Urban and Regional Economics
Field Exam
August 15, 2011

Answer the following three questions as completely (but succinctly) as possible. They are equally weighted.

1. Compare the spatial structure of an urban area in which commuters are charged for the number of miles they drive with the spatial structure of an urban area in which commuters are charged for the external congestion costs caused by their travel.

   Be sure to make explicit any assumptions you make in addressing the issue. Indicate how your conclusions – about the spatial distribution of population, income and/or other identifiers – are related to the assumptions you have made.

2. Suppose *ad valorem* real estate tax rates are distributed over a large set of local jurisdictions according to the function $TR_j = f(N_j)$ where TR is the property tax rate in jurisdiction j and N_j is an index of the $j = 1, ..., J$ jurisdictions. Describe carefully a set of circumstances under which the tax is an excise on the use of real capital; contrast this with a circumstance under which the tax is a levy on asset values. Be concise, but be careful in describing the relevant conditions.

3. An analyst has estimated an "appropriately specified" hedonic valuation model, $V_i = f(X_i)$ where V_i is the market value of housing i and X_i are the hedonic components of the housing vector for house i. The analyst now claims that the aggregate market value of the component X_j in the urban area can be approximated by

$$\sum_{i=1}^{N} \left[\frac{\partial X_{ij}}{\partial V_i} \cdot X_{ij} \right]$$

$$\left[\sum_{i=1}^{N} \frac{\partial F_{ij}}{\partial V_i} X_{ij} \right]$$

   Indicate a set of circumstances under which the analyst is "correct," a set of circumstances in which she is "close," and a set of circumstances in which she is "way off." Be clear in specifying these sets of conditions.