Self-evaluation Tests

Wages 7

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: 20 minutes.

Questions

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

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

General Linear Regression Model

1. The estimated coefficient of the variable tenure is:

   (a) 0.0207219   (b) 0.119882   (c) 6.097   (d) 0.521990

2. The plots of the OLS residuals against each regressor suggest 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 heteroskedastic using the White test ($\alpha = 5\%$).

(a) The null hypothesis is:

(a) $\sigma_i^2 = 0$ (b) $\sigma_i^2 = \sigma^2 \, educ_i$

(c) $\sigma_i^2 = \sigma^2$ (d) $\sigma_i^2 = \sigma^2 \, \dfrac{1}{educ_i}$

(b) The test statistic is:

(a) $SSE/2$ (b) $\dfrac{SSR_1/q}{SSR_2/(N-k)}$

(c) NR^2 (d) SSR_2/SSR_1

(c) The coefficient of determination of the auxiliary regression is:

(a) 0.452529   (b) 0.170054   (c) 0.794750   (d) 0.025533

(d) The sample value of the White's test statistic is:

(a) 238.0302   (b) 6.536448   (c) 203.456   (d) 89.448213

(e) Is the error term heteroskedastic? ($\alpha = 5\%$)

(a) Yes   (b) No

4. Test whether the variance of the error term is not constant over the sample using the Breusch-Pagan test ($\alpha = 5\%$).

(a) The null hypothesis is:

(a) $\sigma_i^2 = 0$ (b) $\sigma_i^2 = \sigma^2 \, educ_i$

(c) $\sigma_i^2 = \sigma^2$ (d) $\sigma_i^2 = \sigma^2 \, \dfrac{1}{educ_i}$

(b) The test statistic is:

(a) $SSE/2$ (b) $\dfrac{SSR_1/q}{SSR_2/(N-k)}$

(c) NR^2 (d) SSR_2/SSR_1

(c) The explained sum of squares of the auxiliary regression is:

(a) 435.2529   (b) 515.7689   (c) 537.2341   (d) 412.801

(d) The sample value of the test statistic is:

(a) 217.62645   (b) 257.88445   (c) 268.61705   (d) 206.44037

(e) Is the error term heteroskedastic? ($\alpha = 5\%$)

(a) Yes   (b) No

5. Given the result obtained in the previous test, what is the standard error of the OLS estimator of β_9 valid to test the statistical significance of the variable *living in a big city*?

(a) 0.3452890   (b) 0.092839   (c) 0.06763588 (d) 0.260069

6. *Living in a big city* is a statistically significant variable ($\alpha = 5\%$).

(a) True   (b) False