FINM3123 Introduction to Econometrics

Chapter 05

Class exercises

Multiple Choice Questions

1. If $\hat{\beta}_j$, an unbiased estimator of β_j, is consistent, then the:
   a. distribution of $\hat{\beta}_j$ becomes more and more loosely distributed around β_j as the sample size grows.
   b. distribution of $\hat{\beta}_j$ becomes more and more tightly distributed around β_j as the sample size grows.
   c. distribution of $\hat{\beta}_j$ tends toward a standard normal distribution as the sample size grows.
   d. distribution of $\hat{\beta}_j$ remains unaffected as the sample size grows.

2. If $\hat{\beta}_j$, an unbiased estimator of β_j, is also a consistent estimator of β_j, then when the sample size tends to infinity:
   a. the distribution of $\hat{\beta}_j$ collapses to a single value of zero.
   b. the distribution of $\hat{\beta}_j$ diverges away from a single value of zero.
   c. the distribution of $\hat{\beta}_j$ collapses to the single point β_j.
   d. the distribution of $\hat{\beta}_j$ diverges away from β_j.

3. If the error term is correlated with any of the independent variables, the OLS estimators are:
   a. biased and consistent.
   b. unbiased and inconsistent.
   c. biased and inconsistent.
   d. unbiased and consistent.

4. If OLS estimators satisfy asymptotic normality, it implies that:
   a. they are approximately normally distributed in large enough sample sizes.
   b. they are approximately normally distributed in samples with less than 10 observations.
   c. they have a constant mean equal to zero and variance equal to σ^2.
   d. they have a constant mean equal to one and variance equal to σ.

5. If $\hat{\beta}_j$ is an OLS estimator of a regression coefficient associated with one of the explanatory variables, such that j= 1, 2, …., n, asymptotic standard error of $\hat{\beta}_j$ will refer to the:

a. estimated variance of $\hat{\beta}_j$ when the error term is normally distributed.

b. estimated variance of a given coefficient when the error term is not normally distributed.

c. square root of the estimated variance of $\hat{\beta}_j$ when the error term is normally distributed.

d. square root of the estimated variance of $\hat{\beta}_j$ when the error term is not normally distributed.

True or False

6. If variance of an independent variable in a regression model, say x_1, is greater than 0, or $Var(x_1) > 0$, the inconsistency in $\hat{\beta}_1$ (estimator associated with x_1) is negative, if x_1 and the error term are positively related.