

# ECON 7103 Homework 8

Yifan Liu (yliu3494)

Spring 2023

## 1. The effect of the recycling pause and the possibility of parallel trends

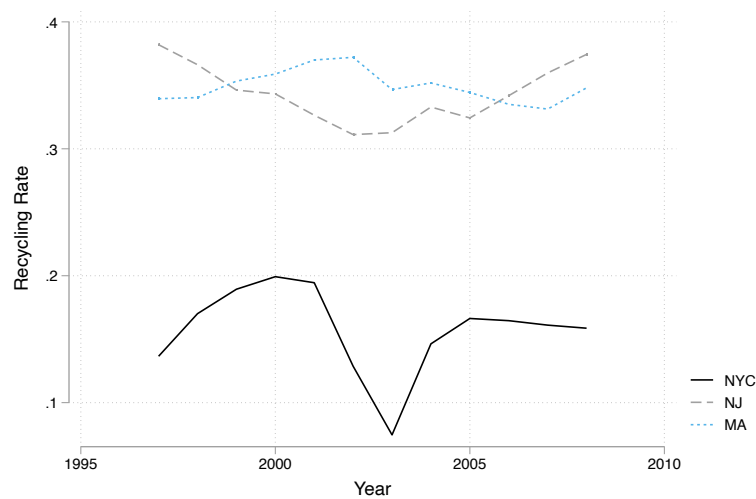


Figure 1: A yearly plot of the recycling rate for NYC and the controls

Figure 1 demonstrates a yearly plot of the recycling rate for NYC and the controls. There is a discernible drop of recycling rate between 2002 and 2004, which can result from the recycling pause. However, the trends between NYC and NJ or MA look quite different.

## 2. TWFE

The average treatment effect of the recycling pause is  $-0.06199$  with a standard error of  $.0058$ .

## 3. Synthetic DID

The average treatment effect of the recycling pause is  $-0.06310$  with a standard error of  $.03792$ .

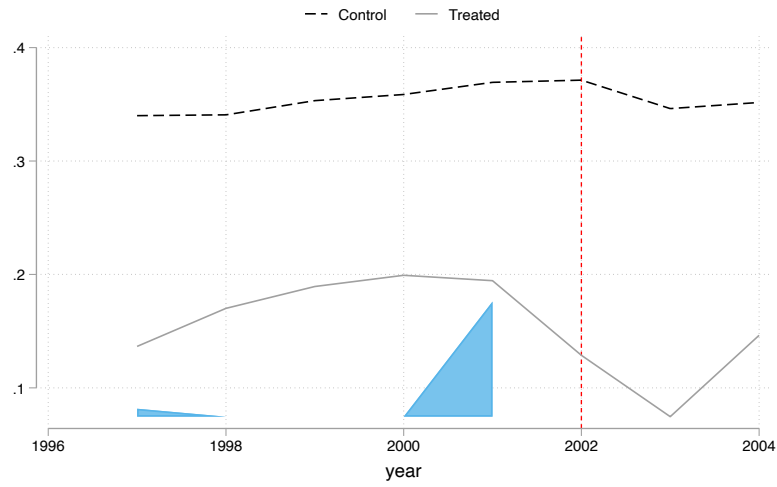


Figure 2: The synthetic DID plot

#### 4. Event study

Setting the year of 2001(dy5) as the benchmark, the effect of year 2002 (dy6) is  $-.06734$  with a standard error of  $.0073$ .

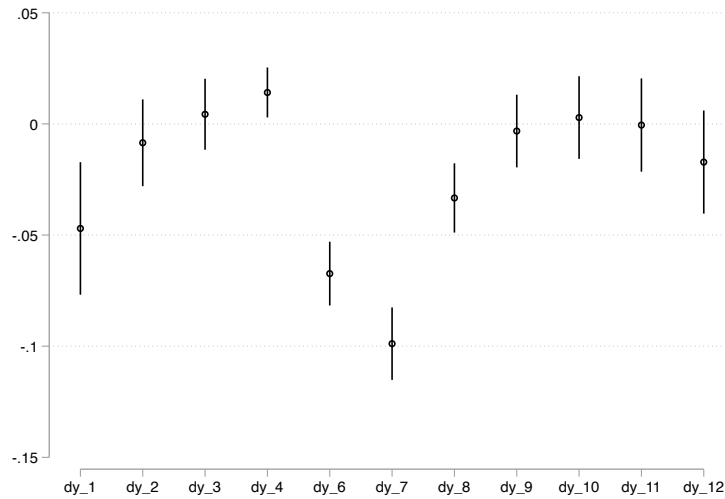


Figure 3: Event study

#### 5. Synthetic control estimates

(a) The plot of raw outcomes for treated and control groups over time:

