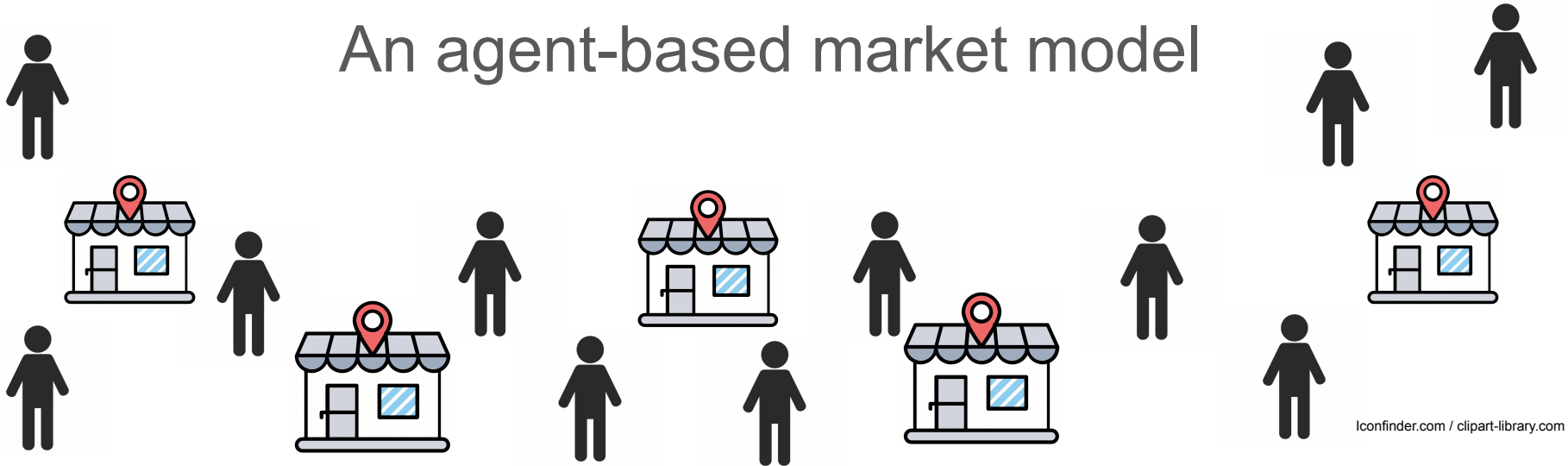


The visible hand

An agent-based market model



The team



Yannick



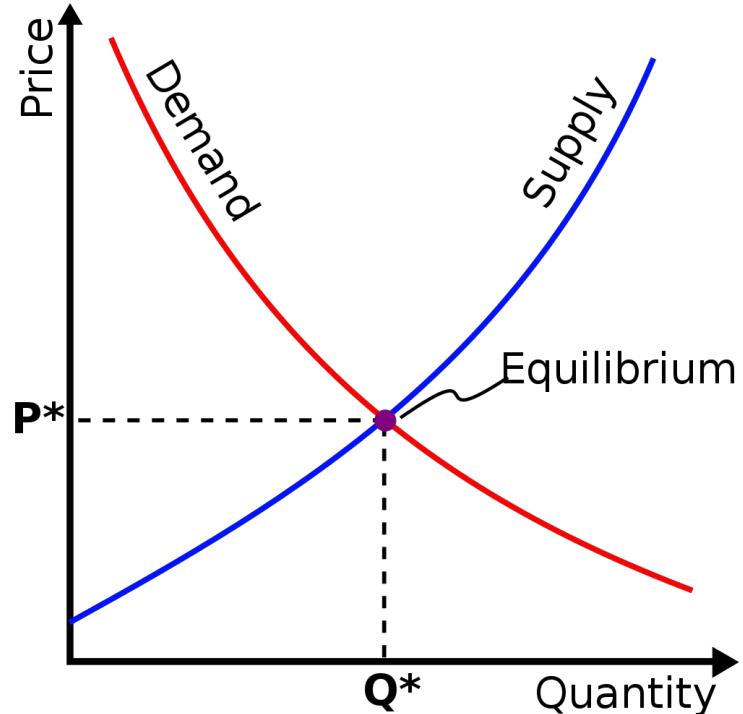
Ace



Anja

Thanks to Julian and John Miller!

