

Inter-urban Differences of Housing Price Change during the Period of Economic Depression : the Case of Korea*

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주택 가격 변화에 있어서의 도시별 격차*

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Abstract : Housing prices in the Korean housing market dropped at an unprecedented magnitude in 1998 after the economic crisis. With the support of housing policies to boost depressed housing markets, house prices managed to bounce back after the mid-1999. During the period of housing price decline and of its recovery, the degrees of house price changes were not even across the country. The cities could be classified into four groups regarding the differential rates of house price changes. The cities which had higher rates of decrease also had higher rates of increase. On the other hand, some other cities continuously experienced a price fall during the recovery period although the rate of housing price changes were relatively low after the economic crisis. Throughout the processes of administering housing market depression due to the crisis of the national economy, the cities which could fully redeem the level of house prices in the mid-1997 were a few selective cities in the Seoul metropolitan area. As a result, the gap of the economic conditions in housing markets between the Seoul Metropolitan area and the other parts of the country has been widened.

Key Words : housing price, housing market, inter-urban differences, urban system

요약 : 1997년 말의 경제위기 상황 이후 한국의 부동산 시장에서의 공급 증가 및 수요의 위축으로 부동산 가격이 크게 폭락하였다. 주택 시장에 있어서도 실질소득의 감소와 주택금융의 부족 등에 의한 수요의 감소로 단기간 동안 주택가격이 급격히 하락하였다. 그러나, 부동산 경기 부양을 유도하는 정책적인 기제에 의해 1998년 말 이후 주택가격이 다시 상승하게 되었다. 이 경우 주택 가격 하락기나 그 이후의 회복기에 도시별 격차가 뚜렷하게 나타났다. 각 도시들은 주택 가격의 하락률과 상승률의 차이에 따라 4개의 그룹으로 구분될 수 있다. 몇몇 도시들에서는 주택 가격의 하락기에는 급격한 하락을 보인 대신 상승기에는 다시 비교적 빠른 상승세를 보여 경제 위기 이전의 상황으로 그 수준이 거의 회복되었다. 그러나, 반면에 다른 몇몇의 도시들에서는 주택 시장이 침체를 벗어나지 못한 채 회복기 이후에도 계속 하락하는 추세를 보였다. 이러한 격차는 주택 매매 가격뿐만 아니라 주택 전세 가격에도 뚜렷이 나타났다. 특히, 수도권 일대의 전세가격 상승 정도는 주택 시장 침체에 나타났던 하락률을 상회하였고, 일부 지역의 재개발 계획과 그에 대한 기대 심리로 인하여 전세 수요의 급증을 초래하기도 하였다. 결과적으로 금융위기에 따른 경제 침체를 경험하고 극복하는 과정에서 도시간 주택 시장의 격차는 더 크게 벌어지게 되었다.

주요어 : 주택 가격, 주택 시장, 도시간 격차, 도시 체계

1. Introduction

Different regions in the world are becoming increasingly interconnected through the globalization of the world economy. The change of the economy in one region in the world has affected the economic conditions in the other parts of the

world. The Korean economic crisis at the end of 1997 was triggered by the depression in the financial markets in some of the Southeast Asian countries. The remarkable performance of the Korean economy after the 1960s was overshadowed by the economic turbulence during the depression period. The disturbance of financial

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sector in Korea led to the increase in interest rates. The money flowed into the banks and stock markets. Successively, the blight of the capital from the real estate sector became a factor to induce the housing market crash and the Korean myth that the housing price always rises was discredited. The price of housing abruptly dropped in 1998 and managed to bounce back after the mid-1999 with the support of housing policies to boost the depressed housing market. During the period of housing price decline and the period of its recovery, the degrees of housing price changes were expected not to be even across the country.

