An Analysis on Rent Determinants of Retail Property
- Focusing on Wholesale and Retail Services -

Jihye, Han and Kabsung, Kim

Abstract— The Purpose of this study is to analyze the determinants of rental price of retail properties. To be specific, the study will look into more general rent determinants of stores by expanding its spatial extent to 7 metropolitan cities in Korea, which is relatively wide research range compared to precedent studies in the country. Also, the study analyzes the differences in the determinants of rental prices between the wholesale and retail services and other businesses through estimating hedonic price model. For this, the data holding the distance from nearest subway station and bus stop, the types of business and others for each retail property is used. The result of the analysis suggests interesting features of retail property’s determining factors of rental price as follows. In general, an improvement in horizontal accessibility raises store’s rental price, and the vertical accessibility such as location floor develops different level of rent. The growth of building age and the number of elevators provokes the increase effect on the rent, while the gross area of parking lot allocated to 1m’ of rent area has a negative effect on it with increasing marginal effect. However, not all of these determinants explain the difference between the rental price of stores occupied by wholesale and retail services and that engaged in the other businesses. Except for the factors related to the area of parking lot per rental unit, all the other factors have been analyzed to account for the difference.

Keywords— Rent, Rent Determinants, Retail Property, Hedonic Price Model, Wholesale and Retail Services

I. INTRODUCTION

Commercial activity is one of the elements that form urban activity, so there are a variety of researches with respect to commercial activity, such as the formation and the range of business district, the scale of commercial facilities, and consumer shopping behavior. However, only the study on rent determinants has been undertaken restrictively on account of the difficulty in collecting research materials. The factors that influence the rental price of retail property have quite piecemeal characteristics and their spatial extents are relatively diverse and wide. On the other hand, data is not yet that specifically constructed because both lessor and lessee show repulsive attitudes toward making rental price and property’s characteristics of every kind public.

Nevertheless, an analysis on rent determining factors of retail property is worth studying in the way that it enables proper planning of the business area based on understandings of micro and macro commercial activities and helps directly to analyze property’s profitability. Against this backdrop, this study empirically analyzes determinants of retail property’s rental price for the purpose of partially contributing to understand value formation elements of the retail property. To be specific, the major study objects are identifying general determining factors of retail rent and on that basis analyzing difference in the rent caused by whether the property is used for wholesale and retail services or not.

The retail property is occupied by various types of business, such as wholesale and retail services, food and lodging industry, educational services, health services, and personal services, but this study focuses only on one type of business, the wholesale and retail services. This is because of the limitation the model itself has. The model is designed to identify the difference in rent determinants by dummy variables, which is quite distinct from precedent studies. However, the design of the model with dummy variables and its interaction terms costs the model’s degrees of freedom by increasing number of independent variables. Therefore, for the reliability of the model, it has to be avoided to include all types of business as dummy variables. In addition, the reason for focusing especially on wholesale and retail services is that the industry is the end point of production and distribution and the start point of consumption at the same time. In other words, since it is the target of social interests, the analysis of rent determinants of retail property focusing on the wholesale and retail services is expected to play a pivotal role for understanding commercial activities in both of micro and macro dimensions.

II. LITERATURE REVIEW

In Korea, it is quite rare that research is on identifying determining factors of the retail property, so is the study on specific category of retail property. The previous studies have in common that their spatial extents are strictly restricted within commercial facilities in Seoul and in apartment complex. Particularly, because the studies estimated the model in the way of classifying the data into types of business, business districts, and regions, they investigated only the structure of rental price of each class not the difference in rental price and its
determinants between the classes. In this respect, this study is significant in the sense that it is looking for the difference in the rent and its determinants driven from the property’s type of business.

Chanho Kim et al.(2001) made a close inquiry into decision principle of store usage by explaining location characteristics and rental price. They identified determining factors using hedonic price model and conducted integrated analysis on five types of usage taking note of vertical location of commercial facilities. To be concrete, the study reinterpreted determining process of rental price in terms of the store’s accessibility and space preference and willingness to pay for it. As results, the rental price goes up as the area of property increases and as the number of stores in the same industry on the same floor increases. It also increases if the retail property is not on the corridor, which is easy to approach, but if not, the rental price decreases. In the aspect of vertical accessibility, the higher the store is located on, the lower the rent is formed.

Jaewoo, Lee et al.(2006) carefully examined the structure of retail property’s rental price in Seoul and that of each business district in the capital on the basis of data collected from buildings with more than three floors located in the heart of a city. The study is unlike Kim’s in the way that it estimated the model for each business district where the novelty comes from. As a result of an analysis, the store’s located floor is the only factor that affects rental price of the retail property in the same direction in every business district analyzed. On the other hand, the impact of conditions of location and building characteristics on the rent is quite distinct from district to district.

