

ANALYZING THE EFFECT OF THE RESIDENCE AND REAL ESTATE POLICIES ON HOUSING PRICE

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Abstract

Since the foreign currency crisis, Korean economy has suffered recession and the government launches residence and real estate policy in order to increase the demand and trade of real estate and to help the economy revitalization. As a result, the rate of economy growth is shown the high increase with the figure of 10.9% in 1999 and 8.8% in 2000. However, it brings overheating market as a negative effect. Although, the government established the policy for the control of speculation, the policy causes instability of economy. This study is to analyze the effect between the residence policy and the housing cost since the foreign currency crisis through housing sale price estimation and housing lease price estimation and is to apply the basis data of the next residence policy.

Keywords : Residence and real estate policy, Housing sale price, Housing lease price. Multiple regression analysis

1. Introduction

1.1 Background and Purpose

Since the foreign currency crisis in 1997, Korea's economy has suffered recession in all industrial sectors. Hence government tried to stimulate the economy through the boosting of construction industry which has great effect on overall industries. Then, as construction market showed excessive boom, current participatory government intervened in the market through speculation control measure, which caused the reduction of the construction orders received.

In addition, to address the housing price issued emerging as a serious social problem, government are seeking the solution from the operation of various policies. However, few are optimistic in the residence policies of current government and some estimate that housing price would become even more unstable.

Therefore, this study aims to examine and analyze the effect the various real estate policies since foreign currency crisis have had on the housing sale and lease price in the nation, Seoul area and 6 metropolitan cities. Also, this study expects that the more exact understanding of the influence of real estate policies on the housing price in certain localities can enhance the adequacy of analysis on the performances of residence and real estate policies enforced until now and be utilized as a important basic material for future establishments of real estate policies.

1.2 Scope and Methods

According to above purposes, this study consists roughly of two parts. One is the history of residence and real estate policies and the situations from 1960's to present. It classifies the patterns of policies through the understanding of the goals of Korean residence and real estate policies enforced. The other is the analysis on the market influence of real estate policies. By means of the multiple regression analysis on macro-economy indexes, policies and housing prices, the effectiveness of policies were examined. In order to quantify the policies, dummy variables were used.

Multiple regression analysis including dummy variables was used for analytical method and analytical tool was SPSS 12.0.

2. Patterns and characteristics of residence and real estate policies

2.1 Changes of Korean residence and real estate policies

Korean government has intervened in the market through various real estate policies, from late 1960's to the real estate stabilization measure at March 30, 2003, to stabilize the market price and control speculation.

Since 1960's, there has been fifty residence and real estate policies and 28 of which are promulgated in every year after foreign currency crisis. this means that too many residence and real estate policies are enforced after foreign currency crisis (See Table 1).

2.2 Characteristics of Korean residence and real estate policies by patterns

Korean real estate policies can be classified into three major patterns.(See Table 1) The first is the business stimulation policy to revitalize the depressed market. The second is the speculation control policy to stabilize the price through preventing the market's overheating. The last is the common people's residence stabilization policy to support their stable residing.

Business stimulation policy includes the supply expansion based market booming through trading activation by the mitigation of residence and real estate regulation, demand promotion by fund and tax support, mitigation of various kind of supply regulation and national large scale development plan of government, etc.

Speculation control policy's main tools are demand control, revenue redemption through the public concept of real estate ownership, administrative measure such as registration management, monitoring of brokerage speculation and tax investigation.

Common people's residence stabilization policy has been enforced before and between the enforcements of speculation control policy and business stimulation policy. its main contents are the measures to support real demander and common people in short-term, including expansion of lease fund support, empty house survey and lease grievance settlement.

Table1. change and pattern of the residence and real estate policies after foreign currency crisis

