Analysis on Different Market Data for Real Estate Valuation

Investigations on German Real Estate Market

FIG Working Week 2016
Recovery from Disaster
Christchurch - May 4th, 2016

Matthias Soot
Geodetic Institute, Technische Universität Dresden, Germany
Regions With Few Transactions

• Only 20-30 purchases/a
• ImmoWertV: Comparison approach with purchase prices
• Problem: Few purchases available for appraisers
  ➔ Use data from “comparable” regions (objective?)
  ➔ Use subjective knowledge (gut feelings)
## Motivation

- Need of reliable market description in regions with few purchases
- Improve valuation results
- Specifying accuracy
  - Today missing in most market reports

> Use of other data sources
Market Data for Valuation Practice

- offer prices
- experts’ knowledge
- purchase prices
- site characteristics

MARKET DATA
Subject of Investigation

- Spatial submarket: City of Nienburg (Weser)
  - 50,000 inhabitants
  - North of Germany
  - Typical buildings: individual houses
  - Balanced supply-demand situation

- Functional submarket
  - One and two-family houses
Purchase Prices

- Official purchase price database
- Reference dataset
- \( \approx 300 \) appropriate purchase prices within 4 years
- Method: multiple linear regression
  - 5 influencing factors
    - Age
    - Living space
    - Lot size
    - Equipping standard
    - Standard land value
Experts’ Knowledge

- Survey in Nienburg (Weser)
- 10 experts from the committee of valuation experts
- Valuate real estates
  - Provided information: pictures, quality description, market reports/data
- Self assessment of accuracy
  ➔ ≈ 200 pseudo prices
  ➔ Pseudo price model
## Purchase Prices vs. Experts’ Knowledge

- No significant differences between purchase prices and experts’ knowledge for:
  - Age
  - Living space
  - Lot size
  - Standard land value

- Significant difference in equipping standard
Histogram of Equipping Standard

- 5 categories
  - 1 = very simple equipped, 5 = very good equipped

06 May 2016
Self-Assessment of Accuracies

Analysis on Different Market Data for Real Estate Valuation

May 4th, 2016
Offer Prices

- Former marketing platform: newspaper ➔ today: online platforms
- Exposé: Described quality
- Provider: Private person and real estate agents

➔ Offset to purchase prices
Price Offset (Offer vs. Purchase)
## Conclusion & Outlook

- Relationship among data can be modelled
  - Need more investigation
- Approach to combine data (FIG Paper 8187)
- Outliers in data $\Rightarrow$ robust approach
- Combining different data $\Rightarrow$ Bayesian approach
Thanks for your attention!

Matthias Soot (M.Sc.)  
Prof. Dr.-Ing. Alexandra Weitkamp  
Dipl.-Ing. Anja Jeschke

Technische Universität Dresden – Geodetic Institute  
Helmholzstraße 10  
Dresden D - 01069  
GERMANY
Tel. +49 (0) 351-463 31653  
Fax + 49 (0) 351-463 37190  
Email: matthias.soot@tu-dresden.de, alexandra.weitkamp@tu-dresden.de, anja.jeschke@tu-dresden.de

Alexander Dorndorf (M.Sc.)  
Dr.-Ing. Hamza Alkhatib

Leibniz Universität Hannover – Geodetic Institute  
Nienburger Str. 1  
Hannover D - 30167  
GERMANY
Tel. +49 (0) 511 762 2464  
Fax +49 (0) 511 762 2468  
Email: dorndorf@gih.uni-hannover.de, alkhatib@gih.uni-hannover.de

Supported by  
Graduiertenakademie TU Dresden

Financed by  
Deutsche Forschungsgemeinschaft