Restricted housing supply, house prices and household preferences

Evidence from the Netherlands

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Joint work with Mark van Duijn and Jan Rouwendal

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Background and research questions

- Strong influence of (local) government on land use in the Netherlands

- What are the preferences of households for local amenities and housing types?

- Can policies on housing types affect the regional distribution of the population?

Structure

- Sorting model
- Data description
  - Households
  - Regions
- Results
  - Willingness to pay
  - Scenario simulation
- Conclusions

Sorting model

- Logit model estimates the probability a household locates in region *n* (1...118) and housing type *j* (1...4)

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- Utility depends on:
  - Regional characteristics
  - Housing type (rental, apartments, terraced, detached)
  - Interaction with household characteristics

$$u_{i,j,n} = \alpha_{0,i} Price_{j,n} + \sum_{k=1}^{K} \alpha_{k,i}\, Regional\ characteristics_{k,n} + \varphi_i House\ type_j + \xi_n + \varepsilon_{i,j,n}$$

Sorting model

- Endogeneity problem with unobserved characteristics
- Solution: two-step model
  - Step 1: estimate parameters for interaction terms and obtain alternative specific constants
  - Step 2: use alternative specific constants to estimate the household-independent parameters with 2SLS

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Data (households)

- Data come from Dutch Housing Survey 2012
- 57,276 households
- Household characteristics:

	Mean	Min.	Max.
Couple	0.63	0	1
Children	0.35	0	1
Average education	0.30	0	1
Average age	51.7	17	100

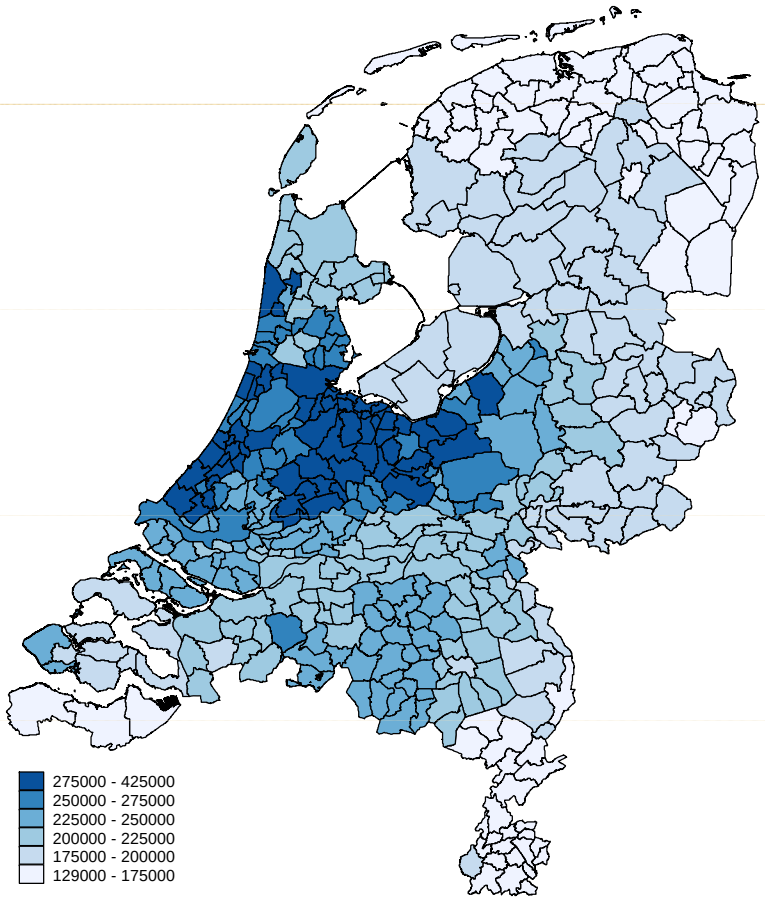
Data (regions)

- 118 regions based on 415 municipalities
- Regional characteristics independent of dwelling type (except prices)
- Regional characteristics:

	Mean	Min.	Max.
Distances to nearest 100,000 jobs (in km)	12.6	3.6	32.8
Distance to nearest intercity train station (in km)	7.5	1.5	27.8
Distance to nearest highway onramp (in km)	4.1	1.0	20.3
Share of surface being nature (in %)	13.8	0.4	65.8
Size of historical city centre (in km^2)	0.9	0	13.3

Data (regions)

- Prices are based on hedonic price model, adjusted for size, # of rooms, etc.



