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Distribution Impact of Rent Control on Seoul Market Rents during the COVID-19

Joo Han SUNG¹, Jin KIM²

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Abstract

After the outbreak of the COVID-19 in the early 2020, Korea has attempted to reinforce the existing rent controls to help the low-income households. From July 2000, the tenants' right of lease renewal came into effect, as a policy tool to enforce the upper bound percentage of rent increases within Korea. **Purpose:** This study aims to examine the impact of rent control on the uncontrolled rents in Seoul Metropolitan Area (SMA). **Research design, data and methodology:** The study regresses the monthly panel data from 58 municipalities in SMA from January 2020 to March 2022, during the COVID-19 pandemic. **Results:** The data indicates that the policy had the effect of lowering rents for a period of two months, and subsequently monetary policy including quantitative easing and low interest rates, coupled with asset market bubbles lead to rent increases. During the sample data period, the quantity of money supply increased by 12.6% and CPI rose by 3.0%, these phenomena collectively increased the rents by up to 14.7%. **Conclusions:** The results of the present study support the findings of earlier studies in part: namely, that rent control without the government's steps to stabilize the property price may have an undesirable effect on rental tenants.

Keywords : Distribution Impact, COVID-19, Rent Control, Seoul Metropolitan Area

JEL Classification Code: C33, D12, E51, R20, R38

1. Introduction

There has been a common consensus in the economic literature that rent control causes a deep-seated excess demand which can displace households from controlled areas, and negatively impacts on building maintenance and delays the commencement of new construction, leading to the rundown sections of cities. Concerning the market rents in uncontrolled neighborhoods, theory predicts the null or small decreases in the short term in contrast to a boosting effect in the long run. In brief, rent control distorts the distribution and allocation of rental homes in the market.

After the outbreak of the COVID-19 in the early 2020, some nations have attempted to launch rent controls and/or reinforce the existing controls to help the low-income households. One such case from July 2020, the Korean government enacted the one-time right of lease renewal (RoLR) for the tenants to benefit the upper bound percentage of rent increase. (Two years is the common contract term in lease agreement therefore four years of security of tenure is guaranteed). This policy follows households' complaints regarding the shortage of available rental homes and the steep hike-ups of uncontrolled rents, specifically in Seoul Metropolitan Area (SMA). Besides, the

1 First Author. Assistant Professor, Department of Real Estate and Finance, Changshin University, Korea. Email: didier09@cs.ac.kr

2 Corresponding Author. Associate Professor, Department of Global Business, Hannam University, Korea, Email: citywolf@hnu.kr

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distortion of rental housing distribution entailed some black market practices such as key fees and double sets of contracts. Therefore, scholars have started to reconsider the effectiveness of rent control as a measure to stabilize the market rents and enhance the distribution efficiency.

The purpose of this study is to examine the impact of reinforcement of rent increase control on the market rents under the pressure of inflation and asset market boom in the era of quantitative easing. It analyzed the panel data from 58 municipalities between January 2020 and March 2022, in order to investigate the core questions of 1) 'was the rent control successful to stabilize the uncontrolled rent?' and 2) 'if so, how long was it effective for within an inflationary environment?'

Dependent variable is the monthly rent index of Chonse in SMA. Chonse is a unique Korean leasing form in which a tenant entrusts his landlord with a higher ratio of deposit to property value, usually ranging from forty to seventy percent, but he does not pay the monthly rent during occupancy. When the tenant vacates the property, he takes the deposit back from the landlord.

The study designed two estimation models: one is to use a dummy independent denoting 'before/after the control' to detect any significant effect of rent control to stabilize the uncontrolled rents, whilst the other is to insert seven time-lag variables after the start of the control to measure the time lapse of the effect. The choice of estimation method between FE (Fixed Effect) model and RE (Random Effect) model was performed with Hausman Test. The tested model included three macro-economic variables, namely market interest rate, money quantity and inflation, to capture the impact of expansionary monetary policy during the research period. To detect a possibly different response by submarket, this study separately regressed the market rents in three submarkets, the City of Seoul, the City of Incheon and Kyunggi-Do, as well as in overall SMA. The research data for dependent variable is the Chonse rent index in SMA released by Kookmin Bank on a monthly basis, while the data for all of the independent variables are provided by the government agencies.

