

Political Methodology Comprehensive Examination

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Part I

1. Between 1961 and 1963, several civil rights cases were appealed to the federal appellate court for the South (i.e., the Fifth Circuit Court of Appeal). There was a group of judges dubbed “The Four” on this nine-member court who were particularly liberal and supportive of civil rights claims. Cases at the appellate level, though, are not decided by all nine judges, but by panels of three judges. What is the probability that a randomly selected three-judge panel would consist of a majority of these liberal judges?
2. You are defending your prospectus, which includes a cross-sectional time-series model with country-year as the unit of analysis. A committee member raises the issue of endogeneity of your key independent variable, a dummy variable indicating whether or not the country has a particular type of electoral system. What alternative solutions could you pursue to address the concerns of your committee member? What are the relative advantages of the various solutions?
3. In the same prospectus defense, a different committee member raises a different concern. This member is concerned that you apply the same model to a wide range of countries over a long period of time. The member believes that regions and era are too different to combine in one model. What can you do to constructively engage this criticism? Be specific.
4. You are given a Stata data set, “UN Peace Keeping (Stata 9).dta” which contains data on countries’ participation in UN peace keeping missions. One might explain participation as a function of a country’s level of democracy, a country’s multilateral security commitments, a country’s security interests, and regional interests. A codebook for the variables can be obtained by typing “codebook” in the Stata command window. We have also provided information about the hypotheses and variables in the notes field for each variable (type notes in the Stata command window). Analyze the data. More specifically:
 - (a) Estimate an appropriate model for UN peace keeping using these variables or variables derived from them.
 - (b) Interpret the coefficients after conducting relevant hypothesis tests. Which predictors have significant effects on the outcome variable, and in what direction? Are the results expected?
 - (c) Do the predictors explain peace keeping participation well? By what criteria?
 - (d) What assumptions, if any, might these models violate? Please provide relevant diagnostic tests and any appropriate corrective action.

(e) Include `nato1`, `pop1`, and their interaction in the model (`natopop1`). Interpret that interaction.

5. The latent variable y_i is assumed to be linearly related to the observed x 's through the model:

$$y_i = \beta_0 + \beta_1 x_i + \epsilon_i, \quad \epsilon_i \sim N(0, \sigma^2)$$

The latent variable y_i is linked to the observed binary variable y^* by the equation:

$$y_i^* = \begin{cases} 1 & \text{if } y_i > \tau \\ 0 & \text{if } y_i \leq \tau \end{cases}$$

where τ is the *threshold* or *cutpoint*. Formally write out the following:

- (a) Probability that $y_i = 0$ given x_i
- (b) Log-Likelihood Function
- (c) Do not assume that the variance equals 1, but instead you want to model the variance with a predictor, z_i . Write the log-likelihood function.

Part II

Either submit an empirical research paper along with the exam or schedule an oral exam after the written exam.