PUBPOL 6090 Lecture 1 Notes

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Overview

- Class emphasizes usage of the econometric toolkit used in modern reduced-form applied microeconomic research and policy evaluation.
- To use these tools, we need to think carefully about trade offs between assumptions, robustness, and credibility.

Classical OLS Results

1. No Correlation between Xs and the error term: $E[\epsilon_i|X] = 0$
    1. In other words, it requires exogeneity
2. Homoskedastic standard errors: $var(\epsilon|X) = \sigma^2$
3. Error term is normally distributed $\epsilon \sim N(\mu, \sigma^2)$
4. No perfect colinearity between regressors, formally, the design matrix must be of full rank $(X'X)$
5. Linear relationship between Y and X
6. Xs are independent and identically distributed i.i.d.

Properties

1. $\hat{\beta}$ is consistent
2. PLim of β is the true value
3. Variance of the estimate is asymptotically normal
4. Best linear unbiased estimator
5. Var can be computed as $(X'X)^{-1}\sigma^2$

Estimation hierarchy

Identification – Consistency – Unbiased

Correct inference (accurate SEs)

Efficiency – Precision – Coherent research design

Ease of coding and computational burden