The study, such as Kim’s that focus on local area and Lee’s that restrict the research area only to downtown, is worth researching because it catches otherness in the specific region or business district. However, estimation of more general model by expanding the range of spatial extent, for example, the research of Jongeun, Lee et al.(2008), can be more helpful to understand significant determining factors of rental price. Jongeun, Lee et al.(2008) used the data collected from 16 cities and provinces in Korea, thereby the study apprehended the difference generated between two region(metropolitan area and the rest). Moreover, it suggested that the general rent determinants of the retail property are building coverage, ratio of floor area to site, rentable space, land value, the number of stories, the distance of the subway station from the store, the width of the road the store bordered on, and the direction of the window etc.

III. MODEL AND VARIABLES

A. Data

The analysis data used in this study is the Survey on Rented Examples of Commercial Properties gone along by the Ministry of Land, Transport and Maritime Affairs and Korea Appraisal Board at the first quarter in 2011. The object of the study is 12,559 stores located in 2,000 buildings in 7 regional central cities in Korea.

B. Model and Variables

The examination of previous studies shows that the Hedonic Price Model is widely being used in measuring real estate value and in market analysis studies. The hedonic price model focuses on investigating the factors that determine rent based on a specific timeframe. The model is especially useful in confirming the influence of new factors, which had previously been unknown, such as the environment surrounding an office, on the rental fee.

Hedonic price model is derived by using the nominally observed price of goods and the quantity of characteristics. By regressing the price of goods on the quantity of characteristics, the hedonic price model is estimated. The estimated model can be expressed as a functional formula as follows. The formula classifies determining factors of retail rent into characteristics of area($A_j$), location($L_j$), building($B_j$), and rent unit($T_j$).

$$ R_j = f(A_j, L_j, B_j, T_j) $$

What is important for the selection of location in the case of retail shop is profitability and accessibility according to Christaller’s Central Place theory and Nelson’s location theory. Therefore, the elements that influence the selection of location are how far from the rivals, the region’s population composition, travel patterns of consumers, availability of parking lot, residents attitudes and so on. Moreover, the theories contend that lessees call for the retail properties with high profitability and accessibility, whereupon high rental price is formed. In this context, this study presumes that the factors significant to retail property’s selection of location are the factors that determine the level of rental price, so it used some of elements proposed by the theories as explanatory variables. Variable definitions for the data used in the analysis are provided in Table I.

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<thead>
<tr>
<th>TABLE I</th>
<th>VARIABLES FOR ANALYSIS</th>
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<tr>
<td>Category</td>
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<tr>
<td>Dependent Variable</td>
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<td>Conditions of location</td>
<td>SUB_INF</td>
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<td>N_ELEV</td>
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<td>PKLOT_AREA</td>
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<td>Characteristics of rental unit</td>
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IV. ANALYSIS RESULTS

A. Descriptive Statistics of Variables

Descriptive statistics of variables are shown in Table II. From this, it can be confirmed that whether operational defining is gone right, and the characteristics of the data can be grasped. The stores that are engaged in the wholesale and retail services are counted up to 2,003 and the stores engaged in other industries are summed to 10,556. About 57% and 55% of wholesale and retail services and other industries respectively are analyzed to be located in Seoul.

The asking rental price per m² is 52,718 won in average for wholesale and retail services and as for other industries is 20,123 won, so the rental price of the property occupied by wholesale and retail services are higher than other industries averagely. It is also same for building age and the area of parking lot. In case of the number of elevators, wholesale and retail services show a tendency to locate in the building with 0.29 elevators on average and other industries does so in the building with 0.39 elevators, so other industries seem to take place in the buildings that are more convenient to use. In the aspect of horizontal accessibility, the stores within 200m from the subway station are 45% of wholesale and retail services and 43% of other industries. The number of cases that the size of frontage is bigger than middle-sized road takes up 63% of wholesale and retail services and 51% of other industries. As for the aspect of vertical accessibility, 64% of the stores engaged in wholesale and retail property analyzed to be averagely located on the first floor, 11% on the second floor, 9% on the third floor, 9% on the fourth floor, and 7% on the basement, and 19%, 19%, 20%, 29%, 13% of the stores engaged in other industries are located on the first, second, third, fourth, and basement respectively as listed in order.

Overall, all the mean values of the variables related to wholesale and retail services present a contrast to those of other industries. Therefore, it can be expected that the difference between the rental price of wholesale and retail services and that of other industries is caused by the difference in the characteristics of the store for each group.