The empirical findings of this study contribute to the literature evidencing the null effect concerning rent control due to the abusive quantitative easing, which led the asset market bubbles. Contrary to the policy intention, rent control was shown to be insignificant to stabilize the rents, and disarranging to allocate the rental housing to the right consumers, specifically in a rapid turnover of real estate cycle as seen during the COVID-19. The present study also implies that the government regulations mismatched with macroeconomic policies severely disturb the distribution of merit goods like rental homes.

2. Literature Review

The majority of literature researching the impact of rent control on rents has reported that the quality-adjusted rents are much lower in controlled areas than in uncontrolled areas (Arnott, 1995, p.113). De Salvo (1971), examining New York City between 1943 and 1968, found that the controlled rents had risen by 110 percent while the operating expenses of rental houses had dramatically risen by 285%. Likewise, Smith & Tomlinson (1981) reported that the rents in controlled units in Toronto had benefitted from low rent increase rate of 39% from 1975 to 1980, whilst the corresponding operating expenses had grown by 75% in the same period.

The benefits for the controlled tenants were the detriment of controlled landlords. A study of New York City's rent control, Olsen (1972) estimated that the tenants in controlled units had experienced a 3.4 percent increase in real income while their landlords had lost a 6.8 percent of rents. This rent loss was well capitalized in the property values. Smith & Tomlinson (1981) estimated the decrease of the market value of apartment properties by around 40 percent between 1975 and 1980. As a decisive evidence of rent control effect on residential property values, Auto et al. (2014) verified that rent decontrol generated substantial, robust price appreciation at decontrolled units and nearby never-controlled units in Cambridge, Massachusetts between 1998 and 2005.

Another stream of literature focusing on the neighborhood effect of rent control has been inconclusive regarding their effectiveness because of the split results of significance: due to the ideological reasons in part and the methodological issues in the remainder (Arnott, 1995, p.117). The displaced excess demand from controlled submarkets moved into the uncontrolled submarkets, bidding up the market rents of rental housing (Mense et al., 2019). Therefore, the vast portion of regulation cost is transferred to the households in uncontrolled submarkets (O'Sullivan, 1996, pp.439-40). It is costlier, in time and money, for a potential tenant to search for and to find a home under rent control (Oust, 2017). More seriously, this misallocation across the demographic subgroups can be concentrated on a specific housing segment in uncontrolled places (Glaeser & Luttmer, 2003). Theoretically, however, this negative impact on the market rents must be mild in the early years, since the impact is assumed to be accumulative over the long-term (Skak & Bloze, 2013).

Early (2000) criticized the underlying assumption of earlier studies in which the rental per unit in the uncontrolled sector is unaffected by rent control and concluded that higher prices in the uncontrolled sector made the average benefits to tenants in regulated units as negative. Likewise, so many studies discovered the rebounding market rents in

response to the rent control after a short time of cool down, specifically in an international context. For example, examining the Israeli rent control system, Werczberger (1988) asserted that the rent control boosted the market rents severely thereby generating some black-market practices.

Malpezzi (2010) suggested one of the possible explanations for these contradictory findings. He compared the estimated costs and benefits for four cities in developing countries (Cairo, Kumasi, Bangalore and Rio de Janeiro) with those from four US cities (New York, Los Angeles, Santa Monica and Washington, DC). All markets have large variance about the average cost or benefit of controls, and the variation seemed rarely relevant to household characteristics. Instead, the divergence in each unique legal environment seemed to cause the differences (Kutty, 1996).

