

Paulo Fernando Mahaz Simões

paulo.mahaz@ibge.gov.br

Department of Price Indexes / Directorate of Surveys

Brazilian Institute of Geography and Statistics - IBGE

A Model Based Approach to Produce Commercial and Residential Property Price indices

In this work, we produce hedonic double imputation Laspeyres property price indices based on the creation of pseudo housing units. The proposed matching of multiple units makes the arrangement of a panel data comprised by transaction prices feasible, is imperative to estimate parameters via longitudinal mixed effects models and to circumvent some issues that arise in real estate studies, such as the lack of sufficient information on transaction prices and difficulties to perform analysis based on repeat sales for the short run or for nowcasting purposes. In contrast to traditional modelling approaches, which consider determinant variables of the prices as time invariant, here we relax this hypothesis and prices are modeled under the assumption that the status of some predictors, such as the floor or the size of an apartment can now be assumed as time-varying covariates. Also, the adoption of mixed effects models accomodates a specific statistical inference issue, that is exactly the treatment of the additional intra group variance that arises with the matching of different properties when we create pseudo housing units. Finally, we use a data set of transaction prices collected from 2014 to 2016 to estimate monthly house price indices for a specific area of the city of Rio de Janeiro. The findings suggest that the implemented methodology can be very useful to estimate price variations in the real estate market.