DIW Applied Micro Seminar

Achievement Gap Estimates and Deviations from Cardinal Comparability

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Abstract:

This paper assesses the sensitivity of standard empirical methods for measuring group differences in achievement to violations in the cardinal comparability of achievement test scores. The paper defines a distance measure over possible weighting functions (scalings) of test scores. It then constructs worst-case bounds for the bias in the estimated achievement gap (or achievement gap change) that could result from using the observed rather than the true test scale, given that the true and observed scales are no more than a certain distance from each other. The paper next estimates these worst-case weighting functions for black/white and high-/low-income achievement gaps and gap changes using several commonly employed surveys. The results of this empirical exercise suggest that cross-sectional achievement gap estimates tend to be quite robust to scale misspecification. In contrast, achievement gap change estimates seem to be quite sensitive to the choice of test scale. The paper next extends the bounding methodology to study bias in regression coefficients when the left-hand side variable is incorrectly scaled. The same survey data suggest that regression coefficients relating income to achievement in the cross-section are quite robust to scale-misspecification, while first differences in regression coefficients appear to be much more fragile. Standard empirical methods do not robustly identify the sign of the trend in achievement inequality between students from different racial groups and income classes.