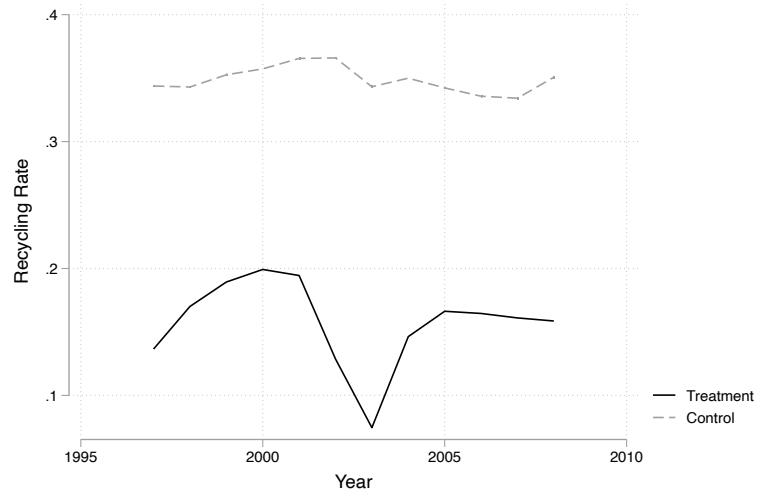


Figure 4: Raw outcomes for treated and control groups over time (A)

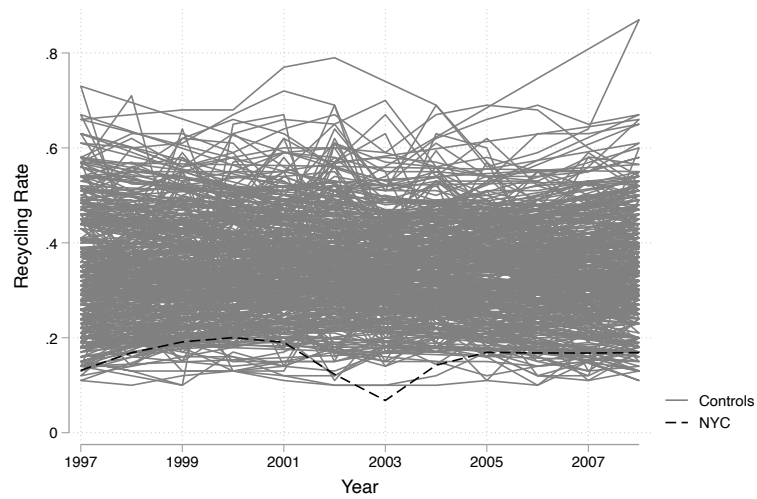


Figure 5: Raw outcomes for treated and control groups over time (B)

(b) The plot of raw outcomes for treated group and synthetic control group over time:

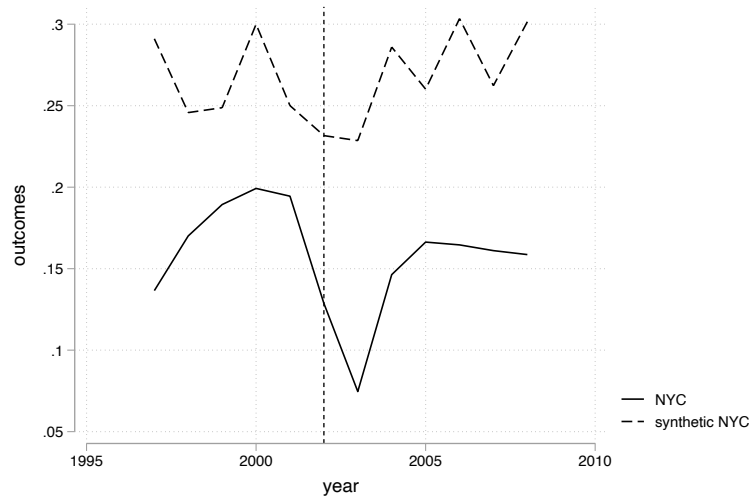


Figure 6: Raw outcomes for treated group and synthetic control group over time

(c) The plot of estimated synthetic control effects and placebo effects over time:

