Choosing Among Different Types of Propensity Score Matching Techniques

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Introduction

Propensity score matching is the most commonly used evaluation method for determining treatment effects because of the pitfalls of other methods.

**Pitfalls of Evaluation Techniques**

- **Residual confounding:**
  - Costly and difficult to implement
  - Subject to ethical problems
  - Potential attrition bias
  - Difficulty of estimating and maintaining the randomness of control and treatment group assignment
  - Subjects' different reaction to temporary treatment
  - External validity threatened by difficulty of generalizing from small samples or a single geographic location

- **Controlling for baseline imbalance using the SUTVA:**
  - Other controlling and under-controlling
  - Omnitting relevant controls and variables for conditions that are caused by the variable of interest, leading to biased coefficients

**Differential settings of SUTVA risks of outcome**

- Risk for selection bias
- Risk for unmeasured confounding bias

- Less reliable for longer time frames
- Possible downstream effects of treatment effect, because of incorrect assumptions that the treatment is not implemented based on the pre-existing differences in outcomes

- Some studies, in the functional form of the model, if average levels of the outcomes are very different between controls and treatment substrates, the fixed effect models, it is cumbersome to check trends

- **Instrumental variables:**

  - Catches very small if the instrument is not truly exogenous
  - Even randomly assigned instruments can be invalid

- For example, Imbens et al. (2009) showed that the letter sent to doctors convinced them to take other steps to prevent flu. Therefore, the letter, not the shot itself, had a direct effect on flu. Applying the IV method using the letter instrument would result in an overestimate.

**Examples of Performance Measures**

- Differences in outcome measures (in Russian).

**Methods**


**References**


