

Two-Tier Framework

- Macro (regional “control totals”)
 - What happens with people and jobs over time
 - Aspatial process (intra-regional location has no influence on dynamics)
- Micro (parcel-level “land use”)
 - What happens with parcels over time
 - Change in physical (buildings) and virtual (valuation) attributes
 - Spatial process (intra-regional location has everything to do with the real estate markets)

Tiers Connected

- Macro model (population and employment dynamics) creates demand for new buildings (residential housing and workplaces) by simulating a list of disaggregate movers (new or relocating)
- Micro model (parcel dynamics) creates supply of new buildings by simulating a list of disaggregate projects
- Movers (households and jobs) are “matched” with buildings

Micro Model (parcel-level “land use”)

- UrbanSim Framework
- Economics of Real Estate Development
- Location (accessibility) and Prices
- Valuation regressed on
 - Regional Accessibilities
 - Neighborhood Attributes
 - Building’s Attribute
- Expected Sale Price (of a hypothetical project)
 - Offsets (land, construction, and demolition costs)
- Projects “compete” on ROI in a simulation
- Quantity limits (via vacancy rates or abs. targets)

Micro Model (parcel-level “land use”)

- Preeminence of Supply
- Can consumers “steer” developers?
 - If they can, then the consumer choice is already reflected in the existing urban form
 - If they can’t, then consumer choice doesn’t matter
- Secondary importance of choice models
 - Guided randomized assignment is sufficient
 - Future consumer preferences can be handled on the supply side
- We put major effort into the model that generates buildings
 - Not actively developing household and employment location choice models

Developing a Real Estate Model

- Parcels and Buildings Data Development
- Construct Variables
 - Learn the expression language
- Experiment with Variables
 - To get a decent fit and explainable signs
- Decide on the final Specification
 - Estimate the model (get the coefficients)
- Calibration
 - Doesn't apply
- Validation
 - How well the model fits the data (R^2 , random residuals)

Random Thoughts

- Importance of base year data and pipeline projects
- Land use monitoring program
 - Announcements, Plats, Permits
- Research nature of Socioeconomic Modeling
- Unfortunately, the MPO/COG set up is typically not well suited for research-type activities
 - The detriment of multitasking and interruptions
 - Long periods with no tangible “product”