Forecasting with Model Uncertainty: Representations and Risk Reduction: Corrigendum*

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Assumption 3.3 of Hirano and Wright (2017) specifies that:

$$\sum_{t=1}^{[Tr]} \sum_{s=1}^{t-1} \frac{\partial \ell_s(\beta_{0,T})}{\partial \beta} \frac{1}{t-1} \frac{\partial \ell_t(\beta_{0,T})'}{\partial \beta} \rightarrow_d \int_0^r \frac{1}{s} B(s) dB(s)'. \tag{1}$$

The existence of this stochastic integral requires that $\int_0^r \frac{1}{s^2} B(s)B(s)' ds < \infty$, a.s. But by the law of the iterated logarithm, this is of order $\int_0^r \frac{1}{s} loglog \frac{1}{s} ds$, a.s., which is infinite. Consequently the stochastic integral in (1) is not well-defined. However, what we actually use in the subsequent propositions is instead the assumption that:

$$\sum_{t=[T\pi]+1}^{T} \sum_{s=1}^{t-1} \frac{\partial \ell_s(\beta_{0,T})}{\partial \beta} \frac{1}{t-1} \frac{\partial \ell_t(\beta_{0,T})'}{\partial \beta} \rightarrow_d \int_\pi^1 \frac{1}{s} B(s) dB(s)'. \tag{2}$$

for $0 < \pi < 1$. Since $\int_\pi^1 E[\frac{1}{s^2} B(s)B(s)'] ds = -\ln(\pi) I$, this stochastic integral does indeed exist. Equation (1) would imply equation (2), but equation (1) is not well defined. Assumption 3.3 should therefore be amended to be given by equation (2), which keeps the domain of integration away from 0. We are grateful to Peter Phillips for pointing out this mistake.

References

HIRANO, K. and J.H. WRIGHT (2017): "Forecasting with Model Uncertainty: Representations and Risk Reduction," *Econometrica*, 85, 617-643.

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