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The Relative Impacts of High School Types on Adjacent Housing Resale Prices in South Korea[1]

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Abstract

The socioeconomic understanding of education in South Korean society is unique. The general belief is that becoming better educated is a way of rising in social status, and a superior education is recognized as being a fundamental requirement for acquiring a stable job and a high income. Typically, acquiring a high school education, the last step before entering university, is regarded by many as enabling graduates to advance to the pinnacle of society, a status that is highly desired by Koreans. In this manner, although high schools in South Korea are highly prized, and various types exist, the impacts of school types on housing prices have not been well studied. This study compares the influence of high school types on housing resale prices focusing on four school types—special purpose, autonomous, general, and specialized—in the city of Seoul. The result shows if the nearest school is specialized, housing resale prices drop by 21.2%, compared to a special purpose schools. Autonomous and general schools are also found to have a negative influence compared to special purpose, by about -8.9% and -10.3% respectively. These different preferences are influencing the price of housing, and that specialized high schools have relatively negative influences on housing prices. Therefore, instead of considering residents' opinions objecting to the location of certain types of high schools, policy measures are needed that can resolve conflicts by improving the image of these schools.

Keywords: Housing Price, Apartment, School Type, High School, Spatial Hedonic Price Model

INTRODUCTION

The socioeconomic understanding of education in South Korean society is unique. The general belief is that becoming better educated is a way of rising in social status, and a superior education is recognized as being a fundamental requirement for acquiring a stable job and a high income. These social perceptions have led both to growth in the private education market, and to encouraging the relocation of families who want to find a better educational environment. As a consequence, it has been an important factor in increasing the variability of housing prices (Jin and Son, 2005; Um et al., 2006; Yoon and Choi, 2011).

According to education statistics analyzed by the city of Seoul (2013), average monthly private education expenses per person are KRW 318,000 while attending elementary school, KRW 468,000 in middle school, and KRW 584,000 in high school, showing that the costs increase as students advance to higher grades. This pattern of educational expenditures indicates that acquiring a high school education, the last step before entering college (university), is regarded by many as enabling graduates to advance to the pinnacle of society, a status that is highly desired by Koreans.

Under the enforcement ordinance of the Elementary and Secondary Education Act (Article 76.3, amended in January 2016), high schools in Korea are classified into four types, according to their curriculums and level of autonomy, such as general high schools, special purpose high schools, specialized high schools, and autonomous high schools. Even though this classification is intended to let students choose a curriculum that fits their abilities and aptitudes, giving them autonomy in choosing their own curriculums, in reality, it is perceived as a consequence of academic abilities (Oh, 2008), and this social perception may make residents prefer or avoid a specific type of high school when choosing where to live.

As an example, attempts by the Dongho Technical High School (currently the Seoul Broadcasting High School) located in Oksu-dong (Seongdong-gu, Seoul), to relocate to Namyeong-dong (Yongsan-gu, Seoul) failed, due to local residents' demands for an elementary school, because of opposition from local residents at the proposed relocation site. Another attempt to move to Magok-dong (Gangseo-gu, Seoul) also failed, due to opposition from the local residents. The main reason for the

[1] This article is partially based on the first author's Master's thesis

opposition was that housing prices would drop if the special high school moved there. In contrast, residents' actively welcomed an announcement of plans to build a special purpose high school and an autonomous private high school, because of their expectations that they would not have to move to Seoul's Gangnam District, which is Korea's most attractive school district for children's education, and has increasing in housing prices. [2]

Accessibility to educational facilities is one component of the educational environment, and previous research has shown that it affects housing prices. In existing studies, accessibility to educational facilities was mostly investigated by classifying schools as elementary, middle, or high schools. Although high schools are the focus of a national educational fervor, and various types of school are available, the impacts of school types on housing prices have not yet been investigated.

Accordingly, this study attempts to compare the spatial influence of the four types of high schools specified in the Enforcement Decree of the Elementary and Secondary Education Act on housing resale prices. Typically, this study focuses on the most famous housing type, apartment, in Korea.

