Analysis of the Structural Fluctuation of the Permitted Building Areas and Housing Distribution Ratios - Focused on 5 Cities Including Bucheon

Cheon Sik Min, Hyeong Wook Song, Sook Yeon Shim, and Hoon Chang

Abstract—The purpose of this study was to analyze the correlation between permitted building areas and housing distribution ratios and their fluctuation, and test a distribution model during 3 successive governments in 5 cities including Bucheon in reference to the time series administrative data, and thereby, interpret the results of the analysis in association with the policies pursued by the successive governments to examine the structural fluctuation of permitted building areas and housing distribution ratios.

In order to analyze the fluctuation of permitted building areas and housing distribution ratios during 3 successive governments and examine the cycles of the time series data, the spectral analysis was performed, and in order to analyze the correlation between permitted building areas and housing distribution ratios, the tabulation was performed to describe the correlations statistically, and in order to explain about differences of fluctuation distribution of permitted building areas and housing distribution ratios among 3 governments, the goodness of fit test was conducted.

Keywords—The Permitted Building Areas, Housing Distribution Ratios, the Structural Fluctuation.

I. INTRODUCTION

THE government's housing policy includes real estate policy, tax policy, monetary policy, development of new town development plan, new town, and balanced regional development policy. It is "Comprehensive" in the sense that the real estate policies say. These policies directly and indirectly affected the housing market, in addition to structural impact of external factors, IMF social structural phenomena. In this regard, J.S.Ryu, "Study on the Determinants of housing prices and housing occupancy choice", suggesting that the housing market is strongly influenced by the real estate policy [1].

In Korea three governments for five municipalities in conjunction with each propelled by the government on the basis of time-series data for building permits area and housing supply rate policy by interpreting is to explain the structural fluctuations.

Therefore, the purposes of this study are as follows.

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(1) By each government for Building Permits and Housing supply rate correlation

(2) By each government building permit area and cross-correlation analysis between housing supply rate

(3) By each government building permit area and Housing supply rate Trend Analysis

(4) Fitness distribution test conducted by each government Housing supply rate and building permits

This study of Scope of contents, administration major statistics based corrective four cities of Bucheon, Gyeonggi.
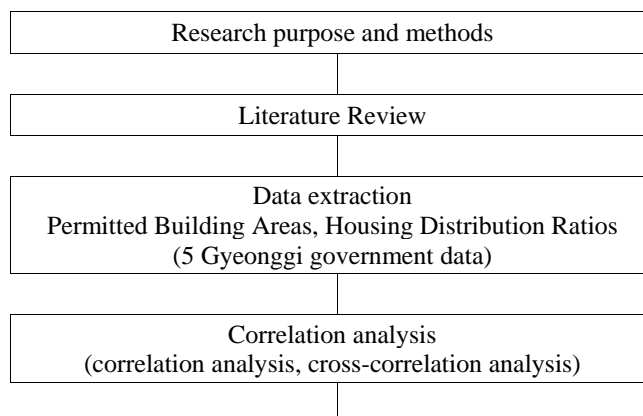
The unit of analysis is classified by the government [Civilian Government (Case1), the government of the people (Case2), participation in government (Case3)] years using time series data.

II. LITERATURE REVIEW

For this purpose, the relevant literature was reviewed focusing on concept of the real estate policies, definition of houses, concept of the housing distribution ratio, housing policies, recent research trend and government's real estate policies centered about housing policies. In particular, types of government's real estate policies and major real estate policies were examined in relation with such yearly issues as real estate real name system, debt to income ratio, sales price ceiling system, extended period for limited resale, composite real estate tax, and so on[2]-[3].

III. METHODOLOGY
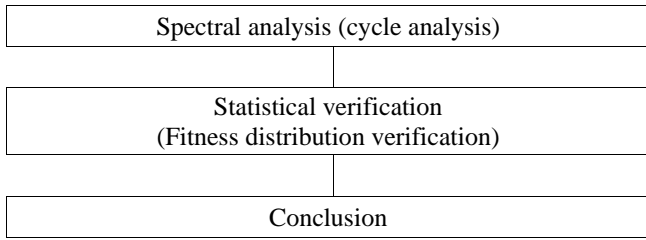
Flowchart of the this study was carried out as Fig. 1

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Spectral analysis (cycle analysis)
Statistical verification (Fitness distribution verification)
Conclusion

