Housing Price Indices Trends & Changes of Gangbuk and Gangnam in Seoul

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Abstract

Recently Seoul real estate market is showing a polarization divided into Gangbuk and Gangnam. The real estate price increase in Gangnam is relatively higher than that of Gangbuk. In this study, HPPCI and Seoul, Gangnam, and Gangbuk Real Estate Index were used. Also in Gangbuk, Northern-3gu was designated as Dobong-gu, Gangbuk-gu and Nowon-gu where the rate of increase is relatively low and in Gangnam, Southern-3gu was selected as Seocho-gu, Gangnam-gu and Songpa-gu where the rate of increase is relatively high. These indexes were collected from Kookmin Bank real estate website. The analysis period is 377 months from January 1986 to May 2017 for HPPCI and Seoul, Gangnam and Gangbuk Real Estate Index. The purpose of this study is to compare real estate price trends in Gangnam and Gangbuk with HPPCI and SEOUL and to predict future changes. The analysis period was 377 months from January 1986 to May 2017. Since 2011, the rate of change in each indicator has been decreasing until recently, and the possibility of new change is increasing in the near future. In the monthly descriptive statistics, Gangnam was appeared higher than Gangbuk. Therefore, Gangnam is considered to
have a 'high rise, high risk' compared to Gangbuk. According to the analysis, Gangnam has a phenomenon of 'high profit and high risk' and Gangnam is expected to show differentiated growth unlike Gangbuk for the time being.

**Key Words**: Housing purchase price composite indices, Seoul City, Gangnam, Gangbuk, Real estate

1 INTRODUCTION

The purpose of this study is to compare real estate price trends in Gangnam and Gangbuk with HPPCI and SEOUL and to predict future changes. The analysis period was 377 months from January 1986 to May 2017. The reason why Seoul real estate attracts high interest is because most infrastructures such as famous University, general hospital, performing arts center, advanced department store are concentrated in downtown and Gangnam area.

Gangnam is the warmer part of an ondol floor of the Korean real estate market. In general, the ondol effect, which warms the upper part of an ondol floor when the warmer part of an ondol floor warms, has not appeared in recent years. As Gangnam real estate prices rose in Seoul, Gangbuk increased later but recently Gangnam and Gangbuk move separately.

As current liquidity flows into rising regions, decoupling phenomenon is appearing in Gangnam and Gangbuk and it is expected to be stronger in the future. For this reason, Seoul real estate prices are showing a polarization in recent years. The rise in real estate prices in Gangnam is higher than in Gangbuk. In this study, we try to predict future changes through various analysis of Gangnam and Gangbuk.

2 PRECEDENT RESEARCH

The difference between living environment, department store, school and elderly general welfare center of Gangnam and Gangbuk was studied to affect the price of real estate(M. J. Cho, et al., 2016, G. Y. Kim & M. S. Choi, 2013). In addition, Gangnam and Gangbuk analyzed that there are differences in terms of cultural aspects

We examined the empirical study on the influence of macroeconomic variables on the Gangnam-3gu and Gangbuk-3gu (H. H. Kim & M. S. Choi, 2015). In addition, I looked for the determinants of apartment prices in Gangnam and Gangbuk areas (J. S. Lee & J. H. Jo, 2010) and Investigate the change of sale and lease price of real estate in Gangnam and Gangbuk (Y. G. Seo, 2008). There are a study on land price gap between Gangnam and Gangbuk in Seoul (S. Hur & S. W. Lee, 2008) and the study of youth and regional culture in Gangnam and Gangbuk (G. Y. Jang, 2013).

3 DATA COLLECTION AND SEOUL REAL ESTATE TREND

A. Data Collection

In this study, HPPCI and Seoul, Gangnam, and Gangbuk Real Estate Index were used. Also in Gangbuk, Northern-3gu was designated as Dobong-gu, Gangbuk-gu and Nowon-gu where the rate of increase is relatively low and in Gangnam, Southern-3gu was selected as Seocho-gu, Gangnam-gu and Songpa-gu where the rate of increase is relatively high. These indexes were collected from Kookmin Bank real estate website. The analysis period is 377 months from January 1986 to May 2017 for HPPCI and Seoul, Gangnam and Gangbuk Real Estate Index.

