



# Seminarios de Macroeconomía y Finanzas

## Counterfactual Analysis with Artificial Controls: Inference, High Dimensions and Nonstationarity

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Sala de Conferencias, Agustinas 1180, piso 3

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Los Seminarios de Macroeconomía y Finanzas tienen como objetivo difundir investigación académica y aplicada de investigaciones del Banco y externos.

### Abstract

Recently, there has been growing interest in developing statistical tools to conduct counterfactual analysis with aggregate data when a single "treated" unit suffers an intervention, such as a policy change, and there is no obvious control group. Usually, the proposed methods are based on the construction of an artificial counterfactual from a pool of "untreated" peers, organized in a panel data structure. In this paper, we consider a general framework for counterfactual analysis for high dimensional, non-stationary data with either deterministic and/or stochastic trends, which nests well-established methods, such as the synthetic control. Furthermore, we propose a resampling procedure to test intervention effects that does not rely on post-intervention asymptotics and that can be used even if there is only a single observation after the intervention. A simulation study is provided as well as an empirical application where the effects of price changes on the sales of a product are measured.