Fig. 1 Flowchart of the study

IV. DATA ANALYSIS

In order to analyze the correlation between permitted building areas and housing distribution ratios, the relevant data were encoded using the spread sheet program, while spectral and correlation coefficient analyses were performed using the SPSS statistical program. Furthermore, the statistical distribution of data was calculated with the simulation analysis program ARENA operated for statistical goodness of fit test, correlation, tabulation and spectral analyses of each distribution [4].
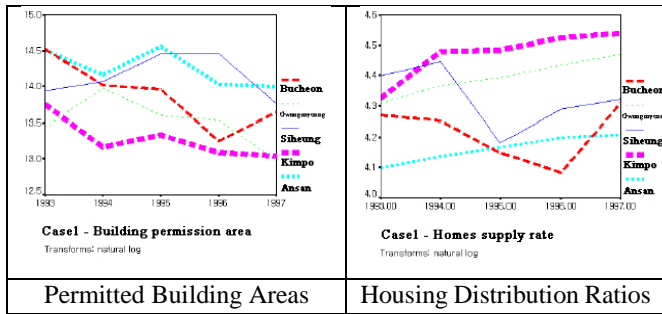
Permitted Building Areas	Housing Distribution Ratios

Fig. 2 (a) Remove Permitted Building Areas and trend of the Housing Distribution Ratios time series trends - Civilian Government (Case1)

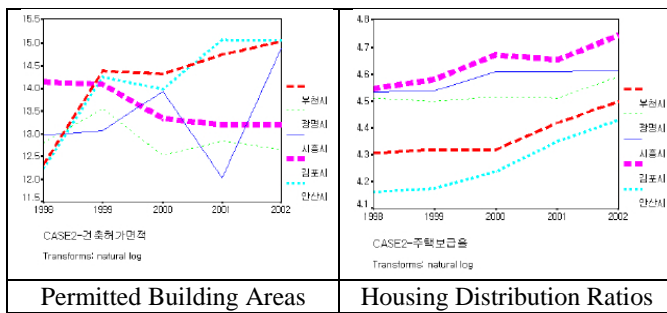| Permitted Building Areas	Housing Distribution Ratios

Fig. 2 (b) Remove Permitted Building Areas and trend of the Housing Distribution Ratios time series trends - the government of the people (Case2)
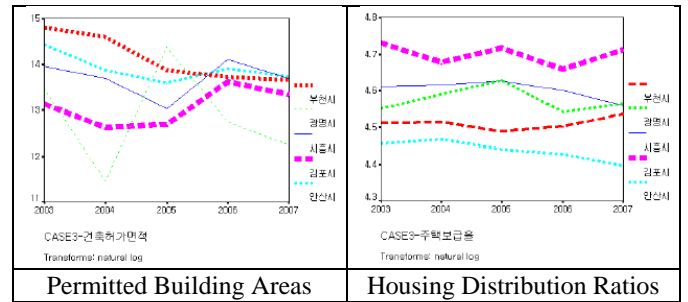
Permitted Building Areas	Housing Distribution Ratios

Fig. 2 (c) Remove Permitted Building Areas and trend of the Housing Distribution Ratios time series trends - participation in government (Case3)

V. ANALYSIS RESULT

A. Correlation Coefficient Analysis

First, as a result of correlation coefficient analysis, it was found that in terms of correlation between permitted building areas and housing distribution ratios, the permitted building areas had increased from Civilian Government to People's Government and from People's Government to Participatory Government, while the housing distribution ratios had decreased. Namely, the correlation between two variables had been "negative." However, both permitted building areas and housing distribution ratios had increased from Civilian Government to Participatory Government or People's Government. Namely, the correlation between two variables was "positive" during this period.

