The value of green urban spaces

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Abstract

Green urban spaces such as parks or urban woodlands offer recreational opportunities to the rising share of the population living in urban areas. In contrast to other urban land uses, however, green spaces do not command a market price and their potential value may not be reflected adequately in public policy decision making. To underpin policy decisions it is therefore essential to gain a better understanding of the demand for green open spaces in the population. The contribution of this paper lies in the valuation of green open spaces through a hedonic study of the housing market. Building on a uniquely detailed dataset we estimate the marginal prices for proximity to green, open spaces in urban areas. In the near future the ambition is to exploit the availability of data from different housing markets as well as on the socio-economic characteristics of the owner-occupants in order to estimate demand functions for green, open spaces in the urban landscape.

We identify green spaces for the four biggest cities in Denmark, i.e. Copenhagen, Odense, Aarhus and Aalborg. The green spaces are identified using aerial photographs together with data from the local municipalities and data on recreational areas from the Danish National Survey and Cadastre (Kort10). Unfortunately, at present the publicly available data on green areas from the Danish National Survey and Cadastre is of such poor quality that it is of no use for this exploit, if at all.

Green spaces are divided into categories which identify whether a given green space is a park or a nature area with some or no public maintenance. The green spaces are also categorized according to their proximity to different sources of negative externalities such as industrial areas or heavily trafficked area such as a highways or railways tracks. Categorization of urban green spaces to this degree is new in hedonic valuation studies. It has become necessary due the conceptually different approaches which previous studies have applied. While we estimate the general value of green spaces previous Danish studies have focused on a specific local environmental externality.

We construct urban housing markets which are stable over time and space from local Morans I clusters analysis of house prices for each year from 2000 to 2007. We assume that the presence of spatial dependency between neighbouring houses at nearby locations describe distinct housing markets. The spatial dependency are essentially a proxy variable for a large number of house characteristics that are able to explain a considerable part of the house price. Housing markets are therefore spatially contiguous entities which reflect a common pool of similar house characteristics from which household choose. To disregard the spatial nature of housing markets or the presence of housing markets will most likely bias the results of any house price estimation.

Marginal values of green urban spaces are predicted from a spatial error model, a spatial lag model and a spatial second least square model. For reason of comparison a simple linear regression model is
also estimated. Even though the housing markets are spatially defined, spatial autocorrelation are still present and needs to be corrected for if the estimates are not to be biased. We find that the close proximity of various types of recreational areas has a significant impact on the going price of houses. Parks and publicly maintained green areas have the biggest effect on the house price while green areas exposed to negative externalities such as highways and industrial areas have no or negative effects.