An evaluation of the methods used by European countries to compute their official house price indices*

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Key question

Since 2012, Eurostat requires the National statistical institutes (NSIs) in all European countries to compute official house price indices (HPIs) at a quarterly frequency. Because HPIs can be sensitive to the method used and this sensitivity can be a source of confusion amongst users, this article evaluates the theoretical properties of these methods, and their empirical comparability.

Methodology

Most NSIs use hedonic methods. These one – which express house prices as a function of characteristics – are ideally suited for constructing quality-adjusted HPIs and can be grouped into four classes: Repricing (RP) methods (most widely used, in particular in Belgium and Italy); Average characteristics (AC) ones (in particular, used by Spain); Hedonic imputation (HI) ones (used by Germany and UK); Rolling time dummy (RTD) methods (in particular, used by France). Some others use stratified medians method or a combination of actual prices with expert valuations. The theoretical properties of hedonic methods are compared through their formulas. Empirically, the methods are compared using micro-level housing datasets for Sydney (2003-2014) and Tokyo (1986-2016).

Main results

- Theoretically, it is shown that the underlying structures of 3 of the hedonic methods – the repricing, average charateristics and hedonic imputation methods – share common features. The RTD method is somewhat different in its approach.
- Empirically, the authors show, using housing (apartments and houses) transactions for Sydney and Tokyo, that:
- HPIs computed using hedonic methods, exhibit better statistical performances (avoiding drift or high volatility problems) than others (stratified medians) over longer time horizons (e.g, 10+ years). In particular, for apartments in Sydney, the cumulative change in house prices from 2003Q1 is quite robust to the choice of hedonic method (Figure).
- Moreover, with each method, an NSI still needs to make a number of decisions when implementing it. The most widely used hedonic method, the repricing method, can become problematic when the hedonic model is not re-estimated every year.
- For smaller countries with less housing transactions, the HPI becomes more sensitive to the choice of method: the rolling time dummy (RTD) method performs better.

Estimates of prices indices for apartments in Sydney (2003Q1 = 1)
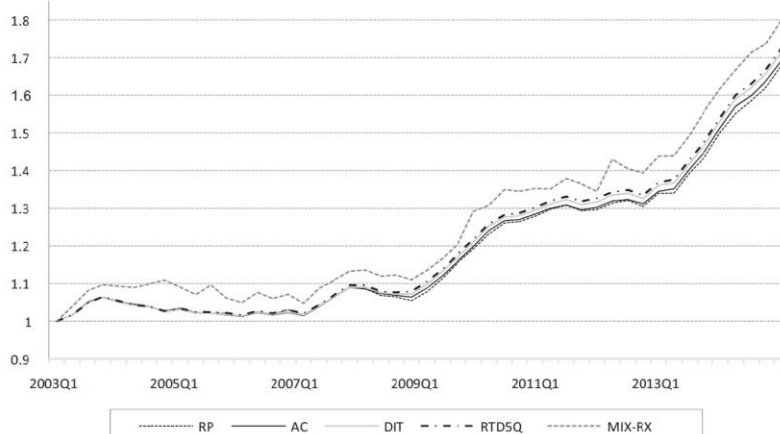
Note: RP, AC, DIT (Double imputation Törnqvist) and RTD5Q (Rolling time dummy with five quarter window) are all hedonic methods; MIX-RX is a stratified median method. Coverage: Apartments in Sydney, Australia. Sources: Australian Property Monitors; authors' calculations.

Main message

The official HPIs in Europe seem to be quite robust to the choice of hedonic method. The RTD method is particularly recommended: It is simple to compute and performs well on smaller datasets. NSIs using stratified medians should switch to a hedonic method when possible.