Real Estate Market Bubble Forecasting Using Artificial Intelligence

Research Question

The central question of this thesis is how artificial intelligence (AI)—specifically the COCO model (Component-based Object Comparison for Objectivity model)—can be used to identify and forecast real estate market bubbles. Real estate market bubbles are characterized by price increases that are not justified by fundamental economic factors, and detecting these bubbles is critical for maintaining market stability. The research aims to examine whether the COCO model can accurately identify real estate market bubbles and uncover future real estate market trends.

Research Methodology

In the research, data processing and analysis were conducted using the COCO model (a method developed by the My-X Team). Historical data from the Hungarian real estate market were utilized, including average price changes of family houses, apartment buildings, and panel apartments. The analysis was based on the collection, cleaning, and modeling of data from multiple sources, as well as a detailed analysis of the real estate market bubbles identified by the COCO model. Relative deviation values (between the estimation calculated by COCO and real market average prices on the housing market) were used to assess the accuracy of the model and to observe the life cycle of real estate bubbles.

Results

The research results indicate that the COCO model is capable of accurately recognizing historical real estate market bubbles. It successfully identified, for instance, the real estate bubbles that emerged during the 2008 financial crisis and the 2020 pandemic, highlighting deviations in prices from fundamental economic factors. Regarding forecasting ability, the results are promising, but the model's predictive effectiveness requires further, comprehensive research. It is important to emphasize that the concepts of efficiency and accuracy in forecasting must also be further examined to ensure well-founded and accurate future predictions. Based on the results, the COCO model shows significant potential for real estate market forecasting, which could contribute to market stability and optimize investor decision-making.