Year	Measures	Pattern	Year	Measures	Pattern
1998	Housing business stimulation measure (5.22)	A	2002	Housing market stabilization measure (8.9)	B
1998	Fund supporting measure for housing business stimulation (6.22)	A	2002	Housing market stabilization measure (9.4)	B
1998	Construction industry stimulation measure (9.25)	A	2002	Real estate market stabilization measure(10.11)	B
1998	Construction and real estate business stimulation measure(12.12)	A	2003	Real estate price stabilization measure (1.8)	B
1999	Housing construction expansion plan (3.22)	A	2003	Housing market stabilization measure (4.18)	B
1999	Housing construction promotion program (10.7)	A	2003	Housing price stabilization-comprehensive measure (5.23)	B
2000	Housing construction promotion program (7.1)	A	2003	Reconstruction Apartment's price stabilization measure (9.5)	B
2000	Construction industry stimulation measure (8.30)	A	2003	Housing market-comprehensive measure (10.29)	B
2000	Construction investment rationalization measure (11.11)	A	2004	Common people's housing welfare expansion plan (6.28)	C
2000	Provincial construction stimulation measure(11.1)	A	2004	Construction business soft-landing plan (7.1)	B
2001	Provincial construction industry and housing construction measure(1.4)	A	2005	Metropolitan area's housing market stabilization measure (2.17)	B
2001	Provincial construction ireform and investment rationalization program (5.23)	B	2005	Rental housing policy reform measure (4.27)	C
2002	Housing market stabilization measure (1.8)	B	2005	Real estate system reform measure (8.31)	B
2002	Housing market stabilization measure (3.6)	B	2006	Real estate stabilization measure (3.30)	B

Note) A : Business stimulation policy, B : Speculation control policy, C : Common people's housing stabilization policy
 Source : MoC (2004), Housing white paper, Yoo Hae-Woong, GiwonHoi(1997), Citizen's coalition for economic Justice, Korea Land Cooperation, Kookmin Bank

3. Analysis on the influences of residence and real estate policies

3.1 Data collection and analytical method

To analyze what effect have residence and real estate policies had on housing price, housing price(dependent variable) was determined by housing sale price index and housing lease price index, policy(independent variable) was used, for quantification, with dummy variables transformed by patterns, and, considering the timeliness of policies, only the policies after foreign currency crisis are used with dummy variables.(See Table 2) In addition, to consider the effective elements other than housing price, independent variable includes several macro-economy variables such as total money supply, construction permit site, price index of stocks, CP RoE and consumer price index, which are extracted by the review on previous studies' literatures.(See Table 3)

The model of study has following formulas and functions:

$$Y_t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_7 X_7 + \beta_8 X_8 \quad \text{Eqn. (1)}$$

- Y_A : Housing price
 X_2 : Construction permit site
 X_4 : CP RoE
 X_6 : Business stimulation policy (Dummy variables)
 X_7 : Speculation control policy (Dummy variables)
 X_8 : Common people's housing stabilization policy (Dummy variables)
- X_1 : Total money supply
 X_3 : Price index of stocks
 X_5 : Consumer price index

Table2. Definition of policy variables

Variables	Value	Period	Effect expected
Dummy variables A (business stimulation policy)	1	3 month after enforcement	+
	0	Rest of period	
Dummy variables B (speculation control policy)	1	3 month after enforcement	-
	0	Rest of period	
Dummy variables C (people's housing stabilization policy)	1	3 month after enforcement	-
	0	Rest of period	

Note) Effect expected is the effect on housing price of each policy pattern.

Note) NSO: National Statistical Office, KB: Kookmin Bank

Table 3. Collection of analytical data

Variables	Unit	Basic year	Source
Total money supply (M2balance)	Billion won	97.1.1 ~ 06.7.31	NSO
Construction permit site	1,000 m ²	97.1.1 ~ 06.7.31	NSO
Price index of stocks	%	97.1.1 ~ 06.7.31	NSO
CP RoE	%	97.1.1 ~ 06.7.31	NSO
Consumer price index	%	97.1.1 ~ 06.7.31	NSO
Housing sale price index	%	97.1.1 ~ 06.7.31	KB
Housing sale lease index	%	97.1.1 ~ 06.7.31	KB

3.2 Housing sale price

The variables used to analyze the effect on housing sale price were total money supply, construction permit site, price index of stocks, CP RoE, consumer price index and dummy variables A, B and C.

First, when dependent variable was the housing sale price of whole country, significant independent variables are five; construction permit site($\beta = 0.001$, $p < 0.05$), price index of stocks($\beta = 0.003$, $p < 0.1$), consumer price index($\beta = 1.983$, $p < 0.05$), business stimulation policy($\beta = -7.775$, $p < 0.05$) and speculation control policy($\beta = 3.917$, $p < 0.05$). That is,

business stimulation policy caused rather the increase of housing price, within 5% of significance level, speculation control policy also caused rather the increase of housing price, within the same 5% of significance level. R-Square that indicates the explanatory degree of the model was 0.89 and adjusted R-Square that reflects the margin of error was 0.882.

