

Regression III: Homework 4

The goal of this homework is to have you put into practice some of the tools you have learned about in the course. In particular, you will be applying the idea of using DSS as a model specification diagnostic.

- 1) Select a published article of your choice which uses a linear model. Ideally this would be utilizing a paper you find substantively interesting. Provide a citation, a link to the replication data, and replicate the “main result” in their analysis. Briefly describe what the author(s) hypothesis was as well as the inference they drew from their empirical analysis.
- 2) Apply the DSS model diagnostic tool we introduced in class and played with in the lab (diagFun). Are any specification problems indicated? Are non-linearities, omitted interactions, or both found to be important?
- 3) If any specification problems are found, attempt to model them using any of the techniques presented in class. Then, briefly explain whether the inference made by the authors has changed - and if so, how.

A few notes on identifying an appropriate article to replicate:

- Make sure that the replication data is available. You might want to pick a recent publication from a top journal since authors are often required to provide replication materials, which will be made available by the journal.
- If the journal does not provide the materials, you should look for them at either the [Harvard Dataverse](#) or the [ICPSR data repository](#).
- It *is not* necessary to find evidence that the original authors missed something; it *is* necessary to try. Articles which are not clear and which do not present results in a straightforward manner should be avoided.
- If you cannot find an article to replicate, and you are open to reading through some Economics papers, you can look at [this site](#).

A note on the replication process:

- To take advantage of the DSS diagnostic function presented in class, you must replicate in R. This may mean that you need to adapt the provided Stata code, or at minimum load a foreign data type into R. Information on how to load various data types can be found on CRAN [here](#).