Adam Smith – The invisible hand



Graphic: wikipedia

Concept mentioned in the book Smith, Adam. *The wealth of nations*

Markets in reality?

- No full information
- Spatial structure possible
- Price setting
- Emergence of prices



downloadclipart.net



wikipedia.org



clipground.com

Questions

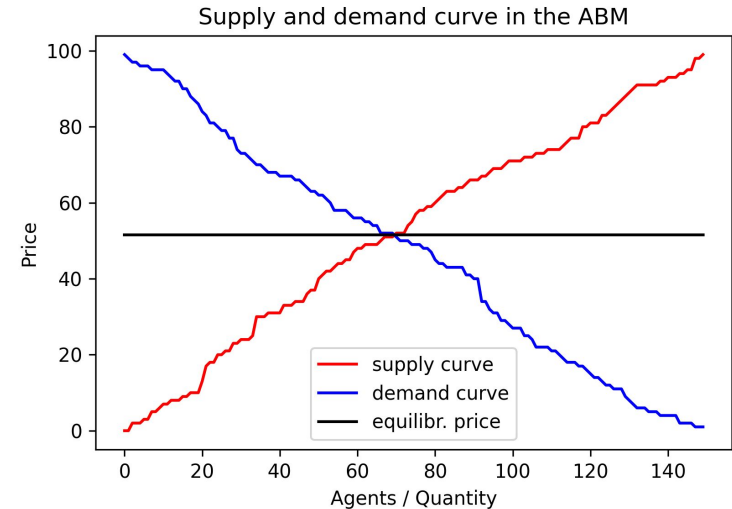
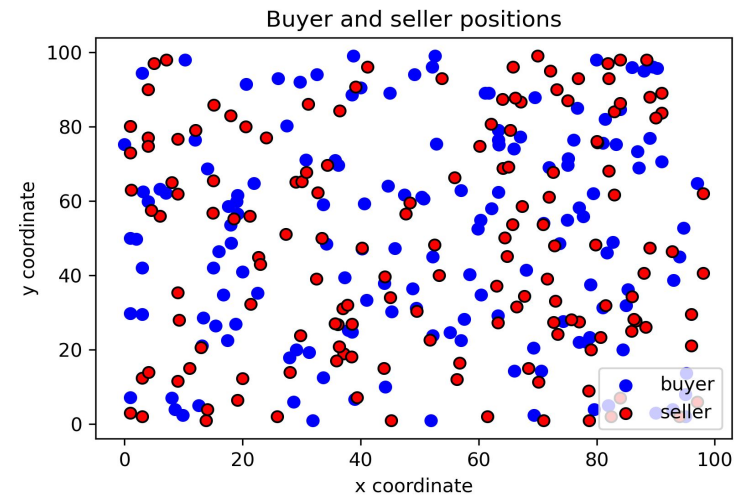
How do market prices emerge from the interaction of buyers and sellers?

Under what conditions does the agent-based model converge to the demand and supply equilibrium?

Can a spatial version of the model cause local equilibria and meta-stable states?

The model

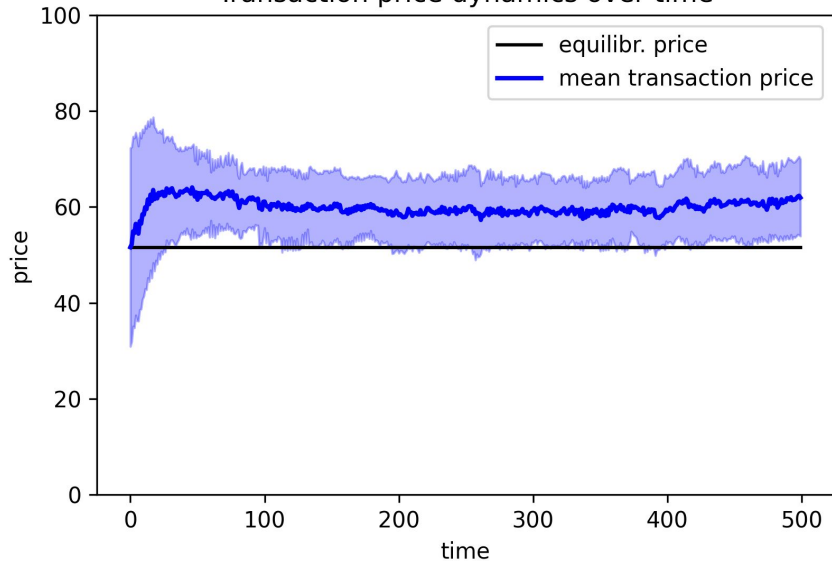
- N buyers, N sellers
- Two dimensional area
- Sellers post prices
- Buyers look for cheapest price in a given radius
- Agents move if not successful
- Sellers adapt their current price