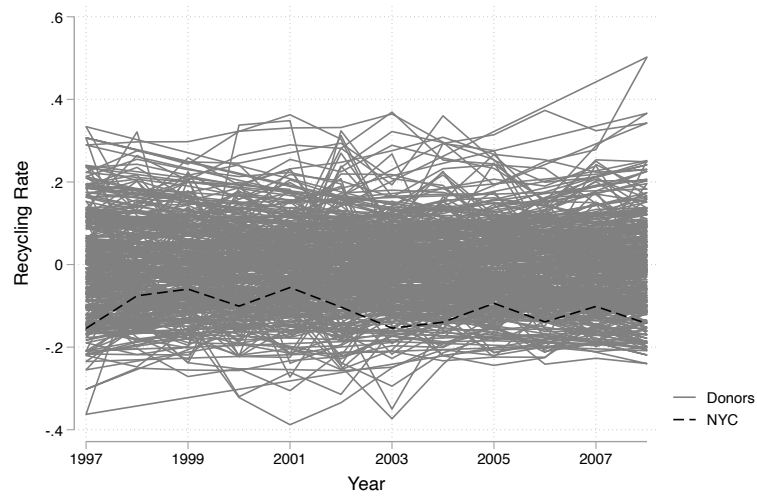


Figure 7: Estimated synthetic control effects and placebo effects over time

(d) The plot of final synthetic control estimates over time:

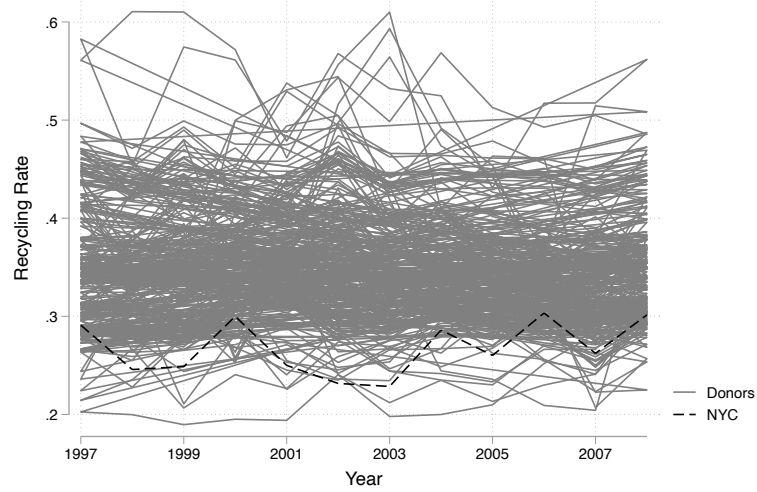


Figure 8: Final synthetic control estimates over time?

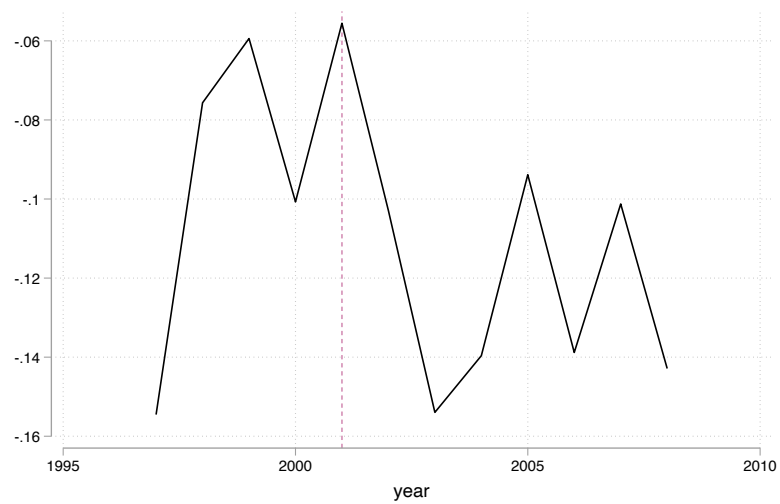


Figure 9: Final synthetic control estimates over time?