

POLS509 - The Linear Model

Homework 8 - Autocorrelation

1 Introduction

In a 1993 research note in *Polity*, Philip Klinkner makes the unlikely claim that turnout in elections for federal government offices (i.e. the presidency and Congress) has declined in the past 150 years largely due to the pernicious influence of none other than the U.S. Supreme Court. By overturning laws passed by Congress and the states, the more activist Court of the 20th century has “turned off” voters to the democratic process; why, the reasoning goes, should a citizen bother to vote when the laws enacted by that elected official are only going to be overturned by an unelected, politically unaccountable Court? The result is that judicial activism at the Supreme Court level has led to decreased voter participation at the polls.

Klinkner tests this dubious proposition using data on aggregate turnout in national elections from 1840 to 1988. His dependent variable is the percentage of registered voters who go to the polls and vote in Congressional and presidential elections. His primary independent variable is the number of laws overturned by the U.S. Supreme Court during the two years immediately preceding the election. Klinkner finds that Supreme Court activism exerts a statistically significant and substantively strong effect on turnout: his bivariate OLS regression results indicate that each law overturned corresponds to a decrease of 0.87 percent in overall turnout ($R^2 = 0.48$). Klinkner interprets this result to indicate that “(E)xcessive judicial activism might ‘dwarf the political capacity of the people’.”

A potential problem with Klinkner’s analysis is that of autocorrelation. Turnout, in particular, seems a likely candidate for this problem, as most elections involve incumbents, similar districts, overlapping voter pools, etc. Likewise, slow turnover and stable agendas on the Court suggest that the level of “activism” ought also be correlated over time. These substantive characteristics of the phenomena under study thus have potentially important statistical implications.

Your task is to reevaluate Klinkner’s study, paying particular attention to the problem of autocorrelated errors.

2 Exercise

1. Begin with the following OLS model of turnout:

$$TURNOUT_t = \beta_0 + \beta_1(OFFYEAR_t) + \beta_2(LAWSOT_t) + u_t$$

where $TURNOUT_t$ is the percentage of eligible voters who cast votes at time t , $LAWSOT_t$ is the number of federal, state and local laws overturned by the U.S.

Supreme Court during the two years prior to the election, and $OFFYEAR_t$ is a control variable that equals 1 in off-year (i.e., non-presidential) elections, and 0 otherwise. Estimate this regression and discuss your results, both statistically and substantively.

2. Test for the presence of autocorrelated residuals from this regression, using both graphical techniques and statistical methods. Discuss each diagnostic or test as you go. Use as few or as many tests as you feel necessary to be satisfied that you understand the nature and extent of the problem.
3. Reanalyze the data, using methods appropriate for addressing the problem(s) with autocorrelation you found. Again, choose the method or methods you feel is/are most appropriate; these may include generalized difference equations on transformed data, Cochrane–Orcutt/Prais–Winsten regression(s), or other approaches. For each such reanalysis, be sure to specify (a) the nature of the estimation, (b) the substantive and statistical reasons for using it, and (c) the results of that reanalysis, including any points of similarity or difference from other methods.
4. Finally, briefly reassess Klinkner’s hypothesis in light of your findings. What, if any, differences did you find between your results and those of Klinkner? What rationale(s) might you offer for those differences?

This homework is worth the customary 50 points, and is due on April 10.