Some Population-Level Treatment Effects

Applied Microeconomics

Hans-Martin von Gaudecker & Florian Zimmermann

Average Treatment Effect (ATE)

$$\mathrm{ATE} = E[Y(1,\omega) - Y(0,\omega)]$$

- Average taken over the population of interest
- Could condition on some observed variables taking on particular values
- Does not depend on who gets treatment in a particular environment
- Not necessarily interesting from a policy perspective

Average Treatment Effect on the Treated (ATT)

$$\mathrm{ATT} = E[Y(1,\omega) - Y(0,\omega)|D(\omega) = 1]$$

- D(ω) = 1 if individual with ω is treated
- Average taken over the population of individuals who are treated in some setting
- Thus depends on who is being treated at baseline
- Effect of shutting down the program that is in place

Average Treatment Effect on the Untreated (ATUT)

$$\mathrm{ATUT} = E[Y(1,\omega) - Y(0,\omega)|D(\omega) = 0]$$

- Average taken over the population of individuals who are not treated in some setting
- Thus depends on who is being treated at baseline
- Effect of extending treatment to those who are not treated

Effect Of Treatment for people at the Margin of indifference (EOTM)

$$\text{EOTM} = E[Y(1,\omega) - Y(0,\omega) | R(Y(1,\omega), C(1,\omega), \omega) = R(Y(0,\omega), C(0,\omega), \omega)]$$

- Conditions on the individual being indifferent between treatment and control
- Thus depends on who is being treated at baseline
- Generalizes to the Marginal Treatment Effect (MTE)

Policy Relevant Treatment Effect (PRTE)

$$\text{PRTE} = E_p[Y(s,\omega)] - E_{p'}Y[(s,\omega)] \quad \text{where} \quad p, p' \in \mathcal{P}$$

- Compares average outcomes under two different policies
- Thus depends on who is being treated at baseline and under alternative
- Changing the policy from p to p' only changes who gets treated
- PRTE is the mean difference in outcomes under the two policies