The economic restructuring processes concomitant with the globalization of the economy are often suspected to increase the polarization among sub-regions at the level of intra urban spaces (Adair, et. al., 2000; Fainstein, Susan, Ian Gordon and Michael Harloe, eds., 1992; Musterd, et. al., 1999; Sassen, S., 1991). Yet, some of empirical researches on European cities indicated that the polarization based on income or occupation within cities was more moderate than expected (Musterd and Ostendorf, 1998; Hamnett, 1994). While more scholars paid more attention to the polarization at the intra-urban level, there have been less studies on the inter-urban rehierarchization in the restructuring processes. One study on the patterns of housing price changes in Australia indicated that those cities which had the greatest impact of boom in prices were also those cities which have undergone the biggest readjustment, while those areas which experienced less price escalation also had a less influence from the downward movement of prices (Maher, 1994).

Housing prices in the Korean real estate market experienced a wide fluctuation during the period of economic turmoil after 1997. Regarding the fact that varied degrees of housing price changes were expected across the country, it would be needed to examine the patterns of inter-urban differences of housing price changes. Especially, in consideration

of the dominant role of the Seoul Metropolitan Region in the Korean urban system, it will be worth while to review the impacts of housing market changes on reordering of urban areas. Therefore, this study examined and compared the inter-urban patterns of housing price changes during and after the period of housing market depression in Korea. Differences of housing prices between cities could show whether the disparity between urban regional housing markets increased or not. The present study would also try to pursue explanation and implications of inter-urban differences in degrees of housing price change.

2. Data and Method

The period covered in this study spans between the end of 1997 and the first half of 2000. This is a relatively short period. However, Korea experienced a rapid contraction of her economy in 1998. Accordingly, the real estate markets in Korea had to face an unrecorded decline in land and housing prices during this period. Concerning the conditions of the Korean real estate markets after the 1970s, such a sudden decrease in land and housing prices seemed to be a very unusual incident.

The principal source for data analysis was Survey of Urban Housing Price Trend published monthly by the Housing and Commercial Bank of Korea. I used other sources to address the changes in housing prices and housing related variables in the Korean cities. These sources are The Yearbook of Housing Statistics and the Housing Handbook published by Korea National Housing Corporation. The housing price data also came from Budongsan Bank, a bi-weekly magazine that publishes collected information on apartment prices because housing price data from HCBK only provided a relative index based on the reference year instead of absolute prices. Thus, the comparison of the data

from HCBK with actual data would more clearly illuminate the housing market conditions in different Korean cities. The data for population and housing variables also came from Municipal Yearbook of Korea published by the Ministry of Government Administration and Home Affairs.

This study mainly depended on descriptive statistical techniques for presentation of various tables. For the classification of cities according to the patterns of housing price changes, the author performed cluster analysis. Based on the result of cluster analysis, I later classified groups by inclusively considering the nature of the variables and the characteristics of the cities in each group. Correlation coefficients were estimated for exploring the relations between population and housing variables.

3. Trends in Housing Price Change in the 1990s

The growing urban population in the rapid urbanization process in Korea started in the early 1960s caused serious housing shortages in Seoul as well as in other large metropolitan areas. Due to strict government regulations on the conversion of land use and the provision of finance for housing construction, the supply of housing did not sensibly respond to the increase of demand in urban areas (Doling, 1999; Green, et. al., 1993; Kim, K., 1991). As a result, housing prices rose rapidly and resulted in a housing affordability crisis in the Korean cities during the late 1980s (Kim, K., 1991). Apartment prices for purchase registered a higher rate of increase compared to other types of housing between the end of 1986 and the early 1990s when housing prices reached their apex (Hahn, 1998). The market for renters was not immune to the increase in prices. The Chonse price for apartments rose even more rapidly than the purchase price (Hahn, 1998).

Housing policies in Korea stressed the supply of high-density housing because of limited space for housing development and a housing shortage due to rapid urban population increase (Yang, J., 1989). The supply of housing units since the early 1970s was dependent on the construction of apartment units especially in urban areas. A consistent supply of apartment units, mostly in urban areas, significantly altered the composition of different types of housing in total housing stock in Korea. After continuous housing price increases during the 1980s, the need for a more permanent and radical solution for the expansion of housing stock was largely recognized. The Two Million Unit Housing Construction Plan of 1988-1992 was a construction plan of extensive scale that was proposed and implemented to relieve housing shortages in the Korean cities. As part of this plan, five New Towns were developed outside of Seoul.

