Endogenous Segregation Dynamics and Housing Market Interactions: An ABM approach

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June 8th, 2017

1. Introduction

- Ethnocentrism is a widely observed phenomenon, which arises from the belief that the affiliation into one's own ethnic group is rather preferable.
- According to Schelling's well-known model of segregation, individuals have a mild preference for "being close to people of your own kind" [Schelling, 1978].
- The underlying assumption here mostly refers to skin color or ethnic affiliation, but not to the socioeconomic status of an individual.

Starting point:

- Endogenization of "tolerance/happiness" setup by considering varying dissimilarity
- Individuals can only move to free spots, which lie in their price range
- Creation of a theoretical model

2. Main results

- Indications that agents cluster according to house prices and individual income levels
- Interactions on the housing market strenghten segregation in urban areas and function as main driving force
- The effects of income levels become smaller over time, but are still reinforcing segregation
- Skin color / ethnicity still has a significant effect on segregation, but affects the outcome on a smaller level
- Individual education seems to have a rather small effect on the segregation dynamics

- Extensions to 3 or more "ethnical groups", which result in diverse tolerance thresholds depending on cultural, religious and **socioeconomic** factors
  [Clark and Fossett, 2008, Fossett and Waren, 2005, Ellis et al., 2012, Hatna and Benenson, 2014]
- Analysis of different tolerance thresholds, which lead to different segregation outcomes [Banos, 2012]
- Higher house prices reduce in-migration
  [Cameron and Muellbauer, 2001] and house owners suffer under economic loss if they move elsewhere [Dorn, 2008]
- Analysis with micro-data considering several variables to check upon mobility and location choice [Böheim and Taylor, 2002]

- Outcomes are determined by different socioeconomic, cultural and religious factors $\rightarrow$ greater heterogeneity
- These results go along with different tolerance levels
- Individuals are influenced negatively, if they suffer under economic loss as house owner
- However, the previous studies only focus on empirical analyses $\rightarrow$ there is no ABM yet, considering these factors

4. Research questions

1. Is there any other pattern than skin color / ethnicity, how agents cluster under consideration of varying socioeconomic status?
    1. What is the actual location choice of agents, if their decision criterion is connected to housing affordability?
    2. Can there be a lock-in effect for certain agents in the sense that they decide to move, but cannot afford it? How does this affect the individual tolerance levels?
2. Do market processes (like on the housing market) reinforce segregation?
    1. What are the economic and social driving forces for the segregation pattern on the macro-level?
    2. How severe does economic loss affect different households?

5. The model

5.1 Main features of the model

- Endogenous segregation dynamics without tolerance threshold
- A multidimensional dissimilarity index across several individual socioeconomic attributes
- Consideration of house prices
- Housing market interactions with all agents owning houses
- Peer group influences in Moore neighborhood
- Aggregate segregation measure based on several "segregation attribute" indices

