

House Price Indices

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Background

House Price Indices

- Methodology needs to take into account the different situations confronted by countries
 - Most particularly data availability
- But
 - Increasing consensus on best practice
 - RPPI Handbook
 - Increasing international comparability can be achieved by the introduction and adoption of standards on conceptual, methodological and computational issues
 - Conceptual basis of the index
 - Type of index to be compiled, will depend on its purpose
 - The *System of National Accounts (SNA) 1993* should be used as conceptual framework

House Price Indices - weighting

- Different weighting schemes produce price indices which measure different concepts of house prices and house price movements
 - Whether an index is “stock” or “transaction” weighted
 - Whether volume or value weights are used
- Important to have clear understanding of what the target measure
 - So that the indices can be evaluated against the target measure to determine fitness-for-purpose

Table 10.1. Index purpose and weighting

Transactions		Stock	
Volume	Value	Volume	Value
Market monitoring, price of a typical house sold?	Macro-economic Indicator. Deflators for National Accounts. Owner-occupier housing costs in a consumer price index.	Market monitoring, price of a house typical of the stock?	Housing stock deflator. Macro-economic indicator. Lender exposure.

House Price Indices - weighting

- A *stock-weighted* index is appropriate when measuring the *wealth* associated with the ownership of residential property should be *stock-weighted*
 - A *stock-weighted* index is also appropriate for a financial stability indicator, in particular to identify property price bubbles.
- A *sales-weighted* index is appropriate for measuring the *real output* of the residential real estate industry
 - This is consistent in treatment to the acquisition or purchase of goods and services in a consumer price index.

House Price Indices – scope

- A price index covering all residential property is appropriate for measuring the *wealth* associated with the ownership of residential property
 - The index should cover existing properties and properties which have been recently built (including conversions)
- An index covering all residential properties is also appropriate when used as a financial stability indicator
- A price index covering new property only is appropriate for measuring the *real output* of the residential real estate industry
- The value of new housing is part of *gross investment*
 - The cost of the land, apart from the value of any improvements made to this element, should be excluded
- A price index restricted to new property is also appropriate for the inclusion of owner-occupier housing costs on a net-acquisition cost basis
 - I.e. where the consumer price index covers the cost of acquiring properties which are new to the owner-occupier housing market

House Price Indices – (1) decomposition between building & land components & (2) constant quality

- A decomposition between the building & the land is an added complication
 - should be made where a country's balance sheet estimates of national wealth make this distinction
 - may also be required when a residential property price index is an input into the CPI for the measurement of owner-occupier housing costs using the net-acquisition approach
- A residential property price index compares the values of the stock or of the sales of residential property between two time periods
 - after allowing for changes in the attributes of the properties involved
 - Price changes need to be decomposed into those associated with changes in attributes and the residual which relates to the underlying “pure price” change
- A constant quality price index is appropriate for all purposes
 - Both for a stock and for a sales-weighted price index
- Chapter 13 comments on a number of practical methodologies which can be used to deliver constant quality & also addresses the issue of land

House Price Indices - Statistical methods for compiling constant quality indices

- Challenging due to following three factors
 - Residential properties are heterogeneous
 - No two properties are identical
 - Prices are often negotiated
 - The (asking) price of a property is not fixed & can change throughout the transaction process until the price is finalised
 - A property's market value can only be known with certainty after it has been sold
 - Property sales are infrequent
 - For example, typically less than ten per cent of housing stock changes hands every year
 - A given house is likely to have a confirmed value not more than every ten years
- Four methodologies have been presented in depth in the handbook
 - Stratification or “mix-adjustment”; hedonic regression; repeat sales; appraisal-based methods (more particularly, the SPAR method)

House Price Indices - Recommendations and Guidelines - Statistical methods for compiling constant quality indices

- *Stratification or “mix-adjustment”*
 - The most straightforward method for controlling for changes in the composition or ‘quality mix’ of properties sold
 - Also addresses any user need for sub-indices relating to different housing market segments
- Stratification or “mix-adjustment” is an appropriate method where
 - An appropriate level of detail is chosen for the number of cells and can be applied in practice
 - A decomposition of the index into structure and land components is not required
- *Stratification/mix-adjustment is recommended where the volume of sales is large enough to support a detailed classification of properties*

