

Advanced Applied Econometrics – selected OLS topics

Stata exercise on Fisher inference

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We have argued that Fisher inference is useful and the Young-paper makes the point that it often delivers better results compared to other more-often used ways of computing standard errors.

Let's illustrate this in an example where we want to examine the effect of an additional teacher in two classrooms (out of 10), which have 30 students each. Note that this could be anything else, in a nutshell you have 10 groups of 30 participants each and two groups receive treatment.

The attached STATA code does all you really need: constructs the data generating process and runs the regression in the sample you have at hand. Then it takes all possible permutations of two out of 10 to compute the distribution of the beta-estimates under the Fisher sharp null. This is where this code leaves you.

Your exercise for now is to take these results to actually compute the Fisher exact p-values from this.

To do this:

1. Note: there are possibly prettier ways of coding this up and you are welcome to make improvements - also, it should be easy to implement this in R. The idea here is not to run the most efficient code but to make sure you understand what is going on step-by-step.
2. Stata also offers various programs put together by users that can help you do this automatically. I have only used the `percom` package to generate permutations. You probably have to install this using `"ssc install percom"`. Before using such packages, make sure you can code this up yourself –where you are in control of what is going on.
3. Comment on the differences in results. What effect does clustering the error have in your original regression? How do the Fisher p-values compare to the robust and clustered- standard errors? If the results differ, which ones should be trusted the most/is any of these correct?