Housing price statistics in Finland - Monthly prices of dwellings, regional division in housing price statistics and usage of administrative data

13th Ottawa Group Meeting, Copenhagen, May 2013

Poster session on Housing Price Indices

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Introduction

- Statistics Finland has produced extensive statistics on dwelling prices for a number of years.
- The quarterly house price index for existing dwellings in housing companies has been published since 1985.
  - Historical series are available for some regions from 1970 onwards.
- The monthly index published since August 2011.
  - Statistics Finland has obtained information on transaction prices of apartments in housing companies on monthly basis since beginning of 2009.
  - This has given the opportunity to publish prices of dwellings on monthly basis.
- Also for more current/faster information rose from the users.
- In addition, the growing interest in housing prices at EU-level has given the impulse to develop monthly series.
1. Introduction cont’d.

- At summer, 2013 Statistics Finland starts to release real estate prices for new single family homes and also indices of owner-occupied housing
  - Indices of owner-occupied housing prices describe the costs of purchasing and owning owner-occupied dwellings, as well as the development of purchase prices of dwellings
  - The price index of dwellings describes the price development of dwellings bought by households (HPI). The Housing Price Index consists of the price indices of new and old dwellings in housing companies, the price index on real estate prices, and the price index of new detached houses.
2. Monthly index

- The index is compiled by combining the monthly data (i.e. asset transfer taxation records) with the register data (i.e. buildings and dwellings register and real estate register) and the data are updated by using the municipal classification of the year concerned.

- The obtained data is validated by adding to them data on state subsidised housing, setting price thresholds and by supplementing missing data on e.g. number of rooms, year of completion and type of building.

- When the monthly index is published for the first time, it covers around two-fifths of the transactions in the month concerned.
  - The rest of the data are obtained later as the transactions are entered into the asset transfer taxation records.
Prices of existing dwellings in housing companies, 2010=100

Whole country
Greater Helsinki

Tomi Martikainen
1 May, 2013
Accumulation of dwelling transactions in the asset transfer taxation records, Whole country, 2012

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<th>Statistical Month</th>
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2. Hedonic quality adjustment

- In Statistics Finland’s housing price statistics the repeat sales problem has been solved by utilising a calculation method that combines conventional data classification and regression analysis (hedonic regression).

- The used classification does not necessarily homogenise the data sufficiently:
  - Factors affecting price, such as micro-location, floor area, year of completion, and so on, are not controlled for by the classification.

- The available data contains information on these characteristics, which can be used for adjusting the average price of a given category in the comparison period so that the obtained average price adjusted for quality takes into account compositional changes within the category in the base and comparison periods.
2. Hedonic quality adjustment cont’d

- The overall index for prices of dwellings is obtained via the log-Laspeyres formula:

\[
\text{index}_0^1 = \exp \left( \sum_{i=1}^{N} w_i^0 \ln \left( \frac{\bar{P}_i^1}{\bar{P}_i^0} \right) \right) \exp \left( \sum_{i=1}^{N} w_i^0 \beta_i^0 \left( \bar{x}_i^0 - \bar{x}_i^1 \right) \right)
\]

- The first term of the equation is a pure classification log-Laspeyres index. The second term is explicit within-cell quality adjustment at aggregate level (Koev, 2003).
2. Hedonic quality adjustment cont’d

- The regression models are of the following format:

\[
\ln(p_{ij}) = \beta_0 + \beta_1 \times x_{ij1} + \ldots + \beta_n \times x_{ijn} + \epsilon_{ij}
\]

- The notation of the model is a standard, half-logarithmic function
2. Hedonic quality adjustment cont’d

- Index weights are value-share weights from the base year

\[
\begin{align*}
    w_0^i &= \frac{\left( \bar{A}_0^i \times n_0^i \right) \times \bar{p}_0^i}{\sum_{i=1}^{N} \left( \bar{A}_0^i \times n_0^i \right) \times \bar{p}_0^i}
\end{align*}
\]

where \( A \) is geometric average of dwelling floor area in elementary level class \( i \) in base year and \( n \) is the number of dwellings in class \( i \). \( p \) is the geometric average price in class
3. Classification and regional divisions

- Location is one of the most important characteristics of the dwelling
  - The regional classification is formed to be geographically meaningful and as homogenous as possible in respect of price levels
- The calculation method in prices of dwellings is based on a well-constructed classification.
- The classification must meet following three criteria:
  - homogeneity,
  - adequate number of observations and
  - meaningful aggregability
- We should aim for as detailed classification as possible
3. Classification and regional divisions cont’d

- The prices of existing dwellings statistics use diverse area combinations, such as Greater Helsinki Area, satellite municipalities around the Greater Helsinki Area, regions and urban sub-areas
- The urban sub-areas are formed of postal code areas using price level and geographical location as the criteria
- The classification used in the statistics on the prices of new and old dwellings and the real estate prices also takes into consideration the needs of the Consumer Price Index
3. Classification and regional divisions cont’d

- Graph 1. Helsinki divided into for sub-areas by postal code areas. Blue represents central areas of Helsinki with higher price levels and areas marked with yellow are the areas farthest from city centre or otherwise undervalued and therefore at the lower end of price levels.
4. Usage of administrative data – Asset transfer tax data

- For existing dwellings the data of the statistics is based on the price information gathered by the Finnish Tax Administration for asset transfer tax calculation purposes
  - The Tax Administration maintains a database from all the paid asset transfer taxes and certain properties of the sold apartments
- When a share-type apartment is bought in Finland, the buyer has to pay asset transfer tax 2,0 per cent of the sale price
- Statistics Finland receives the information about the sold apartments around the fifteenth day of the following month
- Not all transactions of old housing company dwellings are included immediately in the statistics, because the purchaser is allowed two months to pay the asset transfer tax
  - Transactions intermediated by real estate agents the tax is paid at the time of transaction
4. Usage of administrative data – Asset transfer tax data cont’d

- From the data from Tax Administration Statistics Finland receives following information:
  - Price,
  - Share in a debt,
  - Size of dwelling,
  - Name of the housing company,
  - Identification number of the housing company,
  - Identification number of the housing company (Business identity code),
  - Date of purchase,
  - Whether the buyer is first-time home buyer and
  - Whether the buyer is a company
4. Usage of administrative data - Registers

- The information provided by tax authorities contains only few characteristics of the dwelling, so supplementary variables are needed.
- The sources for this information are the Tax Administration’s Register of Real Estate Property and Statistics Finland’s data on the dwelling stock, which is based on the Population Register Centre’s Register of Buildings and Dwellings.
- Registers contain following information:
  - Location,
  - Year of completion,
  - Number of rooms and,
  - Type of dwelling (Terraced house or blocks of flats)
4. Challenges of using administrative data

- Registers are not necessarily completely up-to-date.
- The Population Register Centre’s Register of Buildings and Dwellings is updated once a year.
- There can be a case that some important variable is updated after a longer period, or update means that content of some variable changes.

5. Conclusions

- The range of publications concerning housing prices will be supplemented in the near future with indices of owner-occupied housing.
- The index for new detached houses will be published for the first time nationally.
- Extensive development project in progress, which main goal is to develop consistent production process for the statistics on housing.