The very recent studies, particularly in Europe, are briefing the rapid disappearance of rent control effect on market rents. Analyzing the effects of rent control implemented in Germany from 2015, Breidenbach et al. (2022) suggests that its impact was much greater than found in previous work but so fleeting to vanish in the second year after the implementation of the control. Jacobo and Kholodilin (2002) made a similar conclusion to above with an OLS (Ordinary Least Squares) and a MARS (Multivariate Adaptive Regression Splines) estimations, upon almost one century of housing market indicator in Argentina. Rent controls have significantly exerted a negative impact on the real housing rent rises, but they were effective only for short periods following World War II.

Some studies reported the negative effect of rent control introduced during the COVID-19 pandemic. A study led by Sagner and Voigtlander (2022) regarding the supply side effects of Berlin’s sudden rent freeze, only for a short period between February 2020 and March 2021, reported that the policy caused a significant reduction in supply during the pandemic.

3. Theoretical Framework and Methodology

3.1. Rent Control in Korea

The rent control in Korea belongs to the second generation: it does not freeze the nominal rent but limits the rent increase to, up to 5 percent for renewed leases. This 5 percent of upper bound, however, had been ignored in practice because of the lack of enforcement measures. If a landlord demanded a higher increase than 5 percent, there would have been no practical way for the tenant to accept the landlord’s demand or leave the leased house.

In July 2020 the Korean government reinforced the rent control with RoLR (Right of Lease Renewal). RoLR

guarantees the tenant to exercise his option (not an obligation) to extend the lease period (usually for two years for rental housing) once. Thus, it extends the tenants’ security of tenure as well as enforces the landlords to conform to the ceiling for rent increase of 5 percent. To some degree, this regulation is retroactive to the past lease contracts which are supposed to expire after the effectuation of RoLR. Of note, it is not possible to segment ‘controlled versus uncontrolled’ submarkets in Korea geographically, since the rule is applied to all the rental homes nationwide.

3.2. Theoretical Framework

It is widely known that the response of supply to rent control is reliant upon the elasticity of the long-term supply. Though the short-term supply of rental housing is inelastic to the change of rents, the long-term supply becomes elastic because of the conversion of building uses and the acceleration or deceleration of new construction commencements (O’Sullivan, 1996, p.434).

Figure 1 illustrates the short- and long-term effects of rent control on rents. If the government controls the rent at R_C , the tenants can benefit the rent decrease ($R_0 - R_C$) from the control in the short run: which generates the excess demand ($Q_1 - Q_0$) in the rental market. As the supply becomes elastic to rent in the long-term ($SS \rightarrow LS$), the quantity (Q_2) supplied at R_C , becomes much smaller than the quantity (Q_1) demanded: which worsens the excess demand and enlarges the tenants’ search cost.

At the quantity of Q_2 , the uncontrolled rent (R_U) will be much greater than the controlled rent (R_C). Of note is that the R_U after rent control is also higher than the equilibrium rent (R_0) in the absence of rent control. The discussion above holds under the assumption that the supply becomes more elastic to rent in the long-term range: which heavily depends on a nation’s housing market conditions.

