Modelling Segregation Processes in Hybrid Housing Markets

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Abstract

Models of segregation dynamics, like Schelling's classic model, often employ superficial treatments of actual housing allocation mechanisms. Moves are friction-less and cost-less and depend only on local neighborhood compositions. But actual housing markets are shaped by economic inequality, the built environment, and rules governing access to different kinds of housing. These impose constraints on mobility that may influence segregation dynamics.

One key feature of real housing markets is the distinction between ownership and rental tenures. In the United States, both rental and ownership tenures are distributed largely through markets. However, in many countries with strong social welfare states, a large fraction of rental housing is allocated through non-market institutions. Countries like Sweden, the United Kingdom, the Netherlands, and Austria, have such "hybrid" housing systems. In these systems, governmental authorities or specialized housing associations own many housing units, and are mandated primarily to provide sufficient, high quality housing, not to produce profits. Often, allocation of these non-market units is done through enrollment in a seniority-based housing queue, rather than through a pricing mechanism.

In most contexts, rental and ownership tenures, and hence social and market housing, are often unevenly distributed across urban space. Market- and ownership-based housing is often associated with single family homes in less dense neighborhoods, while non-market housing is often located in multi-family buildings in denser neighborhoods. In Sweden, much of the non-market housing is increasingly located in dense urban peripheries, while market-based housing is found in desirable center city areas and more well-to-do suburbs, a consequence of a move towards a more privatized, market-based approach to housing provision.

Empirical studies suggest that the prevalence and uneven distribution of different types of housing—rental vs. ownership, market vs. non-market—are related to patterns of ethnic segregation, but how segregation of tenures gives rise to segregating dynamics is not well understood. In this study, we develop a dynamic simulation model to consider the implications of the urban structure, particularly the relative prevalence and geographic distribution of market and non-market housing, for processes of ethnic segregation. While a few dynamic segregation models have incorporated inequality and housing prices, they have typically done so using an idiosyncratic market logic, with housing prices set based on the neighborhood attributes, not competitive bidding. And these models have not considered the possibility that a segment of the housing stock will be allocated according to non-market rules.

We address this gap in our understanding using an agent-based model (ABM) of a hybrid housing market. In our ABM, we construct cities with varying shares of market vs. non-market housing. For each city, we then vary the extent of segregation between these housing types. We populate the cities with ethnic groups with different resource (i.e., income and queue position) distributions and set them in motion. Agents seek to move to rich neighborhoods. They compete over market housing using thei economic resources, and non-market housing based on queue position/waiting times. Using many model runs, we analyze what conditions are most conducive to segregation and explore the precise dynamics that give rise to observed segregation patterns. In doing so, we hope to demonstrate the importance of housing market institutions to segregation processes.

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