sociological science

Supplement to:

Breen, Richard, and Inkwan Chung. 2015. "Income Inequality and Education." Sociological Science 2: 454-477.

Assumptions of the Counterfactual Approach

LetY_i denote the income of the household in which the ith NLSY79 respondent lives. We can write this as a function of the NLSY79 respondent's education, e_i, and other factors relating to the respondent and his/her household that affect incomes, u_i:

$$Y_i = f(e_i, u_i).$$

Let E denote the observed distribution of education, U the distribution of the other factors, and $\hat{E}$ a counterfactual distribution of education. The assumption

$$g(U|E) = g(U|\hat{E} \tag{A1}$$

is that U has the same distribution within a given level of education in the actual and counterfactual cases (see Altonji, Bharadwaji and Lange 2012). For example,

$$g(U|E = College) = g(U|\hat{E} = College)$$

means that U has the same distribution among college completers in both the actual and counterfactual states, even though there may be more respondents in the college category under the counterfactual.

To the extent that assumption A1 holds true for a given counterfactual it will yield a causal estimate in the sense that it will tell us what really would happen if the educational distribution changed. Of course, A1 is unlikely to hold exactly but, as we argue in the text, departures from it are more likely to be such that our counterfactuals overestimate, rather than underestimate, the degree to which inequality can be reduced by educational change.