TABLE I
PERMITTED BUILDING AREAS

Bucheon	Case 1	Case 2	Case 3
Case 1	1		
Case 2	-0.89265	1	
Case 3	0.882249	-0.83919	1
Gwangmyeong	Case 1	Case 2	Case 3
Case 1	1		
Case 2	0.82965	1	
Case 3	-0.04851	-0.55171	1
Siheung	Case 1	Case 2	Case 3
Case 1	1		
Case 2	-0.17057	1	
Case 3	-0.06473	-0.00476	1
Kimpo	Case 1	Case 2	Case 3
Case 1	1		
Case 2	0.656511	1	
Case 3	-0.24049	-0.49954	1
Ansan	Case 1	Case 2	Case 3
Case 1	1		
Case 2	-0.86815	1	
Case 3	0.333719	-0.56357	1
5 Cities	Case 1	Case 2	Case 3
Case 1	1		
Case 2	-0.97431	1	
Case 3	0.74862	-0.83421	1

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TABLE II
HOUSING DISTRIBUTION RATIOS

Bucheon	Case 1	Case 2	Case 3
Case 1	1		
Case 2	0.167246	1	
Case 3	0.789505	-0.83919	1
Gwangmyeong	Case 1	Case 2	Case 3
Case 1	1		
Case 2	0.709397	1	
Case 3	-0.07856	-0.1476	1
Siheung	Case 1	Case 2	Case 3
Case 1	1		
Case 2	-0.82334	1	
Case 3	-0.08714	-0.41799	1
Kimpo	Case 1	Case 2	Case 3
Case 1	1		
Case 2	0.799958	1	
Case 3	-0.57922	-0.01769	1
Ansan	Case 1	Case 2	Case 3
Case 1	1		
Case 2	0.923889	1	
Case 3	-0.84049	0.96548	1
5 Cities	Case 1	Case 2	Case 3
Case 1	1		
Case 2	0.92389	1	
Case 3	-0.84049	-0.96548	1

B. Tabulation Analysis

Second, as a result of tabulation analysis, it was found that permitted building areas and housing distribution ratios increased first and then, decreased during Civilian Government, and the tabulation coefficient was largest at the time-lagged value of zero, which suggests that both permitted building areas and housing distribution ratios increased simultaneously. And during People's Government, permitted building areas and housing distribution ratios decreased, increased and then, decreased again. Also, the tabulation coefficient was largest at the time-lagged value of zero, which suggests that both variables fluctuated simultaneously. And during Participatory Government, permitted building areas and housing distribution ratios decreased first and then, increased, and the tabulation coefficient was largest at the time-lagged value of +2, which means that the permitted building areas preceded the housing distribution ratios by 2 cycles.
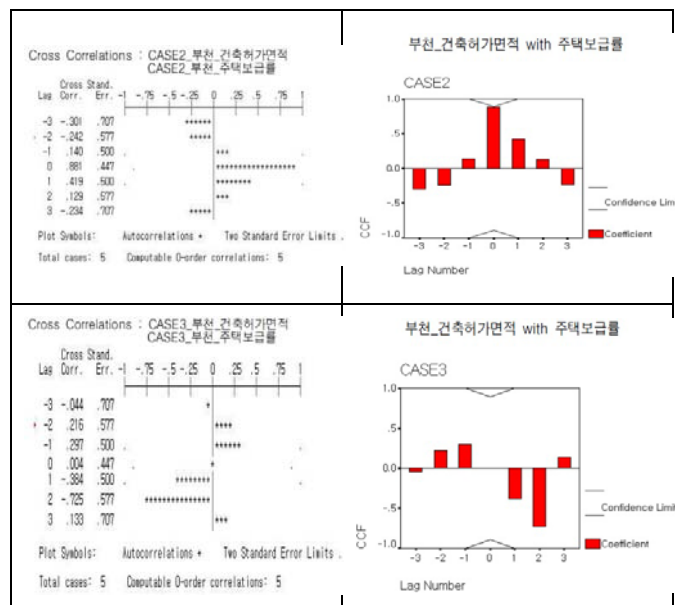