LITERATURE REVIEW

The literature related to this study's topic considers the relationship between school quality and housing prices. Specifically, it deals with the racial composition of schools, students' achievements, the quality of the public schools, and school ratings, in relation to decreasing/increasing housing prices. Early studies use the variable of public expenditures per pupil as the key factor, and find evidence that housing values are positively related to the quality of public schooling (Oates, 1969).

Clotfeller (1975) explores racial changes in the neighborhood school, and the value of single-family houses. The author concludes that increasing the proportion of Negros in schools causes declining housing values, so that demand for houses by white households is affected by school desegregation policies. Jud and Watts (1981) also estimate the effects of racial composition and students' achievements on housing prices for single-family houses in the city of Charlotte, North Carolina. They find that school qualities are important determinants of housing values. Concretely, they state that the value of an average house has a positive relationship on students' average grades.

Hayes and Taylor (1996) explore school quality impacts, such as student expenditures and student achievements on housing values. The results show that schools have an impact on housing values. Specifically student achievements have a positive impact on the values. Downes and Zabel (2002) also find that higher levels of school achievement can raise residential real estate values. Brasington and Haurin (2006) again show that average proficiency test scores and school expenditures have significant impacts on housing values.

Some researchers have conducted case studies of educational achievements in Korea. Jung (2006) investigates the impacts of university enrollment rates. The results show that the enrollment rate has significant impacts on apartment prices in Seoul, typically in the Kang-nam area (the southeast area of Seoul). Chun (2010) specifically focuses on the effects of the ratio of students entering a prestigious university such as Seoul national university on the apartment prices in Daegu Metropolitan City in Korea. The author finds that this ratio is the primary variable of the educational environment, and that a good educational performance can increase apartment prices significantly. Kim and Lee (2014) find the same results as Chun (2010) after conducting a case study in Seoul. Recently, Im and Hong (2015) analyze the influence of educational achievement on housing prices in Seoul, Korea. They state that educational achievements over the previous one or two years have the largest and most meaningful effect on current apartment prices.

Brasington (1999) investigates which measures of public school quality affect housing values, and what their impacts are, based on both a traditional hedonic house pricing method and using weighted least squares to correct for spatial autocorrelation. The author found that the expenditures per pupil, the pupil/teacher ratio, teachers' salaries, and student attendance rates affected housing values. Brasington (2000) also investigates the demand for, and the supply of, public school quality, and the role of private schools, in the housing market. The author finds that the demand for high-quality public schools is rarely responsive to changes in the implicit value of private school quality.

Figlio and Lucas (2004) examine the impact of school ratings (reputation) on housing values. They find that public schools with high grades increase neighboring property values more than lower grade schools. From this point of view, Kim, Lee, and Park (2010) state that the demand for schools influences apartment prices in Seoul, Korea. In Korea, when school districts have good ratings, such as that of the eighth district of Seoul, there is more demand, meaning that students and parents would like to choose that district, regardless of their residential area. This will lead to rises in apartment prices. Their empirical results prove the relationship between a high demand for education and apartment prices. Lee (2010) also analyzes the effects of variables that include a school district's reputation, and educational inputs and outcomes, on apartment prices in Busan, Korea. The statistical results show that there are significant differences in apartment prices depending on the school district's reputation, implying that an educational value can be an important factor for shifting apartment prices.

Although a wide range of housing studies have been conducted, a literature search has not found any research that quantified the

[2] The *Hankyoreh Daily News* (2007, September 6).

impacts of high school types on housing resale prices. Therefore, to remedy this deficiency, this study applies spatial hedonic price models to data from the Seoul Metropolitan City in Korea, to estimate the impacts of the four types of high schools described in the Enforcement Decree of the Elementary and Secondary Education Act, on apartment resale prices.

