

True or False, Econometrics

# OLS

1. For the OLS estimator to be consistent and asymptotically normal, the residuals should be normally distributed.
2. Residuals are heteroscedastic when there is intra-cluster correlation.
3. Accounting for clustering typically inflates the standard errors of the coefficients. The larger the group size, the larger the increase in standard errors after the correction. The smaller the intra cluster correlation, the larger the increase in standard errors after the correction.

# OLS

4. With finite sample size  $N$ , the OLS estimator has a normal distribution regardless of the distribution of the residuals.
5. A negative  $t$ -statistic indicates that the coefficient is not significant.
6. 95% confidence intervals are larger than 99% confidence intervals.
7. The  $F$  statistic provides a test that all coefficients including the constant are equal to zero.

# OLS

8. An omitted variable bias affects the magnitude but not the sign of an estimate.
9. Classical measurement error biases affect the magnitude but not the sign of an estimate.
10. If the omitted variable is positively correlated with the treatment and has a positive impact on the outcome, the effect is overestimated.
11. Classical measurement error requires that the variance of the measurement error is negatively correlated with the true value.

# Inference

12. When estimating the mean of a variable in an iid sample, dividing the variance of the estimator by 2 requires multiplying the size of the sample by 4.
13. When estimating the mean of a variable in an iid sample, the larger the variance of the variance, the larger the variance of the estimator of the mean.

# IV estimation

1. The exclusion restriction requires that the instrument is significantly correlated with the variable of interest.
2. In the single covariate and single instrument case, the standard error of the OLS estimator is inflated by the inverse of the square correlation between the instrument and the covariate.
3. An IV estimator is unbiased under the assumptions of the session. (linearity, exclusion restriction, correlation between instrument and covariate).
4. An IV estimator is asymptotically normal under the maintained assumptions.
5. An IV estimator for fixed  $N$  is normally distributed.

# IV Estimation

1. The Hausman test's null hypothesis is that the instrument satisfies the exclusion restriction.
2. The Hausman test's alternative hypothesis is that the OLS estimator is different from the IV estimator.
3. In the reduced form, the outcome variable is regressed on the variable of interest  $x$ .