The Two Million Unit Housing Construction Plan was relatively successful in promoting housing construction. During 1988 and 1992, more housing units were built than the originally-planned two million units (Kim, J. and Kim, G., 1998). The 1995 Korean census data shows the increase in the housing supply ratio in the Korean urban areas. After 1992, the allocation of the newly constructed apartments units started not to reach 100 percent in some of the Korean cities (Housing Handbook, 1997). After the economic crisis, the allocation of new apartments in some cities had to face more difficulties. The expansion of housing stock also seemed to lessen the housing price increase in the Korean cities. Ever-rising housing prices dropped in the early 1990s. The housing price was relatively stable during the first half of the 1990s although Chonse price continued to increase even during this same period. Purchase prices for housing started to rise after 1994 and the highest price of the 1990s was found in 1997 (Table 1 and Table 2).

Korean economic crisis at the end of 1997 caused

Table 1. Trends in Purchase Price of Housing in the 1990s

1990=100

housing type		year										
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Urban	All	100.0	99.5	94.5	91.8	91.7	91.5	92.9	94.7	83.0	85.8	86.6
	Detached	100.0	100.4	95.5	92.5	91.9	91.2	91.1	90.5	80.4	79.2	78.9
	Apartment	100.0	98.2	93.3	90.5	91.4	92.1	95.3	99.8	86.3	93.6	95.2
Seoul	All	100.0	97.9	92.6	89.6	90.1	89.5	90.9	92.7	80.4	84.9	86.9
	Detached	100.0	99.0	93.2	89.9	89.6	89.0	88.5	88.1	77.9	78.4	79.4
	Apartment	100.0	95.5	91.4	88.8	89.9	89.9	93.7	98.6	84.2	94.7	98.0

Note: The index of each year is based on December.

Source: HCBK, 2000, Survey of Urban Housing Price Trend.

Table 2. Trends in Chonseil Deposits in the 1990s

1990=100

housing type		year										
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Urban	All	100.0	101.9	109.6	112.3	117.4	121.7	129.6	130.7	106.6	124.5	134.2
	Detached	100.0	100.6	107.1	108.8	111.8	114.8	118.5	118.4	98.7	102.2	107.0
	Apartment	100.0	103.4	112.1	116.4	124.2	130.0	143.3	145.6	116.3	147.3	160.6
Seoul	All	100.0	103.9	112.0	112.5	118.1	122.1	130.2	128.7	99.5	121.6	134.1
	Detached	100.0	103.2	108.7	107.6	110.0	113.3	117.8	116.0	90.7	100.5	109.9
	Apartment	100.0	104.7	115.4	117.8	127.6	131.9	144.7	142.5	110.6	146.4	161.6

Note: The index of each year is based on December.

Source: HCBK, 2000, Survey of Urban Housing Price Trend.

a sudden depression in real estate markets. A recent study showed that real estate market depression was caused by the economic crisis in 1997 and not the other way around (Kim, K. H., 1999). The tendency that the behavior of changes in the real estate sector moved together with the other sectors of the national economy was strengthened although the movement in real estate sectors lagged behind the changes in stock markets. (Kim, K. S. and Seo, 1999). The abrupt decline of housing prices in 1998 was partly caused by the cumulative results due to the expansion of housing stock after the Two Million Unit Construction Plan (Kim, K. H. and Lee, 1999). The decreases of housing prices also were the processes of removing bubbles. Some studies showed that the bubbles have been formed in real estate prices in Korea (Son and Kim, K. Y., 1998; Kim, K. H. and Lee, H., 1999; Lee, K., et. al., 1998). However, the decline in real estate prices may not be exclusively caused by the collapse of bubbles, but by complex processes encompassing

the changes in the economic environment and the expansion of housing stock as well as the dissolution of bubbles (Kim, K. H. and Lee, H., 1999).