ANALYTICAL MODEL

The hedonic price model (HPM), which is commonly used in housing market research, is an analytical method useful for estimating the implicit prices of nonmarket items. In housing studies, locational effects have been identified using the HPM. Efforts to quantify locational variables with regard to various amenities, such as schools, have suffered from a lack of objective measures. In this situation, HPM is likely to show the existence of spatial autocorrelation (or spatial dependence). Spatial autocorrelation is a situation in which the dependent variables, or error terms at each location, are correlated with the existence of the dependences or error terms at the other locations (Song, 2002; Agnihotri, Palmer-Jones, and Parikh, 2002; Yoo and Wagner, 2016).

More Specifically, Anselin (1988) defines spatial autocorrelation as "the existence of a functional relationship between what happens at one point in space and what happens elsewhere." As already stated, in the case of housing, it is known that the selling price is related to location. Basu and Thibodeau (1998) further confirm that housing prices are spatially autocorrelated, because neighborhoods share similar structural characteristics and locational amenities.

Pace and Gilley (1997) verify that the existence of spatial autocorrelation causes the OLS to yield an inaccurate estimate of marginal sale prices on housing characteristics by a 44% difference of OLS residuals. Anselin (1988) also states that spatial autocorrelation causes measurement problems on housing prices, such as the arbitrary delineation of neighborhoods, spatial aggregation problems, missing variables, and the presence of spatial externalities.

There are two types of spatial autocorrelation possible in the HPM. First, when the response variable at each location is correlated with observations of the dependent variable at other locations, this can be said to be spatially autoregressive. This process is referred to as spatial lag dependence. The spatial lag dependence can specify the actual spatial autocorrelation. Common specification of the HPM is as follows:

$$Y_i = X_i\beta_i + \varepsilon_i \qquad i = 1, \cdots, n \tag{1}$$

Spatial lag dependence in the HPM—called spatial lag model (SLM)—is formed as follows (Anselin, 1988; Anselin and Bera, 1998):

$$y = \rho Wy + X\beta + \varepsilon \tag{2}$$

$\varepsilon \sim N(0, \sigma^2 I_n)$

where

Y = Housing prices ($n \times 1$ vector)

X = Housing characteristics ($n \times k$ vector)

β = Regression coefficients ($k \times 1$ vector)

ρ = Spatial autoregressive coefficient

Wy = Corresponding spatially lagged dependent variable (matrix)

To transpose ρWy to the left side in equation (2) yields

$$y = (I - pW)^{-1} X\beta + (I - pW)^{-1}\varepsilon \tag{3}$$

$(I - pW)^{-1}$ in equation (3) indicates a spatial multiplier, and is a full matrix. This can be expanded into an infinite series for all ε_i as $(I + \rho W + \rho^2 W^2 + \rho^3 W^3 + \cdots)\varepsilon$. This shows that $(Wy)_i$ is always correlated with ε_i . When ignoring this form of spatial autocorrelation, the result is similar to that which occurs from omitting a significant explanatory variable in the HPM (Song, 2002; Fulcher, 2003). This implies that OLS estimates will be biased and inconsistent, because Wy is endogenous and correlated with the error term.

Secondly, housing prices depend on locational attributes in addition to their physical characteristics, and it is reasonable to assume that nearby housing prices depend on the same locational attributes. Correlation with the error term can be described as the result of this case. This is called spatial error dependence. It is possible to see this outcome when omitted variables are spatially correlated with other variables in the HPM. When the error term at each location is correlated with the values of error terms at other locations, it is possible to specify a spatial process for the disturbance term (Anselin and Bera, 1998). This is a spatial error autoregressive process. Spatial error dependence in a HPM, which is called a spatial error model (SEM), can define the spatial dependence as a nuisance, and explain it by means of a spatial process for the error term of either an autoregressive or a moving average form (Song, 2002). The general specification of the spatial autoregressive process in the error term is as follows:

$$y = X\beta + \upsilon \tag{4}$$

$$\upsilon = \lambda W\upsilon + \xi \tag{5}$$

where

λ = Spatial Autoregressive coefficient for error lag $W\upsilon$

ξ = Uncorrelated and homoskedastic error term with expected value of 0 and variance-covariance matrix $\sigma_\xi^2 I$