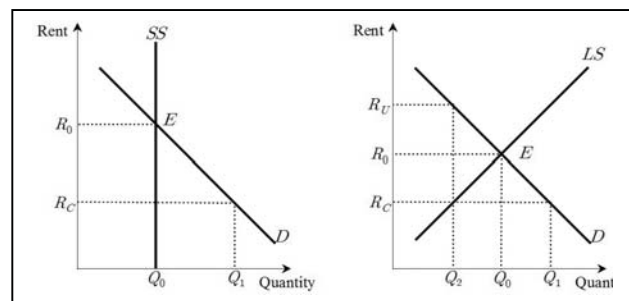


Figure 1: Short- and Long-Term Effects of Rent Control

Table 1: Research Variables

Item	Variable	Description	Measurement	Data Source	
Dependent	Rent	Apartment Rent (<i>Chonse</i>) in SMA	Rent Index (<i>Chonse</i>) (January, 2022=100)	Kookmin Bank R.E. Statistics	
Independent	Market	Price	Apartment Sale price in SMA	Sale price Index (January, 2022=100)	Kookmin Bank R.E. Statistics
		Unsold	Unsold Apartment Units in SMA	Units of Newly Built Apartment (Unit)	Statistics of MOLIT ¹⁾
		Volume	Apartment Transaction Volume in SMA	Monthly Transaction in Stock Market (Unit)	Statistics of MOLIT
	Macro-Economy	Yield	Yield of 3-yr Corporate Bond Rated AA-	Monthly Average of Yields to Maturity (%)	Statistics of Bank of Korea
		M2	Money Quantity	Monthly Average of M2 (One Trillion KRW)	Statistics of Bank of Korea
		CPI	Consumer Price Index	Consumer Price Index (2022 = 100)	Statistics of Bank of Korea
	Rent Control	Lag	To and From the Enforcement of Rent Control	Time Lag Variable (July 31 st , 2020 = 0)	NA
Control		Follow-up After the Rent Control	Dummy after the Control (after = 1)	NA	

1) MOLIT is a government agency, the Ministry of Land, Infrastructure and Transportation

3.3. Research Model, Variables and Data

Research model is to regress the uncontrolled rent (Rent: R) by three independent variable groups. First group deals with the real estate market environments, i.e. the property price (Price: P), the unsold housing units of new development (Unsold: U) and the transaction volume (Volume: V). The effect of expansionary monetary policy is tested by the second variable group, named as ‘Macro-economy,’ which contains the market interest rate (Yield: Y), the monetary quantity ($M2$) and the inflation measured by consumer price index (CPI: I). The third group is related to the research interest. This study attempted to examine the rent control effects in two ways: one is to use the dummy of ‘before and after’ (Control: C , Model 1) and the other is to insert time-lag variables (from 0 to 6) (Lag, Model 2) in the equation. The discussion above can be rewritten with a formula form as follows:

$$R = f(P, U, V, Y, M2, I, C) \quad (1)$$

For the variable, ‘Rent,’ the study used is the monthly index of *Chonse* (C) rents released by Kookmin Bank (KB). It deals with the housing form of ‘apartment,’ equivalent to condominium in the US market. *Chonse* has a functional relationship with monthly rent (R) and deposit (D) through the conversion rate (i), as follows (Kim, 2007, p.231):

$$R = (C - D) \times \frac{i}{12} \quad (2)$$

The KB *Chonse* index is based on the survey of the real estate brokers whose list is fixed over time to form a panel data sample. Also, the price quoted by the brokers is the listed price for a new tenant, i.e. an uncontrolled rent for a new lease contract. Likewise, the variable, ‘Price,’ is the listed price out of the panel of brokers’ survey in KB Real Estate Statistics. Both *Chonse* and Price are the indices of which reference points are January 2022 as 100.

The variable, ‘Unsold,’ is related to the presale system, a unique development practice in Korea. Conforming to some preconditions including the building permit with the acquisition of land and a completion guarantee issued by a government-sponsored entity, Housing and Urban Guarantee Corporation, developers sell the properties to the homebuyers before the completion of construction, and then finance the construction costs with pre-sale proceeds. The failure of presale makes it riskier for the developers to finance housing projects thereby forcing discount sale prices: which in turn generates a pressure for home sellers to lower the listed prices in the existing housing. Another market variable, ‘Volume,’ is the number of units transacted within the existing housing stock. The statistics for both variables are collected by municipalities and collated by the Ministry of Land, Infrastructure and Transportation.

The monthly average of yields for 3-year corporate bond rated as AA- is used for the variable, ‘Yield.’ The statistics for $M2$ is used as a proxy for money quantity in the market. CPI index is announced on a monthly basis by the government. Those three macro-economic statistics are released by Bank of Korea and available on the web site, <https://ecos.bok.or.kr>.

