

**Models & Methods
Preliminary Examination
Fall 2006**

RULES AND DIRECTIONS: You will have eight hours in which to answer the required questions. **The exam must be handed in no later than 4:00 p.m.** Be sure to save some of your time for putting your answers into an organized, typed or legibly written version in good English. Also be sure that you answer all the parts of each question and that you refer to the appropriate scholarly literature in each answer. This is a closed-book exam. Students may not use notes or books, nor may they discuss the examination with anyone while taking it.

Important: Be sure that you choose your questions in order to demonstrate the breadth as well as the depth of your knowledge. It is your responsibility to ensure that your selection of questions and answers to them are distinctive and do not contain undue overlap and repetition.

Please answer one question from Part I, and two questions from Part II.

THEMATIC QUESTIONS

PART I:

Write one (1) of the following essays.

1. Critique the application of rational choice models to the study of politics.
2. What is the level of analysis problem? Illustrate its seriousness. What can be done to solve it?
3. Evaluate the claim that the greatest barrier to scientific progress in the study of politics is our inability to conduct controlled experiments. Is this barrier equally serious in all subfields? Are quasi-experimental techniques sufficiently developed to allow sound scientific inference? How so?

SEMINAR QUESTIONS

PART II:

Answer a total of two questions.

1. The method of maximum likelihood estimation is central to many of the estimation procedures used in quantitative political science. Describe the logic of maximum likelihood estimation using one of the following models as an example: logistic regression, the probit model, or the Poisson regression model. Then, describe how the variability of a maximum likelihood estimate is assessed with attention to the mathematical logic behind this assessment.
2. Discuss the evolution and importance of different equilibrium concepts in game theory. In each case, explain the value-added of each equilibrium refinement and how each refinement advanced our ability to capture strategic behavior. Support your points by referring to specific works in the political science literature.
3. Using Robert Groves' (1989) conceptual structure of sources of error in surveys, describe how you would design as "error proof" of a survey as possible, while keeping in mind time and cost constraints (i.e. don't assume unlimited resources to conduct the survey). Describe each type of error, why it is a problem for surveys, what you would do to reduce the error, and why your approach would be effective (with citation to the survey research literature).
4. It is a truism in social science methodology that "correlation does not imply causation." Yet, a number of correlational techniques are discussed either explicitly or implicitly in causal terms—structural equation modeling, for example. Discuss how the notion of causality interfaces with correlational techniques like ordinary least squares estimation (regression), structural equation modeling and so on. Do the mechanics of these models make causal assumptions, even if they can not assess causality? Moreover, to what extent—and under what conditions—can correlational techniques provide limited evidence in favor of causal conclusions? Provide examples from political science.