Simulation results

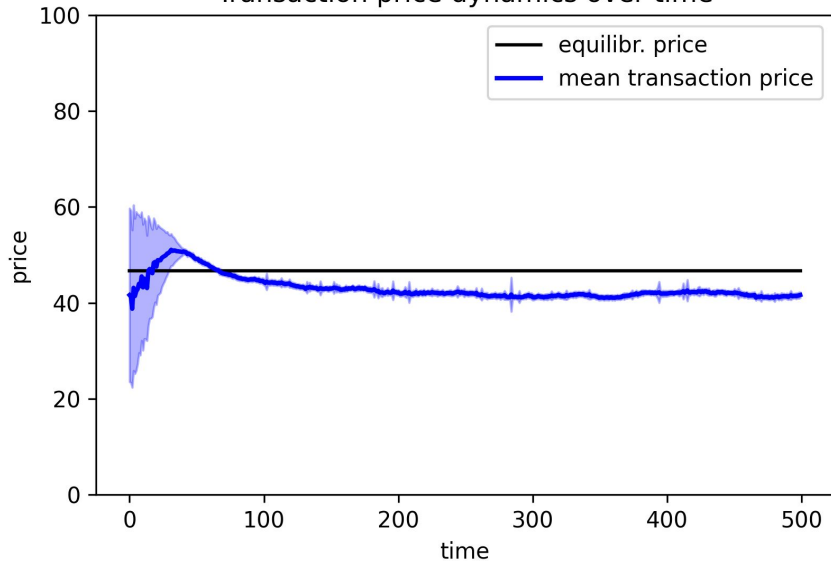
Model version with 2D space:

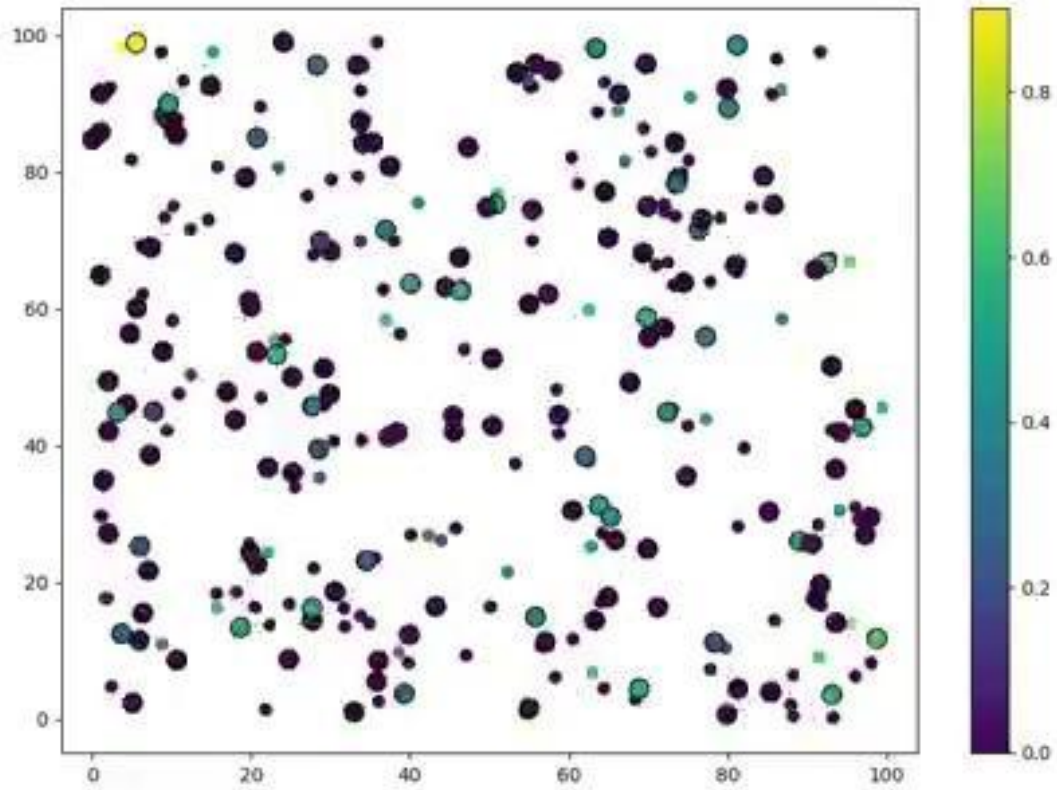
Transaction price dynamics over time



Non-spatial version:

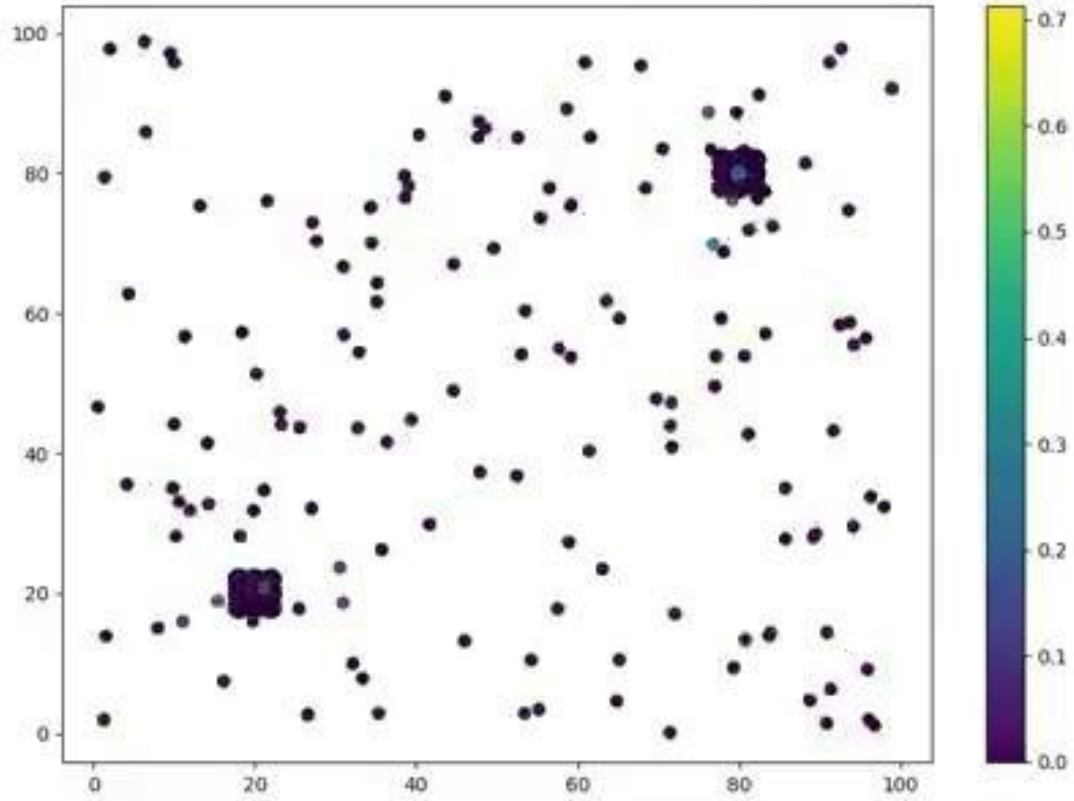
Transaction price dynamics over time





Colors:
Transaction prices,
normalized from 0 to 1

Buyers: big circles
Sellers: small circles



Modification:

Sellers start in
two centers

Outlook

- Systematic deviation of mean transaction prices from equilibrium?
- Exploration of meta-stable states
- Partial differential equation describing the 2D dynamics
- Expand model towards welfare economics or housing markets

