SYRACUSE UNIVERSITY
DEPARTMENT OF ECONOMICS

Economics 741, Urban Economics   Fall 2015
Professor Yinger

Final Exam

This is a closed-book exam. You have two hours to complete it. Please turn the exam in to the CPR receptionist when you are finished. This exam has two parts. **You must answer one question from each part**.

PART I.

1. One of the comparative statics results for an open urban model is that the price of residential land does not change if the agricultural rental rate (R-bar) increases. The size of the urban area declines, of course, but at locations that remain in the housing sector, land prices will be the same as they were before R-bar increased.

    a. Give an intuitive explanation for both the land-price and the urban-size results. Back up your explanations with a graph or with algebra.

    b. Newcrop is one of a dozen urban areas in the Far West region. On the land surrounding the Newcrop metropolitan area, farmers figured out several years ago how to dramatically increase the yield in their soybean fields. (Soybeans are the main crop in the region.) The methods they use depend on the soil and weather patterns around Newcrop and cannot be replicated anywhere else in the region. You have acquired data on land prices for vacant lots at many residential locations in Newcrop. These lots are all similar in the sense that they are flat lots on which housing could readily be built. These data cover a long period of time before and after the new farming techniques were discovered and implemented. Because these lots are almost all developed after they are sold, you cannot create a double-sales panel. Explain how you would use these data (supplemented with other variables if necessary) to test the above land-price result.

2. You have decided to conduct a correspondence audit study of housing discrimination against Hispanic-Americans. You want to measure the amount of discrimination and also test one of the main hypotheses about the causes of this discrimination. You have decided to conduct this study using apartments advertised on the internet, and specifically advertised on Craig's List. These advertisements indicate the size, location, and rent for each apartment.

    a.   Explain how you would conduct this audit. In other words, explain your procedures for identifying auditors, contacting Craig's List, and collecting information.

    b. Explain how you would measure the incidence of discrimination.

    c. State your hypothesis about a cause of discrimination, and explain how you would test it.

PART II.

3. Suppose one of your colleagues has invited you to help write a paper on hedonics (and you have accepted her offer!) Your colleague has collected data for a large sample of house sales in a major metropolitan area over a ten-year period. In fact, the data set is large enough that you observe two sales for many of the houses in the sample. It has extensive panel data on the structural traits of housing, along with data on neighborhood amenities. The neighborhoods are census block groups. The amenities include elementary test scores, crime rates, an air quality measure, and distance to the CBD.

    The focus of the project is on the state-funded Build-a-Park Program, which was implemented in the middle of the sample period. This program gave cities around this metropolitan area funding to build small neighborhood parks with playground equipment and open space. Your colleague's plan is to use the sample of double sales to ask whether the value of a house changes when a new park appears within one mile of the house.

    Your colleagues' preliminary analysis regresses the change in the log of house value (between the two sales dates) on a variable indicating whether a park was built within a mile of the house between those two dates, a year dummy, and variables to indicate changes (if any) in housing or neighborhood traits. There is a variable, for example, for the change in the average math and English tests scores in the neighborhood elementary school. This analysis finds that house values increase 0.5 percent when a park is constructed nearby. The average house value in the area is $160,000, so your colleague interprets this result to mean that, on average, a park is worth $800 to a household.

    Your job is to evaluate this preliminary analysis and to suggest ways to improve upon it. Your colleague is aware that you have studied hedonic analysis and is open to any of your suggestions. She also wants to make sure that she has the correct interpretation of any final regression results.

4. You have obtained a 10-year panel data set on municipal police services in a large state. In this state, city (i.e. municipal) police departments provide all the police services within their boundaries. The data set includes crime rates, i.e. crimes per capita, for total crime, violent crime, and property crime; spending by the police department; the average police salary; the average police starting salary (for new graduates of the police academy); the city poverty rate; median household income in the city; city population; average starting salary for new MBAs in the city; share of city residents with a college education; number of jobs in the city; lane-miles of streets and highways in the city; share of city residents who are homeowners; average rent; average house value; commercial and industrial property as a share of total assessed value; share of city population between 6 and 18 years old; and share of city population older than 65 years.

   You have decided to use these data to estimate a cost function for city police services. Devise and explain the conceptual foundations of your project. Explain the key challenges you face in carrying out this estimation—and how you would address them. Present your empirical specification, and explain how you would use the variables in your data set. (Some of the listed variables may not be relevant; other variables can be added if needed.)