THE UNIVERSITY OF TEXAS AT AUSTIN

Comments on Parker et al.'s "The implications of land-market representation for the interpretation of empirical land-use change models"

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Summary

- Major Topic: How to improve land market representation in agent-based land use models (e.g., LUXE), thus predicting more accurate land use outcomes.
- Two Comparative Evaluations
  - hedonic land value model (including agent-level variables or not)
  - market mechanism (competitive bidding versus first-come first-served)
- Experimental Design: comparing the differences of land use and value between four experiments and the base case
  - Base case: "real-world" land use and value simulated using the "original" utility & WTP functions

$$U = A^{\alpha} \cdot P^{\beta}$$

$$WTP = \left(B - t \cdot D\right) \cdot \frac{U^2}{b^2 + U^2}$$

  - Four comparative cases (2 types of hedonic function by 2 types of market algorithm):

    U=WTP=Hedonic pricing function estimated by base case's data

Major Findings

- Including buyer and seller data for hedonic model estimation.

- Market allocation via the competitive bidding algorithm generates more accurate land use outcomes than the first-come first-served algorithm.

Questions

- Whether the selections of “original” utility & WTP functions, spatial variables, and agent-level variables affects the results?

- It may be more interesting to use realistic/empirical land use data, rather than simulated data, for the base case?

- If we have transaction data of buyers and sellers, as well as land use data, how can we improve the empirical hedonic analysis using agent-based models?