

Call for participation, GLP sponsored workshop on agent-based land market models

Workshop announcement: The Aberdeen Global Land Project office on integration and modeling and the US NSF-sponsored SLUCE 2 project will co-sponsor a small, interactive workshop on agent-based land market models, organized by Dawn Parker, Tatiana Filatova, and Eleanor Milne, to be held from 29-31 May 2009 at the Macaulay Institute in Aberdeen, Scotland. Workshop discussions will cover a range of issues related to land market models, abstract and empirical and rural and urban, including issues of integration between rural and urban market models. Participants will be expected to read overview papers on ABMs of land markets and write a short position paper prior to the workshop. Working from these materials, participants will identify alternative existing approaches, best practices, strategies for model evaluation and testing, open modeling challenges, and plans for infrastructure development. Participants will also have the opportunity to contribute to an online peer-reviewed proceedings volume, to be published by the Web Book of Regional Science.

Background: Currently, very few models incorporate land market interactions in a spatially explicit manner. Theoretical, equilibrium-based economic land market models develop land demand and supply based on both agent-level (preferences, income) and simple spatial (transport cost, spatial externality) drivers. However, to maintain analytical tractability, these models assume a high degree of agent-level and spatial homogeneity. Statistical models can explore the relative contributions of agent and spatial drivers on property values and land-use transitions, potentially basing their estimates on fine-scale, spatially explicit data. However, their estimated coefficients reflect the reduced-form influences of both supply and demand. These models also rarely incorporate agent-level drivers of land-use change and land market behavior. Thus, once estimated, statistical models also essentially take a representative agent approach to empirically modeling land markets. Further, the predictions of such models are likely not to be robust if microeconomic agents' behaviors change (or if new participants enter the market). In particular, if land is not allocated through competitive bidding then endogenous redistribution of land cannot occur due to, for example, local changes in land values caused by loss of open-space amenities or loss of credit availability. Consequently, there is a need to develop spatially explicit land market models that combine the advantages of both empirical and theoretical models.

Agent-based methods are a promising new means to develop process-based land market models that computationally formalize the interactions of heterogeneous agents over a heterogeneous landscape. In an agent-based model, individual willingness to pay (WTP) and willingness to accept (WTA) functions can be developed for heterogeneous buyers and sellers, who then interact through a market, from which a landscape of transaction events and prices evolve over time and space. Agent-based models generate data that can be analyzed using a variety of methods to test hypotheses and develop policy interventions. Models can also be designed to include processes that affect ecosystem services, e.g. land management. Thus, these models can be used as computational laboratories to explore the effects of spatially heterogeneous land use/management on socioeconomic and biophysical outcomes. However, in spite of the promise of agent-based land market models (AB-LMM), few fully empirically informed AB-LMM have

been developed. This workshop will be a unique opportunity to bring together a diverse group of scholars with interesting in land market modeling to meeting, discuss, and compare alternative approaches.

Call for participation: To apply to participate in the workshop, potential participants should submit a short essay (approximately 1000 words) discussing their interest and ongoing activities related to land market modeling, with emphasis as appropriate on agent-based complex systems models to Dawn Parker (dparker3@gmu.edu) by 15th April 2009. We suggest that your essay touch on the following points as appropriate:

- Your ongoing research/scholarly activities related to land markets;
- What you see as key challenges in land market modeling;
- Your view of potential strategies and/or innovations that could help meet these challenges;
- Examples of effective land-market modeling work;
- Your view of the most important open questions related to agent-based land market models.

You may also address the following specific questions:

- Who are the key agents who should be included in a land market model? What is the role of real estate agents and developers, and how should they be modeled?
- How should price expectations be modeled and/or updated, and should these mechanisms differ for different agent types?
- What role should market equilibrium play in land market models?
- How should a fully empirical land market model be structured and parameterized? What role might buyer and seller survey data play? What role can statistical analysis and regression models play?

Further open questions related to both rural and urban land markets are outlined in Polhill, Parker, and Gotts (2005) (http://mason.gmu.edu/~dparker3/ESSA_ELMM_05.doc) and Parker and Filatova (2008) (<http://dx.doi.org/10.1016/j.compenvurbsys.2008.09.012>)

Applications for participation are invited from scholars at all levels from graduate students to senior scholars. We particularly welcome applications from scholars outside Europe and North America. While we have very limited funds available to support participant travel, please indicate requests for support with your application. Participants must be able to attend the full workshop and contribute to the workshop proceedings. Accepted participants will be informed by 1 May, 2009.