Prices of a 'standard house' for detached houses

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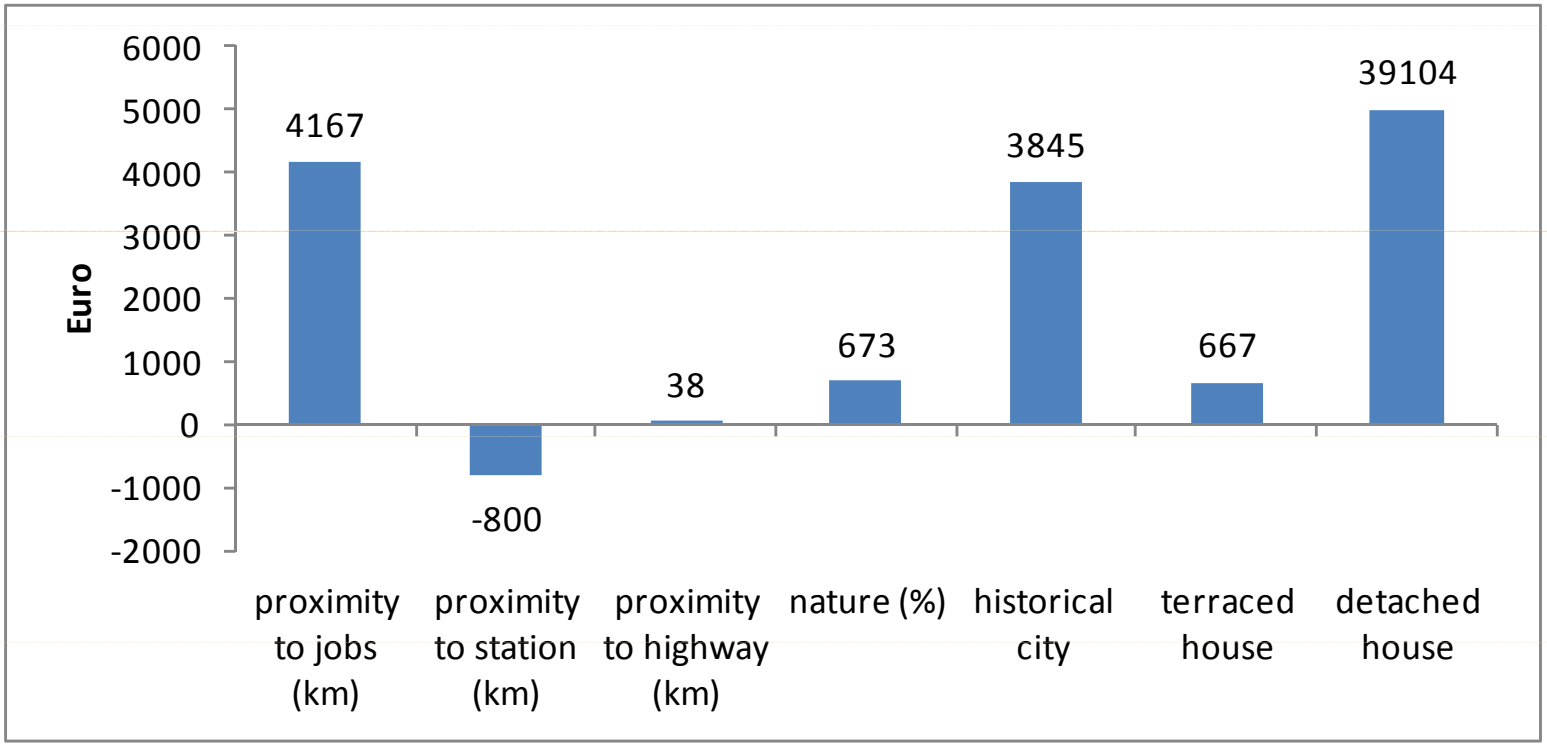

