FINM3123 Introduction to Econometrics

Chapter 02

Class exercises

Multiple Choice Questions

1. If a change in variable x causes a change in variable y, variable x is called the _____.
   a. dependent variable
   b. explained variable
   c. explanatory variable
   d. response variable

2. Consider the following regression model: $y = \beta_0 + \beta_1 x_1 + u$. Which of the following is a property of Ordinary Least Square (OLS) estimates of this model and their associated statistics?
   a. The sum, and therefore the sample average of the OLS residuals, is positive.
   b. The sum of the OLS residuals is negative.
   c. The sample covariance between the regressors and the OLS residuals is positive.
   d. The point $(\overline{x}, \overline{y})$ always lies on the OLS regression line.

3. Which of the following is a nonlinear regression model?
   a. $y = \beta_0 + \beta_1 x^{1/2} + u$
   b. $\log y = \beta_0 + \beta_1 \log x + u$
   c. $y = 1 / (\beta_0 + \beta_1 x) + u$
   d. $y = \beta_0 + \beta_1 x + u$

4. In the regression of y on x, the error term exhibits heteroskedasticity if _____.
   a. it has a constant variance
   b. Var(y|x) is a function of x
   c. x is a function of y
   d. y is a function of x

5. What does the equation $\hat{y} = \widehat{\beta_0} + \widehat{\beta_1} x$ denote if the regression equation is $y = \beta_0 + \beta_1 x_1 + u$?
   a. The explained sum of squares
   b. The total sum of squares

c. The sample regression function

d. The population regression function

True or False

6. The variance of the slope estimator increases as the error variance decreases.