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Anchoring Effect of the Prosecutor's Demand on Sentence: Evidence from Korean Sexual Crime Cases†

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The anchoring effect can be found when a decision shows cognitive prejudice towards the initial information given. Several studies have argued that such an effect is present even for judges in the courtroom. This paper seeks to find a relationship between judges' decisions on penalty sentences and the sentences recommended by prosecutors. In this study, 2,773 actual court cases are considered in the analysis, and quantile regression is used to show that the sentencing decisions judges make are anchored by the recommendations of prosecutors. However, this reliance on recommendations differs according to the seriousness of the crime committed. Specifically, at the lowest penalty levels, a one-month increase in the prosecutors' sentencing recommendation results in a 0.25-month increase in the judges' sentence, while at the highest sentence level, the judges' sentences increase by 0.78 months under an identical condition. The results of this research indicate the need to create more objective and clear sentencing guidelines in the future in an effort to mitigate the psychological pressure experienced by judges with regard to serious offences or heinous crimes.

Key Word: Prosecutor, Anchoring Effect, Sentence
JEL Code: K14, K42, D91

I. Introduction

It is crucial to make fair and rational judgements in courts to consolidate the faith of people. If there is a gap between sentences for similar crimes or similar criminals, it can cause people to discredit the criminal justice system. Therefore, it

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is important to verify whether reasonable decisions are made on each case where various factors can affect those decisions, including the final sentence of the judiciary.

Judges are allowed to make decisions at their own discretion, as each case needs diverse perspectives and consideration of the circumstances to provide clear justice. However, the principle of discretion can hinder predictability and therefore acceptance of consequences. Here, we suggest that there is an anchoring effect on judges' decisions and empirical results to prove the existence of this phenomenon.

The empirical results provide fair insight into how a prosecutor's declarations affect judges. First, judges' sentences tend to be below the level of the prosecutors' sentence recommendations. Second, the more serious the case is, the more sensitively judges respond to prosecutors' recommendations.

The following section describes both the data used here and the relationship between prosecutor demands and the decisions of judges for each decile of sentencing. The third section introduces the empirical model and reports and discusses the empirical findings, while the final section of the paper offers a summary and concluding remarks.

II. Literature Review

In one study of the jurisdictional process, Lee (1988) lists the characteristic factors and causal incidents affecting sentences and measures the degrees of those effects. This study suggests that several factors, including lower economic status and repeated convictions, induce longer sentences; however, there are still differences among judges. In another study, Lee (2006) investigated violent crimes and confirmed characteristics related to the final conviction level, while later Lee (2009) asserts that an upside-down U-shaped relationship exists between the criminal's age and the sentence level. However, these studies were mostly based on small sample sizes.

Other studies specifically focused on the anchoring effect during the prosecution process. Note that this paper attempts to analyze both sentencing disparities and the anchoring effect of the prosecutor's sentencing demand. Many studies present results supporting the idea that the decisions of judges depend on an anchoring point. Park *et al.* (2005) and Kim and Choi (2010) give active judges in South Korea three different anchoring points (no anchor, low anchor, and high anchor) to assess whether their decisions change according to the information given. First, Park *et al.* (2005) analyzes the jurisdictional consequences of 158 judges in Daejeon in Korea. That study compared three types of hypothetical cases of sentencing after prosecutors' recommendations of zero years, two years, and ten years, while controlling for other variables. Second, Kim and Choi (2010) conducted an experiment on 103 judges' decisions in sexual harassment cases. Both surveys conclude that an anchoring effect exists, as judges facing higher recommendations tend to impose longer sentences.

Hastie *et al.* (1999) and Malouff and Schutte (1989) find through an analysis of actual cases that amounts claimed by the plaintiff side can affect jurors' decisions. The former conducted a controlled experiment and showed that juries were willing

to announce 2.5 times more compensation for plaintiffs. The latter also demonstrated the existence of the anchoring effect, finding that the amount of legal compensation is significantly influenced by the plaintiffs' claims in civil cases. Viscusi (2001) and Hinsz and Indahl (1995) conducted surveys of citizens and college students to show that the anchoring effect exists during the process determining the penalty. The latter study divided the samples into three groups of high, low, and zero compensation for a traffic accident. The results were similar to those of Robbennolt and Studebaker (1999).