And the real estate indices of Dobong-gu, Gangbuk-gu, Nowon-gu, Seocho-gu, Gangnam-gu and Songpa-gu are 165 months from September 2003 to May 2017. For the sake of convenience, housing purchase price composite indices is used for HPPCI, Gangnam for southern in Seoul and Gangbuk for northern in Seoul. The data of the main indicators were obtained descriptive statistics and correlation analysis, normal distribution, Q-Q distribution, scatter distribution using e-views, SPSS, Excel.
B. Real estate trends of Northern and Southern in Seoul

[Figure 1] shows the growth trends of Korea, Seoul, Northern and Southern over the period of 377 months from January 1986 to May 2017. During the analysis period, the rate of increase is high in the order of Southern, Seoul, Korea and Northern. Over time, the gap between Southern and Northern is increasing.

[Figure 2] shows the monthly trends of Korea, Seoul, Northern and Southern over the past 377 months from January 1986 to May 2017. So the variation of Southern is larger than that of Northern. Until recently, the rate of change in Korea, Seoul, Northern and Southern has been declining since 2011, and new changes are likely to take place in the near future.
Figure 3: Growth Rate Trend: Korea, Seoul, Northern-3gu, Southern-3gu

[Figure 3] shows the growth rate of Korea, Seoul, Northern-3gu, and Southern-3gu during 165 months from September 2003 to May 2017. It can be seen that between the years 2005-2008, Southern-3gu rises first, followed by Northern-3gu. Since 2013, Korea, Seoul, Northern-3gu and Southern-3gu have converged in a transverse direction, recently Southern-3gu has been showing an upward trend and it is gradually differentiated.

Figure 4: MoM Change trend: Korea, Seoul, Northern-3gu, Southern-3gu

[Figure 4] shows the monthly return trends of Korea, Seoul, Northern-3gu, and Southern-3gu over the period of 165 months from September 2003 (= 0) to May 2017. In general, Southern-3gu has shown a significant change, but the rise of Northern-3gu, which showed a rise in the center of small apartments in 2008, is noticeable. Since 2011, the volatility of Korea, Seoul, Northern-3gu and Southern-3gu has converged, and the possibility of change is expected soon (J. I. Choi and O. K. Lee, 2013).
4 EMPIRICAL ANALYSIS

Indicator Analysis

Monthly descriptive statistics are classified into Korea, Seoul, Northern, and Southern in Table 1. The average of each was in the order of Southern 0.75%, Seoul 0.50%, Korea 0.46%, Northern 0.29%. Each standard deviation was in the order of Southern 2.37, Seoul 1.64, Korea 1.23 and Northern 1.16 and Southern appeared to be 'high return and high risk' compared to Northern. The range was Southern 25.11% and Northern 17.20%, so Southern showed wider fluctuation than Northern.

<table>
<thead>
<tr>
<th>TABLE I DESCRIPTIVE STATISTICS</th>
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<tbody>
<tr>
<td>Korea</td>
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<tr>
<td>-------</td>
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<tr>
<td>Average</td>
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<tr>
<td>Median</td>
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<tr>
<td>S. D.</td>
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<tr>
<td>Kurtosis</td>
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<tr>
<td>Skewness</td>
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<tr>
<td>Range</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Confidence Level(95%)</td>
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</tbody>
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<tr>
<th>TABLE II CORRELATION ANALYSIS 1 - KOREA, SEOUL, NORTHERN, SOUTHERN</th>
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<tbody>
<tr>
<td>Korea</td>
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<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Korea</td>
</tr>
<tr>
<td>Seoul</td>
</tr>
<tr>
<td>Northern</td>
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<tr>
<td>Southern</td>
</tr>
</tbody>
</table>
Correlation analysis was conducted to identify the first relationship of Korea, Seoul, Northern and Southern. <Table 2> shows the correlation analysis for the past 377 months and Seoul has a higher correlation with Southern(0.96) than Northern(0.92).

