

Population Economics Field Exam
Spring 2009

Instructions

You have 4 hours to complete this exam.

This is a closed book examination. No written materials are allowed. You can use a calculator.

YOU MUST ANSWER BOTH PARTS A AND B. EACH PART IS WORTH 100 POINTS. YOU MUST OBTAIN AT LEAST 50 POINTS IN EACH PART TO PASS THE POPULATION FIELD EXAM.

Please answer Parts A and B in separate booklets. Make sure you write your identification information and which part you are answering on the front page of ALL booklets.

Part A: Population Economics (2 hours). Total points: 100.

There are 20 questions in this part. Each question is worth 5 points. Some questions are harder than others. DO NOT spend too much time on any one question. Partial credit will be given whenever possible.

1- (25 points) General review questions (1/2 page each at most)

1. (5 points) What is the evidence on the causes of mortality increases in the last 2 centuries?
2. (5 points) Discuss the evidence of the effect of changes in life expectancy and health on economic growth.
3. (5 points) Briefly describe the quantity-quality model and how various empirical studies have attempted to test it.
4. (5 points) Review the 2 main models of intra-household allocation that exist in the literature, detailing on they differ in their predictions. Why is it important or interesting to distinguish between these?
5. (5 points) Review Manski's concepts on social effects. What are endogenous social effects? Contextual effects? Correlated effects? Give an example of which and explain why we are interested in differentiating between them.

2-(75 points) Empirical Application: Analyzing the effects of Family Medical Leave Act on child health

In 1993, Congress passed the Family Medical Leave Act (FMLA). The FMLA requires all employers with 50 employees or more to provide up to 12 weeks of unpaid, job-protected parental leave a year to eligible employees. The Act was passed with the expressed purpose of allowing leave to care for a newborn, newly-adopted or foster child, child, spouse, or parent with a serious health condition, or for the serious health condition of the employee (including maternity-related disability). In this way, the FMLA could be used for both maternity leave and parental leave following childbirth, for up to 12 weeks in total. Health insurance benefits must be continued during the period of leave. When the FMLA was passed in 1993, 34 states and the District of Columbia had already passed some form of maternity or parental leave law. Most policies were unpaid and the duration of these policies varied from state to state.

Suppose you have data containing state-level averages of infant mortality, mean birth weight and the average number of illnesses within the first year of birth for 1990 and 1995 (that is before and after the FMLA was passed).

1. In theory,
 - a. (5 points) What effects would the FMLA have on labor supply and wages? Do we expect to see any general equilibrium effects as a result of this legislation?
 - b. (5 points) Would we expect to see unambiguous effects in infant/birth health outcomes as a result of the FMLA?
2. (5 points) Suppose a researcher estimates the following regression:

$$(1) \quad H_i = \beta_0 + \beta_1 * I(\text{mom took leave from work}=1)_i + X_i B + e_i$$

Where H_i is a health measure for infant i (birth weight, infant mortality, or incidence of disease), X_i is a set of infant characteristics, and $I(\text{mom took leave from work}=1)$ is an indicator variable equal to 1 if i 's mom took leave at or around the time of i 's birth. Under which assumptions does β_1 give us the causal effect of "leave taking" on health?

3. Simple DD estimates: Given the information about the FMLA above and the data that is available to you,
 - a. (5 points) How would you implement a simple linear difference-in-difference (DD) strategy to estimate the effects of the FMLA on infant health outcomes? Write down the estimating equation.
 - b. (5 points) Explain why a DD estimation method is better than simply comparing what happened to the affected states before and after the law was passed; and why DD estimation is better than comparing affected and unaffected states after the legislation has passed.
 - c. (5 points) What are the identifying assumptions we need to make to obtain causal effects of the FMLA? Provide examples where assumptions would fail.
4. Since the legislation affected only individuals in large firms, one could consider estimating a Difference-in-Difference-in-Difference (DDD) model. Assuming you had data by state, year and firm size (large versus small firms),
 - a. (5 points) How would you estimate the effect of the FMLA model using a DDD approach? Write down the equation.
 - b. (5 points) What are the identifying assumptions needed for this DDD strategy?
 - c. (5 points) Is this DDD a better strategy than the DD strategy? Why?
5. Suppose that you had access to firm level data including information on the exact number of employees at the firm that could be matched to individual data that includes health outcomes of the babies of the firm's employees.
 - a. (5 points) How would you use these data to estimate the effect of the FMLA using a regression discontinuity approach (RD)? Write down the equation.
 - b. (5 points) What assumptions would we need to make to get unbiased estimates using the RD approach?
 - c. (5 points) Would this approach be better than the DD or DDD approaches above?
6. (5 points) Assuming that we could estimate the causal effect of the FMLA on health (using either the DD, DDD or RD methods above), would the estimates of the effects of the FMLA give us the causal effect of "leave taking" on health? Why or why not?
7. Imagine you have individual data that would allow you to estimate equation 1 and that can be linked to state level laws. You can now consider estimating the effect of "leave-taking" using state laws as instruments in a linear framework.

- a. (5 points) Write down the assumptions we need to make for the instrumental variables strategy to provide unbiased estimates of the effects of “leave-taking” on infant health. How likely are these assumptions to hold?
- b. (5 points) Do you expect the OLS estimates of (1) to be bigger or smaller than the instrumental variable estimates? Why can OLS differ from instrumental variables estimates?

Part B: Development (2 hours). Total points: 100.

1. For each question below, answer whether you think the statement is true, false, or unclear, and explain your answer. Note that the true/false/unclear distinction is far less important than the explanation. Be specific but concise. Cite specific papers.
 - (a) (10 points) Individuals in developing countries are relatively well insured against risk.
 - (b) (10 points) There is little convincing evidence on the rate of return to education in poor countries.
 - (c) (10 points) Microfinance is likely to have larger impacts when targeted towards women than when targeted towards men.
2. Say that output per worker can be written as $y = Ak^\beta$, where k is capital per worker and A is technology.
 - (a) (10 points) Say that $\beta = 0.4$. Output per capita in the US is over 15 times that in Africa. What does this imply about the returns to capital in the US and Africa? What does it imply about interest rates in US and Africa?
 - (b) (10 points) This fact raises the "Lucas paradox", after Robert Lucas. What is the paradox?
3. (15 points) Under which conditions will a health poverty trap emerge? Explain the intuition. What does the evidence to date suggest about the likelihood of health poverty traps in developing countries?
4. (15 points) In the World Development Report 2004, the World Bank advocates "community empowerment" as a way to increase the quality and quantity of services that reach the poor. Does the evidence to date support this view?
5. (10 points). What is called the "separation property" of the agricultural household model? When does it hold?

6. (10 points) Summarize the research proposal that you submitted for the class in 1/2 a page. Be clear, to the point. What is the main research question? Why is it important? How will you go about answering it?