B. Result of Analysis of Variance

An analysis of variance has been conducted for the purpose of confirming whether the difference in the characteristics of the retail property and its rental price between the industries, wholesale and retail services and other industries, which was detected when descriptive statistics of variables are looked through. The results are shown in Table III. According to the results, the difference in retail rent is statistically significant in 1% level, and the differences in all the factors included in the model except for the variable that reflects whether the store is located within station influence area or not are analyzed to be statistically significant at 10% level.

C. Estimation results

Not classifying the stores into two groups, one for wholesale and retail services and the other for other industries, the model(1) explains what the retail property’s general rent determinants are and how much and in what direction they have an impact on rental price. The results are presented in Table IV. To be specific, in the aspect of regional characteristic, if the store is located in Seoul, the rental price of the retail property is estimated to enjoy 80.3% of synergistic effect more than the one that is located in other than Seoul. As for the conditions of location, if the retail property is situated within a radius of 200m from the nearest subway station, 8.6% higher rental price is formed than if not. And if the width of the road bordered on the store is larger than middle-sized road, the level of retail rent is 3.0% higher than if otherwise.

The dummy variables that are defined to explain how vertical accessibility has an effect on retail rent are estimated to most powerfully influence the formation of the rent. Compared to the store located on the first floor, the one on the second floor...
positive way. If the variable increases as much as its one unit, price. The number of elevators also influences the rent in a building age has a positive effect on rental price. Concretely, As one of the variables that represent building characteristics, retail rent is built.

dissimilarly depending on how accessible the store is in a level of retail rent. In other words, the rental price is formed 130.8%, and the one on the basement presents 126.3% lower third floor presents 111.6%, the one on the fourth presents shows 85.9% lower level of rental price, while the one on the second floor, third floor, fourth floor, and basement, high-level compared to the one on the other floors, and in the order of occurrence, so the magnitude of parking lot built in the building may be not that significant determining factor of the retail property. Actually, since too many cars are used when renting. As one of the variables that represent building characteristics, building age has a positive effect on rental price. Concretely, property. Therefore people seem to prefer stopping by to parking.

In order to see how the type of business causes the difference in rent determinants of the retail property, the dummy variable, which has the value of 1 if the business type is the wholesale and retail services and the value of 0 if otherwise, is additionally included in the model as an additive form and multiplicative form(Model II). The results can be seen in Table IV. However, unfortunately, the interaction term that is the multiplicative form of business dummy and building age could not be included in the model II, because it causes relatively severe problem of multi-collinearity in the model. In fact, it is estimated that all parts of the interaction term can be explained by the other explanatory variables based on VIF.

According to the results of the estimation, except for the variables related to parking lot(building age), all the variables are analyzed to play a role as factors that explain the gap in the level of rental price between the types of business.
Note: *, **, *** are statistically significant at 10%, 5%, 1%, respectively

Industries. And if the distance from the nearest subway station located in Seoul, the rental price is 74.9% higher than the one in the nearest subway station.

However, some of the variables are analyzed to be more sensitive rent determinants for the retail property occupied by wholesale and retail services and to that of other industries, specifically having a negative impact (-7.4%) on the rent in the case of retail business and a positive impact (2.6%) in the case of other industries.

The rental price of wholesale and retail services notably elastically reacted to the vertical accessibility so that the rent is formed 89.0%, 117.6%, 136.7%, 141.4%, and 152.4% lower if the store is located on the second floor, third floor, fourth floor, and the basement respectively than on the first floor. Lastly, one unit increase in the number of elevators causes 10.8% increase in the rental price of the retail property engaged in wholesale and retail services compared to that engaged in the other industries.

V. CONCLUSION

This study casts a long shadow to us in the respects of analyzing rent determinants, which is the field of the research studied not enough, and particularly looking into the differences in the rental prices between the types of business and that in the characteristics of the property the lessees have in favor of. However, the study has several restrictions. The model used in the study has its limit that it cannot make detailed analysis for each type of business because the number of dummy variables and interaction terms that were going to be included in the model would increase exponentially only to cost the degrees of freedom. Luckily, the size of the sample is sufficiently large so that using the model with only one dummy variable for the types of business and its interaction terms is acceptable in the aspect of reliability of the model. Another limitation of the study is that it doesn’t bother to investigate the cause of the results of empirical analysis thoroughly.

The empirical results of the study implies that first, when selecting the retail property for the purpose of investing or operating retail business, conditions of location is the most important factor the investor or operator should consider. Notably, vertical accessibility of the store should come up for in priority based on the results that the location of the store, specifically on what nth floor the store is located on, causes a large margin on rental prices. Second, the study suggests that since each type of business has dissimilar structure of rent determining process, understanding and analyzing determining factors of rental price for each of them is surely required.

REFERENCES