Using the F-test - Quiz

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Question 1

1/1 point (graded)

Which of the following null hypotheses is the default F-test statistic computed by R testing?

- a. the hypothesis that none of the coefficients on your regressors is equal to 0.
- b. the hypothesis that any of the coefficients on your regressors is equal to 0.
- c. the hypothesis that all of your coefficients are equal to 0.
- d. the hypothesis that all of your coefficients with the exception of the intercept are equal to 0. ✔

Explanation

The default F-stat reported by R tests the null hypothesis that all your coefficients, with the exception of the intercept are equal to 0. C is incorrect because the set of coefficients on your regressors does not include the intercept.

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✔ Correct (1/1 point)

Question 2

1/1 point (graded)

True or False: If you have only one regressor, the default F-test statistic and t-test statistic reported by R for the coefficient on that regressor will be equivalent. Here "equivalent" means whether you derive the same conclusion of the test. (Intutievely, think whether there is a relationship between the t and the F statistics.)

- a. True ✔
- b. False

Explanation

As Prof. Duflo showed in lecture, the F-test statistic computed by R is testing whether each of the coefficients on your regressors is equal to 0, whereas the reported t-test statistic is testing that the specific coefficient is equal to 0. Therefore, if you only have one regressor, these will be equivalent. In particular, the reported F-test statistic will be the square of the reported t-test statistic.

Regressions, and Omitted Variable Bias

Practical Issues in Running Regressions
due Dec 5, 2016 05:00 IST

Omitted Variable Bias
due Dec 5, 2016 05:00 IST

Module 10: Homework
due Nov 28, 2016 05:00 IST

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Question 3

1/1 point (graded)

Suppose you are interested in the effect of education on wages. To this goal, you run the following regression in R:

$$\log(\text{wage})_i = \alpha + \beta \text{years of education}_i + \epsilon_i$$

where i indexes the individuals in your sample. The reported t-test statistic on β is 2.09, and the reported coefficient is $\hat{\beta} = 0.10$. Furthermore, you know your sample size is large enough for the t-distribtion to be very close to a normal distribution.

What can you conclude given this information?

- a. You accept the null that $\beta = 0$ at the 95% confidence level.
- b. You reject the null that $\beta = 0$ at the 95% confidence level. ✔
- c. You are 95% sure that $\beta = 0$.

d. You are 95% sure that $\beta = 0.10$.

e. You are 95% sure that β is positive.

Explanation

The reported t-test statistic tests the specific null hypothesis $H_0 : \beta = 0$, against the alternative hypothesis $H_1 : \beta \neq 0$. R's default is to report test-statistics at the 5% significance level. If you want to test a different hypothesis (ex. $\beta > 0$) you need to construct a different test. In practice, R will do that for you. Look up the R command "linearHypothesis" for more details.

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