

Abstract: We study the problem of assigning a treatment to individuals with observed covariates. In this problem, the most common decision rule is the conditional empirical success (CES) rule proposed by Manski (2004), which uses only the average treatment effect (ATE) estimate conditional on each covariate value. However, in the estimation problem, a common method in statistical estimation problems is to shrink unbiased but noisy preliminary estimates toward the average of these estimates and it is well known that shrinkage estimators have smaller mean squared error than unshrunk estimators. In this study, we propose a shrinkage rule that selects the shrinkage factor by minimizing an upper bound of the maximum regret and analyze the computational and theoretical properties of this rule. We also compare the proposed shrinkage rule with the CES and pooling rules.