

Title:

Restricted housing supply, house prices and household preferences

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Abstract:

Several empirical studies have reported that housing preferences of different types of households are quite diverse. Those with higher levels of education tend to be willing to pay more for specific housing attributes and local amenities. The sorting of households is affected by the composition of the housing stock and its distribution over space which are largely determined by history. In the longer run land use policy can have a substantial impact on this phenomenon, for instance by stimulating the construction of social housing and prohibiting supply in specific locations while stimulating it in others. Understanding the consequences of these policies is crucial for their evaluation. This paper attempts to do so by estimating a sorting model in which the choice alternatives are various types of housing at different locations. We investigate the preferences of different types of households for three dwelling types (apartments, terraced housing and detached housing) and for local amenities on the level of 118 regions in the Netherlands. For example, we find that the willingness to pay for detached houses is higher for couples, households with children, households with a higher age and households with higher education. We also use the estimation results of the sorting model to simulate the effects of changing the housing stock in Amsterdam. The estimation results can also be used to simulate the effects of more complex scenarios involving either the housing stock or the demography of the population.

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Motivation

In the Netherlands governments have a strong influence on land use, which can potentially lead to a suboptimal supply of housing.

Question 1: What are the preferences of households for local amenities and housing types?

Question 2: How do policies on housing types affect the regional distribution of the population?

