"Forecasted Treatment Effects" and it is joint work with Raffaella Giacomini and Martin Weidner.

An extended abstract is:

In this paper, we propose a method for estimating the effect of a program or policy when there are many treated units and no control units, e.g., when all individuals in a population are treated. We show how individual pre-treatment information can be exploited to forecast individual counterfactuals, which can then be used to obtain estimates of the average treatment effect. We propose simple estimators based on polynomial regression, which do not require correct specification of the individual forecast model or a long pre-treatment history. In fact, our framework is a short panel one (large N, short T). Our first contribution is to show that polynomial-regression based estimators obtain unbiased forecasts for a broad class of data-generating processes (DGPs) that allows for a large degree of individual-specific heterogeneity. Our results apply DGPs that express the individual potential outcomes as the sum of potentially three components: a stationary process, a unit root process, and a polynomial time trend. Each of the components can be individual-specific, so that potential outcomes can feature fixed effects, lagged outcomes, and individual time trends. Our result is surprising as it suggests that (1) polynomial-based forecasts are not subject to the incidental parameter problem, (2) a larger polynomial order can mitigate the bias due to a "non-stationary" initial condition in a short time series, and (3) forecasting the deterministic component of individual time series, while leaving the stochastic component unspecified, is sufficient for unbiasedness of forecasts. Our second contribution is to derive sufficient conditions for the consistency and asymptotic normality of the average treatment effect estimator based on our unbiased forecast of the counterfactual.