During the year of 1998, real estate prices including housing prices fell at a unprecedented rate. Different sectors in real estate markets experienced a greatest degree of price fall in 1998. The purchase prices for housing in urban areas dropped 12.9 percent after the end of 1997. The Chonseil deposits had a higher rate of fall (Table 3). Table 3 also shows that the apartment prices for purchase dropped 14.2 percent and those for Chonseil dropped 21.7 percent. Chonseil deposits decreased further than purchase prices because the elasticity of income for housing is more sensitive for the demand for rent than for purchase (Yoon, et. al., 1998). Moreover, the income for middle to upper socioeconomic classes had been less affected by the economic conditions compared with the lower socioeconomic groups. An empirical study

Table 3. Housing Price Changes before and after the Economic Crisis

Dec. 1995=100

		Oct. 1997	Dec. 1998	June 2000	Change between Oct. 1997 and Dec. 1998 (%)	Change between Dec. 1998 and June 2000 (%)
Purchase	All Cities	104.2	90.7	94.6	-12.9	4.2
	All Cities (Apartments)	109.3	93.7	103.4	-9.6	13.5
Chonseil	All Cities	108.9	87.6	110.3	-19.5	25.9
	All Cities (Apartments)	114.2	89.4	123.5	-21.7	38.1

Source: HCBK, 1997, 1998, 2000, Survey of Urban Housing Price Trend.

revealed that the renters experienced a downward mobility in housing markets during this period of economic crisis (Yoon, et. al., 1998). Apartment prices which usually registered a higher rate of rise throughout the 1980s and the 1990s decreased at a greater degree compared with the prices for other types of housing.

In spite of all the anxieties, the housing price managed to bounce back almost to its level in mid-1997. A series of government policies were implemented to help the recovery of housing prices. These policies were expected to boost the demand for housing. Some of main features for such housing policies include the increase in supply of housing loans and the reduction of taxes for new home buyers (Kim, K. S. and Suh, 1999). Eligibility requirements for new home buyers were eased and interest rates were lowered on housing loans from National Housing Fund (Kim, K. S. and Suh, 1999). Several measures to alleviate the problems in the Chonseil market were also implemented. The government provided financial supports to landlords for paying back the Chonseil deposit to their tenants because many landlords faced a serious problem to mobilize the initial deposit supposed to be paid to their tenants due to an unexpected fall of the deposit level (Kim, K. H., 1999).

The purchase price of housing rose 4 percent from the end of 1998 to the mid-2000. The price was not fully recovered compared with its level before

the economic crisis. However, the Chonseil price rose more rapidly during this same period. The Chonseil price rose about 26 percent during the recovery period while it decreased 20 percent throughout the year of 1998. Both prices of purchase and Chonseil for apartments increased at a higher rate than for other types of housing. The abrupt re-rise of Chonseil deposit for such a short period was majorly due to the decrease in the supply of new housing units during 1998 (Kim, K. S. and Suh, 1999). Construction of new housing units decreased 48.7 percent in 1998 and 416 out of about 3,600 house builders were bankrupt (Kim, K. H., 1999). Moreover, reconstruction plans for several large old apartment complexes intensified the shortage of Chonseil units.

4. Regional Variations of Housing Price Change between Cities

The purchase and Chonseil prices of housing had different rates of changes as illustrated above. Compared with the prices of other types of housing, apartment prices experienced higher degrees of rise as well as higher degrees of fall before and after the economic crisis. Furthermore, a more striking contrast in housing price changes would be perceived from the comparison of housing prices among different urban regions. During the period of housing price decrease after

