Resum de Tesi Doctoral

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Resum de la tesi

The concepts of "energy sustainability" and "environmentally friendly" arouse extensive attention and the discussion on how to utilize, save and regulate energy and reduce pollution has become a dominant issue. The building sector in Europe is responsible for 40% of total energy consumption and 38% of total CO_2 emissions, leading to economic, geopolitical and environmental concerns. An increasing number of studies have recognized the significant role that energy efficiency played in the residential market and the energy policies and the inner implication that promote or hinder the EPC program has aroused researchers' concerns. This dissertation aims to explore the spatial implications of energy efficiency on housing price in Barcelona Metropolitan Area and furtherly detect the energy premium submarket in details as well as their policy implications. To well-fulfil this general objective, there are four specific objectives proposed: 1) To explore the possibility of selection biases when detecting the "green premium" in Barcelona residential market; 2) To explore the EPC impacts on housing price in different residential segmentations are uneven or not; 3) To explore the presence of spatial dependence (i.e. autocorrelation) when analyzing the impact of EPC on housing price; 4) To explore the presence of spatial heterogeneity when analyzing the impact of EPC on housing price. This dissertation has employed a series of Hedonic Price Models (HPMs) and spatial econometric models as well as other approaches or methods to fulfil the specific objectives. It has drawn a series of conclusion concerning each empirical study. Firstly, sample selection bias indeed exists and will lower the energy efficiency's impacts on housing price. In our case, the green premium will reach to an increase of 12% if an apartment improves its energy efficiency from rating G to rating A. From an ordinal EPC perspective, about 2% growth of housing price along with energy efficiency rating improvement gradually (i.e. step by step in the G to A Spanish EPC Scale). At the same time, we found that selection biases in Barcelona mainly happened surrounding the area with a higher housing price and more university-educated citizens. From a real estate segmentation perspective, there are several highlights of energy premium performance. Secondly, consumers are willing to pay more for those tangible characteristics (e.g. heating or air conditioning) rather than an intangible and composite indicator. Interestingly, the housing price in "new apartment" segmentation market does not sensitive at all to energy efficiency which supposed that the EPC implication has been captured by new buildings' structural quality. However, those cheapest apartments with a worst structural quality can enjoy considerable "energy premium" (reaching to 33%) if they renovated certificates from rating G to rating A. It is inferred that the poor people may regard this EPC label as one of the quality indicators for an apartment. It highlights that the spread and transparency of energy efficiency may fail to the public with a lower income/lower social class. Thirdly, empirical study III and IV confirmed the existence of spatial dependence and heterogeneity which contributed to the non-stationary distribution of energy premium. In sum, there are many limitations to this dissertation but it has synthesized a comprehensive model to check the spatial implication of energy efficiency on housing prices. In the future how to improve this compositive model and apply it in other case study are our aims.

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