

Methodology of Econometrics

1. Statement of theory or hypothesis
2. Specification of mathematical model of the theory
3. Specification of econometric model of theory
4. Obtaining the data
- 5. Estimation of the parameters of the econometric model**
- 6. Hypothesis testing**
7. Forecasting or prediction
8. Using model for control or policy purposes

Assumptions of Least Squares

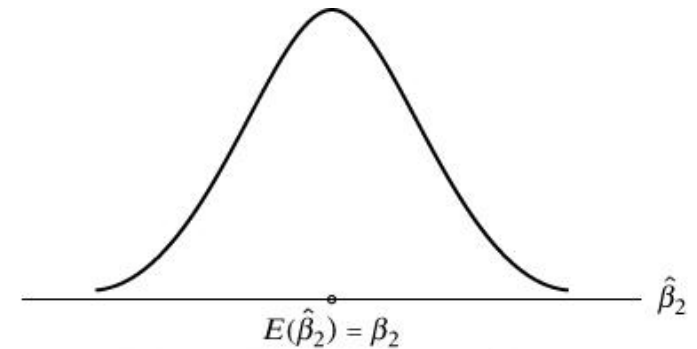
1. Linear Regression Model
2. X_i values are fixed in repeated sampling
3. Zero mean value of disturbance u_i
4. Homoscedasticity or equal variance of u_i
5. No autocorrelation between the disturbance
6. Zero covariance between u_i and X_i
7. Number of observations must be greater than number of parameters to be estimated
8. Variability in X_i values
9. Regression model is correctly specified
10. No perfect multicollinearity
11. Normal Distribution

Properties of Least-Squares Estimator

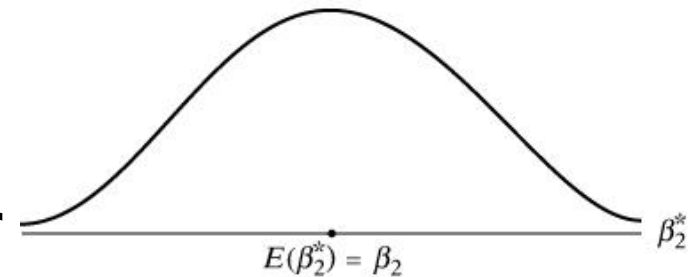
1. Linear
2. Unbiased
3. Efficient estimator

Gauss-Markov Theorem:

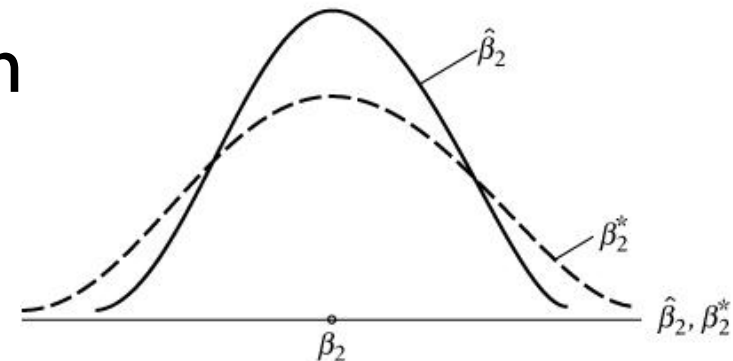
Given assumptions of CLRM, the least-squares estimators, in the class of unbiased linear estimators, have minimum variance -- they are Best Linear Unbiased Estimators (BLUE).



(a) Sampling distribution of β_2



(b) Sampling distribution of β_2^*



(c) Sampling distributions of β_2 and β_2^*

Evaluating Estimated Results

1. Sign of the Coefficients.

- Whether the estimated results are according to the theory.

2. Overall Test – F-test.

- Whether all explanatory variables can be used in explaining the dependent variable.

3. R-Squares.

- How well does the model explain the dependent variable.

4. Individual Test – t-test.

- Whether each explanatory variables can explain the dependent variable.