Table 4. Housing Price Changes in the Korean Cities

CITIES	Purchase		Chonsei	
	Rate of Decrease (%)	Rate of Increase (%)	Rate of Decrease (%)	Rate of Increase (%)
All cities	-13	4	-20	26
Seoul	14	8	-24	35
Seoul-North	12	3	-2	33
Seoul-South	-16	13	-26	36
Pusann	-11	2	-16	17
Taegu	-16	4	-18	18
Inchon	-14	6	-21	36
Kwangju	-16	-2	-20	12
Taejon	-4	0	-14	21
Ulsan	-16	2	-22	14
Suwon	-19	3	29	23
Sungnam	-13	13	-18	40
Anyang	-16	12	-22	48
Puchon	-10	5	-19	40
Kwangmyung	-15	8	-22	38
Ansan	-17	2	-21	31
Koyang	-16	14	-20	49
Kunpo	-16	15	-27	47
Chuncheon	-17	-5	-27	24
Wonju	-8	-3	-11	15
Chungju	-11	0	-11	14
Cheongju	-5	-5	-6	4
Chunan	-12	-10	-23	6
Chonju	-14	-7	-21	3
Iksan	-7	-1	-12	-3
Mokpo	-5	5	-5	14
Sunchon	-6	-4	-2	2
Pohang	-7	-3	-9	5
Kumi	-10	-5	-11	9
Masan	-13	4	-10	15
Changwon	-17	5	-25	29

Note: The rate of decrease was the difference of housing prices between October 1997 and December 1998 while the rate of increase was the difference of housing prices between December 1998 and June 2000.

Source: HCBK, 1997, 1998, 2000, Survey of Urban Housing Price Trend.

the Korean economic crisis, different urban regions registered different rates of change (Table 4). In case of Seoul, the degrees of change were higher both for purchase and Chonsei prices than the average rate of the Korean cities. The southern part of Seoul had greater degrees of change in housing prices than the northern part of Seoul.

The cities can be divided into several groups

according to the behavior of changing patterns in housing prices during the depression and recovery periods. Table 5 illustrates the different groups of the Korean cities by the rates of housing price change. Four groups could be identified. For purchase prices, several cities registered higher rates of decrease during the depression period in real estate markets, but also had higher rates of

increase during the successive period of price recovery. These cities are found in Group I and they include the Southern part of Seoul and several cities in Kyunggi Province. On the other hand, some of the cities which had higher price fall could not fully recover the price which was maintained before the housing market depression. These are the cities in Group II in Table 5. Cities in Group II mostly are the rest of the cities in Kyunggi Province and Greater Metropolitan Cities like Busan and Taegu. Although the rising rates of housing prices were less than their rates of fall in most cities in Group I and Group II, the prices started to be recovered in these cities.

However, some of the cities which did not have a sharp decline in housing prices experienced further decrease even during the recovery period. The cities in Group III had a low rate of fall in 1998 and had a continuous fall of housing prices after 1999. The cities in Group IV also experienced a continuous fall of housing prices. The decreasing rate of prices during the period of depression in the cities in Group IV were much higher than in the cities in Group III. Housing markets in some of the Korean cities seemed to sensibly respond to the changing economic environment while other cities

had been relatively less affected by the same economic situation. As a result, some selective cities in the Seoul metropolitan area only managed to bounce back to the level of their housing prices while the housing market conditions in the cities in other parts of the country did not seem to be fully recovered. Several cities such as cities in Group IV have suffered the depression of real estate markets since the Korean economic crisis broke out.

This kind of contrast among different regional housing markets was more noticeable in Chonseil price changes. As mentioned earlier, Chonseil deposits declined at a greater degree than purchase prices, but also rapidly increased again during such a short period. All of the cities except just one city registered the increases of Chonseil deposits after the first half of 1998 while purchase prices of housing in many of the Korean cities could not be fully recovered during the same period. The cities could be classified into four groups as represented in Table 6 by the differential rates of change in Chonseil deposits. The cities in Group I had a high rate of fall and a high rate of increase. All of these cities except Changwon are located in Kyunggi Province. In these cities, the rate of increases was higher than the rate of decreases. The next category

Table 5. Cities in Different Categories for the Change in Purchase Prices

	Characteristics	Cities
Group I	High Fall / High Rise	Seoul-South, Sungnam, Anyang, Koyang, Kunpo
Group II	High (Low) Fall / Low Rise	Seoul-North, Pusan, Taegu, Incheon, Ulsan, Suwon, Puchon, Kwangmyung, Ansan, Chungju, Masan, Changwon
Group III	Low Fall / Fall	Taejon, Wonju, Cheongju, Iksan, Mokpo, Suncheon, Pohang
Group IV	High Fall/ Fall	Chunchon, Kwangju, Chunan, Chonju, Kumi

