# Evaluation of Social Programs In The Presence of Selection Bias

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## Abstract

This thesis examines the methods used to evaluate the effectiveness of various social programs within a causal inference framework. Outcomes being evaluated are assumed to be obtained from participants that are self-selected into a particular program in terms of personal, observed or unobserved to the analyst, criteria. In principle, this self-selective nature of participation decision generates nonrandom samples of participants. Hence, the data collected cannot be analyzed by conventional statistical methods based on inference from random samples that would lead to severe bias on the parameters estimates. Alternative procedures have to be considered to correct for the bias, literally known as selection bias.

Mainly, three evaluation methods are reviewed, *Randomised Experiments, Matching Methods and Structural models approach*. *Randomised experiments* and *Matching methods* are generally thought as the statisticians' way of evaluation. These are, by definition, distribution-free approaches to deal with the selection problem. The analyst neither makes any distributional assumptions nor postulates a specific structural model to compare participants' outcomes with those of nonparticipants'.

On the other hand, *Structural models* are applied mostly by econometricians. After defining a structural model that describes the data and the participation process, the analyst has to make specific distributional assumptions for the error terms (disturbances). As an alternative, semi-parametric approaches have also been developed to deal with situations where obvious distributional assumptions cannot be established.

The advantages and the limitations of the above procedures are also outlined extensively and examples of these methods are mentioned. Finally, this thesis reviews the case of cross-sectional studies. The panel studies case is also examined in a separate chapter.