

Mini-course on Two-Way Fixed Effects and Differences-in-Differences with Heterogeneous Treatment Effects

Synopsis

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A. Description

Linear regressions with period and group fixed effects are widely used to estimate policies' effects: 26 of the 100 most cited papers published by the American Economic Review from 2015 to 2019 estimate such regressions. It has recently been shown that those regressions may produce misleading estimates, if the policy's effect is heterogeneous between groups or over time, as is often the case. This mini-course reviews a fast-growing literature that documents this issue, and that proposes alternative estimators robust to heterogeneous effects. Several examples drawn from the literature will illustrate the theoretical results, and Stata commands will be presented.

B. Pre-requisites

It is recommended that students have followed graduate-level econometrics classes. In particular, students should be familiar with standard ordinary least squares algebra, and in particular with the Frisch-Waugh-Lovell theorem. Chapters 3 and 4 of my PhD-level lecture notes, available here: https://drive.google.com/file/d/1m4_oPc10sDI955b3hYDLxheMk1Row1zA/view, might be helpful. See in particular Theorems 3.4.1 and 4.1.1.

C. Tentative outline (may be subject to changes)

- 1 TWFE estimators with heterogeneous treatment effects.
- 2 Designs with a binary treatment, and no variation in treatment timing.
- 3 Heterogeneous adoption designs.
- 4 Heterogeneous change designs.
- 5 Binary and staggered designs.
- 6 General designs, ruling out dynamic effects.
- 7 General designs, allowing for dynamic effects.
- 8 Designs with several treatments.

References

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