Table 6. Cities in Different Categories for the Change in Chonseil Deposits

	Characteristics	Cities
Group I	High Fall / High Rise	Seoul(North, South), Incheon, Sungnam, Anyang, Puchon, Kwangmyung, Koyang, Kunpo, Ansan, Changwon
Group II	High Fall / Medium Rise	Suwon, Chunchon
Group III	Medium Fall / Low Rise	Pusan, Taegu, Kwangju, Taejon, Ulsan, Wonju, Chungju, Chunan, Chonju, Mokpo, Masan
Group IV	Low Fall/ Low Rise	Cheongju, Iksan, Suncheon, Pohang, Kumi

includes the cities which had a high rate of fall, but had a relatively moderate rise during the recovery period. This category includes Suwon and Chunchon. Although the rates of increase in Group II are less than the cities in Group I, the cities in Group I and Group II experienced the recovery of their past housing price level up to certain points during this turbulent period. The rise in Chonseil prices in cities of Seoul Metropolitan Area and Kyunggi Province was partly due to the condition that some of old apartment units are to be redeveloped. During the period of redevelopment, the current residents of planned units have to move out from their residences and find some places to stay temporarily. As a result, the executions and expectations for redevelopment plans intensified the rise of demand for Chonseil. The rise of demand in Chonseil markets was reflected in the trend in price changes.

The third category can be characterized as a medium rate of fall and a low rate of rise. Many of Greater Metropolitan Cities are included in this group. Finally, the last category includes the cities with a low rate of fall and a low rate of rise. Chonseil prices in this last group of cities was not much changed because these cities had low rate of rise as well as low rate of fall. The changing trends in Chonseil deposits more clearly demonstrate the inter-urban differences of the housing market situation in the process of economic fluctuation. As the case of purchase prices, cities in Kyunggi

Province had a highest rate of recovery in Chonseil deposits. Increasing demand or expectations for increasing demand for Chonseil units regarding redevelopment plans seemed to escalate the increasing tendency of Chonseil deposits in Kyunggi area. The abrupt decrease in housing construction after the economic crisis further aggravated the deficiencies of the Chonseil units.

Regional disparities among housing markets in different cities seemed to be narrowed during the period of housing market depression following the economic crisis. However, it became broadened again when real estate prices were recovered. Several cities in Kyunggi province were only cities that successfully regained the price levels in the 1997. The absolute price data for apartments collected by Budongsan Bank also supported this notion. Table 7 shows the price difference among the city of Seoul, Five New Towns in Kyunggi province established by the Two Million Unit Housing Construction Plan, and six Greater Metropolitan cities. Although these data only dealt with a few selective cities, Table 7 demonstrates the widened gap in housing prices between the Seoul Metropolitan area and the cities in other parts of the country. Urban housing markets were more polarized through the processes of economic depression and subsequent recovery of the crisis. A recent study on the Korean urban system not only indicated that the bi-polarization of the urban system centering in Seoul and Busan were

Table 7. The Absolute Housing Prices for Selective Cities

Unit: Man Won

		Oct. 1997		The Lowest Value in 1998		July 2000	
		Purchase	Chonseil	Purchase	Chonseil	Purchase	Chonseil
Seoul	Price	663	320	534	214	612.1	339
	Index	100	100	100	100	100	100
Five New Towns	Price	567	247	474	161	554.4	313
	Index	85.5	77.2	88.8	75.2	90.6	92.3
Larger Metropolitan Cities	Price	319	174	264	138	273.8	169
	Index	48.1	54.4	49.4	64.5	44.7	49.8

Note: The index for each year is based on the prices of Seoul.