**TABLE III CORRELATION ANALYSIS 2 - KOREA, SEOUL, NORTHERN 3GU, SOUTHERN 3GU**

<table>
<thead>
<tr>
<th></th>
<th>Korea</th>
<th>Seoul</th>
<th>Northern 3gu</th>
<th>Southern 3gu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>1</td>
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<td></td>
<td></td>
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<tr>
<td>Seoul</td>
<td>0.9021</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern 3gu</td>
<td>0.6992</td>
<td>0.8084</td>
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<td></td>
</tr>
<tr>
<td>Southern 3gu</td>
<td>0.7709</td>
<td>0.8416</td>
<td>0.4248</td>
<td>1</td>
</tr>
</tbody>
</table>

Correlation analysis was conducted to identify the first relationship of Korea, Seoul, Northern-3gu and Southern-3gu. <Table 3> shows correlation analysis for the past 165 months. The correlation coefficient between Northern-3gu and Southern-3gu is 0.4248, which is relatively low, suggesting differentiated movements.

**Figure 5: Normal Distribution - Korea, Seoul, Northern, Southern**
The normal distribution of returns of Korea, Seoul, Northern and Southern is shown in [Figure 5] over the last 377 months. In the above picture, Southern is higher than Northern, showing broader range of return.

Figure 6: Scatter Distribution - Seoul, Northern, Southern

Scatter distribution of Northern and Southern versus Seoul is shown in [Figure 6]. Both Northern and Southern is distributed in the lower left to upper right and it is moving in the same direction as Seoul overall. The distribution of Southern is distributed relatively better than that of Northern(O. K. Lee and J. I. Choi, 2014)

Figure 7: Quantile-Quantile - Korea, Seoul, Northern, Southern

[Fig. 7] shows the Monthly Quantile-Quantile plot of Korea, Seoul, Northern and Southern. The figure shows the output data of each indicator centered on a 1:1 line (red line). In the case of Southern, it is moving closer to the red line than Northern.
The Box-Plot of Korea, Seoul, Northern and Southern represent in Fig. 8. In the case of Northern, it can be seen that there are a large number of temporary anomalies(*). However, Southern(-10~20) shows wider variation than Northern(-6~8). As Southern real estate prices rose in Seoul, Northern increased later but recently Southern and Northern move separately. As current liquidity flows into rising regions, de-coupling phenomenon is appearing in Southern and Northern and it is expected to be stronger in the future. For this reason, Seoul real estate prices are showing a polarization in recent years.

5 CONCLUSION

In this study, the real estate price trends in Gangnam and Gangbuk were compared with the HPPCI and Seoul. In the past 377 months, the rate of increase was higher in the order of Southern, Seoul, Korea, and Northern and the gap between Southern and Northern increases over time. During the last analysis period, the rate of change in Southern was larger than that in Northern.

Since 2011, the rate of change in each indicator has been decreasing until recently, and the possibility of new change is increasing in the near future. In the monthly descriptive statistics, Northern(average 0.75% and S.D 2.37) was appeared higher than Northern(0.29% and 1.16). The range also showed a wider variance compared to Northern 17.20 with Southern 25.11. Therefore, Southern is considered to have a 'high rise, high risk' compared to Northern.

In Scatter Distribution and Quantile-Quantile, Northern was judged to move relatively closer to Seoul than Southern. In cor-
relation analysis between Northern-3gu and Southern-3gu in the last 165 months, the correlation coefficient was 0.4248, and it was judged that they showed differentiated movements. In the future, Gangnam and Gangbuk are expected to show differentiated movements rather than showing a coherent phenomenon at a certain point in time.

References


