985
		PR10	0.894	0.945	0.983	0.887	0.936	0.983	0.886	0.936	0.986
		S15	0.906	0.955	0.992	0.905	0.959	0.989	0.899	0.947	0.987
0.4	500	WSNS	0.898	0.953	0.991	0.901	0.942	0.987	0.877	0.917	0.963
		PR10	0.932	0.969	0.989	0.923	0.971	0.989	0.885	0.928	0.979
		S15	0.927	0.964	0.992	0.920	0.971	0.993	0.913	0.957	0.991
	1000	WSNS	0.924	0.960	0.993	0.928	0.965	0.988	0.887	0.941	0.980
		PR10	0.949	0.982	0.994	0.948	0.976	0.993	0.884	0.929	0.979
		S15	0.939	0.965	0.994	0.935	0.971	0.995	0.900	0.948	0.992
	1500	WSNS	0.935	0.974	0.992	0.919	0.960	0.996	0.905	0.945	0.989
		PR10	0.950	0.977	0.995	0.938	0.969	0.994	0.901	0.960	0.991
		S15	0.945	0.973	0.995	0.933	0.974	0.996	0.919	0.963	0.994
0.8	500	WSNS	0.930	0.969	0.987	0.889	0.949	0.991	0.877	0.925	0.975
		PR10	0.986	0.994	0.999	0.984	0.994	0.999	0.954	0.979	0.992
		S15	0.981	0.994	0.999	0.972	0.990	1.000	0.953	0.985	0.996
	1000	WSNS	0.928	0.965	0.997	0.911	0.955	0.994	0.881	0.943	0.983
		PR10	0.992	0.999	1.000	0.997	0.999	1.000	0.950	0.982	0.998
		S15	0.981	0.993	0.999	0.974	0.995	0.999	0.946	0.979	0.998
	1500	WSNS	0.933	0.965	0.996	0.895	0.953	0.993	0.907	0.953	0.988
		PR10	0.990	0.997	1.000	0.985	0.996	1.000	0.972	0.995	1.000
		S15	0.983	0.996	1.000	0.974	0.989	0.999	0.966	0.992	1.000

Table 53: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with Uniform$(-2, 2)$ innovation, $\rho = 0.3$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.836	0.893	0.959	0.844	0.908	0.957	0.829	0.886	0.941
		PR10	0.843	0.913	0.974	0.864	0.915	0.968	0.863	0.903	0.964
		S15	0.898	0.954	0.988	0.897	0.950	0.990	0.899	0.947	0.986
	1000	WSNS	0.889	0.936	0.983	0.886	0.933	0.979	0.859	0.906	0.965
		PR10	0.894	0.951	0.985	0.891	0.935	0.985	0.878	0.929	0.979
		S15	0.908	0.952	0.995	0.909	0.956	0.989	0.897	0.949	0.989
	1500	WSNS	0.895	0.939	0.982	0.886	0.945	0.986	0.878	0.926	0.981
		PR10	0.896	0.942	0.980	0.893	0.942	0.980	0.900	0.943	0.986
		S15	0.905	0.954	0.989	0.902	0.957	0.990	0.906	0.947	0.987
0.4	500	WSNS	0.841	0.910	0.964	0.837	0.902	0.957	0.820	0.889	0.940
		PR10	0.918	0.968	0.982	0.904	0.955	0.979	0.888	0.935	0.963
		S15	0.934	0.967	0.996	0.916	0.965	0.996	0.903	0.945	0.993
	1000	WSNS	0.886	0.940	0.976	0.884	0.931	0.976	0.860	0.919	0.962
		PR10	0.950	0.978	0.994	0.923	0.960	0.993	0.901	0.951	0.981
		S15	0.939	0.970	0.997	0.930	0.967	0.993	0.901	0.945	0.984
	1500	WSNS	0.897	0.944	0.984	0.887	0.934	0.985	0.869	0.934	0.978
		PR10	0.945	0.975	0.995	0.922	0.968	0.988	0.921	0.956	0.986
		S15	0.944	0.974	0.996	0.937	0.967	0.994	0.922	0.965	0.992
0.8	500	WSNS	0.881	0.950	0.979	0.863	0.922	0.979	0.849	0.897	0.955
		PR10	0.982	0.991	0.998	0.971	0.990	0.999	0.946	0.971	0.991
		S15	0.980	0.995	0.999	0.963	0.984	0.998	0.947	0.981	0.999
	1000	WSNS	0.896	0.941	0.983	0.877	0.936	0.980	0.866	0.914	0.967
		PR10	0.993	0.998	1.000	0.979	0.995	1.000	0.958	0.979	0.999
		S15	0.980	0.991	0.999	0.969	0.989	1.000	0.940	0.967	0.997
	1500	WSNS	0.894	0.951	0.988	0.898	0.940	0.981	0.865	0.928	0.980
		PR10	0.988	0.996	1.000	0.984	0.993	1.000	0.959	0.979	0.997
		S15	0.986	0.995	0.999	0.968	0.992	1.000	0.948	0.978	0.997

Table 54: Empirical coverage probabilities of the proposed WSNS method, the PR10 method of Politis and Romano (2010) and the S15 method described in Shao (2015) for Scenario 3 with Uniform$(-2,2)$ innovation, $\rho = 0.6$ and $B_N = 150$.