Source: Budongsan Bank, published during 1997, 1998, 2000.

persisted, but also indicated that many medium to small cities grew substantially (Choi, 2000). The same study also concluded that Greater Metropolitan cities gained more regional autonomy than before (Choi, 2000). On the other hand, the housing price data, especially for Chonseis prices did not particularly present a trend that Greater Metropolitan cities contended better with housing markets depression than other smaller cities (Table 5 and Table 6). The data rather suggested that the unbalance between the Seoul Metropolitan Area and the rest of the cities in other parts of the country became more apparent.

5. Explanations and Implications of Housing Price Change

Many factors may involve in the differential rate of house price changes between urban regions. The explanations to clarify such differences are needed. First, it was examined whether the behaviors of price changes for purchase and for Chonseis had similar patterns. The correlation analysis shows that the cities which had higher rates of changes for purchase prices also had higher rates of changes for Chonseis deposits. These tendencies were applied both for the increasing and decreasing periods.

The correlation analyses between some of the variables and the rate of change were performed. The correlation coefficients were separately

estimated not only for the purchase and Chonseis prices, but also for the decreasing and increasing rates. Thus, the rate of change was divided into four categories: the rate of decrease in purchase price, the rate of increase in purchase price, the rate of decrease in Chonseis price, and the rate of increase in Chonseis price (Table 8). Not to mention, the increase in population is one of the most important factor for raising the demand for housing. However, the rate of housing price change do not seem to have a high correlation with the average rate of population increase for the past five years although the direction of relationship coincided with an expected pattern.

The relations between housing supply ratio and the rate of housing price changes seemed to be more close to usual patterns. The rate of increase both for purchase and Chonseis prices and housing supply ratio has negative relation while decreasing rates have positive relations with housing supply ratio. This relationship is more apparent for the rate of price increase while the correlation between the rate of price fall and housing supply ratio was weaker. As mentioned above, house price inflation was majorly formed in the apartment sector during the early 1990s and price changes after the economic crisis in the late 1990s more severely struck apartment markets. It could be expected that the rate of price change will be higher for the cities with high ratio of apartments among the existing housing stock. However, the correlation between

Table 8. Correlation Coefficients between the Rate of Housing Price Changes and Selective Variables

	the average rate of population increase between 1994 and 1998	housing supply ratio	the percentage of apartments in total housing stock
the rate of decrease in Chonseis deposit	-0.13	0.34	-0.37
the rate of decrease in purchase price	-0.22	0.35	-0.31
the rate of increase in Chonseis deposit	0.30	-0.63	0.47
the rate of increase in purchase price	0.26	-0.59	0.38

the ratio of apartments and the rate of price increase was not very strong. Because the total housing stock was substantially expanded in the 1990s and the major form of housing supply has been high density housing in Korea, the ratio of apartments among the total existing housing stock was continuously increased throughout the country. It may not be true anymore that the ratio of apartments is higher in some large cities or cities in the Seoul Metropolitan Area. For example, the percentage of apartments in Seoul in 1998 was lower than the average. Thus, the percentage of apartment itself may not satisfactorily describe the characteristics of different urban areas any more although the differences in the composition of housing stock still might characterize the attributes of sub-areas at the intra-urban level.

The variables related to the characteristics of population and housing did not as satisfactorily explain inter-urban differences of house price changes as expected. The factors related to house price changes should be examined with regarding to the multiple facets of regional economies. Differences in housing price changes between cities were products of complex mechanism of supply and demand in urban housing markets. Moreover, such differences would imply different influences on the housing building industries. Because the housing sector consists of an important component of the regional economy, difficulties faced by the house building industry would also have a substantial impact on regional economic conditions (Bourne, 1980). After the economic crisis, more units of newly built apartments were unsold than the mid-1990s. Different regions had different rates of unsold units. The data collected by the Ministry of Construction and Transportation indicated that Seoul and Kyunggi Province had the lowest level of unsold units with reference to the total number of newly constructed housing.¹¹ The data on unsold units from Budongsan Bank also revealed the same trend (Budongsan Bank, 1999, Nov.).

