

POL-GA 1251
Quantitative Political Analysis II
Homework 4

You are going to replicate some of the results in the following paper,

Miguel, Edward, Shanker Satyanath, and Ernest Sergenti. 2004. "Economic Shocks and Civil Conflict: An Instrumental Variable Approach." *Journal of Political Economy*. 112(4):725-753.

The paper and replication material are available on Edward Miguel's website, linked on our course website.

Carry out the following:

1. Discuss the specific contribution of each of the following aspects of their empirical approach in addressing concerns related to non-random assignment of year-to-year GDP growth:
 - (a) Using rainfall growth as an instrument for GDP growth.
 - (b) Country fixed effects.
 - (c) Country time trends.
 - (d) Using lead ($t + 1$) values of the rainfall growth variable.

With these elements included, can you think of sources of confounding that may still be a reason for concern? (10 points)

2. Replicate the estimates in Tables 2, 3, 4, and 6. Briefly discuss the main results. (10 points)
3. Take advantage of the country-specific heterogeneity to construct a placebo test to provide circumstantial evidence on the exclusion restriction (10 points):
 - Run the simple first-stage regression (that is, the one with no covariates, country FEs, or time trend/FEs) going country-by-country. Look at the point estimates (ignore p -values or confidence intervals) for the coefficients on the rainfall growth variable and its lag. For which countries do these coefficients take values that are contrary to the one hypothesized in the paper — that is, both coefficients are either negative or zero through the first and second decimal places, implying no substantial relationship?
 - Re-run the first stage regression just using the countries identified in the previous step. You should find that the first stage, when restricted for these countries, is not valid for an IV analysis of the sort proposed in the paper.
 - Now, estimate the reduced form regression just using the countries identified as having no valid first stage. Are your findings in favor or against Miguel et al.'s identification strategy? Why?
 - Have a look now at this paper (written while the author was an undergrad!), which discusses a similar type of identification check using another dataset:

<http://www.sciencedirect.com/science/article/pii/S030438781400159X>

Explain the logic of this identification check. What are some reasons that it *may not* speak to the original Miguel et al. paper?