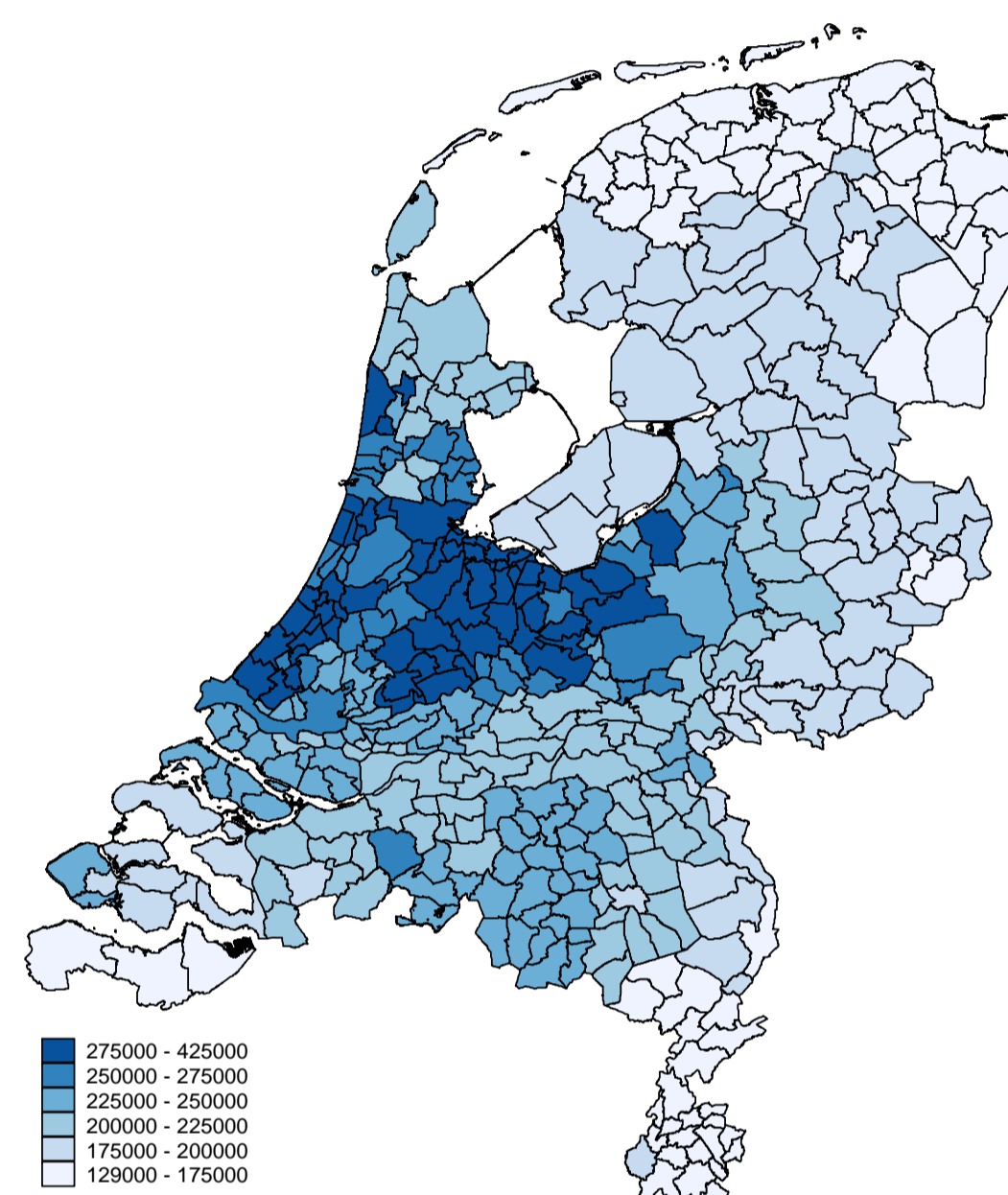
Estimation method: the sorting model

- This model estimates household preferences by sorting a given population of households over a given set of choice alternatives.
- Choice alternatives are combinations of regions and housing types (apartments, terraced housing, detached housing). For example: apartments in Amsterdam or detached houses in Utrecht.
- Household preferences for local amenities and housing types can be different depending on the household characteristics.
- Parameters are estimated using a two-step procedure:
 - step 1 is a multinomial logit model that estimates (i) the parameters for the interactions between the characteristics of households and choice alternatives, and (ii) a constant for each choice alternative.
 - step 2 is an IV regression that explains the constants estimated in step 1 as a function of the characteristics of the choice alternatives.

Data

- Household characteristics and household locations come from the Dutch housing survey (WoON) 2012.
- House prices of a standard house are estimated using a hedonic price model based on transaction data from the NVM.

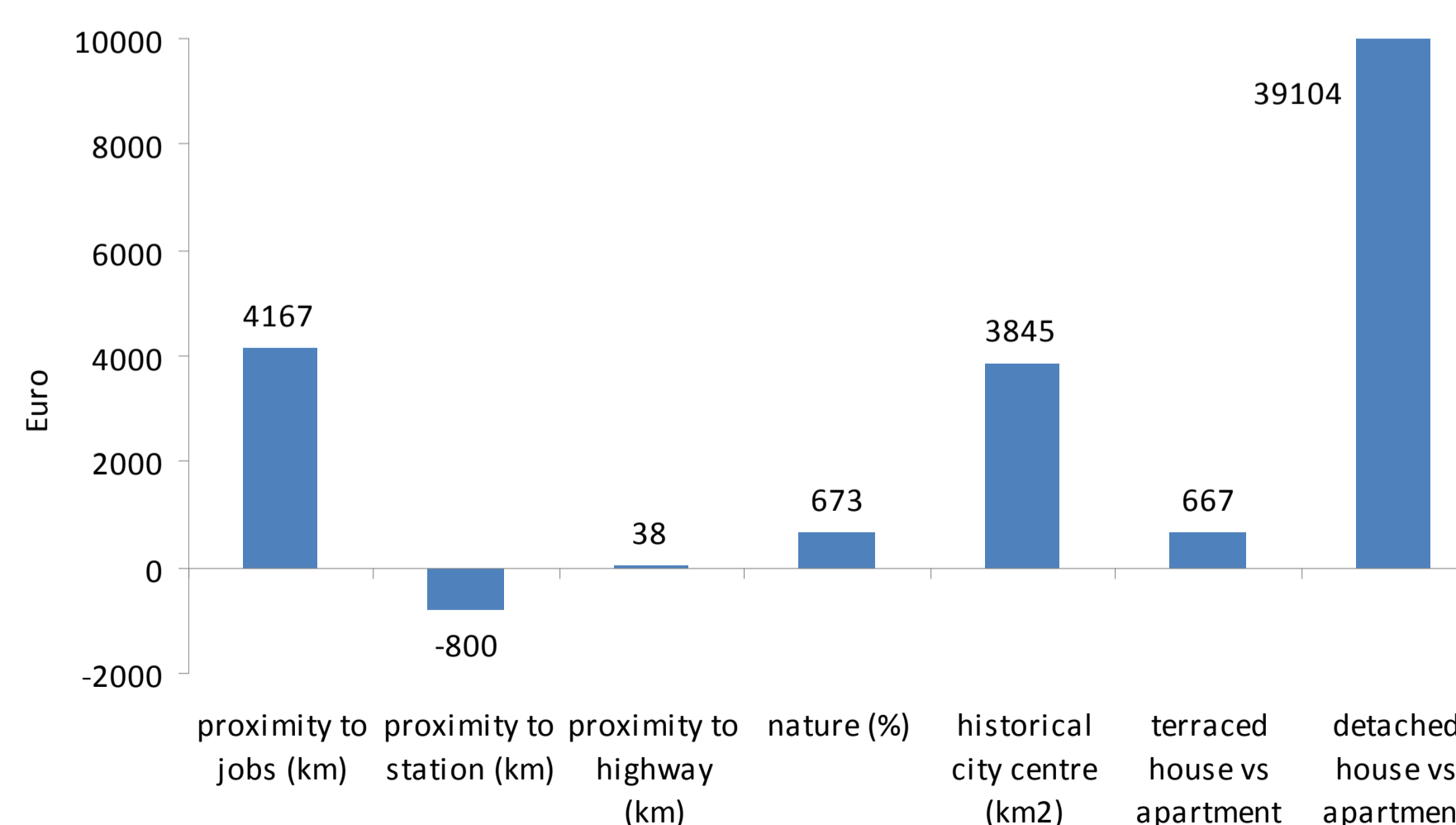
Figure: price of a standard house with average characteristics (size, number of rooms, etc.), detached