Second, when dependent variable was the housing sale price of Seoul, significant independent variables are five; construction permit site($\beta = 0.001$, $p < 0.05$), price index of stocks($\beta = 0.006$, $p < 0.05$), consumer price index($\beta = 2.614$, $p < 0.05$), business stimulation policy($\beta = -7.556$, $p < 0.05$), speculation control policy($\beta = 5.077$, $p < 0.05$). That is, business stimulation policy decreased housing price, within 5% of significance level, speculation control policy increased housing price, within 5% of significance level. R-Square that indicates the explanatory degree of the model was 0.931 and adjusted R-Square that reflects the margin of error was 0.926.

Third, when dependent variable was the housing sale price of 6 metropolitan cities, significant independent variables are four; construction permit site($\beta = 0.008$, $p < 0.05$), consumer price index($\beta = 1.722$, $p < 0.05$), business stimulation policy($\beta = -7.482$, $p < 0.05$), speculation control policy($\beta = 3.552$, $p < 0.05$). That is, business stimulation policy decreased housing price, within 5% of significance level, speculation control policy increased housing price, within 5% of significance level. R-Square that indicates the explanatory degree of the model was 0.927 and adjusted R-Square that reflects the margin

Table 4. Result of housing sale price estimation

Variables	Nation			Seoul			6 metropolitan cities		
	Estimated value	T-AU	Sig.	Estimated value	T-AU	Sig.	Estimated value	T-AU	Sig.
Total money supply (M2balance)	-7.0E-05	-3.351	0.001	-9.3E-05	-4.254	< 0.001	-6.9E-05	-3.716	< 0.001
Construction permit site	0.001	2.887	0.005	0.001	2.697	0.008	0.001	2.960	0.004
Price index of stocks	0.003	1.377	0.071	0.006	2.498	0.014	0.001	0.585	0.560
CP RoE	-0.193	-1.045	0.298	-0.294	-1.507	0.175	-0.223	-1.354	0.179
Consumer price index	1.983	5.873	< 0.001	2.614	7.834	< 0.001	1.722	5.710	< 0.001
Dummy Variable A	-7.775	-6.961	< 0.001	-7.556	-6.051	< 0.001	-7.482	-7.500	< 0.001
Dummy Variable B	3.917	3.401	0.001	5.077	4.029	< 0.001	3.552	3.454	0.001
Dummy Variable C	1.674	0.880	0.381	1.486	0.715	0.476	1.602	0.943	0.348
R Square	0.890			0.931			0.927		
Adjusted R Square	0.882			0.926			0.859		

of error was 0.859(See Table 4).

3.3 Housing lease price

The variables used to analyze the effect on housing lease price were total money supply, construction permit site, price index of stocks, CP RoE, consumer price index and dummy variables A, B and C.

First, when dependent variable was the housing lease price of whole country, significant independent variables are six; construction permit site($\beta = 0.001$, $p < 0.05$), price index of stocks($\beta = -0.008$, $p < 0.05$), CP RoE($\beta = -1.289$, $p < 0.05$), consumer price index($\beta = 2.203$, $p < 0.05$), business stimulation policy($\beta = -8.537$, $p < 0.05$), speculation control

policy($\beta = 7.026$, $p < 0.05$). That is, business stimulation policy caused rather the increase of housing price after policy's enforcement, within 5% of significance level, speculation control policy also caused rather the increase of housing price, within 5% of significance level. R-Square that indicates the explanatory degree of the model was 0.919 and adjusted R-Square that reflects the margin of error was 0.913.

Second, when dependent variable was the housing lease price of Seoul, significant independent variables are six; construction permit site($\beta = 0.001$, $p < 0.05$), price index of stocks($\beta = -0.010$, $p < 0.05$), CP RoE($\beta = -1.611$, $p < 0.05$), consumer price index($\beta = 2.082$, $p < 0.05$), business stimulation policy($\beta = -8.753$, $p < 0.05$), speculation control policy($\beta = 9.042$, $p < 0.05$). That is, business stimulation policy caused rather the decrease of housing price after policy's enforcement, within 5% of significance level, speculation control policy also caused rather the increase of housing price, within 5% of significance level. R-Square that indicates the explanatory degree of the model was 0.875 and adjusted R-Square that reflects the margin of error was 0.866.