υ = Random error term with mean 0 and non-spherical variance-covariance matrix

This can be solved for υ as follows:

$$\upsilon = (I - \lambda W)^{-1}\xi \tag{6}$$

Therefore, the reduced form of equation (4) is

$$Y = X\beta + (I - \lambda W)^{-1}\xi \tag{7}$$

This shows that the spatial multiplier affects only the error term in the spatial error model. If $w_{ij} < 1$, and $|\rho| < 1$, equation (7) yields

$$(I - \lambda W)^{-1} = I + \lambda W + \lambda^2 W^2 + \cdots \approx \frac{1}{1-\lambda} \tag{8}$$

Here, as described above, W can be defined as the ($n \times n$) weight matrix that represents the spatial structure of the data. It indicates possible spatial dependence between two observations, i^{th} and j^{th}, if $i = j$, then $w_{ij} = 0$. This implies that the observations are not spatially dependent on themselves.

An important issue when trying to measure the spatial autocorrelation parameter λ in equation (5) is how to define and measure spatial contiguity. That is similar to the problem of how to construct the spatial weight matrix, and it is an important part of a model as Anselin (1992) states that the suitability of a model depends on how the spatial weight matrix is composed. In this study, k-nearest neighbor weights are used. Because the apartment samples used in this study are based on points, the weight matrix based on the centroid distance between each apartment has more advantages than a weighted matrix constructed by imposing one and zero, depending on spatial contiguity, such as Linear Contiguity, Rook Contiguity, Bishop Contiguity, and Queen Contiguity.

There are several methods available for estimating spatial dependence, such as OLS (Ordinary Least Squares), Instrumental Variables (IV) Estimation, Two-Stage Least Squares (2SLS) Estimation, and Maximum Likelihood Estimation (MLE). Among the estimation methods, MLE has mainly been used to minimize the bias of spatial regression. MLE maximizes the likelihood function that is a non-linear function of the parameters. This method for estimating spatial dependence was introduced by Ord (1975), with more details provided by Anselin (1980, 1988).

If the error term is assumed to be normal, the MLE for the SLM is as follows (Anselin, 1988):

$$L = -\frac{N}{2}\ln(2\pi\sigma^2) - \frac{(y - \rho Wy - X\beta)'(y - \rho Wy - X\beta)}{2\sigma^2} + \sum \ln(I - \rho w_i) \tag{9}$$

where

X = Housing attributes (characteristics) (n ´ k vector)

β = Regression coefficients (k ´ 1vector)

ρ = Spatial autoregressive coefficient

Wy = Corresponding spatially lagged dependent variable ($n \times n$ matrix)

W_i = i^{th} eigenvalue of the spatial weights matrix

The MLE for SEM is as follows:

$$L = -\frac{N}{2}\ln(2\pi\sigma^2) - \frac{(y - \lambda Wy - X\beta + \lambda WX\beta)'(y - \lambda Wy - X\beta + \lambda WX\beta)}{2\sigma^2} + \sum \ln(I - \lambda w_i) \tag{10}$$

Both MLE for the spatial lag model (SLM), and MLE for the spatial error model (SEM), are maximized. These can be explained in terms of "concentrated likelihood," where the MLE is dependent on either transformation parameters ρ or λ (Mikelbank, 2000).

This study uses a semi-log transformation that takes a natural log of the dependent variable. The transformation is generally more suitable when a model includes many dummy variables, as is the case in this study (Seo and Von Rabenau, 2011). It is also more appropriate for satisfying fundamental HPM assumptions, such as normality, independency, homoscedasticity, and the exclusion of spatial autocorrelation (Seo, 2010).

