

Collected System Dynamics Works On Recent Real Estate Dynamics

Martijn Eskinasi, PBL Netherlands Environmental Assessment Agency

Outline

1. System Dynamics is perfect for complex policy decision making
2. But it is not yet changing the world sufficiently
3. Possibly because we specialize in method rather than in substance
4. There are few position papers of SD works in a particular field
5. We try to do so for recent SD works on real estate dynamics

Connection points

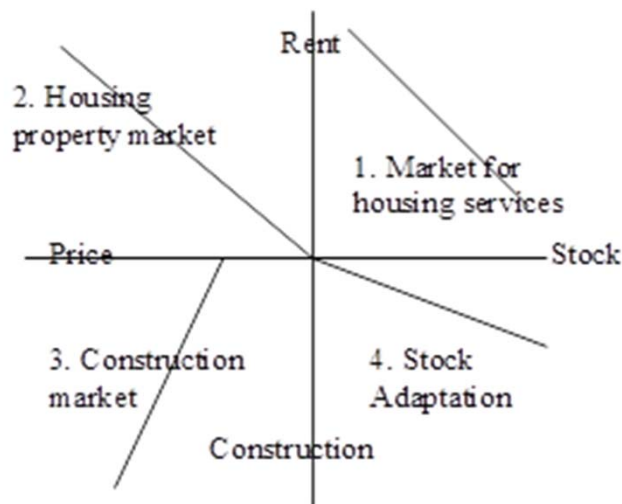
- Real Estate Economics and System Dynamics share basic concepts: stocks, flows, feedback
- REE research must focus on actor decision making in the market (diPasquale, 1999)
- Data gaps hamper REE research (diPasquale, 1999)
- RE cycles and crises need information delays and institutional feedback (Wheaton, 1999)

Embryonic SD present in REE

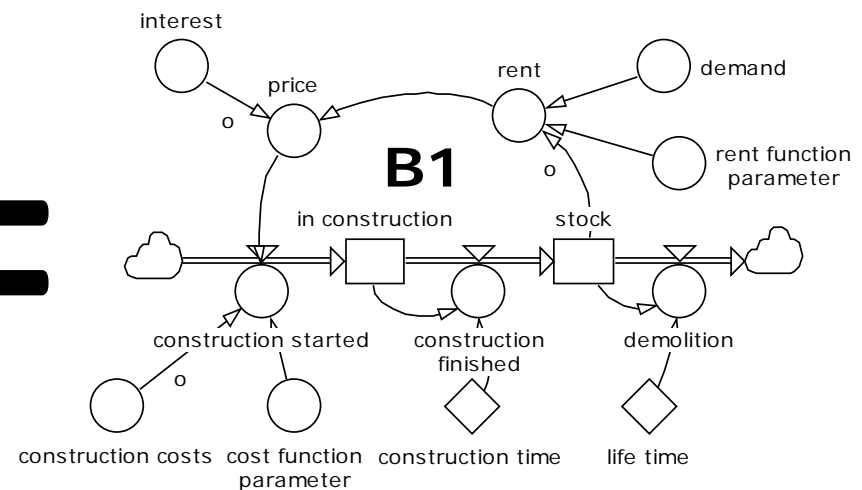
Di Pasquale & Wheaton's (1999) four quadrant model (4QM) describes feedback between three main real estate submarkets:

1. Market for office, housing, commercial space
2. Market for real estate finance and mortgages
3. Real state construction market

4QM in REE form



4QM in SD form



Treasure cove: SD Bibliography

- Over 150 entries on urban, housing & real estate
- Urban Dynamics School: classic and modern
- Local Dutch School, starting from Vennix (1996)
- Real Estate Dynamics School (from ca. 2008)
- Use of main stream REE literature
- Interest in cycles and actor behavior

SD on housing vacancies

Barlas ea (2007), Özbas ea (2008)

- Developer in oligopoly market
- Backward expectations
- Rigorous sensi analysis:

Factor	Impact on
Construction time	Cycle length
Sale times	Cycle amplitude
Profit margins	Final prices

Mashayeki et al (2009)

- 4QM with vacancies
- Cycle producing mechanisms
- Rental: supply lag, no vacancies
- Owner occupied: vacancies and supply lag
- Both oscillate, rental does not without supply lag
- Elasticity & unit consistency?

SD on real estate finance

Household finance and equity:

- Mukerji & Saeed (2009)

Regulation of secondary mortgage market

- Hwang et al (2009)

Construction finance and output

- Rafferty & Farshchi (2009)

SD and speculation loops

Market structure causes cyclic behavior,
but external trigger needed (demand, interest)

- Hu & Lo (1992); Jie Chen (2007)

Questionable boundary adequacy:

- is the RE market separable from the economy?
- Any interaction models?

SD and government interventions

Controversial measures taken in Korea:

- Short term benefit, long term drawback
- Policy discourse ignores speculation
- Park et al (2008)

Subsidies, land use planning and land market

- Residual land pricing links construction to price growth rather than price level
- Eskinasi et al (2011)

Conclusion and discussion

- Strong connection points between REE and SD
- SD works extend REE scope & methods
- Interesting studies on vacancies, finance, speculation and government interventions
- Debates: myopic / rational; operational/ statistical
- Thematic specialization may help SD connectivity
- Isomorphism not necessarily helpful

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