Estimation results

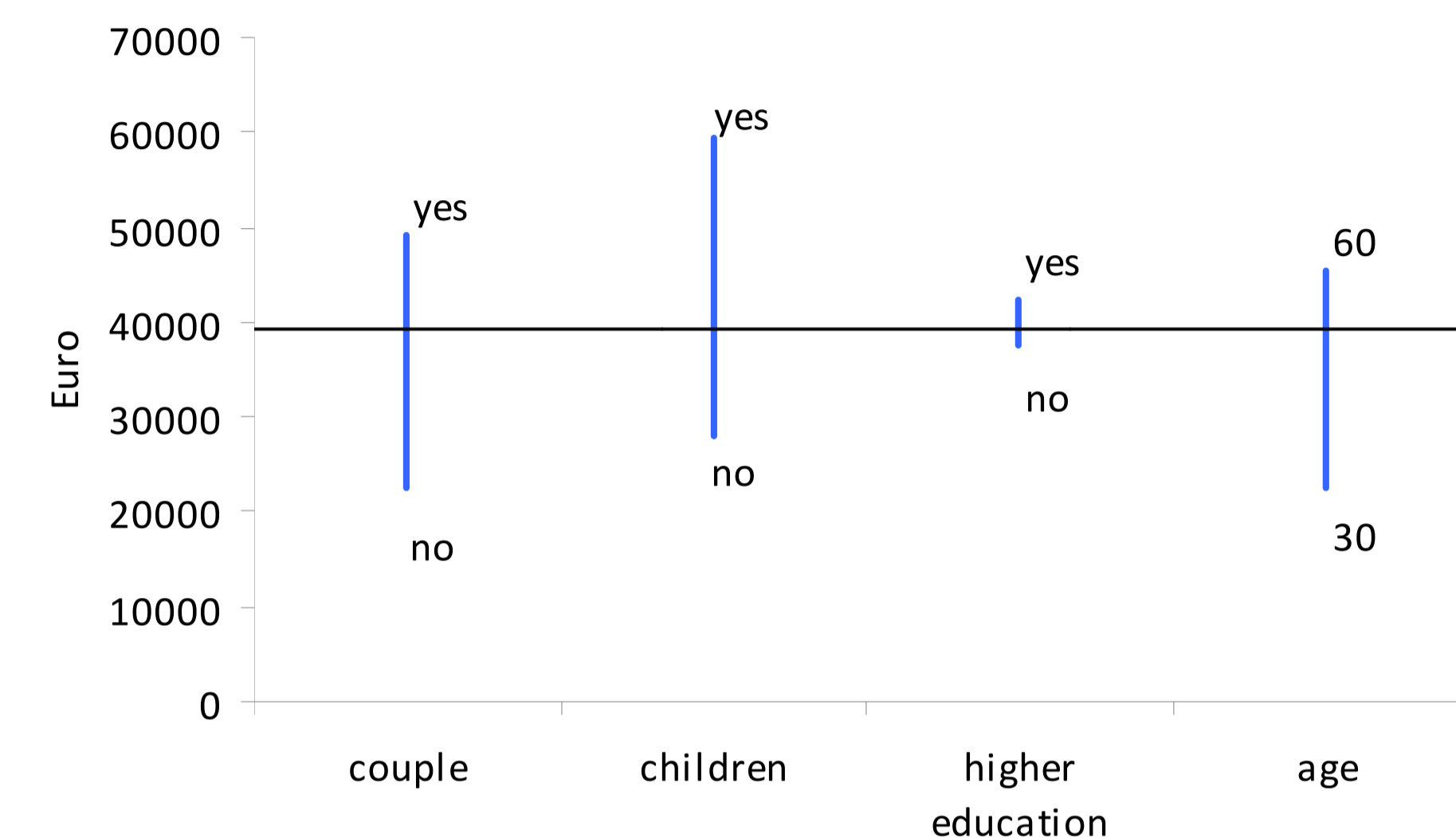
- The estimated parameters from the sorting model can be used to determine the marginal willingness to pay (WTP) for the characteristics of the choice alternatives.

