

Co-integration and control: assessing the impact of events using time series data

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Abstract

Control groups can provide counterfactual evidence for assessing the impact of an event or policy change on a target variable. We argue that fitting a time series model offers potential gains over a direct comparison between the target and a weighted average of controls. More importantly, it highlights the assumptions underlying methods such as difference-in-differences and synthetic control, suggesting ways to test these assumptions. Gains from simple and transparent time series models are analysed using examples from the literature, including the California smoking law of 1989 and German re-unification. We argue that selecting controls using a time series strategy is preferable to existing data-driven regression methods.

KEYWORDS: common trends; difference in differences; intervention analysis; stationarity tests; synthetic control; unobserved components.

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