How Important is Simultaneity in the Crime-Incarceration Relationship?

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October 18, 2015

Introduction. The impact of incarceration on crime has long been a focus of criminological research with substantial implications for debates about appropriate and effective criminal justice policy. The main stumbling block to achieving an empirical consensus on incarceration's impact is the need to overcome potential simultaneity between incarceration and crime. Various approaches have been used, such as instrumental variables and quasi-natural experiments, but results differ with the specifics of the analysis. Moreover, questions generally remain about the legitimacy of instruments and the degree to which experiments mimic a true random assignment.

This study hopes to contribute to the literature by examining the potential relationship using a completely novel approach. The suggested technique makes direct use of the theoretical bias associated with the use of OLS estimators that are applied to simultaneous relationships. Specifically, we derive the theoretical bias for a simple simultaneous model of crime and incarceration and calculate the expected bias using independently estimated parameters. We then use Using Monte Carlo simulations to generate distributions for the estimated OLS coefficients and theoretically true coefficients (based on the bias relationship). Those distributions permit an evaluation both of the size of the expected bias for individual crimes and whether the true relationship is statistically significant. The approach also illuminates why simultaneity has typically been found for only some crimes and not others.

The simulations produce quite credible results, both in terms of their consistency with theory and the magnitudes of the coefficients. The simulations indicate that bias is unlikely to be a substantial problem in the estimation of violent crime equations, and that the true relationships between incarceration and violent index crimes are not significant.

Bias is more of a problem when OLS is used to estimate property crime equations. Still the estimates suggest that incarceration only has a negative and statistically significant relationship with burglary and larceny. Moreover, the magnitudes of the effects are relatively small. While the analysis requires the estimation of independent parameters, doing so is much less problematic than effectively handling simultaneity via instrumental variables or other approaches.