3.4. Methodology

The current study performed empirical analysis in two steps. First, by performing the Hausman Test to select the estimation method between the FE model and the RE model, based on the X^2 statistics. Second, by the panel regression analysis, the study estimates the effect of rent control in two manners: one with the dummy (Model 1) and the other with time lags (Model 2). As discussed earlier, four regions are separately regressed to search for the discriminant effect by submarket: the overall SMA region (R_T), the City of Seoul (R_1), Kyunggi-Do (R_2) and the City of Incheon (R_3). Each covers the number of municipalities as 58, 25, 26 and 7, respectively.

Table 2: Descriptive Statistics

Variables		Period	Before Rent Control Seoul			After Rent Control Incheon			Overall Mean
			Mean	Min	Max	Mean	Min	Max	
Dependent	Rent (Chonse)		80.9	72.9	95.0	92.8	74.4	101.5	89.7
Market	Price		74.7	60.6	86.2	89.6	65.2	102.2	85.7
	Unsold		56.8	0.0	874.0	29.9	0.0	1,068.0	36.8
	Volume		699.6	6.0	5,280.0	373.9	2.0	3,423.0	458.4
Macro-Economy	Yield		2.1	1.8	2.2	2.2	1.8	3.0	2.2
	M2		3,014.3	2,929.0	3,093.3	3,393.9	3,100.4	3,672.1	3,295.5
	CPI		99.8	99.4	100.2	102.4	100.1	106.1	101.7

4. Empirical Results

4.1. Descriptive Statistics

Table 2 presents descriptive statistics. In summary, it is obvious that the variables like Rent, Price, Yield, M2 and CPI show higher averages, subsequent to the application of rent control. The most remarkable changes of macro-economic variables between two periods are found in M2 and CPI: KRW 3,014 trillion (USD 2,181 B) versus KRW 3,394 trillion (USD 2,456 B) for M2 (12.6% of increase) and 99.8 versus 102.4 for CPI (3.0% of increase). The monetary policy to expand the quantity clearly prompted the inflationary pressure, which lead to asset price rises and unsold unit drops after the rent control (from 74.7 to 89.6 for Price and from 56.8 to 29.9 for Unsold). As a result, the average of variable, Rent increased from 80.9 before the control to 92.8 after the control (14.7% of increase). The contrast in transaction volumes between the two periods is somewhat counter-intuitive, that is, the monthly volume after the control (374 units) looks much smaller than 700 units before the control.

4.2. Hausman Test Result

All the probabilities corresponding to the test statistics (X^2) in Table 3, both from the dummy variable (Model 1) and the time lag scheme (Model 2), are greater than the significant level of 0.05: which fails to reject the null hypotheses thereby making it select the RE as the estimation method. Hereafter, all the estimation results are produced from the RE method.

4.3. Analytical Results

The estimation results of research models are summarized in Tables 4 and 5. Among the market group of independent variables, only the sale price index of apartment (Price) is significant and shows consistent positive

Table 3: Hausman Test Results

Model		Hausman Test			
		$X^2(3)$	Prob > X^2		
		b = consistent under H_0 and H_a B = inconsistent under H_a , efficient under H_0 Test H_0 : difference in coefficients not systematic $X^2 = (b - B)'[(V_b - V_B)^{-1}](b - B)$			
Model 1 (Dummy)	R_T (Overall)	$X^2(3) = 2.88$	Prob > $X^2 = 0.409$	Random Effect (RE) Model	
	R_1 (Seoul)	$X^2(3) = 0.99$	Prob > $X^2 = 0.803$		
	R_2 (Kyunggi)	$X^2(3) = 1.46$	Prob > $X^2 = 0.691$		
	R_3 (Incheon)	$X^2(3) = 5.49$	Prob > $X^2 = 0.139$		
Model 2 (Time Lag)	R_T (Overall)	$X^2(3) = 1.92$	Prob > $X^2 = 0.590$	Random Effect (RE) Model	
	R_1 (Seoul)	$X^2(3) = 3.58$	Prob > $X^2 = 0.310$		
	R_2 (Kyunggi)	$X^2(3) = 1.10$	Prob > $X^2 = 0.777$		
	R_3 (Incheon)	$X^2(3) = 2.98$	Prob > $X^2 = 0.407$		

directionality all through the models and the submarkets. Therefore, the higher housing price is closely related to higher rents, confirming the results of previous studies in Korea.

