OPTIMAL PPP AGREEMENT FOR A BROWNFIELD REDEVELOPMENT PROJECT

Brano Glumac, Eindhoven University of Technology, Qi Han, Eindhoven University of Technology, Jos Smeets, Eindhoven Univeristy of Technology, Wim Schaefer, Eindhoven Univeristy of Technology.

The stagnation in a Brownfield redevelopment can be fasten-up by introducing Public-Private Partnership (PPP) agreements as argued by numerous literature. There are numerous PPP agreements and we will focus on the joint venture companies (JVC) as it is the most present form of partnership in the Netherlands, the country of our research. In our study, the joint venture company services the land with a detail land-use plan and parcellation. The final product of this company is the urban land with immediate possibility to sell the building plots. Often, the initiator of such a JVC is the municipality. In order to involve a developer to share the investment and uncertainty of the redevelopment, municipality should offer the attractive agreement terms. Focusing on the municipality, we suggested an integrated method to define the optimal terms. The method consists of two sub-models that together predict a developer's acceptance probability for the mentioned agreement. The two constitute parts are: discrete choice model and game-theoretic model.
The discrete choice model estimates the preferences of a developer concerning the relevant attributes of a redevelopment project. Using these preferences as input, the game-theoretic model explores the negotiation (land-use distribution and - parcellation) between the developer and municipality. For that purpose we created a game in extensive form and using equilibriums with the backward induction to find the optimal solutions. Data is collected with an on-line questionnaire addressed to the professionals (developers and municipality representatives). Improvements can be reached by enlarging the number of the attributes and respondents but also with adding the multiple scenarios in a simulation phase. Within the specific settings and with the mentioned improvements, our model can be the basis for a decision support system (DSS) to aid municipalities in selecting the most beneficial agreement terms while incorporating different developer types.

Keywords: discrete choice modeling, game theory, brownfield redevelopment

Email first author: b.glumac@tue.nl