

Causal Inference II

MIXTAPE SESSION



Roadmap

Basic suggestions going forward



- Basic principles – DiD calculation, ATT, parallel trends, falsifications, event studies
- Covariates – Abadie, Sant'Anna and Zhao
- Differential timing with heterogeneity – Bacon, Callaway and Sant'anna, Sun and Abraham, Borusyak, et al., Gardner, Wooldridge
- Continuous treatments – Callaway, Sant'anna and Goodman-Bacon

Concluding remarks on DD

- You're probably going to write a paper using DiD at least once in your life, but probably more
- Even if you don't, you're going to read a lot of papers using DiD, referee them, or advise students using them
- It's in your best interest to make the fixed cost investment in the new econometrics of DiD because the old methods are mostly harmful
- Good news is we are at the conclusion of this wave of papers, software is now widely available, solutions tend to have common features, and overall presentations (static and dynamic) aren't all that different

Concluding remarks

- Simple 2x2 has its own problems when estimated using TWFE *if you include covariates*
- Stronger assumptions needed to include covariates, and bias can be large
- Don't control for covariates that could be affected by the outcome

Concluding remarks

- Main problem in differential timing is heterogeneity and the use of already-treated units as controls
- Differential timing and lacking a priori theory, you *cannot* use TWFE. It is biased, and it does not obey a “no sign flip” property, weights can be negative, etc etc.
- Robust DiD methods do not place restrictions on treatment effect heterogeneity

Concluding remarks

- But when you lose parallel trends, you're probably going in the direction of needing synthetic control methods
- There are plenty and they also require good form fit pre-treatment
- But when you fail that, there are new advances – augmented synth, Imbens and Doudchenko both allow for lower quality fit

Conclusion

- Thank you for coming to the workshop
- I hope that this was valuable for you
- We will be doing this until demand drops off, so keep your eyes peeled