

Complexity: a Framework for Policy and Decision Support

Background: Economics

- The challenge is to put spatial structure into economic theory by taking households and establishments as the transacting entities.
- What evolve are ‘eco-structures’ (towns and cities) that have relative hierarchical stability over the longer term
- The challenge is to establish the effects and likely outcomes of any proposed interventions, and to identify those that will create a cost-effective and beneficial change to the system.
- How will the existence of *productive nano-systems*, which overturns traditional economic concepts of supply and demand, affect national policy and planning?

Original items posted for possible discussion:

1. How can economic modelling be applied to decision analyses within health care?
2. Issue around data particularly differences in **micro** (firm, organisation) level and **macro** (sector, economic aggregates)

Outputs from Economic modelling workshop

Attendees

- Brian MacAulay
- Annela Anger
- Antoaneta Serguieva
- Robert H Samet
- Sevrin Waights

Registered Interest

- Peter Allen
- Alan Braithwaite
- Jeff Miles
- Grant Kopec
- Ysanne Carlisle
- Richard Lewney
- Louisa-Jayne O’Neill
- Omer Saka

Discussion and proposal

The group began discussing the West Midlands Regional Observatory’s Integrated Policy Model (IPM) as a starting point. While an advance in economic modelling, the IPM still relies on sectoral (macro) data to estimate economic relationships. This limits the time horizon over which the model can be applied. Currently the model runs to 2031; for it to be effective in assessing climate issues, e.g. it would need to be extended to 2050 and beyond.

This would require the economic relationships to be built on micro data – firms and households. The group noted existing and potential future data sources that would provide micro data. Much of this data

is provided spatially so enabling economic interactions to be developed within geographical boundaries – regions, local authorities etc.

The group propose that consideration be given to the following project:

An agent-based integrated spatial model

The model would provide an effective decision support tool that could be used by a broad constituency of users including public policy and decision makers, academe, and private businesses. If the model was of sufficiently fine spatial granularity the land-use component could be used by infrastructure organisations such as utilities, transport and planning authorities.

Given the scale and complexity of the proposed model it would need to be financed through a partnership of funders including regional and central government, research councils and HEIs. The group also believe that the practical applications for business would suggest that private investment funds could also be attracted.

Action: the group propose a further one-day workshop to develop the idea and to hear presentations from existing projects.