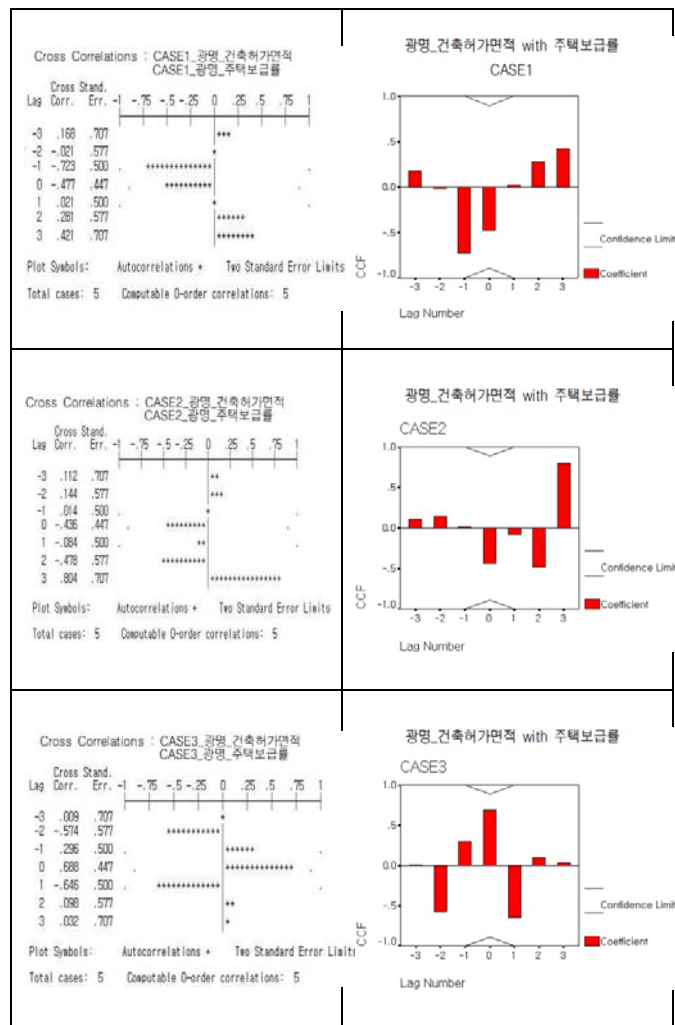Fig. 3 (a) Compare Case 1, 2, 3–Bucheon
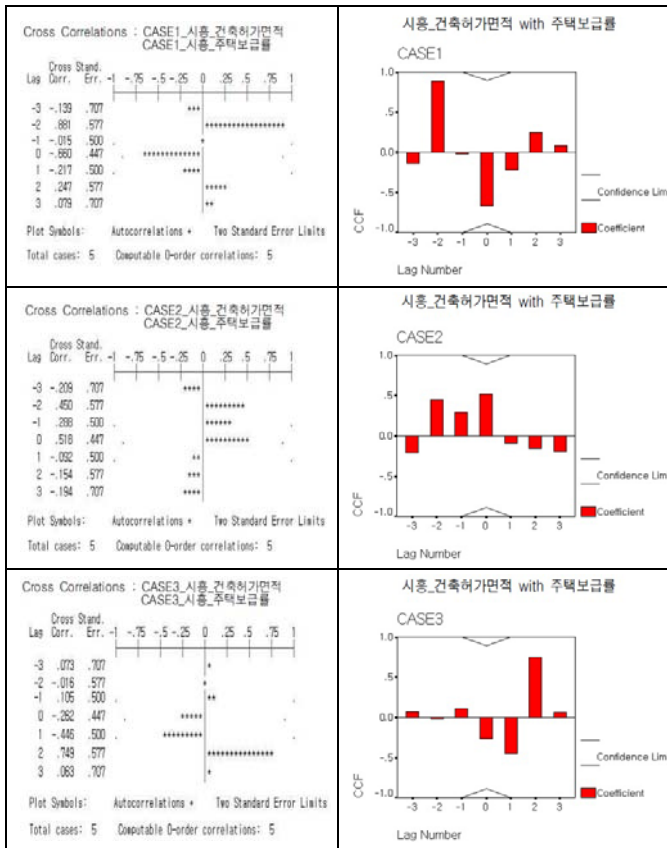