Most importantly, Martin and Alonso (1997) conducted an empirical study of actual criminal court decisions. Their study showed stronger anchoring effects in sentences for sex crimes, minor rape cases, and rape cases, while no significant results were noted for rape attempts. Judges sentencing for serious crimes may tend to share responsibilities with prosecutors.

Except for the last case, most previous studies rely on experiments based on civil disputes in a controlled environment. However, we need to identify these effects in actual criminal cases as well as civil trials. The analysis provided in this paper is expected to offer the following advantages over previous studies: first, a majority of existing studies were based on small-scale data pools, which limits the generalizability of their results. Meanwhile, this paper examines a total of 2,733 cases in order to enhance the reliability of the results. Second, the existing literature on the anchoring effect of the prosecution's initial sentencing recommendation contends that sentencing recommendations present an obstacle for the judge when determining an objective and reasonable sentence. However, it would be more logical to consider the prosecution's sentencing recommendations as professional opinions and to have judges makes rulings based on or in reference to the prosecution's discernment. Third, actual cases were used for the data analysis, thus allowing empirical studies of sentencing disparities, which were lacking in previous studies.

III. Data

After collecting first trial cases on indictments from July 1, 2009 to October 10, 2011 in 52 categories of offences falling under the classification of sex crimes, 3,995 sex crimes were confirmed; 52 categories include rape, rape and murder, fatal rape, robbery and rape, forced indecency, and rape of minors, as listed in Table A1. Among these, 3,991 cases included data on the prosecution's sentencing recommendation and 2,737 provided information on the judge's eventual sentence. Finally, 2,733 sex crime cases were regarded as valid samples because information about the prosecution's sentencing recommendation in four out of the original 2,737 cases was missing.

Next, the above data were ranked according to the length of the judge's sentence in months then split into deciles (273 cases in each decile based on the sentence level). Table 1 shows the statistical abstract of these valid samples. We divided the entire dataset evenly into ten groups based on the sentence level to avoid arbitrary data distortion and to conduct a quantile regression. Hypothesis and suppositions

TABLE 1—SUMMARY OF JUDGES' SENTENCES AND PROSECUTORS' RECOMMENDATIONS

Level of Sentence	Number of Samples		Mean		Median		Std. Dev.		Paired t-test
	N_A	N_S	Judge	Prosecutor	Judge	Prosecutor	Judge	Prosecutor	
1	273	6	5.6	18.4	6	12	3.15	14.12	-14.69
2	273	3	14.5	30.7	12	24	3.18	17.86	-15.39
3	273	12	20.1	38.3	18	36	2.88	17.56	-17.93
4	273	15	28.0	42.8	30	36	2.82	15.98	-15.18
5	273	16	30.0	44.5	30	36	0.00	16.85	-14.20
6	273	13	30.0	47.7	30	36	0.00	21.46	-13.66
7	273	11	35.3	61.5	36	60	1.92	21.77	-20.38
8	273	13	40.2	66.2	36	60	4.84	23.33	-19.12
9	273	11	58.1	88.9	60	84	6.38	37.04	-14.15
10	276	31	100.2	153.3	84	120	37.34	125.88	-7.65
Total	2,733	131	36.3	59.4	30	48	28.19	57.92	-27.86

Note: 1) The unit of sentencing is months. 2) As the fifth and sixth deciles have the same mean, we ordered those two segments according to the recommendation level. 3) N_a indicates the total number of samples, and N_s indicates the number of times in which the judge's sentence surpasses the prosecution's sentencing recommendation. 4) The paired t-test verifies whether the differences between the sample means of the judge's sentences and those of the prosecution's sentencing recommendations are statistically meaningful.

