Abstract

A study on the Relationship between Public Transportation Cost and Housing Price in Gyeonggi-do

A model for estimating apartment prices in Gyeonggi-do was constructed using the hedonic price model. Since apartment prices in Gyeonggi-do have spatial autocorrelation, the geographic weighted regression model was optimally analyzed. The geographic weighted regression model, which is an optimal model, uses the dependent variable as the apartment price per unit area (10,000 won/㎡), and as independent variables, the elapsed apartment age, heating method (dummy), number of households, elementary school approach distance (dummy), high school approach distance (dummy), urban railroad and metropolitan railway station access distance (dummy), public transportation travel time to the Seoul employment center (Seoul Station, Gangnam Station), department store access distance, general hospital access distance, population density and employment density of county districts including apartment complexes Variables were used. The key variable of the optimal model, the distance-weighted regression model, is “the travel time of public transportation to the employment center of Seoul (Gangnam Station, Seoul Station)”, which is an important variable in determining the price of Gyeonggi-do apartments.

As an optimal model, the change in apartment prices in Gyeonggi-do according to the opening of the metropolitan express train (three GTX lines) was estimated. When the metropolitan express train was opened, the transit time of public transportation to the employment center of Seoul was calculated and applied to the optimal model to calculate the change in apartment prices before and after the metropolitan express train was opened. The effect of the opening of the metropolitan express train on the apartment price in Gyeonggi-do was analyzed in three aspects.

First, the metropolitan express train raises apartment prices in Gyeonggi-do. With the opening of GTX, apartment prices increased by 500,000 won/m² in Gyeonggi Province, 12.8 million won/m² in northern Gyeonggi Province, and 340,000 won/m² in southern Gyeonggi Province.

Second, the wide-area express railway reduces the gap in apartment prices in the southern and northern regions of Gyeonggi-do. With the opening of the GTX, the gap in apartment prices per square meter in the southern and northern regions of Gyeonggi-do will decrease by 580,000 won. In addition, the ratio of apartment prices in the northern part to the southern part of Gyeonggi-do increased by 13.9%.

Third, the metropolitan express train changes Gyeonggi-do apartment prices close to the average. The apartment price index of Si, Gun, and Gu in Gyeonggi-do is defined as the ratio value obtained by dividing "the apartment price in Si, Gun-gu" by the "average apartment price in Gyeonggi-do". As a result of analyzing the index before GTX opening as X-axis and the difference in index before and after GTX opening as Y-axis, 35 cities, counties, and gus (80%) in the 1・4 quadrant were averaged by GTX opening. It is an approaching area, and 9 cities, counties, and gus (20%) in the 2・4 quadrant are areas that are far from the average due to the opening of GTX.

As a result of this study, it was evaluated that the Metropolitan Express Railroad (GTX) has the effect of increasing apartment prices in Gyeonggi Province and reducing the price gap between regions. We propose two policies to maximize the positive effects of the metropolitan express railway.

First, the government should build the GTX quickly as possible. It was analyzed that the GTX will play a role in reducing the gap in apartment prices by region. High-speed public transport increases the area of choice for home consumers. Therefore, it is believed that it will be possible to alleviate the phenomenon that the excessive demand for housing occurs in a specific area and the housing price surges. Therefore, rapid promotion of GTX project is required.

Second, Gyeonggi-do should invest intensively its administration and budget in planning a GTX station with convenient transfers and supplying connected public transportation. In order to maximize the beneficiary areas of the construction of the GTX, rapid and convenient transfers must be made in the station, and public transportation access to the station must be provided. The GTX station should be planned to allow convenient transfers, and a road network and a public transportation system linked to it should be established so that rapid access to the GTX station by public transportation means from adjacent areas.

Keyword housing price, public transportation cost, GTX , geographic weighted regression model