Housing price indexes in Central and Eastern Europe. 
A comparative study on the models.

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1. Motivation

2. Literature review

3. Key issues in developing a housing price index

4. Study of the models

5. Conclusions
Public information has limited details about methodology

“… the price of a typical house…”

What “typical” means?

“… the price for 3 bedroom apartment increased in 2014, shows… X index”

Why 3 bedroom apartments?
Motivation

Research questions:

• What are the models used for housing price indexes in Central and Eastern Europe countries?

• What are the characteristics in order to have a comparison between the models?
Hypothesis:

• The majority of the public housing price index are based on median/average sales price – which doesn’t fully provide the full spread of the housing market;

• There are significant differences between hedonic models’ characteristics that are used in building the models;
Key issues in developing a housing price index

Created by
- Governmental institutions
- Academic / research
- Private companies

Source of data
- Listings
- Surveys
- Transactions
  - Public data
  - Private data

Data covering
- Narrow
- General

Methodology
- Median /average price
- Econometric: hedonic, repeated sales

Recurrence
- One time transaction/listing
- Multiple sales
Literature review - Housing price indexes methodologies

**Silverstein**
- 2014
- Federal Reserve Bank of Philadelphia Special Research Report
- Analyzing each methods with focus on the repeated sales method

**Nicholas & Scherbina**
- 2013
- Real Estate Economics
- Analyzing main methods: median/average price, repeated sales and hedonic methods and building a hedonic index for Manhattan market evolution between 1920 and 1939

**Barthélémy, Des Rosiers & Baroni**
- 2013
- 2013 ERES Conference, Vienna
- Applying quantile regression on Paris apartments, with market premiums or price discounts on different characteristics
Literature review - Housing price indexes methodologies

- **Coulson**
  - 2012
  - International Encyclopedia of Housing and Home
  - Presentation of methodologies in hedonic prices and repeated sales

- **Graddy, Hamilton & Pownal-Campbell**
  - 2011
  - Real Estate Economics
  - Repeat sale methodology

- **Prasad & Richards**
  - 2006
  - Reserve Bank of Australia Research Discussion Paper
  - Using median sales price with stratification

- **Chau, Wong, Yiu, Leung**
  - 2005
  - Journal of Real Estate Literature
  - Constructing repeated sales index
Literature review - Housing price indexes methodologies

International Monetary Fund
- 2004
  - Compilation Guide on Financial Soundness Indicators
  - General presentation of the methods

Fisher, Gatzlaff, Geltner & Haurin
- 2003
  - Real Estate Economics
  - The effect of constant liquidity and application in developing transaction based indices

Case, Schiller
- 1987
  - National Bureau of Economic Research, Working Papers
  - The fundamental approach to weighted repeated sale method.
### Study of the models

#### Austria

<table>
<thead>
<tr>
<th>Statistics Austria</th>
<th>Austrian National Bank (OeNB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Austrian Federal Ministry of Finance from its property acquisition tax database</td>
<td>• two different breakdowns – one by regions (Vienna and Austria excluding Vienna) one by types of property (condominiums and single-family houses)</td>
</tr>
<tr>
<td>• Entire country</td>
<td>• Entire country</td>
</tr>
<tr>
<td>• Started: 2010</td>
<td>• Monthly</td>
</tr>
<tr>
<td>• Monthly</td>
<td>• Monthly</td>
</tr>
<tr>
<td>• Segmentation and weighted index on transactions</td>
<td>• Hedonic price index</td>
</tr>
</tbody>
</table>
Study of the models

Austria

Austrian Economic Chambers - Immobilienpreisspiegel

- a survey among real estate trustees and estate agents.
- Entire country
- Monthly
- Presenting listing prices

RE/MAX ImmoSpiegel

- data from the land registry, or the platform www.immobilien.net
- Entire country
- Bi-annual
- immoDex – median list price
Study of the models

Czech Republic

Czech Statistical Office

- Data from the real estate agencies
- Entire country
- Quarterly
- Weighted arithmetical average

Hypoteční banka

- Quarterly
- Base: 2008
- Entire country
- Monthly
- Average market price - realistic estimates of market prices
Study of the models

Hungary

Hungarian Central Statistical Office

- Data from National Tax and Customs Administration of Hungary (NAV)
- Entire country
- Quarterly since 2007
- Weighted average of the price indices of second hand homes and new homes

FHB Mortgage Bank

- Quarterly
- Base: 2000
- Since 1998
- Entire country
- Data from FHB and APEH database
- Hedonic methods
Study of the models

National Statistical Institute

- Data since 1993 through a survey which covers real estate agencies where real transaction price of a dwelling sold by a household is registered
- Quarterly
- Hedonic method

BULGARIAN PROPERTIES’ Indexes

- Monthly since 2006
- Uses own listing database
- Asking price indexes for 4 important cities
- Base: 2000
- Average asking price per sq.m.
Statistical Office of the Slovak Republic

- Data since 1993 through a survey which covers real estate agencies where real transaction price of a dwelling sold by a household is registered
- Quarterly
- Average market prices
Central Statistical Office of Poland

- Data: final market price collected through an administrative data source
- Quarterly
- Entire country since 2006
- chain-linked Laspeyres-type price Hedonic method
Study of the models

Statistical Office Republic of Slovenia

- Data: real estate agents, notaries and the Tax Administration of the Republic of Slovenia through statistical survey
- Entire country since 2010
- Hedonic method
Study of the models

National Institute of Statistics & National Bank of Romania & National Union of Notary in Romania

- Surveying Notary Chambers on actual transactions
- Entire country
- Started: 2009
- Base year: 2009
- Main objective: quarterly evolution
- Hedonic price method

Ziarul Financiar & Coldwell Banker

- Listing from Anuntul Telefonic newspaper
- 3 bedroom apartments in Bucharest on area
- Monthly
- Average listing price excluding ground level and top level, for apartments built between 1980 to 1990
# Study of the models

<table>
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<th>Eurobank Property services</th>
<th>Imobiliare.ro</th>
<th>Department of Financial Analysis and Valuation, The Bucharest University of Economic Studies</th>
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<tr>
<td>Own database</td>
<td>Listings</td>
<td>Multiple listing service database – actual transactions (Flexmls)</td>
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<td>Entire country</td>
<td>Bucharest and major cities</td>
<td>Bucharest ARM Index – general view &amp; area</td>
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<td>Quarterly</td>
<td>Weekly/Monthly</td>
<td>Base year: 2013</td>
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<td>Hedonic price method based on different characteristics</td>
<td>Average selling price per sqm</td>
<td>Main objective: price/sqm and price/unit</td>
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<td>Quarterly – analyzing from Q1 2013</td>
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<td>Median sale price – weighted on type of dwelling and area</td>
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<td>Using stratification</td>
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</tbody>
</table>
Comparison

• 18 indexes from which 8 official that follow the Eurostat Owner Occupied Housing project
• Use of databases:
  • governmental tax databases
  • surveys
  • listings
• Recurrence is monthly or quarterly
• Models used:
  • hedonic (but relative low information on the methodology)
  • average price on selected type of apartments
Conclusions

- Each country focus on the house price indices at the local level without a view on regional comparison
- The adoption of house price indices is relatively new (starting from end of 2000s’)
- The regional characteristics should be taken into consideration
- More details information about methodologies used are needed for proper assessment of the indices
Thank you!

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