VARIABLES AND DESCRIPTIVE STATISTICS

Types of High School

In Korea, high school students are generally between the tenth and twelfth grades (referred to as the first to third high school grade). There are four main types of high schools in Korea, including general, special purpose, specialized, and autonomous, according to the 2016 Enforcement Decree of the Elementary and Secondary Education Act.

This Act (Article 76.3) explains the various schools' curriculums and levels of autonomy. Specifically, the special purpose high school provides expert education in specialized fields, such as engineering, agriculture, fisheries, marine biology, science, foreign languages, arts, sports, and international relations (Article 90). However, in Seoul, most special purpose high schools teach science and foreign languages, for which admission is difficult, due to the intense competition.

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Specialized high schools provide an education that is intended to advance people in special areas and experiences such as nature field education (Article 91). Autonomous high schools (both private and public) can offer school or education courses independently (Articles 91.3; 91.4). These schools are granted greater autonomy in designing their course curriculums, in return for maintaining a higher level of financial independence. [3] Most middle school students choose to go to general high schools that are focused on everything from a general education through various academic fields. More specifically, these schools do not specialize in a field, but rather, they focus on sending students to university.

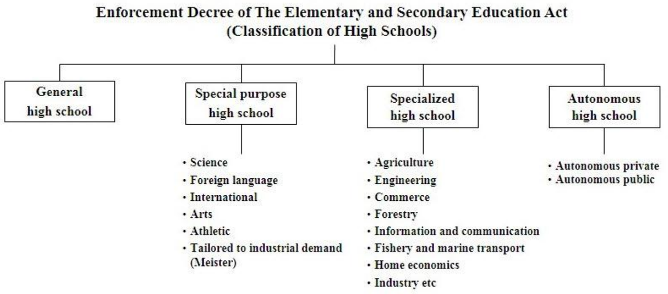

Figure 1: Classification of Korea's High Schools

Variables and Descriptive Statistics

The city of Seoul has been selected as the study area. Seoul is the capital and central area of South Korea, with a population of 10.3 million and 2.7 million housing units as of 2015. Among them, about 1.6 million units (59.3%) are apartment type indicating that major type of housing in Seoul is an apartment. This is one of the main reasons that this study adopts the apartment as a target. The other reason includes that resale prices of the apartment are easy to obtain through the Ministry of Land, Infrastructure and Transport (MOLIT) as well as private institutions providing services for the real estate transaction.

The variables used to analyze the influence of high school types on housing (apartment) prices are shown in Table 1. For housing prices, the dependent variable—the actual market prices of apartment units publicly announced by the MOLIT for the second quarter of 2014—are used. During this period, 14,778 units were sold, and data for 11,799 apartment units were used for this study. This did not include units for which only incomplete data were available. Distribution of sample houses (hereafter apartments) and high schools by type in the target area are shown in Figure 2.

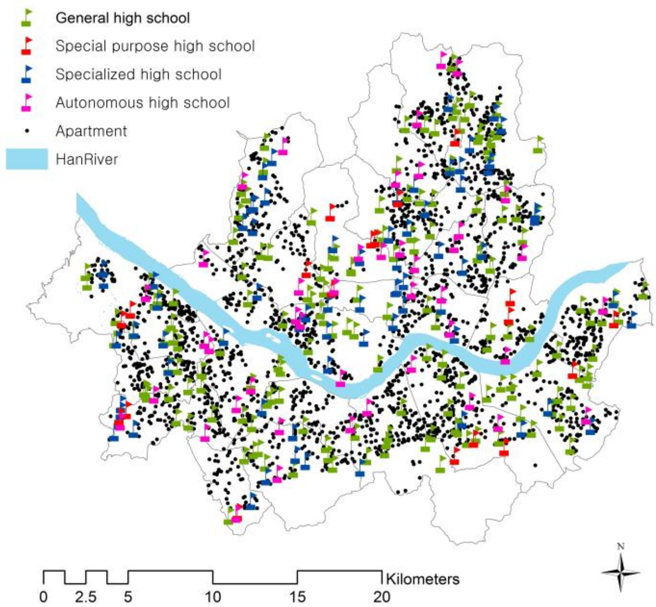

Figure 2: Distributions of Sample Apartments and High schools[4]

The independent variables include apartment and apartment-complex characteristics, accessibility to amenities, and school type characteristics. For school type characteristics, which are the important variables, the types of high schools located nearest to the apartments are treated as dummy variables, under the assumption that high schools located nearer the apartments would have a greater influence on apartment prices than the schools located further away. The special purpose high schools (SP_SCHOOL), which are expected to be the most preferred type, according to previous studies, are used as a reference variable for the analysis.

