

Overview

Linear Panel Event Studies

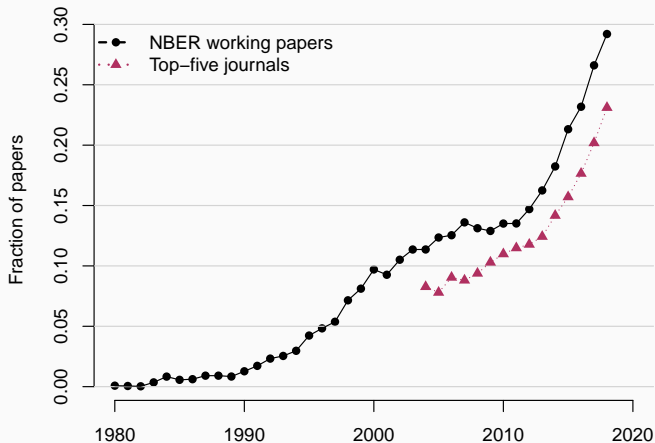
Liyang (Sophie) Sun (CEMFI)

Jesse M. Shapiro (Harvard and NBER)

Linear Panel Event Studies

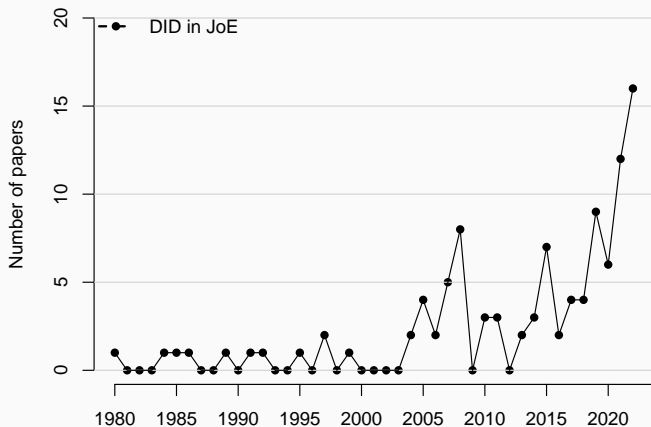
- Units i (e.g., state)
- Periods t (e.g., year)
- Outcome y_{it} (e.g., employment)
- Policy variable z_{it} (e.g., minimum wage)
- Interested in effect of z_{it} on y_{it}
- Willing to specify some kind of **linear panel model** for y_{it}

Event Study Methods Widely Used



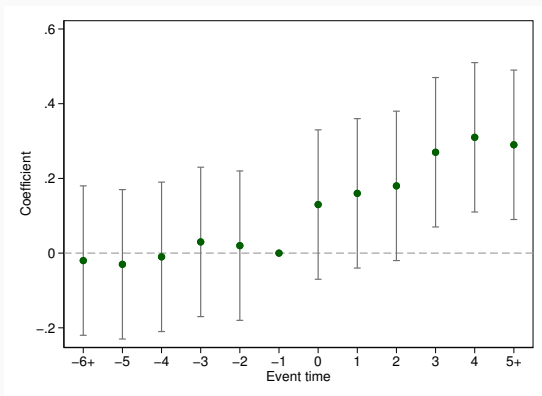
Source: Currie Kleven Zwiers (2020), Figures 4A-4C

Event Study Methods Widely Studied



Source: Our calculations from the *Journal of Econometrics* website.

Plotting is Essential



Source: Freyaldenhoven et al. (2021)

- Of 16 papers in the 2022 AER mentioning DID or event studies, 10 include an **event-study plot**

Many Pitfalls

- Uninformative / misleading visualizations
- Model misspecification

Many Resources

- New frameworks for visualization
- New ways to assess sensitivity

Today

- Overview (Jesse)
- Basics of identification and estimation (Liyang)
- Basics of plotting (Jesse)
- Pitfalls and some solutions
 - Confounds and pre-trend testing (Liyang)
 - Heterogeneous effects (Jesse)
- Conclusions (Liyang)

Caveats

- Not objective (Jesse)
- Not comprehensive

Further Reading

- de Chaisemartin, Clément and Xavier D'Haultfoeuille. Forthcoming. Two-way fixed effects and differences-in-differences with heterogeneous treatment effects: A survey. In *Econometrics Journal*.
- Freyaldenhoven, Simon, Christian Hansen, Jorge Pérez Pérez, Jesse M. Shapiro. Forthcoming. Visualization, identification, and estimation in the linear panel event-study design. In *Advances in Economics and Econometrics: Twelfth World Congress*.
- Miller, Douglas L. 2023. An Introductory Guide to Event Study Models. In *Journal of Economic Perspectives*.
- Roth, Jonathan, Pedro H. C. Sant'Anna, Alyssa Bilinski, and John Poe. Forthcoming. What's trending in difference-in-differences? A synthesis of the recent econometrics literature. In *Journal of Econometrics*.
- Sun, Liyang and Jesse M. Shapiro. 2022. A linear panel model with heterogeneous coefficients and variation in exposure. In *Journal of Economic Perspectives*.

Today

- Overview (Jesse)
- Basics of identification and estimation (Liyang)
- Basics of plotting (Jesse)
- Pitfalls and some solutions
 - Confounds and pre-trend testing (Liyang)
 - Heterogeneous effects (Jesse)
- Conclusions (Liyang)