

MITx: 14.310x Data Analysis for Social Scientists

Heli



Bookmarks

- Module 1: The Basics of R and Introduction to the Course
- Entrance Survey
- Module 2: Fundamentals of Probability, Random Variables, Distributions, and Joint Distributions
- Module 3: Gathering and Collecting Data, Ethics, and Kernel Density Estimates
- Module 4: Joint,
 Marginal, and
 Conditional
 Distributions &
 Functions of Random
 Variable

Module 10: Practical Issues in Running Regressions, and Omitted Variable Bias > Practical Issues in Running Regressions > Using the F-test - Quiz

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?

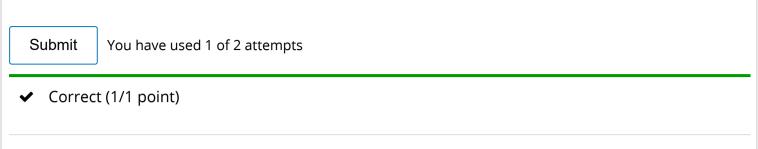
- a. the hypothesis that none of the coefficients on your regressors is equal to 0.
- b. the hypothesis that any of the coefficients on your regressors is equal to 0.
- c. the hypothesis that all of your coefficients are equal to 0.
- d. the hypothesis that all of your coefficients with the exception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

- Module 5: Moments of a Random Variable,
 Applications to Auctions,
 Intro to Regression
- Module 6: Special
 Distributions, the
 Sample Mean, the
 Central Limit Theorem,
 and Estimation
- Module 7: Assessing and Deriving Estimators -Confidence Intervals, and Hypothesis Testing
- Module 8: Causality,
 Analyzing Randomized
 Experiments, &
 Nonparametric
 Regression
- Module 9: Single and Multivariate Linear
 Models
- Module 10: Practical
 Issues in Running



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.)



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

<u>Practical Issues in Running</u> <u>Regressions</u>

due Dec 5, 2016 05:00 IST

Omitted Variable Bias

<u>due Dec 5, 2016 05:00 IST</u>

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

You have used 1 of 1 attempt

✓ Correct (1/1 point)

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?

- ullet a. You accept the null that eta=0 at the 95% confidence level.
- ullet b. You reject the null that eta=0 at the 95% confidence level. ullet
- \circ c. You are 95% sure that eta=0.

- \circ d. You are 95% sure that $\beta=0.10$.
- ullet e. You are 95% sure that eta 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.

Submit

You have used 1 of 2 attempts

✓ Correct (1/1 point)

Discussion

Topic: Module 10 / Using the F-test - Quiz

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