The unsold units of newly built apartment units (Unsold) and the transaction volume of apartments in existing housing market (Volume) are not easy to verify, as the significance or the robustness of signals in submarkets. In brief, the housing rent in SMA, at least Chonse, seems less to be influenced by the transaction volume both belonging to new and existing housing markets rather than by the transaction prices.

Dependence on models and submarkets is revealed in the analysis of the macro-economic variables. The yield of corporate bond (Yield), a proxy measuring the market interest rate, produces the relatively stable significance of coefficients throughout the submarkets. The greater absolute values of parameters with solid negative signals are found in the time-lag model than in the dummy. On the whole, the inverse relationship of market interest rates with the rents is indicated: that is, the lower the interest rate, the higher the rents, and vice versa.

The positive signals of M2, conceptualizing the quantitative easing during the COVID-19 era, are well marked in the overall SMA (R_T) and the City of Seoul (R_1), regardless of Model types. A cautious suggestion is that the

housing welfare for tenants has been impacted on negatively by expansionary monetary policy.

Just like Yield, the positive coefficients of CPI, a proxy for inflation, are identifiable throughout the submarkets. It leaves the suspicion that the monetary policy right after the outbreak of pandemic triggered the inflation which entailed the rent rises.

The data indicates that the reinforcement of rent control fails to stabilize the market rents at the height of the pandemic. The positive and significant coefficients for the dummy, Control (denoting the before and after the policy

change), in Table 4 points out that this challenge has heightened the market rents.

A closer investigation of the time lapses in Table 5 reveals a more accurate indication of the impact of rent control. In the Cities of Seoul (R_1) and Incheon (R_3), the reinforcement of rent control lowered the uncontrolled rents just for a very short period, approximately a couple of months. Though, the impact of rent control is hardly found in one submarket (R_2). In Table 5, the significantly positive coefficients are following the effective period of rent control.

Table 2: Rent Estimation Results in the Pandemic Era: With the Dummy Variable

Variables		Models	R_T (Overall SMA) Beta Sig.	R_1 (Seoul) Beta Sig.	R_2 (Kyunggi-Do) Beta Sig.	R_3 (Incheon) Beta Sig.
Market	Price		0.511	0.599 ***	0.674 ***	0.600 ***
	Unsold		-0.001	0.010	-0.003 ***	0.004 **
	Volume		0.001 ***	-0.001 **	0.000 **	0.000
Macro-Economy	Yield		-1.277 ***	-1.788 ***	0.087	-2.124 ***
	M2		0.007 ***	0.008 ***	-0.002 *	0.003
	CPI		0.300 ***	0.295 ***	0.057	0.166
Rent Control	Control (Dummy)		1.050 ***	1.094 ***	1.407 ***	0.682 **
Constant			-7.208	-16.077 **	34.017 ***	17.928
σ_μ			1.867	1.057	2.162	1.095
σ_ϵ			1.600	1.276	1.597	1.033
ρ			0.576	0.407	0.646	0.529
Observations			1,566	675	702	189
Group			58	25	26	7
R^2	Within		0.956	0.971	0.958	0.981
	Between		0.435	0.455	0.554	0.753
	Overall		0.904	0.954	0.901	0.959
Wald χ^2			33,040.57	21,917.12	15,608.49	9,406.58
Prob > χ^2			0.000	0.000	0.000	0.000

Significance at *** 1 percent, ** 5 percent and * 10 percent.

Dependent variable is the monthly rent index released by Kookmin Bank (January, 2022 = 100).

