ECONOMICS 582 - ELEMENTS OF ECONOMETRICS I

UNIVERSITY OF TENNESSEE, FALL 2024

Replication Study - Analysis and Writeup

Due December 5, 2025, 6:00PM

Each student, working on their own or as a co-author with one other student, will replicate and extend results from an article published in a top economics journal.

The entire replication assignment is worth 10 points, or 10% of your course grade. You have already completed the "first steps" component worth 3 points. This second sub-assignment is worth the remaining 7. For this sub-assignment, turn in your typed paper through Canvas. In addition, provide Tommy and I access to all source data and code necessary to replicate your findings. You can upload this to Canvas in a well organized, zipped folder, or if that folder exceeds 1MB, you can give Tommy and I access to a Google/Dropbox/Box/OneDrive/other place where you store data and code.

You are encouraged to bring coding questions to the lab and office hours.

There are many guides for how to structure an empirical research paper. I suggest reading Bellemare (2020) and dividing your paper into the following sections:[1]

1. Title, author (that's you, not the original author(s)), date

2. Abstract - 100-200 word summary of your research question, data and context, and findings.

3. Introduction - Start with the outline that you wrote for the "first steps" assignment, but revise to add your findings. Be sure to clearly state which results were from the authors' original analysis, and which results were from your narrow extension. Shapiro (2022) has good advice for drafting multiple versions of your introduction over the course of conducting your analysis and writing the rest of the paper.[2] This section might also include a literature review, i.e., a summary of previous work on the topic and how your study (or the study you're replicating) advances or differs from that work.

4. Theoretical Framework - This section would be a good place to explain why we might expect there to be a relationship between X_i and the outcome Y_i. You do not need to develop a full theoretical model. An intuitive description of the relational or cause-and-effect connection would be fine for the purposes of this assignment. Since you may want to cite related research on this connection, you could put your literature review here rather than in the Introduction.

5. Data and Descriptive Statistics - Describe your source and formatted data in enough detail so that someone else can retrace your steps. At a minimum, your writeup should answer the following:

    (a) Where did you get source data?

    (b) What steps did you take to create $\mathbf{X}_i$ and Y_i variables?

    (c) Did you drop any observations from your source data, and why?

    (d) Include a table of summary statistics for the major $\mathbf{X}_i$ and Y_i variables: means, standard deviations, minimum values, maximum values, percent missing (if any), and anything else you think is important.

6. Empirical Framework - This is the most important section for this assignment.

    (a) Write out your estimating equation(s) and define all variables and subscripts.

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[1]https://marcfbellemare.com/wordpress/13712
[2]https://scholar.harvard.edu/files/shapiro/files/foursteps.pdf

(b) What method are you using for your estimating equation(s): OLS, IV, or both?[3]

(c) Identify the variable or variables that are most important for your research question.

(d) Tell us where "identifying variation" in that (or those) most important X_i comes from. That is, why is the value of X_i different across observations, holding constant other controls? Is that identifying variation random, or as good as random conditional on controls?

(e) If you are pursuing a causal research question, describe the assumptions necessary to interpret the coefficient of interest as a causal effect.[4]

7. Results - This is the second-most important section of this assignment.

(a) Include figures and/or regression tables that are most relevant to your specific research question and your extension. This is likely to be a fraction of all of the results presented in the paper you are replicating or extending.

(b) Interpret the magnitude and statistical significance of estimated regression coefficients. For a 1-unit change in X_i, what do regression results say about the estimated effect on, or relationship with, Y_i? Is a 1-unit change in X_i large, or should we scale effects by a larger or smaller change in X_i to interpret the economic magnitude of findings?

8. Conclusion - Summarize your findings in a fresh way, speculate on the economic or policy implications, describe any important limitations of your analysis, and (perhaps building on those limitations), describe how future research could push what we know further.

9. References - Your reference list should be complete and correctly formatted.

10. Appendix - If applicable, this is a good place for robustness checks and extensions that are not central to your main conclusion, but are important enough to mention.

You may organize the paper differently if you wish, but it must be a self-contained, independent research study. By "self-contained," I mean that if you share the paper with another social scientist who has no knowledge of the topic, they could understand your specific research question, methods, and findings. By "independent," I mean that the text should be your own creation. Remember my teaching philosophy: "Learn, Don't Copy."

How long should your paper be? The upper limit for this assignment is probably the *AER: Insights* manuscript guidelines:[5] up to 6,000 words in the main text (including footnotes but not the reference list) with no more than 5 tables and figures. A great paper can be shorter than that.

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[3]Reminder: I do not recommend pursuing methods other than OLS or IV for this assignment, since assumptions and techniques necessary for panel, MLE, time series, and other methods are covered at length in other classes. You may incorporate these more advanced methods into your paper, but be aware that technical and textual errors will reduce your grade.

[4]You will discuss these assumptions further in an individual assignment that will be turned in separately ("Replication Study - Individual Reflection").

[5]https://www.aeaweb.org/journals/aeri/accepted-article-guidelines