

## MATHEMATICAL METHODS, MODELS AND INFORMATION TECHNOLOGIES IN ECONOMY

### Residential real estate prices modelling in multiple regression

**Kovpak E.O.**

Candidate of Economic Sciences,  
Senior Lecturer at Department of Economic Cybernetics and Applied Economics  
V.N. Karazin Kharkiv National University

**Malets V.V.**

Student  
National Technical University «Kharkiv Polytechnic Institute»

The pricing factors in the real estate market have been analyzed in the article. Among the properties of real estate as product that greatly affect the price there are usefulness, uniqueness, two components and fixed location. The usefulness and fixed location of the real estate can be described by quantitative and qualitative variables. The uniqueness property of real estate objects complicates the modelling procedure prices due to the fact that the uniqueness is ensured by the joint effect of the different number of factors.

The location of the real estate in one of the city districts determines its positioning in the market. To illustrate the dependence of apartments prices by location, average prices in the different historical districts of Kharkov city have been shown. The results of clustering the historical districts of Kharkov by level of residential real estate prices have been given. In Kharkov four clusters

were allocated with the historic districts that are experiencing similar average prices for apartments.

The specification of the multiple regression for real estate price has been proposed. The regression model for prices of apartments includes the following variables: the total area of the apartment, dummy variables to describe the characteristics of the current condition of apartments (without finishing, with finishing works, with complete finishing works), dummy variables to describe the location of the property (in one of the 4 designated clusters).

The results of the regression estimation for the offer prices for one-bedroom apartments in new building in Kharkov city have been shown. The presence of heteroscedasticity disturbances in a regression model were eliminated using the method of weighted least squares.