Descriptive statistics are also shown in Table 1. For the dependent variable (apartment resale price), the minimum is KRW 80,000,000, the maximum is KRW 5,065,000,000, and the average price is about KRW 443,000,000. The average floor space in the apartments used for data analysis is about 100 m^2. The average number of rooms in each apartment was 2.93, which is about three rooms. The average distances to the nearest subway station entrance and the nearest high school are 629 m and 611 m, respectively, and this indicates that subway stations and high schools are located relatively close to the apartments.

[3] Autonomous schools expanding school choice is a worthy goal. The *Korea Herald* (2013, August 20).

[4] In Seoul, 183 general high schools, 20 special purpose high schools, 71 specialized high schools, and 44 autonomous private high schools were operating as of 2014, and they were used for this empirical analysis.

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Table 1: Variables and Descriptive Statistics

Variable	**Label**	Min.	Max.	Mean	Std. Dev.
Dependent Variable					
APT	Apartment Sale Price (KRW 10,000)	8,000	506,500	44,261	29,979.28
Independent Variables					
Apartment Characteristics					
FLOOR	Floor Space (㎡)	17.09	540.18	100.85	32.96
ENT	1 if the Apartment entrance is stair type, 0 otherwise	0	1	0.67	0.47
BED	Number of Bedrooms	1	6	2.93	0.69
STORY	Number of Story	1	66	9.10	5.99
Apartment Complex Characteristics					
AGE	Apartment Age	0	45	15.87	7.90
HEAT	1 if Individual Heating, 0 otherwise	0	1	0.63	0.48
PARKING	Parking Availability per Household	0.04	10.53	1.12	0.47
Accessibility to Amenities					
SUBWAY	Distance to the Nearest Subway Station (m)	18.24	3,523.54	628.84	439.46
HSCHOOL	Distance to the Nearest High School (m)	7.79	2,971.84	611.76	346.69
High School Type					
SP_SCHOOL (Reference)	1 if the nearest high school is a special purpose high school, 0 otherwise	0	1	0.03	0.17
A_SCHOOL	1 if the nearest high school is a autonomy private high school, 0 otherwise	0	1	0.13	0.33
G_SCHOOL	1 if the nearest high school is a general high school, 0 otherwise	0	1	0.64	0.48
S_SCHOOL	1 if the nearest high school is a specialized high school, 0 otherwise	0	1	0.20	0.40

The results of spatial autocorrelation measurements using Global Moran's I statistics and LISA (Local Indicators of Spatial Association) which measures level of association at the local level are shown in Figure 3. The Global Moran's I statistics summarize and show overall cluster tendencies of similar values observed within the research area as an index, and LISA could determine the significance of spatial clustering that has similar values in an area, as well as extracting local cluster areas and exceptional areas.

The spatial autocorrelation of apartment prices identified using Global Moran's I statistics showed a relatively high positive (+) spatial autocorrelation of 0.84. Examining spatial autocorrelation at the local level, the HH (High-High) type, meaning that high apartment resale prices are clustered near high resale price areas, is seen in Gangnam-gu, Seocho-gu, and along the banks of the Han River, as shown in Figure 3, while the LL (Low-Low) type, meaning that lower apartment resale prices are clustered near the lower resale price areas, are found in Dobong-gu, Nowon-gu, Guro-gu, and Geumcheon-gu. The LH (Low-High) and HL (High-Low) types indicate unusual cases for explaining spatial autocorrelation.

