

Economics 5800  
Urban Economics  
Second Mid-term Exam

Instructions

This examination has five questions and you are to do all five. Please number your answers clearly. Each question will be worth 20 points, and each part of each question will have the same value, so allocate your time accordingly. The exam is “closed book – closed notes.” You may use a calculator, although you shouldn’t need one. You will have until 12:30 to complete the exam. Latecomers will not be given extra time to finish the exam.

1. The monocentric model has been used to explain the locations of various income groups in urban areas. Suppose that the Jones family has income of 10 and the Smith family has income of 20, and that that income elasticity of demand for land is 0.5. The Jones family buy 0.1 acre of land. Both families work downtown and face the same (per/mile) commuting costs.
  - a. Briefly sketch out (using a diagram) the monocentric model, indicating whether the Jones family or the Smith family will locate further from the center of the city, and why.

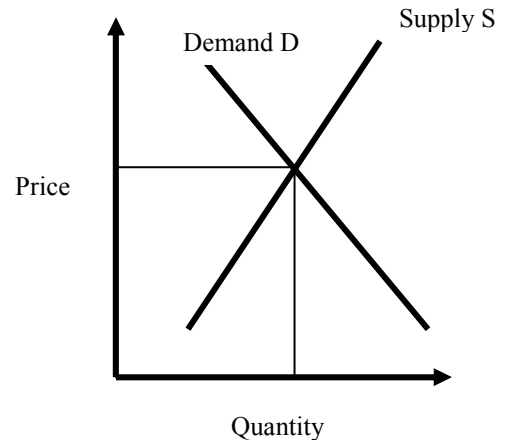


- b. Suppose, one morning everyone wakes up and discovers that gasoline prices have fallen in half overnight. Remembering all of the components of transportation costs, what will the “halving” of gasoline prices do to marginal transportation costs?

- c. What will be the long run impact of the halving of the gasoline costs on the rents that people are willing to pay? Will this change the relative locations of the Smith and the Jones families? Why or why not?

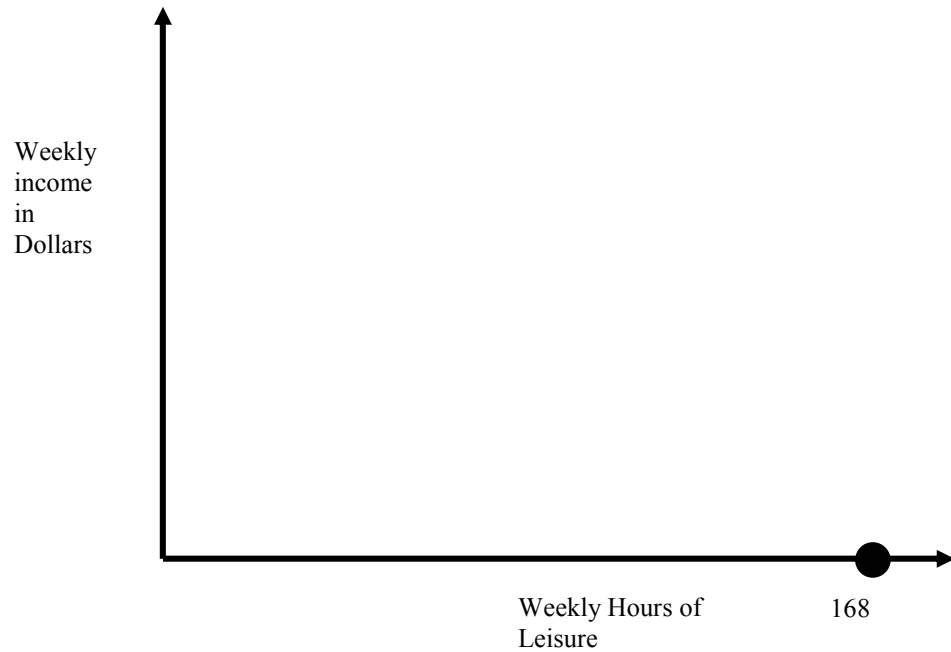
2. Zoning is an important feature in the urban structure.
- a. Recalling that zoning places restrictions on land use, what is the economic rationale behind zoning?

- b. Consider the following supply and demand diagram for housing. Suppose that low density housing is considered to be desirable, so that a community invokes “large lot zoning.” If large lot zoning is desirable to house buyers, and also affects developers, what will happen to supply S and demand D? What will the net effect be on equilibrium price and equilibrium quantity.



- c. The State of New Jersey has a unique law regarding the use of town development plans, and the construction of high and low income housing. Discuss the plan briefly and evaluate its impacts on the construction of high and low income housing.

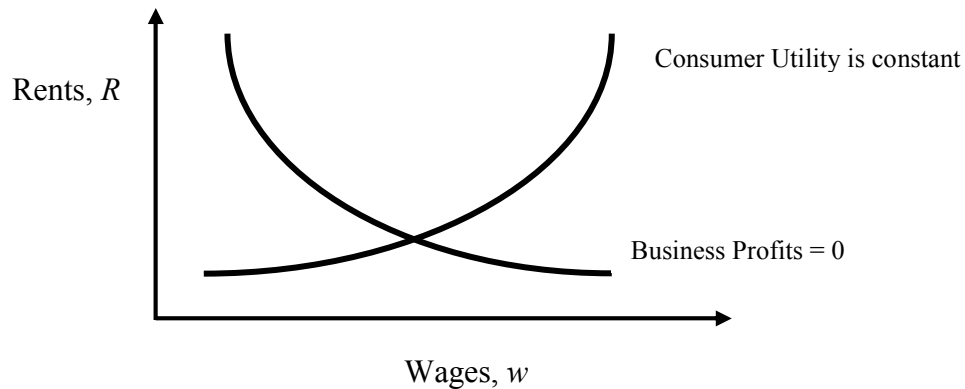
3. Consider a single parent household, in which the parent can earn \$6 per hour. Under these circumstances the parent chooses to work 40 hours per week.



- a. Using the diagram above, with indifference curve analysis, show the parent's equilibrium hours of work and leisure. Discuss your approach briefly .
- b. Suppose the parent is given a cash grant of \$100 per week? Show how the new equilibrium is derived.

- c. What will be the likely impact of the \$100 grant on the parent's equilibrium hours of work? Why?

4. Consider a town called Noruh. Laborers and businesses are able to move in and out freely. Noruh exists within a system of cities such that in order for long run equilibrium to obtain, the following diagram holds.



- Discuss why the two curves have the shapes that they do, and what the equilibrium values of  $R$  and wages  $w$  mean. Label these values  $R^*$  and  $w^*$  on the graph.
- Suppose that the Noruh city council enacts a mandated minimum wage of  $w^m$  which exceeds  $w^*$ . In the long run what will the new equilibrium of rents and wages be? Why?
- What will happen to the size of the population and the size of the city in the long run. You may want to draw a different diagram to illustrate this.



5. Harold takes on a job as a property appraiser doing hedonic price analysis on houses. He looks at some appraisal data, estimates a model and gets the following equation

$$\text{House Price} = 1,000 + 10,000 * (\# \text{ of rooms}) + 100 * (\text{lot size}) \\ - 500 * (\text{distance from downtown}) - 1,000 * (\text{property tax rate})$$

- a. Harold tries to explain to his mother what hedonic prices are. What does he say?
- b. What is the hedonic price of an additional room? Why?
- c. Is it logical, all else equal, for the impact of a higher property tax rate on house prices to be negative? Why or why not?