Economics 312 Spring 2020
Project #7 Assignment Due: 11:59pm, Monday, April 20

Because of our enforced social distance, each student will have to submit an individual report for this assignment. However, you are welcome to work together by whatever means of communication you can use. Please note on your submitted report the names of the other students with whom you worked on the project.

In this project, you will examine a panel data set with labor-market variables for the 50 U.S. states from 1990 to 2013. The objective is to explain unemployment rates at the state level.

[*Note: This project did not come from a textbook and has not been used before, so there might be some ambiguities or issues. I have worked extensively with the data set in my own research, so I think everything is in order, but if something comes up please notify me immediately so that I can fix it.*]

Variables

Variable	Description
year	Year of observation
state	Name of state
fips	Numerical FIPS code of state
ue_rate	Unemployment rate (%)
gdpgap	U.S. national gap between actual and potential GDP (business cycle) (%)
ind_growth	National average growth rate of employment by industry, weighted by each state's lagged employment shares (%)
ed_hs	Share of population with at least high-school education (%)
ed_coll	Share of population with college degree (%)
union_cov_total	Share of all workers covered by union contracts (%)
age_per_18to24	Share of population between 18 and 24 (%)
rate_sales	State sales tax rate (%)
rate_topindv	Highest marginal rate on state income tax (%)
minwage_real	State real minimum wage (or federal if none) (1982–84 $)
urban	Share of population living in urban areas (%)

Modeling issues

You might want to consider the following points as you design a model for state unemployment.

- We know that unemployment varies a lot over the business cycle, which we measure by the gdpgap variable. This variable is measured at the national level. Is this exogenous or are there endogeneity concerns?

- Unemployment tends to be a lagging indicator, so it tends to move after cyclical changes in GDP. Lags of the latter might be appropriate in explaining current unemployment.
- The ind_growth variable takes the state's industrial composition in the previous year and examines how much total employment in the state would have grown this year if each industry's employment had grown at the same rate within the state that it did in the overall U.S. this year. This variable is missing for 1990.
- The minimum wage is deflated by a national price index, not by a state-specific one.

Analysis

- Build, estimate, and analyze a model of state-level unemployment using appropriate estimation techniques. You may wish to consider alternative specifications and estimators, but do not go crazy with nonlinearities, lags, interactions, etc.
- In addition to OLS, fixed effects, and random effects, you may wish to explore the `xtregar` command in Stata, which does a Prais-Winsten estimator with fixed or random effects.
- Your report should present a basic theoretical rationale for the variables with expected signs, a discussion and *a priori* assessment of the methods you are using, a table of results, and brief summary of what you did and your main conclusions. Your report need not be longer than 3–5 pages, but should include all of these parts, labeled as sections. As always, be sure to include your Stata outputs so that I can see how the results were generated.