Fig. 3 (b) Compare Case 1, 2, 3–Gwangmyeong

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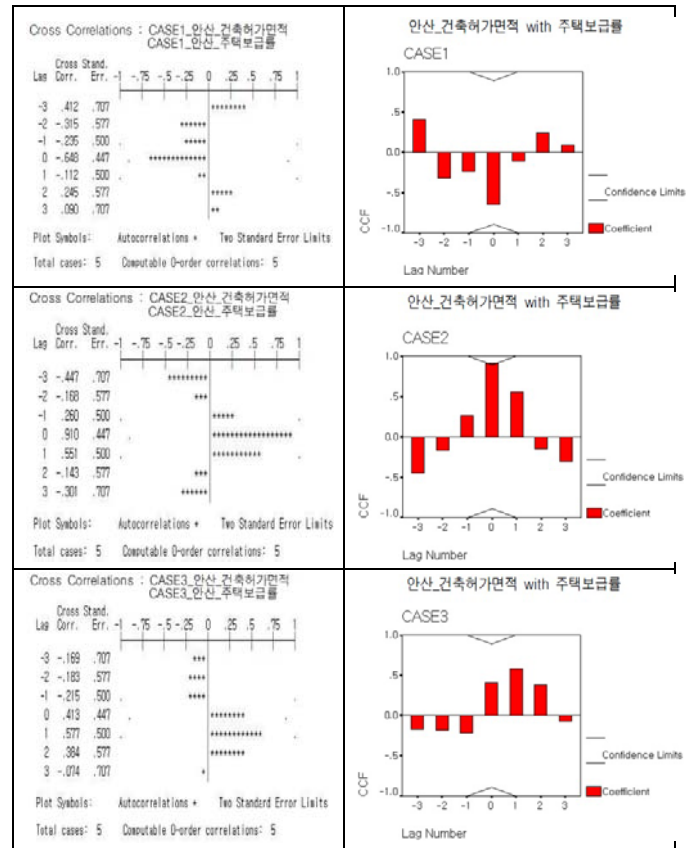Vol:6, No:11, 2012

Fig. 3 (c) Compare Case 1, 2, 3–Siheung

Fig. 3 (e) Compare Case 1, 2, 3–Ansan
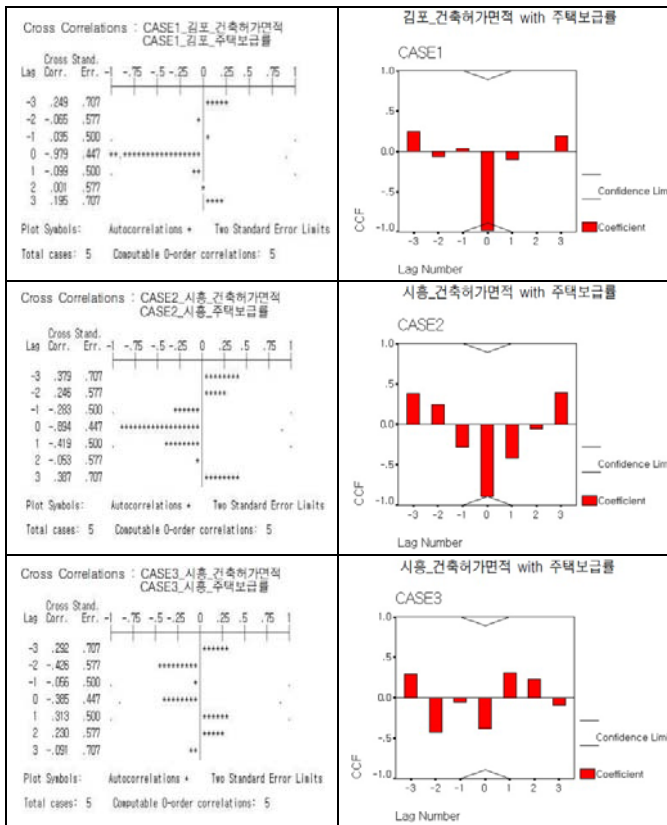
Fig. 3 (d) Compare Case 1, 2, 3–Kimpo

Fig. 3 (f) Compare Case 1, 2, 3– 5 Cities
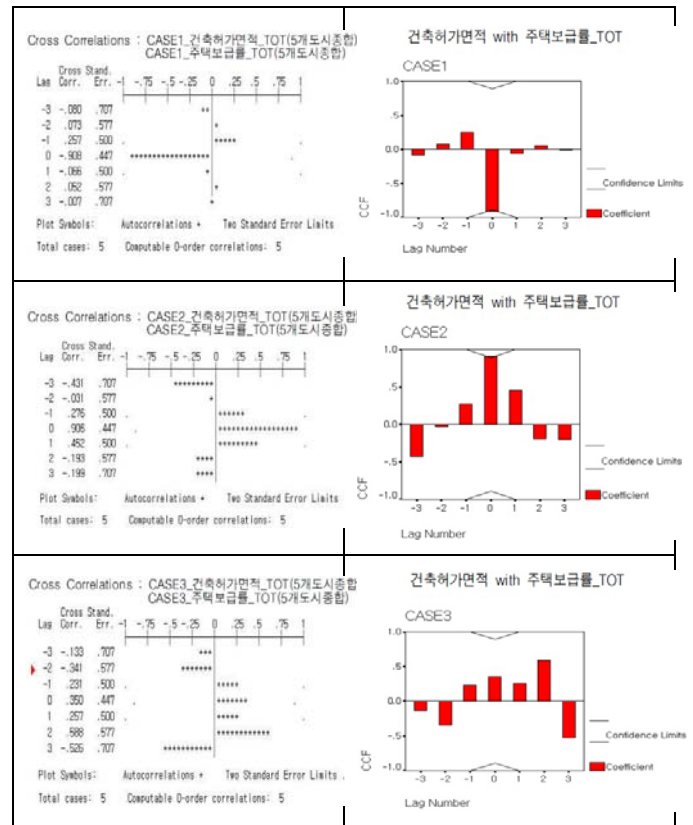
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C. Spectral Analysis