			Mean			Median			Variance		
r	N_c	Method	90%	95%	99%	90%	95%	99%	90%	95%	99%
0	500	WSNS	0.874	0.921	0.978	0.867	0.935	0.972	0.845	0.898	0.954
		PR10	0.854	0.906	0.971	0.858	0.919	0.973	0.852	0.898	0.969
		S15	0.898	0.948	0.988	0.885	0.949	0.991	0.892	0.948	0.993
	1000	WSNS	0.898	0.948	0.987	0.898	0.951	0.987	0.884	0.933	0.977
		PR10	0.894	0.948	0.983	0.883	0.938	0.979	0.865	0.918	0.968
		S15	0.912	0.957	0.990	0.907	0.955	0.986	0.895	0.952	0.993
	1500	WSNS	0.916	0.959	0.990	0.904	0.947	0.990	0.886	0.940	0.982
		PR10	0.894	0.944	0.978	0.886	0.934	0.978	0.887	0.935	0.985
		S15	0.906	0.955	0.992	0.905	0.959	0.989	0.899	0.947	0.987
0.4	500	WSNS	0.881	0.928	0.982	0.871	0.924	0.974	0.848	0.910	0.955
		PR10	0.920	0.961	0.984	0.915	0.962	0.988	0.881	0.922	0.970
		S15	0.927	0.964	0.992	0.920	0.971	0.993	0.913	0.957	0.991
	1000	WSNS	0.905	0.948	0.986	0.909	0.955	0.981	0.882	0.933	0.977
		PR10	0.944	0.977	0.992	0.940	0.969	0.991	0.889	0.925	0.977
		S15	0.939	0.965	0.994	0.935	0.971	0.995	0.900	0.948	0.992
	1500	WSNS	0.923	0.966	0.990	0.906	0.949	0.989	0.898	0.946	0.987
		PR10	0.950	0.978	0.995	0.940	0.968	0.994	0.905	0.963	0.991
		S15	0.945	0.973	0.995	0.933	0.974	0.996	0.919	0.963	0.994
0.8	500	WSNS	0.914	0.950	0.982	0.875	0.936	0.978	0.854	0.908	0.966
		PR10	0.984	0.994	0.998	0.980	0.992	0.996	0.949	0.975	0.990
		S15	0.981	0.994	0.999	0.972	0.990	1.000	0.953	0.985	0.996
	1000	WSNS	0.915	0.954	0.990	0.892	0.951	0.988	0.877	0.928	0.983
		PR10	0.993	0.998	1.000	0.991	0.998	1.000	0.950	0.977	0.997
		S15	0.981	0.993	0.999	0.974	0.995	0.999	0.946	0.979	0.998
	1500	WSNS	0.922	0.963	0.995	0.894	0.947	0.992	0.907	0.944	0.992
		PR10	0.990	0.998	1.000	0.981	0.997	1.000	0.972	0.995	1.000
		S15	0.983	0.996	1.000	0.974	0.989	0.999	0.966	0.992	1.000

S3 Minimum Volatility Bandwidth Choice

The problem of selecting a bandwidth or block size has been widely studied in the subsampling literature; see for example Hall et al. (1995a), Hall et al. (1995b), Politis and White (2004), and references therein. In our data analysis in Section 4.2, we follow Politis et al. (1999) and consider a minimum volatility bandwidth choice which can be obtained as follows.

(i) For any bandwidth B in a suitable range, we take a small integer K to form a neighborhood $\mathcal{N}_K(B) = \{B - K, \ldots, B + K\}$.

(ii) For each bandwidth in $\mathcal{N}_K(B)$, we compute the associated subsampling cut-off threshold, denoted by $\hat{q}_{T,1-\alpha}(B - K), \ldots, \hat{q}_{T,1-\alpha}(B + K)$.

(iii) We compute the standard deviation of $\hat{q}_{T,1-\alpha}(B - K), \ldots, \hat{q}_{T,1-\alpha}(B + K)$, and choose the bandwidth that minimizes such a standard deviation.

As commented in Politis et al. (1999), the choice of K is generally not very important and a choice of $K = 2$ or $K = 3$ usually suffices. We use $K = 5$ in our data analysis in Section 4.2, and the selected bandwidths are $B_N = 43$, 79 and 132 for the mean, median and variance cases respectively.

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