

1. What is the meaning of the term "heteroscedasticity"?

- ☒ (X) The variance of the errors is not constant
☐ () The variance of the dependent variable is not constant
☐ () The errors are not linearly independent of one another
☐ () The errors have non-zero mean

Justification: This is the definition.

2. What would be the consequences for the OLS estimator if heteroscedasticity is present in a regression model but ignored?

- ☐ () It will be biased
☐ () It will be inconsistent
☒ (X) It will be inefficient
☐ () All of the above.

Justification: The estimator will still be unbiased, consistent, but the variance will be larger.

3. Which of the following are plausible approaches to dealing with a model that exhibits heteroscedasticity?

- i) Take logarithms of each of the variables
ii) Use suitably modified standard errors
iii) Use a generalized least squares procedure
iv) Add lagged values of the variables to the regression equation.
- ☐ () (ii) and (iv) only
☐ () (i) and (iii) only
☒ (X) (i), (ii), and (iii) only
☐ () (i), (ii), (iii), and (iv)

Justification: Taking logarithm reduces the range of the variables, so it may work as a variance stabilizing transformation. If we modify the standard errors, we can also stabilize the variance (think of WLS). GLS is one approach that we use to remedy the non constancy of variance.

4. Negative residual autocorrelation is indicated by which one of the following?

- ☐ () A cyclical pattern in the residuals
☒ (X) An alternating pattern in the residuals
☐ () A complete randomness in the residuals
☐ () Residuals that are all close to zero

Justification: Alternating pattern of the residuals, means that each observation is negatively correlated to the previous observation.

5. If OLS is used in the presence of autocorrelation, which of the following will be likely consequences?

- i) Coefficient estimates may be misleading
- ii) Hypothesis tests could reach the wrong conclusions.
- iii) Forecasts made from the model could be biased
- iv) Standard errors may be inappropriate

☒ (X) (ii) and (iv) only

☐ () (i) and (iii) only

☐ () (i), (ii), and (iii) only

☐ () (i), (ii), (iii), and (iv)

Justification: The estimators are still unbiased, consistent, but again the variance is larger.