

Comparison of classical DiD, Synthetic Control and Synthetic DiD

- Small introduction to DiD
 - Key assumptions (parallel trends, no anticipatory effects, ...)
 - Problems resulting from violation i.e. limitations of DiD
 - SC and SDID to „solve“ these problems
- Introduce SC and SDID
 - Similarities and differences of all 3 approaches
- More detailed information about SC and SDID
 - Computation of estimates
 - Unit-weights (SC and SDID), time-weights (SDID), ...
 - Limitations of SC and SDID
 - E.g. Synthetically recreating treated unit with highest or lowest value in variable of interest (pre-treatment) hardly possible
 - When to use which approach
 - E.g. SC for small number of treated units

Comparison of classical DiD, Synthetic Control and Synthetic DiD

- Demonstration of all three approaches on simulated data
 - We **know** the true effect
- Simulate multiple datasets
 - „Optimal“ dataset, that allows for DiD
 - Violation of parallel trends assumption
 - Small vs. Large number of observations (treated or control)
 - Varying treatment effect magnitude
 - Heterogenous treatment effects
- Interpretation and sensitivity of results
 - Placebo studies with random treatment assignment
 - Discuss findings against current literature
 - E.g. Do SDID estimates have lower standard errors?