Abstract

Assessing the impact of physical, locational and environmental attributes on residential real estate prices

This dissertation presents the results of analyses related to the manner and extent of the impact of selected attributes on the transaction prices of residential real estate. The research was conducted on the territory of the city of Poznań located in the western part of Poland and in two, selected municipalities of the Poznań district. The individual analyses were carried out on the basis of transactional price data from notarial deeds, and in the cross-section of the entire work the data was in the time frame from 2014 to 2022. In particular, the research was related to the characteristics of selected attributes and their local conditions. The obtained results in this context indicate the complexity and ambiguity of the real estate market.

The main objective of the paper was to verify whether the use of statistical methods allows to forecast the magnitude and nature of the impact of selected attributes on real estate price formation, and to verify whether the use of these methods can automate the real estate valuation process to some extent. The basis of the research performed was statistical analysis conducted using multivariate regression analysis. The study used the following methods to estimate the hedonic price model (HPM): standard least squares regression (OLS), weighted least squares regression (WLS) and geographically weighted regression (GWR). Attributes that formed the basis of this study were related to, among others: accessibility to a legally protected area defined by the boundaries of the Wielkopolski National Park (WPN), airplane noise (HL) generated by Poznań-Ławica and Poznań-Krzesiny airports, urban public transport (MTP), and rail infrastructure defined by the course of railroad line No. 272 Kluczbork - Poznań Główny. In addition, a number of other characteristics belonging to physical, locational and environmental attributes were included in the analyses.

This study is an important element in the discussion related to the characterization of mechanisms occurring at the real estate market level, and the method of analysis performed, which consists in integrating spatial analysis with statistical analysis, is its undoubted advantage. This solution, due to its transparency, can bring many benefits, among others, to average market participants who, based on this type of analysis, can interpret complex market mechanisms in an approachable way.

Keywords: real estate market, dwellings prices, regression analysis, location