WTP for detached houses differs between households

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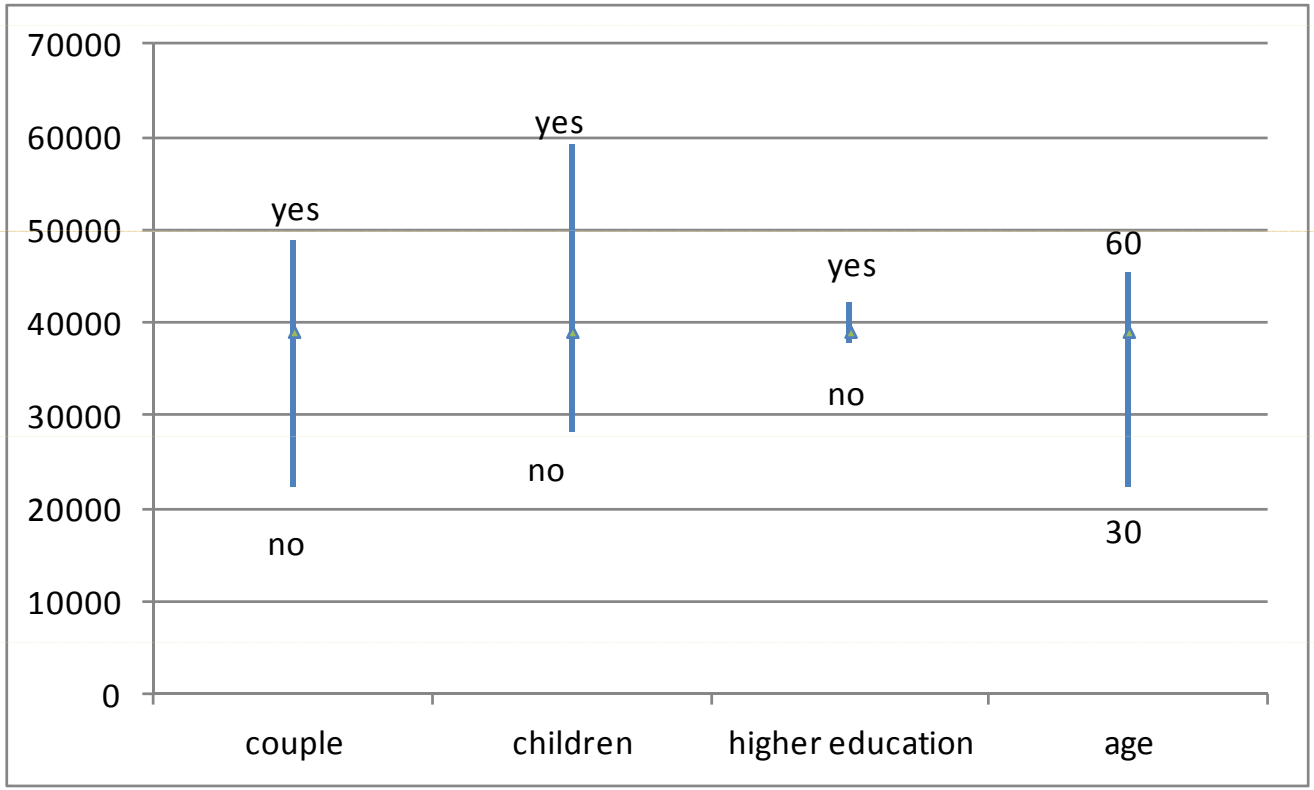

Simulating housing stock in Amsterdam

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- Data
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	Existing housing stock	Scenario 1
Owner-occupied houses		
Apartments	73.2%	63.2% (– 10%)
Terraced housing	21.1%	21.1%
Detached housing	5.7%	15.7% (+ 10%

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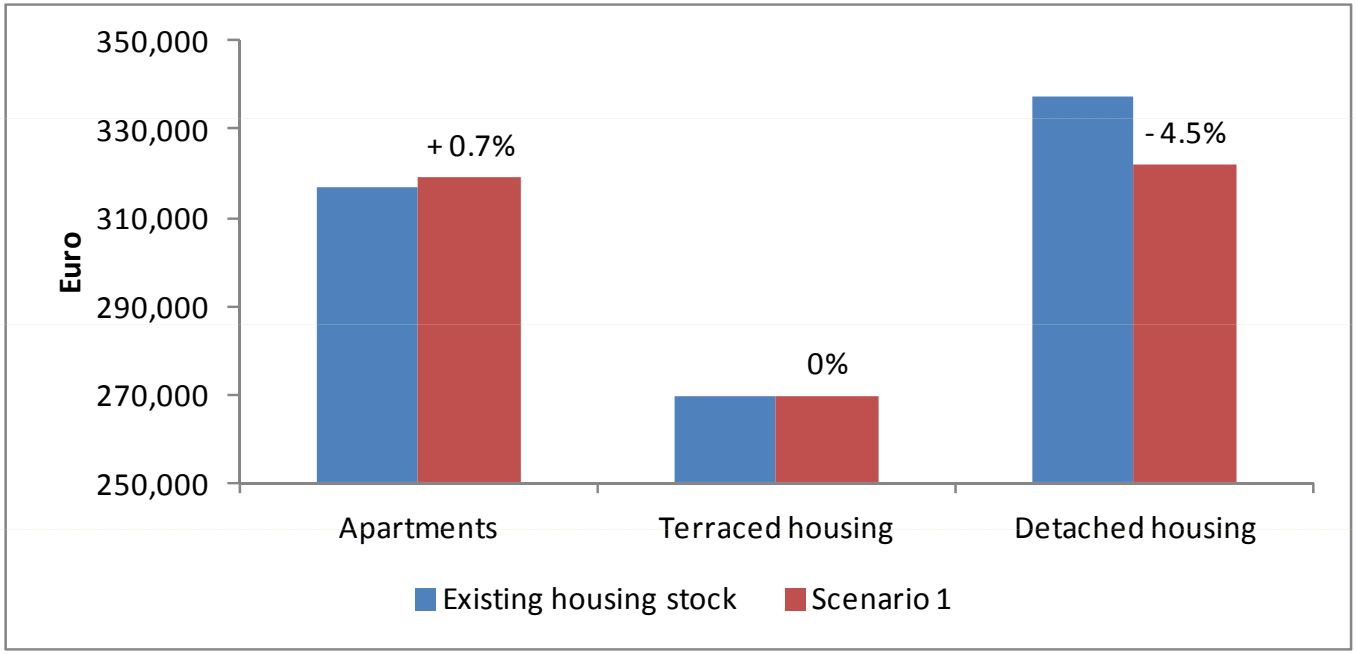

