

Post-Observation Sample Selection and Integrable Empirical Processes

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Abstract

Many empirical researches entail estimators that come from sample selection after observation; one might give estimates without outliers together with estimates with full sample to claim that his results are not the spurious consequence of a handful of rare observations; one might contrast the treatment effects of many subgroups, say poverty levels, to derive effective policy implications; one might consider the joint variation of the expected return and the conditional Value-at-Risk (CVaR) of a portfolio to better decide investment. Not much is known, however, as to the joint statistical properties of such estimators, and hence, the discussion has been prone to heuristics. This paper provides a statistical framework to deal with these estimators jointly, using what I call the *integrable empirical processes*. The proposed theory allows one to conduct a formal statistical test of outlier sensitivity, of multigroup analyses, or derive the joint distribution of many conditional returns of a portfolio. From a statistical perspective, the theory bridges the gap between the multivariate central limit theorems and the uniform central limit theorems. As an empirical application, I revisit the outlier robustness analyses discussed in Alatas et al. (2016) and Acemoglu et al. (2016).

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