We want to analyze the growth of a set of firms. To that end, the database included in EJ5.WF1 contains information about the following variables:

Crec: average growth of the firms during the period 2009-2014

Ahorro: average saving rate of the firms during the period 2009-2014

Age: average age of the firms during the period 2009-2014

Idi = average RDi of the firms during the period 2009-2014

Nemp= average number of workers of the firms during the period 2009-2014

Tam= average size index of the firms during the period 2009-2014

SA = dummy variable that takes the value 1 if the firm is an anonymous society an 0 otherwise.

Using this information, the following model is estimated:

Model 1: OLS, using observations 1-100

Dependent variable: CREC

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Coefficient* | *Std. Error* | *t-ratio* | *p-value* |  |
| const | 5.78364 | 2.39246 | 2.4174 | 0.0176 | \*\* |
| AHORRO | 0.451195 | 0.0721643 | 6.2523 | <0.0001 | \*\*\* |
| EDAD | −0.514324 | 0.0223056 | −23.0581 | <0.0001 | \*\*\* |
| IDI | 0.747987 | 0.257717 | 2.9024 | 0.0046 | \*\*\* |
| NEMP | 20.4387 | 10.6297 | 1.9228 | 0.0575 | \* |
| TAM | −21.4917 | 11.1888 | −1.9208 | 0.0578 | \* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mean dependent var |  3.091800 |  | S.D. dependent var |  8.694935 |
| Sum squared resid |  1051.983 |  | S.E. of regression |  3.345341 |
| R-squared |  0.859447 |  | Adjusted R-squared |  0.851971 |
| F(5, 94) |  114.9572 |  | P-value(F) |  1.79e-38 |
| Log-likelihood | −259.5569 |  | Akaike criterion |  531.1139 |
| Schwarz criterion |  546.7449 |  | Hannan-Quinn |  537.4400 |

White's test for heteroskedasticity -Test statistic: LM = 22.7535 with p-value = P(Chi-square(20) > 22.7535) = 0.301062

Breusch-Pagan test for heteroskedasticity -Test statistic: LM = 5.96343 with p-value = P(Chi-square(5) > 5.96343) = 0.309793

Test for normality of residual -Test statistic: Chi-square(2) = 1.61794 with p-value = 0.445316

Chow test for structural difference with respect to DSA -Test statistic: F(6, 88) = 1.35359 with p-value = P(F(6, 88) > 1.35359) = 0.242361

Reply all these questions, all of them related to the estimated model 1.

1. White’s tests follows a:
2. 2 distribution
3. Snedecor F distribution
4. Normal distribution
5. None of the previous is true
6. The null hypothesis of the Breusch-Pagan statistic is that:
7. The dependent variable is homoskedastic
8. The dependent variable is heteroskedastic
9. The dependent variable is not correlated
10. None of the previous is true
11. The statistic that allows us to test for normality is
12. Jarque-Bera
13. Breusch Godfrey
14. Ljung-Box
15. None of the previous is true
16. The Chow statistic:

A) allows us to accept the null hypothesis

B) allows us to accept the null hypothesis

C) is not conclusive

D) None of the previous is true

5. Is there evidence in favor to the fact that the SA firms shows a smaller growth tan the rest of the firms?

A) No

B) Yes

C) It is true only for the medium size firms

D) None of the previous is true

6. From the available information, we suspect about the existence of:

A) Heteroskedasticity

B) Autocorrelation

C) Non Normality

D) Multicollinearity

7. The statistic of the analysis of the variance takes the value

A) 114.9572

B) depends on the determination coefficient

C) It is small for this type of analysis

D) All the previous are true

8. The sum of the squared total is approximately equal to

A) 7484

B) 12

C) 751

D) None of the previous is true

Parte II. Using the date of the file EJ5.WF1, reply to the following questions

9. Solve the posible problems and propose an alternative estimation

10. interpret the model in economic terms