

Self-evaluation Tests

Wages 6

Instructions

- Click **Start**.
- Answer the questions.
- Click **End**.
- The cell

Score:

 shows the number of right answers.
- Each question is worth 1 point.
- Click **Correct** to check the correct answers.
- The test starts on the next page.
- Recommended duration: 30 minutes.

Questions

Open the data file `wages.gdt`. Estimate by OLS the regression model:

$$\begin{aligned} W_i &= \beta_1 + \beta_2 EX_i + \beta_3 EX_i^2 + \beta_4 ED_i + \beta_5 T_i + \\ &+ \beta_6 NW_i + \beta_7 F_i + \beta_8 M_i + \\ &+ \beta_9 (F_i \times M_i) + \beta_{10} C_i + \beta_{11} ED_i^2 + u_i \end{aligned}$$

General Linear Regression Model

1. The estimated coefficient of the variable tenure is:
(a) 0.0207219 (b) 0.119985 (c) 6.097 (d) 0.521990
2. Plot the OLS residuals against education. It suggests that:
(a) The error term is randomly distributed
(b) The error term is autocorrelated
(c) The error term is heteroskedastic
(d) The error term is homoskedastic

3. Test whether the variance of the error term is an increasing function of education using the Goldfeld-Quandt test ($\alpha = 5\%$). Construct two subsamples of size 175 each.

(a) The null hypothesis is:

(a) $\sigma_i^2 = 0$

(b) $\sigma_i^2 = \sigma^2 \text{educ}_i$

(c) $\sigma_i^2 = \sigma^2$

(d) $\sigma_i^2 = \sigma^2 \frac{1}{\text{educ}_i}$

(b) The alternative hypothesis is:

(a) $\sigma_i^2 = 0$

(b) $\sigma_i^2 = \sigma^2 \text{educ}_i$

(c) $\sigma_i^2 = \sigma^2$

(d) $\sigma_i^2 = \sigma^2 \frac{1}{\text{educ}_i}$

(c) The test statistic is:

(a) $\frac{SSE}{2}$

(b) $\frac{SSR_1/q}{SSR_2/(N-k)}$

(c) NR^2

(d) $\frac{SSR_2}{SSR_1}$

(d) The SSR of the first subsample is:

(a) 739.1280 (b) 2034.422 (c) 3920.119 (d) 2569.234

(e) The SSR of the second subsample is:

(a) 739.1280 (b) 2034.422 (c) 3920.119 (d) 2569.234

(f) The sample value of the Goldfeld-Quandt's test statistic is:

(a) 0.3633 (b) 0.4251 (c) 2.7524 (d) 3.125

(g) Is there any evidence in the sample of heteroskedasticity?
($\alpha = 5\%$)

(a) Yes (b) No

4. Given the result obtained in the previous test, what is the estimated variance of the OLS estimator of β_5 valid to test the statistical significance of the variable tenure?

(a) 0.0248162 (b) 7.05622e-06 (c) 4.37526e-04 (d) 6.14018e-04

5. Tenure is a statistically significant variable ($\alpha = 5\%$).
- (a) True (b) False
6. What is the sample value of the test statistic used to test the statistical significance of gender?
- (a) 65.8998 (b) 33.0431 (c) -1.048 (d) -4.989
7. Gender is a statistically significant variable ($\alpha = 5\%$).
- (a) True (b) False
8. The expected wage is higher for an individual living in a city, holding the rest of the characteristics constant ($\alpha = 5\%$).
- (a) True (b) False
9. The relationship between wages and education is linear, holding the rest of the characteristics constant ($\alpha = 5\%$).
- (a) True (b) False