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CORRIGENDUM

CONFIDENCE BANDS IN QUANTILE REGRESSION–Corrigendum

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The Taylor-series expansion used to obtain equation (8) on p. 1186 is incorrect because $\Psi(t)$ is a step function. We thank Joel L. Horowitz for bringing the error to our attention and outlining a correct proof of (8), which is based on Theorem 1 of Kong, Linton, and Xia (2010). Set $\theta_0 = l(x)$ and $\hat{\theta} = l_n(x)$. Using the notation of Kong et al. set $p = 0 = 0$. This gives $H_n = W_p = 1$, $\lambda = 3/4$, and $S_{n,0}(x) = f(\theta_0|x) f_X(x) + \mathcal{O}(h^2)$. The quantity $\hat{\beta}_n^*(x)$ in equation (12) of Kong et al. is

$$\hat{\beta}_n^*(x) = \frac{1}{nhS_{n,0}(x)} \sum_{i=1}^{n} K_h(X_i - x)\Psi(Y_i - \theta_0) = \frac{H_n(x)}{S_{n,0}(x)},$$

where H_n is as defined in Härdle and Song (2010). It follows from Theorem 1 of Kong et al. that

$$\hat{\theta} - \theta_0 = \frac{H_n(x)}{S_{n,0}(x)} + \mathcal{O}_p\left[\left(\frac{\log n}{nh}\right)^{3/4}\right].$$

Therefore,

$$\begin{aligned}(nh)^{1/2}(\hat{\theta} - \theta_0) &= \frac{(nh)^{1/2}}{S_{n,0}(x)}[H_n(x) - \mathsf{E}\, H_n(x)] \\ &\quad + \frac{(nh)^{1/2}}{S_{n,0}(x)}\mathsf{E}\, H_n(x) + \mathcal{O}_p\left[\frac{(\log n)^{3/4}}{(nh)^{1/4}}\right].\end{aligned}$$

But $(nh)^{1/2}\mathsf{E}\, H_n(x) = \mathcal{O}[(nh)^{1/2}h^2] = o(1)$ and $(nh)^{1/2}[H_n(x) - \mathsf{E}\, H_n(x)] = \mathcal{O}_p(1)$. Therefore,

$$(nh)^{1/2}(\hat{\theta} - \theta_0) = \frac{(nh)^{1/2}}{f(\theta_0|x) f_X(x)}[H_n(x) - \mathsf{E}\, H_n(x)] + \mathcal{O}_p\left[\frac{(\log n)^{3/4}}{(nh)^{1/4}}\right],$$

which is the required result.

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