Thermal Insulation of Apartment Buildings: Decision-making Process and Effect on Energy Savings

Abstract

In order to lower the emissions of green-house gases it is necessary to explore the wide range of the energy efficiency options. This thesis attempts to analyse the effect of thermal insulation installed in the multi-family apartment buildings during the period of 2006-2012 in the Czech Republic. We also investigate whether providing governmental funding further improves energy performance of the insulated apartment buildings. In addition, we examine the collective decision-making processes of members of the multi-family apartment building associations, including their attitudes towards thermal insulation of their houses. The basis of this thesis is the econometric panel data model (with 45 apartment buildings and their energy consumption before and after the insulation) evaluated by the fixed effects method with cluster confirming that the insulation, investments and public funding had all significant and negative impact on the energy consumption in the buildings, when energy consumption was adjusted for weather conditions. After the analysis it was concluded that the more the owners invest in thermal insulation, the more they will save in the long run. The governmental funding led to even greater energy savings and the grants that offer better interest rates on loans are more efficient than the others. Our evidence also supports the notion that the energy savings are lower in those apartment buildings that were insulated at a later stage, as opposed to the apartment buildings that were insulated earlier. The more time passed after the insulation, the less the owners typically saved for heating and that may point at rebound effect.