Table 5: Rent Estimation Results in the Pandemic Era: With the Time Lag Variables

Variables		Models	R_T (Overall SMA) Beta Sig.	R_1 (Seoul) Beta Sig.	R_2 (Kyunggi-Do) Beta Sig.	R_3 (Incheon) Beta Sig.
Market	Price		0.473 ***	0.571 ***	0.642 ***	0.664 ***
	Unsold		-0.001	0.004	-0.003 ***	0.003 *
	Volume		0.000	-0.001 **	0.000	-0.001
Macro-Economy	Yield		-2.022 ***	-2.643 ***	-1.088 **	-4.283 ***
	M2		0.009 ***	0.005 **	-0.003	-0.014 ***
	CPI		0.533 ***	0.788 ***	0.589 *	1.794 ***
Rent Control	Lag 0		-0.488 *	-1.281 ***	-0.377	-1.831 ***
	Lag 1		-0.076	-1.046 ***	-0.009	-1.966 ***
	Lag 2		0.477 *	-0.106	0.744 *	-0.220
	Lag 3		1.565 ***	1.306 ***	1.745 ***	1.502 ***
	Lag 4		2.004 ***	2.180 ***	1.813 ***	1.773 ***
	Lag 5		1.728 ***	1.660 ***	1.581 ***	0.725 *
	Lag 6		1.049 ***	0.932 ***	1.017 ***	0.243

Constant	-31.053 **	-52.020 ***	-12.669	-93.041 ***
σ_{μ}	1.634	0.912	1.988	1.078
σ_{ϵ}	1.448	0.999	1.594	0.948
ρ	0.560	0.454	0.608	0.563
Observations	1,218	525	546	147
Group	58	25	26	7
R ²	Within	0.952	0.973	0.948
	Between	0.495	0.395	0.554
	Overall	0.901	0.951	0.889
Wald X ²	23,041.00	18,095.68	9,393.37	7,637.57
Prob > X ²	0.000	0.000	0.000	0.000

Significance at *** 1 percent, ** 5 percent and * 10 percent.

Dependent variable is the monthly rent index released by Kookmin Bank (January, 2022 = 100).

5. Conclusion and Discussion

This study examined the effect of rent control initiated by the Korean government from July 2020, drawn from the panel data of 58 municipalities in SMA. To avoid the confounding effect of the pandemic, the data period is limited between January 2020 and March 2022. The study regressed the uncontrolled rents on the independent variables regarding property market and macro-economy as well as rent control.

The sale price of the existing housing market reveals that the most consistent significance and predictor amongst the antecedents. Considering the mutual interaction between rent and property price, the rent control effect may have been mitigated by other policies stimulating the housing prices. With regards to the expansionary monetary policy, the macro-economic variables including money quantity, interest rate and inflation affected the uncontrolled rents, in line with theoretical predications. Increase in the quantity of money supply, lower interest rate and higher CPI are strongly related to the rent rises, specifically in the City of Seoul. The coefficients for interest rate generated show the most robust significance and signal than the other two variables. Thus, nearly zero interest rate deserves to be blamed for the disorderly distribution of rental homes today.

The rent control in our research model was shown to stabilize the uncontrolled rents just for a short period. In the Cities of Seoul and Incheon, that effect's duration was approximately 2 months. Thereafter, the uncontrolled rents rose sharply. Moreover, in one submarket, Kyunggi-Do, we find no evidence that the control was beneficial to stabilize the rents.

Consequently, the study casually confirms the predictions of theories and the common findings of earlier studies: namely, that rent control without the government's steps to stabilize the property price may have an undesirable effect on rental tenants and disorganize the distribution and allocation of rental homes. This is in contrast to the policy makers' intention, at least in an unexpected inflationary environment.

Therefore the rental home searchers, especially new tenants, may suffer from the lower number of available homes coupled with the higher level of rents under the sudden enforcement of rent control, relative to uncontrolled market.