Third, as a result of the spectral analysis, it was found that during Civilian Government, the permitted building areas increased and decreased, repeatedly, while the housing distribution ratios increased, decreased and then, increased again. And during People's Government, both permitted building areas and housing distribution ratios increased. During Participatory Government, both permitted building areas and housing distribution ratios decreased.
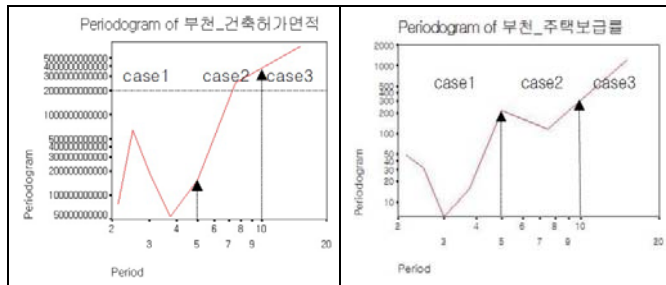

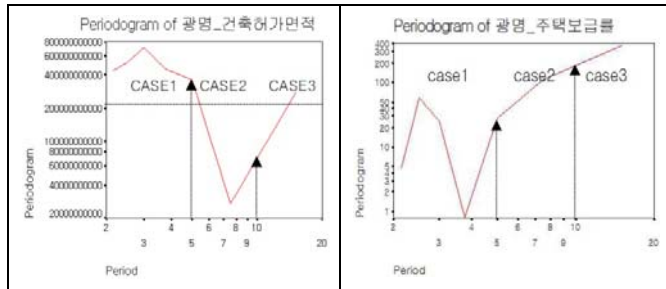Fig. 4 (a) Spectral Analysis – Bucheon
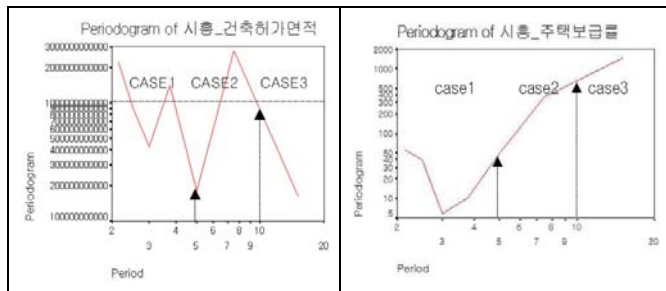

Fig. 4 (b) Spectral Analysis – Gwangmyeong

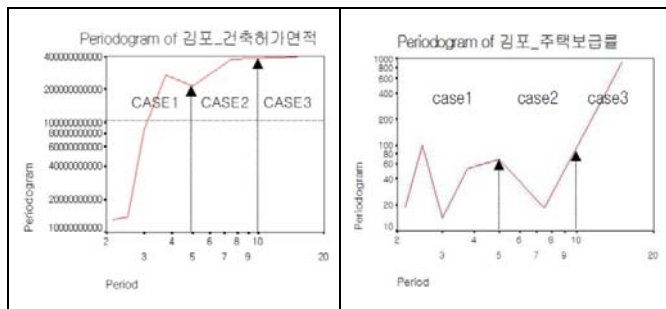Fig. 4 (c) Spectral Analysis – Siheung
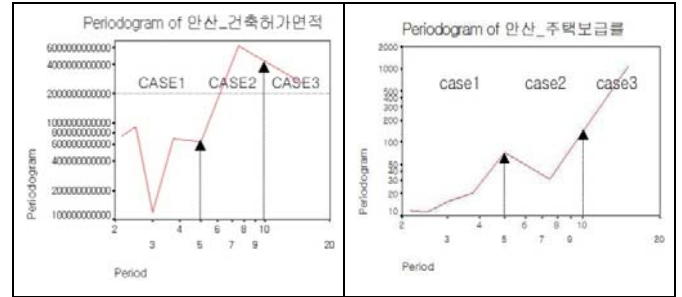

