ARE 231 PAPER ASSIGNMENT: GLOBAL FOOD COMMODITY SUPPLY

In the paper "Identifying Supply and Demand Elasticities of Agricultural Commodities: Implications for the US Ethanol Mandate" (American Economic Review, 2013), Mike Roberts and Wolfram Schlenker estimate the supply and demand for agricultural commodities using instrumental variables.

Getting Started

Roberts and Schlencker use annual data from 1961-2007. I have modified their Stata code and extended their dataset to 2016 (for supply) and 2013 (for demand). In so doing, I made one change that alters the yield shock series slightly. Specifically, I combined small countries into rest-of-north and rest-of-south before estimating their yield shocks rather than the other way around. This means my data will not exactly replicate the tables in Roberts and Schlenker. I'll fix this soon.

Here are links to the required files for this assignment, including Stata and R code to get you started.

1. Data Description.pdf
2. RS.zip

Please read the file "Data Description.pdf" for details. You may use different software (e.g., R or Matlab) if you prefer. The complete data and Stata code produced by Roberts and Schlenker are available here.

Assignment

Your task is to extend the Roberts and Schlenker analysis in some direction. Here are some possibilities:

(i) *Different weights.* Does weighting the commodities by something other than calories change the results? What weights make sense?

(ii) *Stability over time.* Does adding 9 years of data affect the estimates? Is the supply elasticity the same early in the sample as late in the sample?

(iii) *Heterogeneity across commodities*. Estimate different supply elasticities for each commodity and analyze their similarities and differences.

(iv) *Heterogeneity across countries*. Estimate different supply elasticities for each country, or for groups of countries, and analyze the similarities and differences.

(v) *Sensitivity to trend specification*. R&S use cubic splines to fit the trends. What about other possibilities, such as a linear trend?

(vi) *Futures price endogeneity*. We have 9 years more years of data than Hendricks, Janzen and Smith; how does this affect their analysis? Does the endogeneity of prices to yield shocks change over time?

(vii) *Decomposition of production into area, trend yield and yield shocks*. What explains variation over time in these components?

(viii) *Panel approach*. How do the results differ if you use a panel approach to estimate the elasticity rather than using the aggregate time series? Explain the differences.

(ix) *Length of run*. Because R&S identify elasticities based on short-term variation, they represent a short-run elasticity. Propose a method to estimate a longer run elasticity and report the results.

You do not have to choose one of these topics. You may pursue a different idea.

You may report estimates of both the supply and the demand elasticities if you wish, but I will also be happy if you focus only on supply. The quantity supplied data are up to date. You may update the price data if you wish (quandl.com is the only free source I know of for futures data).

Write up your results in the form of a mini-paper. Your paper should not be more than five single-spaced pages (including tables and figures) and should be written as though you aim to publish this work in an academic journal. I do not want your paper to read like a diary, i.e. "first I did this, then I did that". Rather, I would like you to tell a story. Include an outline of the question you are asking, a discussion of the empirical method, the results, and a conclusion. Be sure that a reader could duplicate your analysis. Don't try to cover all possible topics. Instead, pick one and write a coherent story.

Here are some points to keep in mind as you write:

1. Could non-expert readers replicate your results? If not, then they probably also will not clearly understand what you have done. Don't scatter the required steps throughout the paper. Try to consolidate it.
2. Could a reader understand your tables without scouring the text? Include enough detail in the tables and figures (and notes to the tables) for readers to understand them without reading every word of your paper. So, avoid using acronyms, state precisely what the statistic is, state what test produced the p-value etc.
3. State your findings in your introduction. By the end of the intro, you want readers to know what you do and what you find.
4. Don't use excessive digits in your tables. A t-stat of 1.45 is sufficient. Don't write 1.45376. The more digits, the harder it is to read and distill the results.
5. State clearly whether you were using real or nominal prices.

You may write your papers with a co-author, but I expect it to be joint work. I may ask you to revise and re-submit your paper if there are improvements you could make.

Feel free to be creative, both in your analysis and your writing. Writing is an important and understated component of economic research, and I would like to use this class to help you improve your writing. **Adhere to Cochrane's "Writing Tips for Ph.D. Students," which I placed on the class website.**

AER link for the R&S paper, data, and code: https://www.aeaweb.org/articles?id=10.1257/aer.103.6.2265

DUE DATE: Friday November 6 at 5:00pm (upload code and pdf of paper to canvas)