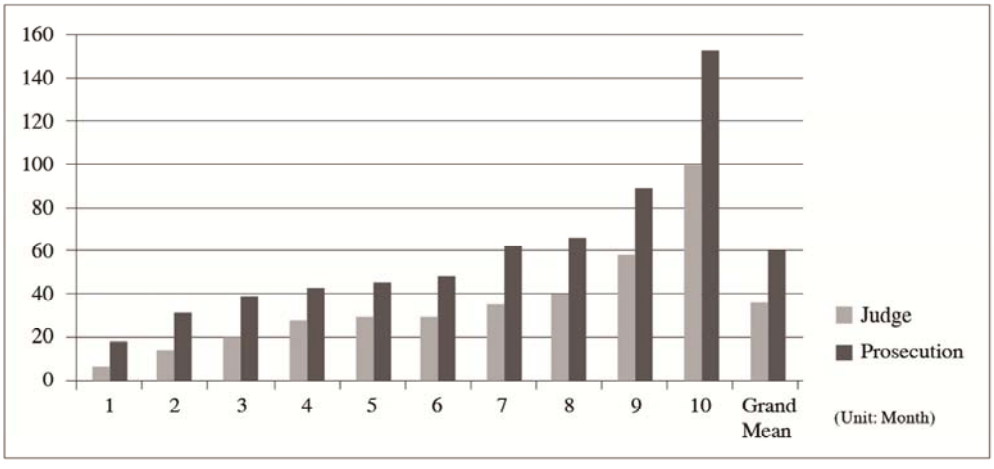


FIGURE 1. PROSECUTOR'S RECOMMENDATIONS AND JUDGE'S SENTENCES

are addressed in chapter IV.

Although some of the judge's sentences were indeed more severe than that recommended by the prosecutor, most of the judge's sentences were a fraction of what was recommended. Only 131 out of 2,733 (4.8%) were cases in which the sentence from the judge exceeded the sentencing recommendation. An examination of the sample means of each decile reveal that the mean of the prosecutor's requests was stricter than the mean of the sentences pronounced by the judges Figure 1.

In addition, Figure 2 shows the ratio of the judge's sentencing level to the prosecution's sentencing recommendation. From the third decile and above, these values are between 0.55-0.67 which indicates that the judges generally levy a sentence in a range lower than that recommended by the prosecutors.

In this paper, factors that affect the sentencing by a judge were determined by

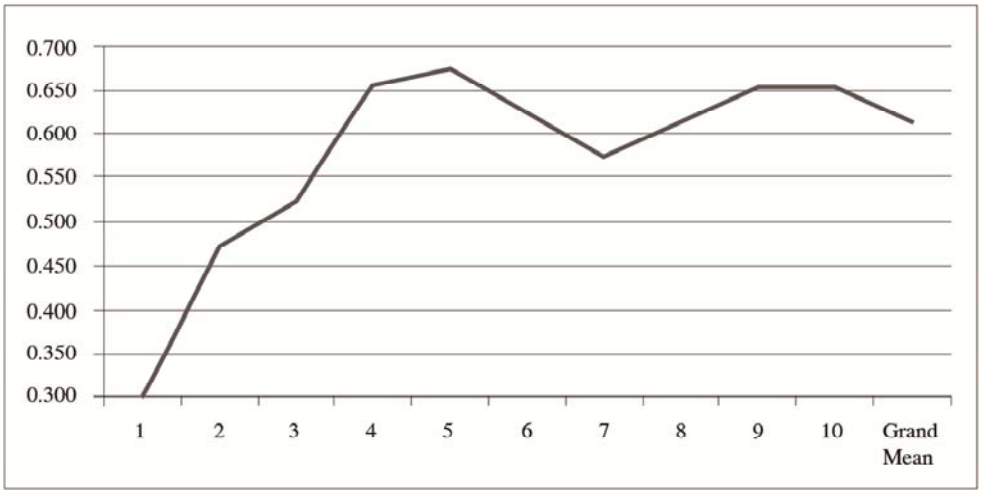


FIGURE 2. RATIO OF THE SENTENCING LEVEL TO THE RECOMMENDED SENTENCING LEVEL

examining processing data from the Prosecutorial Guideline System (PGS), which contains information about each case. Sentencing factors were divided in aggravating variables and mitigating variables. These were subdivided into general and special factors. Sentencing factors consist of 22 variables which include four special mitigating factors, four general mitigating factors, seven general aggravating factors, and seven special aggravating factors.[1]

First, the characteristics of special mitigating factors will be explained. *CRA_MHD* in the PGS defines the method used during the crime, which provides information about whether or not the crime is classified as simple violence by Korean law, whether a deadly weapon was used, whether a mental disorder existed due to the use of drugs, and whether authority and force were used. *CRA_MHD_5* (*sd1*) in the PGS data indicates the use of fraudulent means or a threat of force. Self-denunciation (*sd2*) and a confession (*sd3*) are considered as special mitigating factors. These variables could raise concern about multicollinearity which may arise when correlations among variables cause problems in the regression analysis, as self-denunciation by a suspect implies that he/she has offered a confession. However, as shown in Table 3, the total number of cases of self-denunciation accounts for only 1.65 percent. Most of criminal cases are resolved through an arrest rather than by self-denunciation, and those offenders commonly confess. This relieves concerns about multicollinearity between *sd2* and *sd3*. Lastly, whether or not the victim of the sex crime pursues punishment is also a special mitigating factor (*sd4*). In sex crimes, both the will of the victim and that of his/her family for punishment are taken into consideration, but this paper accounts only for the victim's will. Therefore, if the victim desires punishment, it is scored as '1', with a score of '0' otherwise.