Concerning the fact that housing markets are operated in complex mechanisms, the changing patterns of house prices would indicate overall conditions of housing markets within the context of regional economies. If the categorizations of Korean cities by various factors representing the features of industry and population are considered, the cities in the Group I in Tables 5 and 6 in the above section of this study are included in the category of developing cities(Sung, 1990). In Sung's study, Korean cities were broadly divided into two groups, which were developing cities and stagnating cities considering the characteristics of urban growth patterns, housing conditions and population structures of each city(Sung, 1990). Although his study dealt with the data for the earlier periods, the same attributes of the categorization of Korean cities still seem to persist. The cities which experienced a continuous fall of house prices such as Wonju, Chunan and Suncheon in spite of the government supports to encourage the housing transactions are included in stagnating cities(Sung, 1990). The present study showed that many cities in the category of regional centers with diverse functions such as Cheongju, Chonju and Iksan which were classified as developing cities in the above mentioned study also experienced a continuous fall of housing prices after the economic crisis.

In Sung's study, the regional centers which did not seem to have housing market conditions vital enough to recover house price levels for a short period in the present analysis were included in the category of developing cities. Because his study dealt with the data for the mid-1970s, the role of regional centers may be more substantial in the Korean urban system during that period. However, other studies suggested that the influence of Seoul has become more and more significant in determining the overall structure of the Korean urban system(Choi, 1993). The maturation of information and communication networks may have fostered the superiority of Seoul while the role

of regional centers have been withdrawn. The increasing polarization centering in the Seoul Metropolitan area seemed to be reflected in the patterns of housing price changes in the late 1990s.

6. Concluding Remarks

After the 1970s, the increases in real estate prices used to be a norm than an exception in Korea. However, the economic crisis started at the end of 1997 had a deteriorating impact on the Korean land and housing markets. Housing prices as well as land prices dropped abruptly during the whole year of 1998. Different regions and cities had varied rates of changes for housing prices. In the decreasing period, the cities where higher degrees of inflation rates were found since the late 1980s registered higher rates of decrease while some of the cities which seemed to have stable housing prices had lower degrees of decline (Table 3). On the other hand, the cities had higher rates of decrease were more competent in regaining the previous level of their housing prices. The prices of housing in several other cities continuously fell even after the end of 1999.

The gap between different regional housing markets in their vitality and the changing rates of prices seemed to be narrowed during the period of housing market depression following the economic crisis. However, the disparity in urban housing markets were broadened again when the prices rose with the help of government policies to encourage housing transactions. The absolute price data for apartments collected by Budongsan Bank also supported this notion. Concerning the fact that housing markets are operated in complex mechanisms, the housing price could be an index of regional economies. At the same time, the changes in housing prices have a significant impact on other sectors of the economy. Therefore, the analysis on the housing prices considering some of the

variables representing regional economic conditions would be needed.

The analysis above on the housing price changes and the housing supply ratio indicated that the recovery of the house prices both for purchase and Chonseil was better in the cities with lower ratio of housing supply. Although the ways of measuring housing supply and its relationship with the inflation of house prices are still controversial, this study suggested that the rate of house price increases was negatively related with the housing supply ratio. Therefore, the regional housing policies regarding the economic conditions and the situation of housing supply and demand specific to various regions should be established. Demand appears to be rise when house prices are rising while prices are falling when the converse appears to be the case (Stephens, 1996). This implies that expectations appear to very important and help to explain the changing situations of housing markets (Stephens, 1996). Such expectations also seem to be useful to illuminate why certain cities could have better shape in recovering housing prices in the case of Korea. These cities are some selective cities in the Seoul Metropolitan area and Kyunggi Province. Housing prices for purchase and Chonseil had risen at greater degrees in the early 1990s and after mid-1990s up to 1997. Therefore, people could have better prospects for the rise of house prices in Seoul and the cities in Kyunggi Province than the cities in the rest part of the country. Implementations of and expectations for redevelopment plans of some old apartment units in Seoul seemed to intensify the trend of rising house prices, especially the case of Chonseil deposits after the early 1999.

Note

- 1) The data for housing construction and the quantity of unsold new housing units are available from the internet site of the Ministry of

Construction and Transportation of Korea.

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