### *AIA Pitch*

### team id & names of members

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### title

An Agent Model for Urban Economics: Digging Into Emergence

### Brief

We are creating a spatial agent-based model to analyse the relationship between agents (People) and real estate costs based on agent wages

* Spatial equilibrium
* Utility function
  + Optimum costs
* Experiments
* Housing
* Wages
* Stable system
* whether agents are ‘transport-rich’ (leading to locating on the outskirts) and ‘good-cost rich’ (living near the centre).

### hypothesis

Can interacting agents create a stable, equal-utility settlement pattern?

### primary reference(s)

<http://rf3mf3dz3g.search.serialssolutions.com/?ctx_ver=Z39.88-2004&ctx_enc=info%3Aofi%2Fenc%3AUTF-8&rfr_id=info%3Asid%2Fsummon.serialssolutions.com&rft_val_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Ajournal&rft.genre=article&rft.atitle=An%20agent%20model%20of%20urban%20economics%3A%20Digging%20into%20emergence&rft.jtitle=Computers%2C%20Environment%20and%20Urban%20Systems&rft.au=Heppenstall%2C%20Alison&rft.date=2015-11-01&rft.issn=0198-9715&rft.eissn=1873-7587&rft.volume=54&rft.spage=414&rft.epage=427&rft_id=info%3Adoi%2F10.1016%2Fj.compenvurbsys.2014.12.003&rft.externalDBID=n%2Fa&rft.externalDocID=601778074&paramdict=en-UK>

### anticipated behaviour(s)

* We anticipate that the system will become more chaotic when the range of parameter values becomes larger.
* We anticipate from the reference text that the agent’s behaviour will fall into equilibrium. The speed of which they do this depends on the range of several parameters (land, density, goods cost & wage).

from the reference text – what is the nature of the predicted behaviour (cyclic, convergent, tipping, etc). NB: if your system behaviour does not exhibit interesting characteristics, your pitch will be rejected

### agent deliberation/interaction

a short paragraph: what is it about the agent reasoning & awareness that suggests this behaviour can arise?

### control variables for testing/evaluation

identify key variables (& their roles) which will form the basis for testing the model

**Agents**

*People*

* + Control Variables:
    - Base Land Cost [P(L)] OR Base Density Cost [P(D)]
    - Commute Cost [C]
    - “Love of Variety” Modifier [ρ]

(Brakman et al., 2009, p. 94) (A.K. Dixit et al. 1977, p. 297)

* + Determined Variables
    - Budget [Y]
      * Wage – Commute Cost
    - Spending on Land [L]
      * Determined from P(L), Budget & “Love of Variety” Modifier ρ
    - Spending on Goods [G]
      * Determined from P(G), Budget & “Love of Variety” Modifier ρ
    - Utility (Always wanting more)
      * Determined from Spending on Goods, Spending of Land & “Love of Variety” Modifier ρ
* *Firms*
  + Wage
  + Goods Cost
* *Landlords*

**References**

(Brakman et al., 2009, p. 94) S. Brakman, H. Garretsen, C. van Marrewijk

The new introduction to geographical economics

(2nd ed.), Cambridge University Press (2009)

(A.K. Dixit et al. 1977, p. 297) A.K. Dixit, J.E. Stiglitz

Monopolistic competition and optimum product diversity

The American Economic Review, 67 (3) (1977), pp. 297-308