

**SYRACUSE UNIVERSITY
DEPARTMENT OF ECONOMICS**

Economics 741, Urban Economics
Professor Yinger

Fall 2013

Final Exam

This is a closed-book exam. You have two hours to complete it. Please turn the exam in to the economics office when you are finished.

This exam has two parts. **You must answer one question from each part.**

PART I.

1. A simple monocentric urban model with Cobb-Douglas utility functions, Cobb-Douglas housing production, and constant per-mile commuting costs predicts that the bid-rent and bid-price functions will become flatter as income increases.
 - a. Prove this result.
 - b. Suppose you have data for a region that went through a long recession, in which incomes declined. How would you test the hypothesis that this result still holds (in reverse!) when income goes down? What data would you need? How would you conduct your test?
2. Suppose you have decided to test the proposition that once one controls for non-ethnic household traits and the price per unit of housing services, the demand for housing services is the same for blacks and whites. What data would you need to test this proposition? How would you use this data to conduct this test?
3. Correspondence audits are conducted over the phone or over the internet, so they are much cheaper than in-person audits. They also have the advantage that they can literally randomize ethnicity (but the disadvantage that they observe a narrower set of actions by housing agents). Another potential advantage of correspondence audits is that they can randomize auditor traits other than ethnicity, such as occupation, education, or an auditor's current housing situation. These other traits can be used to test hypotheses about the causes of discrimination. Explain a hypothesis about a cause of discrimination. Explain how you would design a correspondence audit to test this hypothesis. Make sure you explain both the procedures you would use and the statistical tests you would conduct.

PART II.

4. The City of Rapidgrowth first developed east of its downtown. Freeways were put in place and commuting to downtown, where most of the jobs are located, was relatively easy. Thanks to a burst of immigration, the west side of town then filled in rapidly, so rapidly, in fact, that commuting highways were not constructed. People had to commute to the downtown on city streets. The city finally caught up with this situation and built a series of freeways for people living on the city's west side to use.

You have obtained a large sample of house sales for Rapidgrowth in the period before and after the west-side freeways were built. You have decided to study the impact of these freeways on house values. Explain what data you would need to estimate this impact. Explain the methods you would use.

For extra credit, explain how you would calculate the total increase in house values generated by these west-wide freeways.

5. Suppose that one of your colleagues has asserted that log-linear hedonics are just fine. "There is no problem," he says, "estimating a hedonic with the log of house value as the dependent variable and the log of school quality as the key explanatory variable." You have decided to convince him that this claim is not correct by working through the case of heterogeneous household types, each with its own log-linear bid function. More specifically, show (with graphs or algebra) that the hedonic cannot be log-linear if each of the bid functions is log-linear and the slopes of the bid functions vary.

You have also decided to test your proposition using a large sample of house sales you have acquired for a large metropolitan area. Explain what data you would need to conduct this test. Explain the methods you would use.