Fig. 4 (d) Spectral Analysis – Kimpo
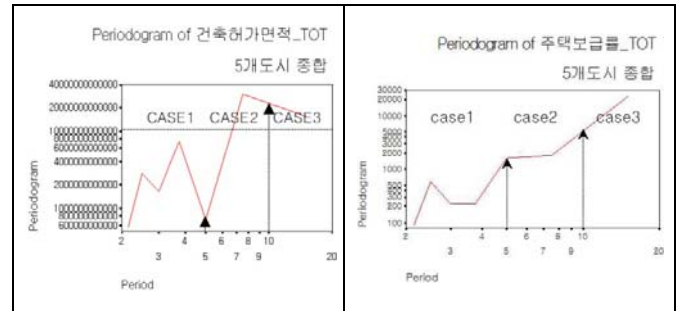

Fig. 4 (e) Spectral Analysis – Ansan

Fig. 4 (f) Spectral Analysis – 5 Cities

D. Testing Differences of the Fluctuation Distribution of Permitted Building Areas and Housing Distribution Ratios

Fourth, as a result of testing differences of the fluctuation distribution of permitted building areas and housing distribution ratios, it was found that the fluctuation distribution of both variables was uniform between Civilian and People's Governments, which means that both variables were stable. During Participatory Government when diverse real estate policies were designed and implemented, the fluctuation distribution of permitted building areas and housing distribution ratios showed a triangular distribution with minimum value, median and maximum value, which means that the fluctuation intervals were not uniform or stable[5].

VI. CONCLUSION

Based on the above result of analyses, it was perceived that during Civilian Government, permitted building areas and housing distribution ratios had been affected much by such policies as deregulation of land uses, deregulation of constructions in the capital area, stabilization of the housing markets, abolition of the housing construction quota system, housing sales price inter locked with construction cost, deregulation of the private rental houses, IMF bailout programs, and the like. During People's Government, permitted building areas and housing distribution ratios were influenced much by voluntary pricing of private apartment houses and some public apartment houses, loans for second installment payment for new houses, exemption of the capital gain tax for those households owning two or more houses, abolition of prohibited resale of the right to buy the apartment house, deregulation of the multi-household building standards, expansion of the financial support to ordinary people's houses, and so on.

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In case of Participatory Government, permitted building areas and housing distribution ratios were affected by such policies as sales price ceiling system, further opening of the sales cost to the public, designation of new town and balanced development zones, activation of rental housing projects, expansion of the public rental housing complexes, etc. As a consequence of comparing the permitted building areas by year during 3 successive governments, the areas were widest during People's Government, followed by Civilian Government and Participatory Government in their order. Namely, the construction markets were most brisk during People's Government. The construction markets much recessed by the IMF bailout program during Civilian Government would continue to be recessed until 1988, and thereafter, the permitted building areas would increase much every year owing to voluntary pricing of apartment houses and exemption of the capital gain tax for the households owning two or more houses. During Participatory Government, the housing markets would be recessed due to such regulations to check the housing speculations as sales price ceiling system.

All in all, as a result of "analyzing the structural fluctuation of permitted building areas and housing distribution ratios," it was found that government's real estate policies had affected the housing markets. Therefore, when the government designs a real estate policy, it is deemed obliged to carefully design it in consideration of its influence over and its cyclic effects on changes of permitted building areas and housing distribution ratios.

VII. FUTURE RESEARCH DIRECTIONS

It is hoped that this study which proved that government's policies would affect permitted building areas and housing distribution ratios will be referred to for future housing policies, and it is also hoped that this study will be followed up by future studies which will focus on such diverse variables deemed to be affected by government's real estate policies but not considered in this study as land price, housing price, business index and other various social factors.

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