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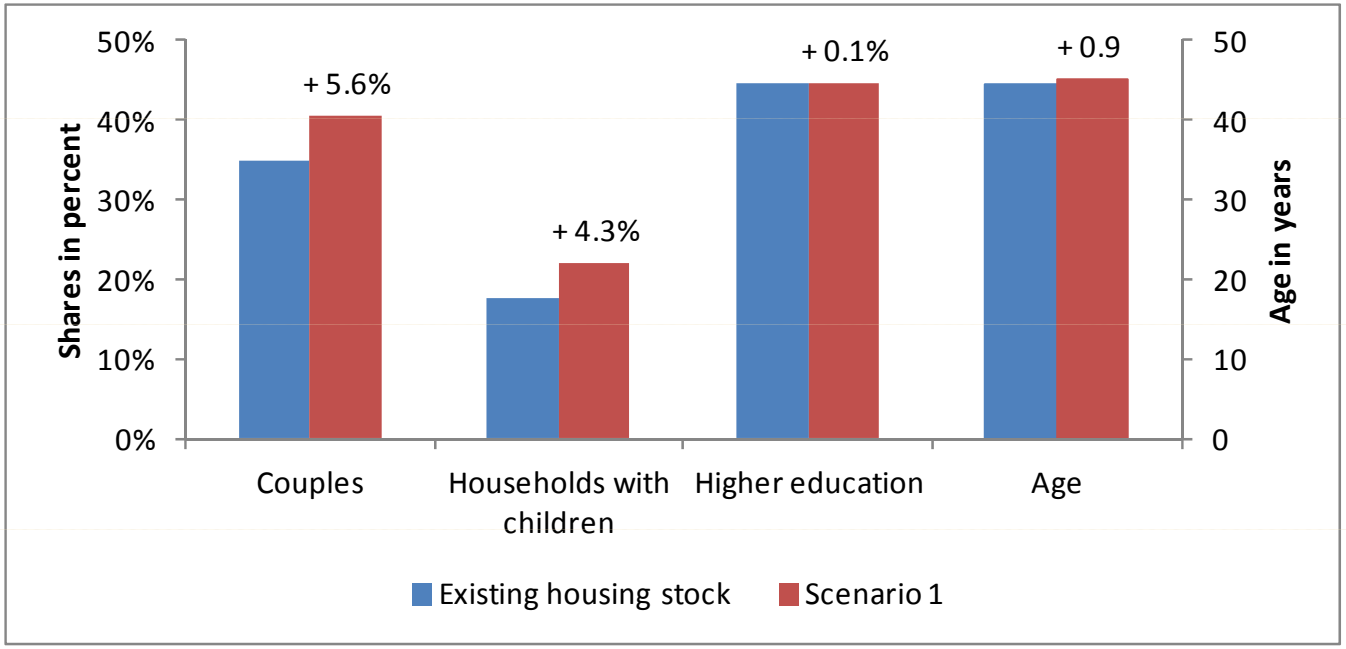

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- Positive WTP for detached housing, not much difference between apartments and terraced housing
- Large differences in WTP for housing types depending on single/couple, children and age, smaller effect for education
- Housing stock has significant impact on population demographics

Questions?

Thanks for your attention!