The group composed of general mitigating factors considers whether or not the

[1]Sentencing guidelines from advanced research conducted by Lee and Park (2010) analyzing sentencing factors of sex crimes based on the guidelines set by the Sentencing Commission of the Supreme Court of Korea are correspondingly applied to the selection of sentencing factors in this paper.

accused undertakes serious reflection on their criminal conduct (*gd1*). In the PGS, the existence of serious reflection is shown in *SLEXM_YN* as '1', and whereas the absence is '2'. However, '2' is converted to '0', which shows that the accused undertook no serious reflection. Approximately 42 percent of criminal cases indicated that the defendants reflected on their crimes. *CNSP_XTN* in PGS shows whether there was passive participation in the crime (*gd2*). The data for passive participation was indicated as '03' in *CNSP_XTN* but was converted to '1'. Other values in addition to '03' were all converted to '0'. Whether or not the accused has a criminal record is regarded as a mitigating factor, *OFN_PRCD_8* (*gd3*), in this paper. Thus, if he/she has no such record, it is treated as '1', whereas the opposite is scored as '0'. Lastly, *DMG_RVR_EFT_YN* in the PGS shows the existence of a sufficient compensation deposit (*gd4*, which is considered a general mitigating factor that indicates whether the accused is making serious efforts to compensate for damages even when he/she fails to reach an agreement).

Seven general aggravating factors are considered. Premeditated crime (*ga1*) distinguishes between cases in which the commission of a crime is premeditated or accidental. The existence of multiple instances of sexual intercourse during the period of an offence (*ga2*) indicates that the defendant committed multiple crimes. In other words, he/she is charged with repeated criminal conduct instead of a single sex crime. Whether or not a case falls under Article 7 of the Act on the Protection of Children and Juveniles from Sexual Abuse (*ga3*) is another aggravating factor under the special act. If it does, the data is scored as '07' in *SPCL_LAW_ICRS_YN* in the PGS and is converted to '1'. If not under the special act, it is scored as '0'. The use of fiduciary relations (*ga4*) is also considered an aggravating factor. It is defined as follows: 'It could be extensively believed that in terms of the motive, means, and results, etc., of a crime, that the accused abuses the mutual trust with a victim in the commission of a crime against the victim with whom the accused maintains an interpersonal relationship'. *ICRS_ELMT_2* is used in the PGS to show the existence of a fiduciary relationship. Whether the criminal motive is to avoid condemnation (*ga5*) is another general aggravating factor. In other words, this factor is related to the following cases: 'the commission of a crime to prevent the victim from reporting it while he/she commits other criminal acts'; 'the commission of a crime to acquire benefits to property'; 'the commission of a crime out of retaliation, resentment or hatred towards the victim'; and 'the commission of a crime for other purposes equivalent to the aforementioned causes'. Causing mental disorder (*ga6*), which falls under *CRA_MHD*, means that a defendant commits a criminal act after mentally debilitating the victim using drugs to render the victim unable to protest. This is represented by *CRA_MHD_6* in PGS. The final factor in the group is the presence of sadistic sexual acts (*ga7*), which is designated as *NV_AGG_ACT* in the PGS.

Finally, there are seven special aggravating factors. The act of compounding the victim's humiliation (*sa1*) is represented by *ICRS_ELMT_1* in the PGS, and approximately 12.3 percent of all samples include this factor. Whether a victim is among those considered especially vulnerable to a crime (*sa2*) is linked to crimes against groups such as those who are mentally impaired or children. If a victim is vulnerable, *VTM_DLCT* in the PGS is classified as '1'; otherwise, it is '0'. The existence of special robbery refers to whether offences include not only a sex