5. The model

5.2 Flow chart of the model

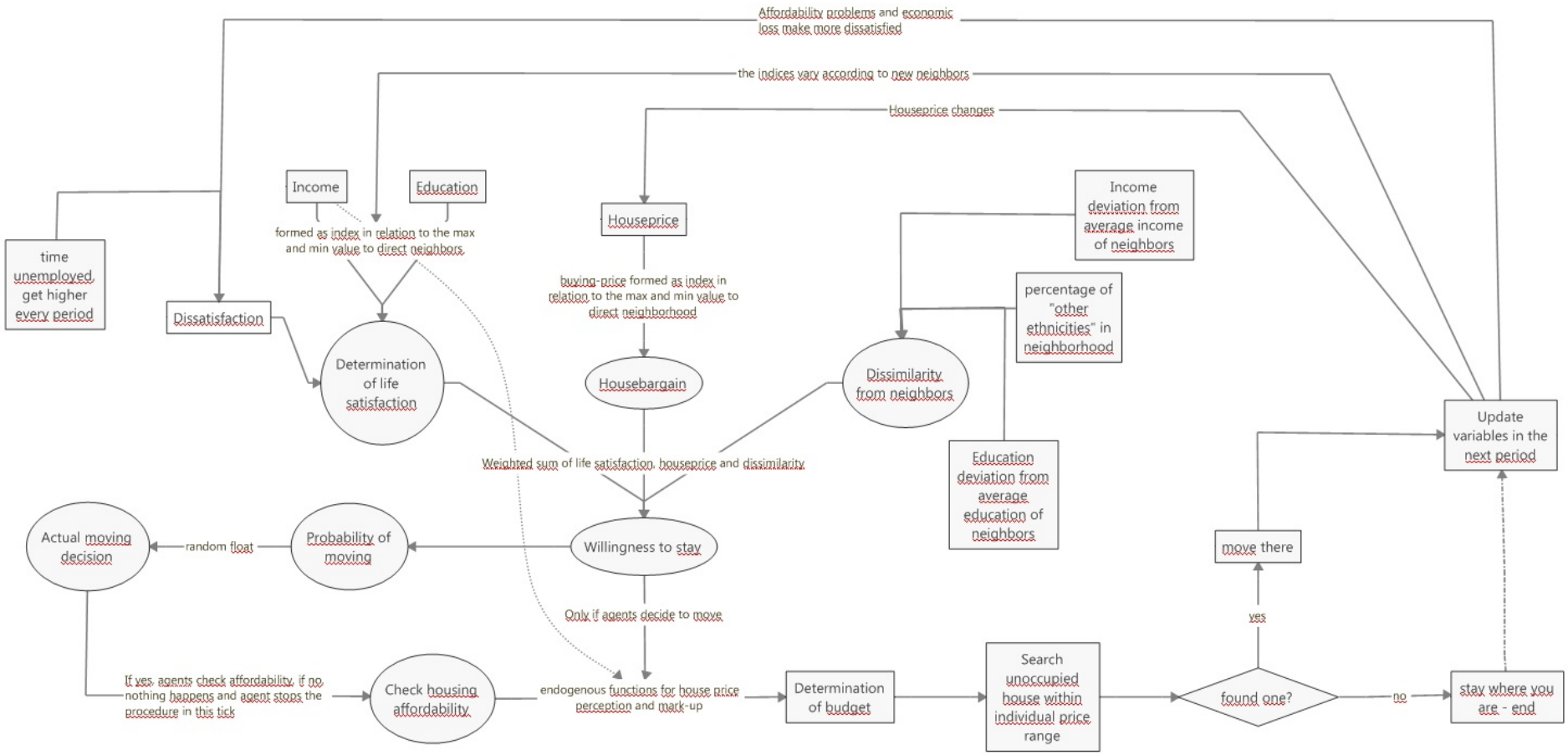

Figure1: Flow Chart of the Segregation model

6. Some first results

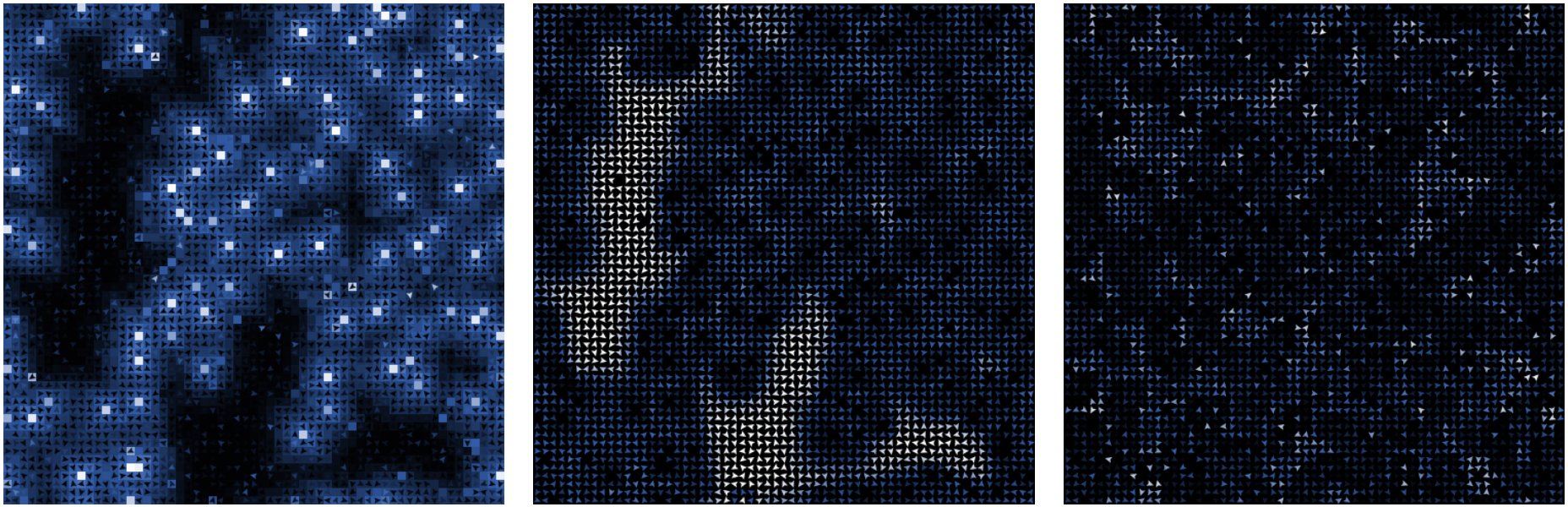

Figure2: Exemplary model outcomes, left: Houseprice and Income cluster, middle: Perception of individual House Price Segregation, right: Perception of individual Income Segregation, 1 run = 200 periods

