

Sharing economy in the short-time accommodations market.

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We presents an agent-based model for the sharing economy, in the short-time accommodations market, where peers participating as suppliers and demanders follow simple decision rules about sharing market participation, according to their heterogeneous characteristics. We consider the sharing economy mainly as a peer-to-peer market where the access is preferred to ownership, excluding professional agents using sharing platforms as Airbnb to promote their business.

We model the accommodation process in a city with private accommodations or hotel accommodations. Each bed has a specific (x,y) position and the observation unit is the bed vacancy. The behaviour of three kinds of agents is modelled: real estate owners, hotel and guests.

Real estate owners decide on the use of each bed vacancy, considering the relative profitability of three alternatives. The owner can alternatively: 1) offer the bed as a short-time accommodation in the tourist market, bearing an operating cost and collecting high revenue if he finds an occupant for the bed; 2) rent the bed in a long-term contract, which gives him a lower profit, without any other expense, or 3) leave the bed empty or occupy it himself, without any cash profit. Each bed vacancy is characterized by random value and operating costs.

The hotel has a fixed dimension of beds that are sold at the same random price in each round of guests' search. Two price strategies are considered: a fixed-price strategy and last-minute offers.

The guest population is divided in two different groups, each one with a stronger preference for one type of accommodations. All guests have a random reservation price. Guests follow three criteria in their search: desirability, centrality and proximity, in a hierarchical order.

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