

The Research Centre of the School of Economics and Business,
in cooperation with **the Bank of Slovenia,**
cordially invites you to a free research seminar
on **Wednesday, 25 October 2023,** at **13:00 CEST** in room **P-201/202**
at the **School of Economics and Business, University of Ljubljana**

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will present the article
Fuzzy difference-in-differences estimator for spatiotemporal data

Difference-in-differences (DiD) literature is a fast growing field in econometrics and causal inference. In previous contribution of Delgado and Florax (2015), DiD has been extended to spatial data with indirect effect part of the estimator capturing proximate neighbour effects. We significantly extend this in treatment effect with network interference capturing context by controlling for violated stable unit treatment values assumption (SUTVA), inherent for such analysis and in a spatiotemporal setting. Our potential outcome regression framework is based on spatiotemporal autoregressive model (Pace et al., 1998). To correct for violated SUTVA assumption we develop a Wald ratio DiD estimator based on fuzzy DiD approach (De Chaisemartin and D'Haultfoeuille, 2019) with extensions to time-corrected Wald ratio and changes-in-changes estimation. Our asymptotic analysis relies on graphon stochastic processes (Lovasz and Szegedy, 2006; Borgs et al., 2008) and we derive asymptotic normality and consistency for our Wald ratio estimator in a graphon context. We follow Li and Wager (2023) in deriving confidence intervals based on conservative bounds for unknown components in the asymptotic variance. In an application, we study causal effects of the yearly Venice carnival, being able to isolate the effect respective to other large events in Venice in the studied period. This resolves key problem in the ex-post econometric verification studies of economic effects of tourism events, namely of competing events biasing the causal estimates of the original economic impact. We consider extensions using spillover double robust DiD and Bayesian approaches, as well as tests for parallel trends (and corrections for its violation, see Rambachan and Roth, 2021; Roth and Sant'Anna, 2023) and inclusion of multiple and/or continuous treatments in our novel difference-in-differences context.

Contribution has been presented in the main program of this year's American Causal Inference Conference (ACIC 2023) in Austin.

Keywords: difference-in-differences, causal inference, spatiotemporal data, network interference, SUTVA, graphon

Please register for the free seminar at <http://raziskave.ef.uni-lj.si/a/1595>
by Tuesday, 24 October 2023.

Access details will be sent prior to the event to registered participants.

We look forward to seeing you!