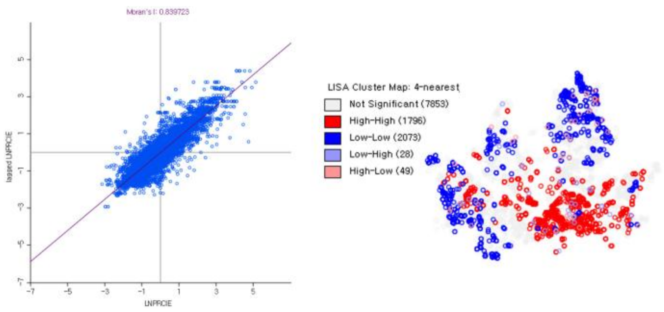

Figure 3: Results of Global Moran's I Statistics and LISA

EMPIRICAL ANALYSIS

For the empirical analysis, this study first examines model fitness, by comparing the Log likelihood, Akaike Info Criterion, and Schwarz Criterion. The Log likelihood value of –2652.24 in the HMP increased to 1034.27 and 3130.29 in SLM and SEM respectively, and the Akaike Information Criterion (AIC) decreased from 5330.48 to –2040.55, and –6234.59, and SC decreased from 5426.36 to –1937.28, and –6138.70. Based on model suitability, the SEM could be determined to be the most appropriate model. Therefore, this study will mainly interpret and discuss the results of SEM. Through the condition number and VIF (Variance Inflation Factors), all the variables are less than 10, meaning that it is confirmed that there is no critical multicollinearity problem associated with the empirical models (O'Brien, 2007).

The empirical results, based on HPM, SLM, and SEM, are shown in Table 2. For apartment and complex characteristics, it is found that when the floor space (FLOOR) is increased by 1 square meter, the apartment price is increased by 0.7%, and that the apartment price is 11.3% higher when the front entrance (ENT) is a stair-type. The price of apartments with individual heating systems is found to be –24.1% lower than apartments with central or local heating, and that the price drops by –0.2% per year. These results are consistent with those of previous research that used the same variables.

The results also show that accessibility to amenities, such as subways and high schools, have a negative impact on the price of an apartment, indicating that the price drops as distance to the amenities increases. Although the price impact does not have as great an effect as other characteristics, these results are also in line with many previous study findings.

With regard to school type characteristics, which are the key variables of this study, it is found that if the nearest school is a specialized high school, apartment resale prices decrease by 21.2%, compared to when the nearest school is a special purpose high school. Autonomous high schools and general high schools are also found to have a negative impact on apartment prices compared to special purpose high schools of about -8.9% and -10.3% respectively.

Table 2: Empirical Results of Spatial Hedonic Price Analyses

Variable	HPM	SLM	SEM	VIF
Constant	9.697***	4.165***	9.863***	
		Apartment Characteristics		
FLOOR	0.007***	0.006***	0.007***	3.437
ENT	0.172***	0.083***	0.113***	1.482
BED	0.079***	0.04***	0.043***	2.856
STORY	0.003***	0.003***	0.004***	1.068
		Apartment Complex Characteristics		
AGE	-0.003***	-0.001***	-0.002***	1.461
HEAT	-0.177***	-0.099***	-0.241***	1.226
PARKING	0.133***	0.010*	0.117***	1.667
		Accessibility to Amenities		
SUBWAY	-2E-05***	-9E-05***	-2E-04***	1.027
HSCHOOL	-2E-04***	-1E-05**	1E-05	1.027

		High School Type		
SP_SCHOOL	Reference	Reference	Reference	
A_SCHOOL	-0.086***	-0.064***	-0.089***	4.582
G_SCHOOL	-0.088***	-0.045***	-0.103***	8.088
S_SCHOOL	-0.216***	-0.09***	-0.212***	6.247
ρ		0.549***		
λ			0.746***	
R^2	0.635	0.815	0.619	
log likelihood	-2652.24	1034.27	3130.29	
AIC	5330.48	-2040.55	-6234.59	
SC	5426.36	-1937.28	-6138.7	