References

- Arnott, R. (1995). Time for Revisionism on Rent Control. *Journal of Economic Perspectives*, 9(1), 99-120. <https://doi.org/10.1257/jep.9.1.99>
- Auto, D. H., Palmer, C. J., & Pathak, P. A. (2014). Housing Market Spillovers: Evidence from the End of Rent Control in Cambridge, Massachusetts. *Journal of Political Economy*, 122(3), 661-717. <https://doi.org/10.1086/675536>
- Breidenbach, P., Eilers, L., & Fries, J. (2022). Temporal Dynamics of Rent Control – The Case of the German Rent Control. *Regional Science and Urban Economics*, 92(C), 103737. <https://doi.org/10.1016/j.regsciurbeco.2021.103737>
- De Salvo, J. S. (1971). Reforming Rent Controls in New York City: Analysis of Housing Expenditures and Market Rentals. *Regional Science Association Papers*, 27, 195-227. <https://doi.org/10.1007/BF01954607>
- Early, D. W. (2000). Rent Control, Rental Housing Supply, and the Distribution of Tenant Benefits. *Journal of Urban Economics*, 48(2), 185-204. <https://doi.org/10.1006/juec.1999.2163>
- Glaeser, E. L., & Luttmer, E. F. P. (2003). The Misallocation of Housing Under Rent Control. *American Economic Review*, 93(4), 1027-46. <https://doi.org/10.1257/000282803769206188>
- Jacobo, A. D. (2022). One Hundred Years of Rent Control in Argentina: Much Ado about Nothing. *Journal of Housing and the Built Environment*, 37(4), 1923-70. <https://doi.org/10.1007/s10901-022-09932-6>
- Kim, J. (2007). Discriminant Impact of Transit Station Location on Office Rent and Land Value in Seoul. *Journal of Transport Economics and Policy*, 41(2), 219-245. <https://www.jstor.org/stable/20054014>
- Kutty, N. K. (1996). The impact of rent control on housing maintenance: A dynamic analysis incorporating European and North American rent regulations. *Housing Studies*, 11(1), 69-88. <https://doi.org/10.1080/02673039608720846>

- Malpezzi, S. (2010). Can New York and Los Angeles Learn from Kumasi and Bangalore? Costs and Benefits of Rent Controls in Developing Countries. *Housing Policy Debate*, 4(4), 589-626. <https://doi.org/10.1080/10511482.1993.9521146>
- Mense, A., Michelsen, C., & Kholodilin, K. A. (2019). The Effect of Second-Generation Rent Control on Land Values. *AEA (American Economic Association) Papers and Proceedings*, 109, 385-88. <https://doi.org/10.1257/pandp.20191023>
- Moon, G. H. (2010). Asymmetric Information Spillover Effect between Housing Price and Chonseil Price in Korea Apartment Market. *Korean Journal of Business Administration*, 23(2), 731-745.
- O'Sullivan, A. (1996). *Urban Economics* (3rd ed.). Chicago, IL: Irwin.
- Olsen, E. (1972). An Econometric Analysis of Rent Control. *Journal of Political Economy*, 80(6), 1081-1100. <https://doi.org/10.1086/259959>
- Oust, A. (2017). The Removal of Rent Control and Its Impact on Search and Mismatching Costs: Evidence from Oslo. *International Journal of Housing Policy*, 18(3), 433-453. <https://doi.org/10.1080/19491247.2017.1336876>
- Sagner, P., & Voigtlander, M. (2022). Supply Side Effects of the Berlin Rent Freeze. *International Journal of Housing Policy*, Published on line and Forthcoming. <https://doi.org/10.1080/19491247.2022.2059844>
- Skak, M., & Bloze, G. (2013). Rent Control and Misallocation. *Urban Studies*, 50(10), 1988-2005. <https://doi.org/10.1177/0042098012470390>
- Smith, L. B., & Tomlinson, P. (1981). Rent Control in Ontario, Roofs or Ceilings. *Journal of Real Estate Economics*, 9(2), 93-114. <https://doi.org/10.1111/1540-6229.00234>
- Werczberger, E. (1988). The Experience with Rent Control in Israel: From Rental Housing to Condominiums. *Journal of Real Estate Finance and Economics*, 1(3), 277-293. <https://doi.org/10.1007/BF00658921>