6. Some first results

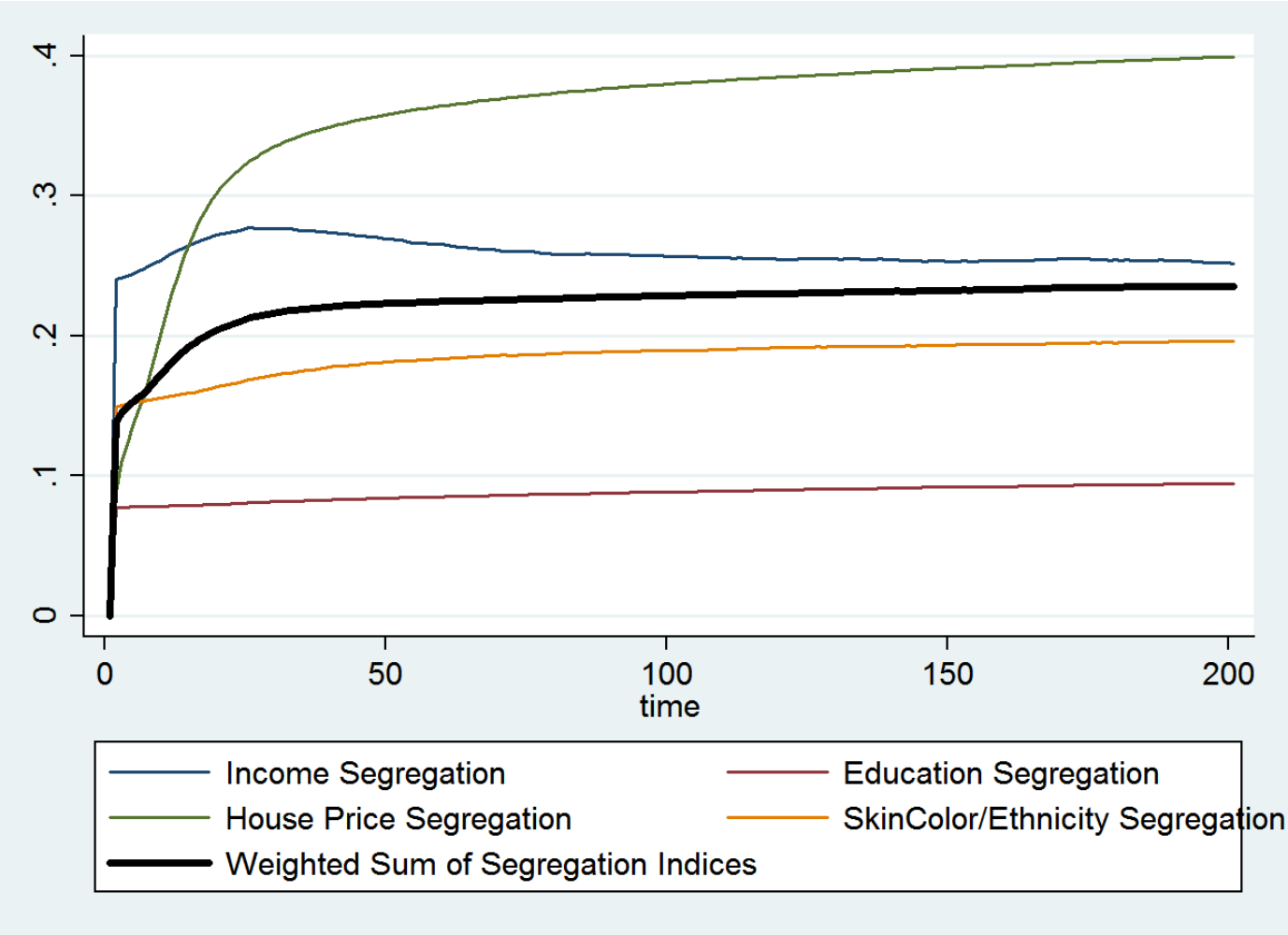

Figure3: Means of Segregation Indices over 100 runs, with 1 run = 200 periods

7. Concluding remarks

- ABM with endogenous segregation dynamics and housing market interactions with several new features
- The results indicate greater relevance of economic variables on segregation dynamics
- Empirical analyses and sensitivity analyses are about to come

Thank you for your attention!

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