

Report on Nonparametric Comparison of Epidemic Time Trends: The Case of COVID-19

The authors consider a quasi-Poisson model

$$X_{it} = \lambda_i \left(\frac{t}{T} \right) + \sigma \sqrt{\lambda_i \left(\frac{t}{T} \right)} \eta_{it},$$

where η_{it} is white noise with unit variance. The goal is to test the set of hypothesis

$$H_0^{(ijk)} : \lambda_i(w) = \lambda_j(w) \quad \forall w \in I_k,$$

where the I_k are sets of time intervals. They devise a testing procedure that controls the familywise error rate. They apply their test to the comparison between countries of the development of the Covid-19 epidemic.

The paper is well-written, the method is new, and the application is clearly of interest. A multiscale approach is introduced, that has not been used in econometrics to my knowledge. I also like the way the authors present their empirical results and discuss them.

Minor comments

- The assumption of independence across countries may be debatable, but it seems that in the context of the model, this could be tested, so this may be worth mentioning.
- Some arguments may be worth further details in the text. For instance, the equation involving $\widehat{s}_{ijk,T}/\sqrt{Th_k}$ on Page 2 Line 7, or the bound for $|r_{it}|$ on Page 2 Line -5.
- I am unsure why the statistic in (3.2) is introduced, I feel the discussion in Pages 8-9 could be done without referring to it.
- The “cp.” abbreviation is uncommon, I feel it should be replaced by “see” or “e.g.”