House Price Indices - Statistical methods for compiling constant quality indices

- *Hedonic regression*
- Simple concept
 - A statistical technique that measures the empirical relationship between the observable attributes of a good or service e.g. a house
- But no uniformity in the practical application of hedonics or agreement on what is best practice
 - Although the 'best' form of the hedonic function may be linear rather than log-linear
 - Reflects fact that the value of a property is generally equal to the sum of the price of the structure and the price of the land
- Two alternative methods of application of hedonics
 - Time dummy variables versus predicted prices

House Price Indices - Statistical methods for compiling constant quality indices (hedonics)

- Hedonic regression is generally the best technique for constructing a constant quality residential property price index
- Hedonic regression using the predicted prices (imputations) approach is the recommended method
- It is also recommended that stratified hedonic indices be computed to minimise the potential for any residual bias
 - Subject to the required data being available

House Price Indices - Statistical methods for compiling constant quality indices (repeat sales)

- *Repeat sales*
 - Observes the price development of a specific house over a period of time by reference to the selling price each time it is sold
 - The price development of a “representative” selection of houses during overlapping time periods can then be observed to obtain a measure of the general trend in residential property prices
 - Measuring the average price changes in repeat sales on the same properties ensures a like for like comparison
 - But sample selection bias & the “same” house may change its characteristics e.g. renovation (or depreciation)

House Price Indices - Statistical methods for compiling constant quality indices (repeat sales)

- Repeat sales method is not preferred above the hedonic method for constructing a constant quality residential property price index
- But methodology is satisfactory where
 - There is limited or no information on housing characteristics
 - There are a relatively large number of repeat transactions
 - To provide enough data points to populate the required types of residences and where sample selection bias is not a problem
- Repeat sales method is not recommended when distinction needed between price of structure & price of land

House Price Indices - Statistical methods for compiling constant quality indices (appraisal-based methods)

- *Appraisal-based methods (applied to matched-models)*
 - Use “assessed” values e.g. valuations for taxation purposes or from specially commissioned surveys using estate agents
 - Often done by reference to similar properties that have been sold
 - Overcomes two main problems associated with the repeat sales methodology
 - The relatively small number of price observations which are generated
 - The susceptibility to sample selection bias
 - Appraisal-based methods
 - Cannot deal adequately with quality changes to individual houses (same as repeat sales)
 - Rely on expert judgement

House Price Indices - Statistical methods for compiling constant quality indices (SPAR method)

- The value-weighted arithmetic Sale Price Appraisal Ratio (or SPAR) index
 - Re-scales appraisal-based indices by dividing by the base-period values
 - Corrects for the potential bias which may result from inaccurate valuations
 - Bias can arise from frequent re-assessments and reduced precision over time can arise from new appraisals

House Price Indices - Statistical methods for compiling constant quality indices (SPAR method)

- It is preferred to the repeat sales methodology
 - if assessment data of sufficient quality is available
- The SPAR methodology addresses some of the weaknesses of the repeat sales methodology
 - E.g. Selection bias
- The SPAR methodology does have its drawbacks but is a recommended when hedonics is not possible, in particular in combination with stratification

House Price Indices – way forward

Which method is best depends on local circumstances
– the “best” may not be the “ideal”

- Different uses - different concepts.
 - Need to ascertain and prioritise different uses
 - Consult potential customers
 - Impacts on
 - Weighting
 - Scope
 - Decomposition between building & land
 - Constant quality

House Price Indices – way forward

- Increasing consensus on international best practice but
 - Flexible approach appropriate to reflect local circumstances
- Data constraints
 - What data is readily available
 - What are the strengths & weaknesses of the available data?
 - Can existing data sources be improved?
 - Worth trying (new data collection expensive)
- How does the lack of data constrain index construction & the methodologies available?
 - Implications of a move away from the target measure on the usability of the index.

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End of Presentation