A Test for Instrument Validity: Applications to the Returns to Schooling

Abstract: This article proposes a test for the exclusion restriction assumption in the instrumental variable approach. The test builds on several monotonicity assumptions of the average potential outcomes. Specifically, treatment weakly increases the mean potential outcome for the principal group of the population; and under any treatment status, some groups of the population mean dominate the others. Under these assumptions, the test set identifies the direct effect of an instrument on outcome. To validate the approach, the article investigates family background variables as instruments for education. Based on Norwegian population register data, the results show that two out of four family background variables have a positive effect on offspring's earnings. Moreover, three out of four instruments can result in significantly biased returns to schooling. In most cases, the size of the bias exceeds the width of the 95% confidence interval for the effect of education on earnings. Additional simulation experiments show that the test in this paper has a high predictive power.