***P<0.1, **P<0.05, ***P<0.01**

The order of influence is special purpose high schools, autonomous high schools, general high schools, and specialized high schools. This shows that people's understanding of different types of high schools is obviously discriminatory, and affects apartment resale prices negatively, if the nearest high school is not a special purpose school. Typically, the drastic discount impact reveals people's general perceptions of the specialized high school compared to their perceptions of other types of high schools. When considering the impacts of high school accessibility and high school types on apartment resale prices at the same time, although people are generally pleased to live close to a high school, there are people who reject particular types of high schools.

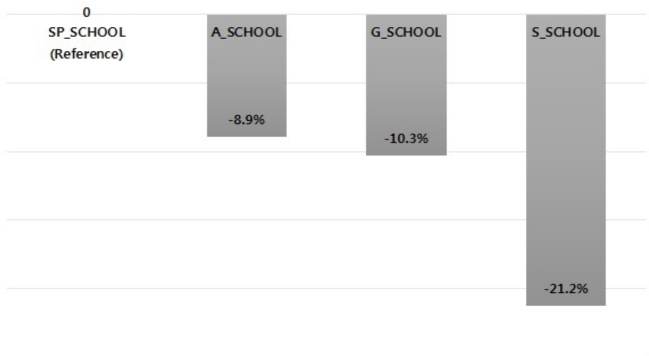

Figure 4: Impacts of High School Types on Apartment Prices (SEM Model)

CONCLUSION AND DISCUSSION

In many studies, schools are used as an index to measure the educational environment, and are recognized as a facility that positively influences housing prices. In fact, various research results show that the closer residential housing is to schools, the higher the housing prices, which supports this understanding. The empirical analysis conducted for this study also supports this finding.

However, as a result of recent trends in overall social environmental changes related to students and schools, such as rapid increases in the number of students that have committed violent crimes, residents are objecting to the relocation of specific types of schools. Moreover, the increased chance of contiguity between housing and schools due to the growing number of schools make it necessary to review the results of previous studies.

In that context, it is hypothesized that it would be important to find out, "how close is the school," and "what type of school is it," when considering which schools are to be located in residential areas, and when comparing and analyzing the influence of different high school types on housing, specifically apartment resale prices.

In summary, with regard to the relationship between high school types and apartment resale prices, this study gives three main findings. First, different types of high schools have significant impacts on apartment resale prices. Specifically, people's understanding of different types of high schools is discriminatory, and so affects apartment resale prices dissimilarly. Second, if the high school nearest an apartment is a special purpose high school, it will have the most positive influence on resale prices of all the high school types. Third, if the high school closest to the apartment is a specialized high school, it will have a relatively negative influence on apartment prices, compared to the influence of other types of high schools.

From residents' attitudes that welcomed the establishment of special purpose high schools, but opposed the establishment and relocation of specialized high schools, differences in residents' preferences, according to the type of high school, are found, and, through the analysis conducted in this study, it is found that such differences in preference are influencing the price of housing. Among different types of high schools, it is found that specialized high schools have relatively negative impacts on housing prices.

The results of this study indicate that instead of considering residents' objections to the location of certain types of high schools, it is necessary to find policy measures that can resolve conflicts using policy considerations to inform people about the purpose of specialized high schools, namely, that they aim to cultivate people in specific areas, by educating students in ways that develop their talents and aptitudes, and to publicize successful examples.

A limitation of this study is that it only considers one city, Seoul Metropolitan City, in Korea, and hence one has to be cautious when generalizing the findings. Further study is needed to determine whether the order of magnitude of these impacts is equally strong elsewhere in Korea. The other possible limitation is that although many housing and neighborhood environments affect apartment resale prices, this study considers only some of these characteristics, which have been proven to be important variables in the literature. Future studies, therefore, will include additional data, to achieve higher statistical reliability.

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