Review of Statistics: Confidence Interval

Dr. Patrick Toche

Textbook:

James H. Stock and Mark W. Watson, *Introduction to Econometrics*, 4th Edition, Pearson.

Other references:

Joshua D. Angrist and Jörn-Steffen Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*, 1st Edition, Princeton University Press.

Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach*, 7th Edition, Cengage Learning.

The textbook comes with online resources and study guides. Other references will be given from time to time.

Confidence Intervals

Let $Y_1, \ldots, Y_n$ be i.i.d. draws from a distribution with mean μ. A test of H_0: $\mu = 5$ vs. H_1: $\mu \neq 5$ using the usual t-statistic yields a p-value of 0.03.

1. Does the 95% confidence interval contain $\mu = 5$? Explain.

   The p-value is less than the significance level, so the null hypothesis is rejected.

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2. Can you determine if $\mu = 6$ is contained in the 95% confidence interval? Explain.

There is not enough information to determine if $\mu = 6$ is contained in the confidence interval. We know neither the sample size n nor the variance σ^2. The variance could be estimated, but that estimate would depend on the sample size, which is unknown.

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