Third, when dependent variable was the housing lease price of 6 metropolitan cities, significant independent variables are seven; construction permit site($\beta = 0.001$, $p < 0.05$), price index of stocks($\beta = -0.009$, $p < 0.05$), CP RoE($\beta = -1.088$, $p < 0.05$), consumer price index($\beta = 2.152$, $p < 0.05$), business stimulation policy($\beta = -8.794$, $p < 0.05$), speculation control policy($\beta = 6.771$, $p < 0.05$), common people's housing stabilization policy($\beta = -2.055$, $p < 0.05$). That is, business stimulation policy decreased the price, within 5% of significance level, speculation control policy increased the price, within 5% of significance level. R-Square that indicates the explanatory degree of the model was 0.927 and adjusted R-Square that reflects the margin of error was 0.859(See Table 5).

Table 5. Result of housing lease price estimation

Variables	Nation			Seoul			6 metropolitan cities		
	Estimated value	T-AU	Sig.	Estimated value	T-AU	Sig.	Estimated value	T-AU	Sig.
Total money supply (M2balance)	-9.0E-05	-4.297	< 0.001	-1.0E-04	-3.639	< 0.001	-8.4E-05	-4.422	< 0.001
Construction permit site	0.001	6.400	< 0.001	0.001	5.636	< 0.001	0.001	6.505	< 0.001
Price index of stocks	-0.008	-3.228	0.002	-0.010	-3.070	0.003	-0.009	-4.286	< 0.001
CP RoE	-1.289	-6.936	< 0.001	-1.611	-6.586	< 0.001	-1.088	-6.489	< 0.001
Consumer price index	2.203	6.470	< 0.001	2.082	4.983	< 0.001	2.152	7.009	< 0.001
Dummy Variable A	-8.537	-7.580	< 0.001	-8.753	-5.597	< 0.001	-8.794	-8.658	< 0.001
Dummy Variable B	7.026	6.051	< 0.001	9.042	5.730	< 0.001	6.771	6.467	< 0.001
Dummy Variable C	-2.764	-1.441	0.152	-4.210	-1.618	0.109	-2.055	-1.188	0.237
R Square	0.919			0.875			0.964		
Adjusted R Square	0.913			0.866			0.930		

3.4 Result of comprehensive analysis

Putting the results together, the most effective independent variable on housing price is consumer price index, while A and B, from dummy variables. Other variables also showed some influences on the price but insignificant as indicated in Table 6.

Dummy variables A, as a business stimulation policy, was expected with price rising effect (+) but analyzed to have caused price falling effect (-). Dummy variables B, as a

speculation control policy, was expected with price falling effect (-) but analyzed to have caused price rising effect (+). Dummy variables C, as a common people's housing stabilization policy, was assumed to have price falling effect (-) and analyzed to meet the target in housing lease price, but the influence on housing price is so weak to have potent housing price has not reached to the expected effect of residence and real estate policies (See Figure 2). Although housing price has risen abruptly from 2000 to 2004, it can be said that such rise was the worldwide common aspect in which low interest driven huge investment fund had rushed into housing sector and increased housing price dramatically.

Table 6. Analysis of the influence on housing price

Variables	housing sale price			housing lease price		
	Nation	Seoul	Metro	Nation	Seoul	Metro
Total money supply (M2balance)	-	-	-	-	-	-
Construction permit site	+	+	+	+	+	+
Price index of stocks	+	+	-	-	-	-
CP RoE	-	-	-	-	-	-
Consumer price index	+	+	+	+	+	+
Dummy variables A (Effect Expected : +)	-	-	-	-	-	-
Dummy variables B (Effect Expected : -)	+	+	+	+	+	+
Dummy variables C (Effect Expected : -)	+	+	+	-	-	-

4. Conclusion

The purpose of this study is to analysis the effects of residence and real estate policy on housing price. According to this study, the effects are shown the different result from government expectation. The reasons why the policies are not working effectively are as followed.

First of all, too many policies are established within short time. Since the foreign currency crisis in 1997, total twenty eighth (28) of hosing-real estate policies are established. And, this figure occupies approximately 50% in the policies established after the year of 1960. Moreover, trust is necessary factor that policy makes influence effectively. However, frequent adjustment of policy cause of people's low trust against the policy and policy launched frequently makes an action as an instability factor because of unpredictable prospect of real estate market.

Secondly, low propriety of policy is one of problems. The current policy for hosing and real estate market is focus on the housing price as a single element rather than fundamental factors influenced on the housing price. Sometimes, the policy misses the operation time or encourages speculation. The policy concerned short-term effect occasionally has a reverse effect.

When the residence and real estate policy is established, it is needed that the government consider not only visible and single element but also market status and various factors

influenced on housing price. Furthermore, it is essential to establish the long-term road map for stabilization of housing market.

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