Figure: WTP for amenities and housing types, of the average household



- The WTP depends on the household characteristics. For example, couples have a higher WTP for detached housing than singles

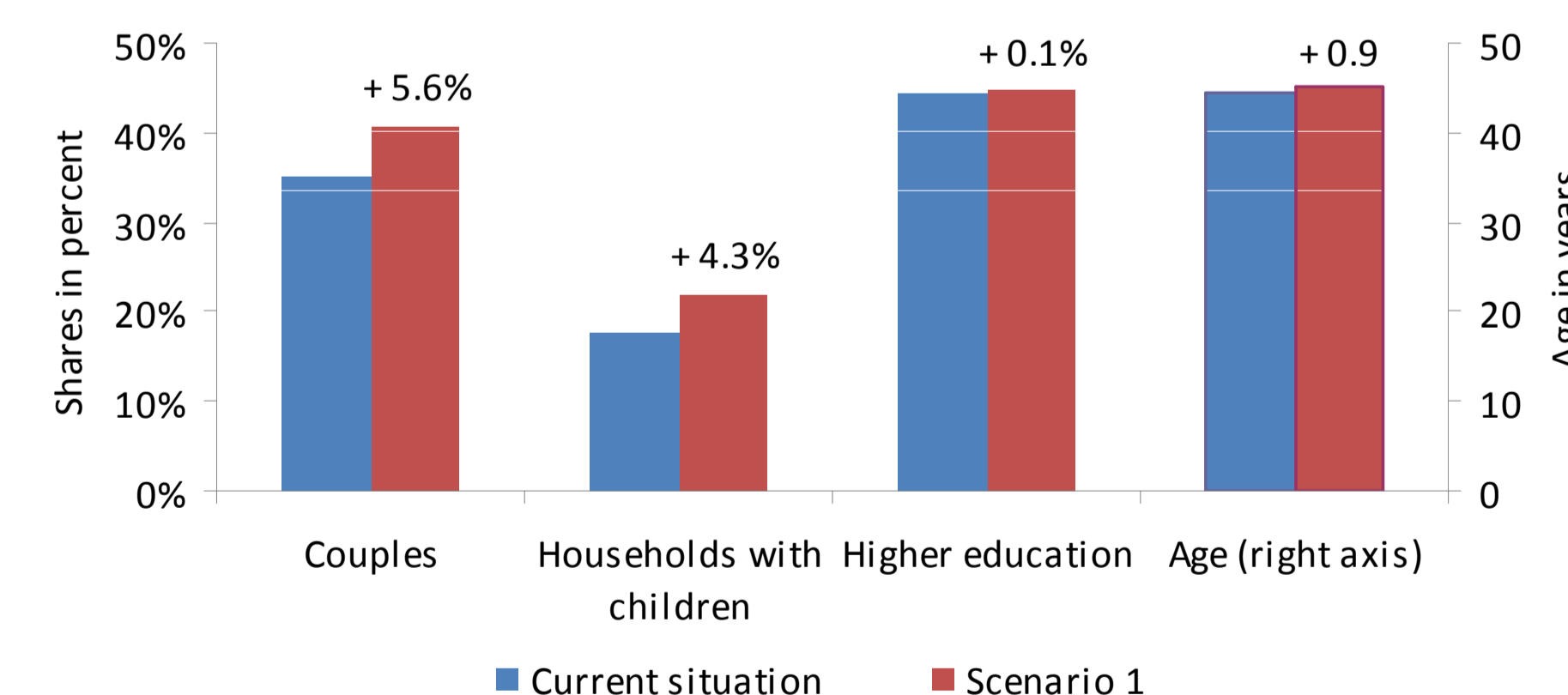
Figure: WTP for detached housing, by household type



Scenario analysis

- Our estimations can be used to analyse what happens to housing prices and to the regional distribution of households when the composition of housing types is changed.

Figure: scenario analysis for Amsterdam, replacing apartments by detached houses



Blue bars: predicted average household values in owner-occupied houses in the current situation (73.2% apartments, 5.7% detached).
 Red bars: predicted average household values in owner-occupied houses in scenario (63.2% apartments, 15.7% detached).

Characteristics of households (57,000 households)	Characteristics of choice alternatives (118 regions x 3 house types = 354)
Couple (0 or 1)	House price of a standard house (in euros)
Children (0 or 1)	Distance to nearest 100,000 jobs (in km), nearest intercity train station (in km), and nearest highway onramp (in km)
Higher education, average of both partners (0, 0.5, 1)	Share of surface covered by nature (in %)
Age, average of both partners (in years)	Size of historical city centre (in km ²)