TABLE 2—PROSECUTORIAL GUIDELINE SYSTEM AND FACTORS

Sentencing Factors		Variable	PGS Code	Treatment of Variable
Special Mitigation	Use of Authority and Force (without violence·threat)	*sd1*	*CRA_MHD_5*	
	Self-denunciation	*sd2*	*SSRD_YN*	
	Confession	*sd3*	*CNF_YN*	
	Victim's Will not to Punish	*sd4*	*VTM_PNH_DCTR*	
General Mitigation	Serious Reflection	*gd1*	*SLEXM_YN*	
	Passive Participation	*gd2*	*CNSP_XTN*	
	Record of Criminal Punishment	*gd3*	*OFN_PRCD_8*	
	Sufficient Compensation Deposit	*gd4*	*DMG_RVR_EFT_YN*	
General Aggravation	Premeditated Crimes	*ga1*	*PLAN_LSNM_YN*	
	Multiple Occasions of Sexual Intercourse during the Period of an Offence	*ga2*	*ACT_TMS_2*	
	Pertinent to Article 7 of the Act on the Protection of Children and Juveniles from Sexual Abuse	*ga3*	*SPCL_LAW_ICRS_YN*	Yes = 1
	Abuse of Interpersonal Relationship	*ga4*	*ICRS_ELMT_2*	No = 0
	Crimes for the Purpose of Avoiding Condemnation	*ga5*	*BLM_MTV1,2,3,4*	
	Causing Mental Disorder	*ga6*	*CRA_MHD_6*	
	Sadistic Sexual Acts	*ga7*	*NV_AGG_ACT*	
Special Aggravation	Act to Compound a Victim's Humiliation	*sa1*	*ICRS_ELMT_1*	
	Victim Vulnerable to a Crime	*sa2*	*VTM_DLCT*	
	Inclusion of Special Robbery	*sa3*	*SLP_ICRS_ELMT_5*	
	Gang Rape	*sa4*	*GRP_YN*	
	Victim's Pregnancy	*sa5*	*VTM_PRGN*	
	Repetition of a Crime of the Same Type not under Relative Special Acts	*sa6*	*OFN_PRCD_2*	
	Commission of Instigation against Those So Directed	*sa7*	*CTR_CMDR_ABET*	

Note: Codes of sentencing factors for cases by the Office of the Supreme Prosecutor in the PGS are used.

TABLE 3—SUMMARY OF PROSECUTORIAL GUIDELINE SYSTEM AND FACTORS

Name of Variable		Number of Samples	Mean	Sample Deviation
sd1	Use of Authority and Force (without violence or threat)	2733	0.0820	0.2744
sd2	Self-denunciation	2733	0.0165	0.1273
sd3	Confession	2733	0.6378	0.4807
sd4	Victim's Will not to Punish	2733	0.7750	0.4177
gd1	Serious Reflection	2733	0.4171	0.4932
gd2	Passive Participation	2733	0.0051	0.0714
gd3	Record of Criminal Punishment	2733	0.2561	0.4366
gd4	Sufficient Compensation Deposit	2733	0.0717	0.2581
ga1	Premeditated Crimes	2733	0.2177	0.4128
ga2	Multiple Occasions of Sexual Intercourse during the Period of an Offence	2733	0.0424	0.2016
ga3	Pertinent to Article 7 of the Act on the Protection of Children and Juveniles from Sexual Abuse	2733	0.0827	0.2755
ga4	Abuse of Interpersonal Relationship	2733	0.1870	0.3900
ga5	Crimes for the Purpose of Avoiding Condemnation	2733	0.0402	0.1966
ga6	Causing Mental Disorder	2733	0.0121	0.1092
ga7	Sadistic Sexual Acts	2733	0.0048	0.0688
sa1	Act to Compound a Victim's Humiliation	2733	0.1233	0.4259
sa2	Victim Vulnerable to a Crime	2733	0.0048	0.0688
sa3	Inclusion of Special Robbery	2733	0.0059	0.0763
sa4	Gang Rape	2733	0.0337	0.1804
sa5	Victim's Pregnancy	2733	0.0088	0.0933
sa6	Repetition of a Crime of the Same Type not under Relative Special Acts	2733	0.0274	0.1634
sa7	Commission of Instigation against Those So Directed	2733	0.0015	0.0382
prose	Prosecution's Sentencing Recommendation	2733	59.3513	57.9213
judge	Judge's Sentence	2733	36.2678	28.1906

crime, but also a special robbery accompanied by the use of deadly weapons or intrusion. *SLP_ICRS_ELMT* in the PGS provides information about intrusion upon a habitation, compound larceny, special larceny, robbery and special robbery. This paper makes use of *SLP_ICRS_ELMT_5* (*sa3*), which represents special robbery. With regard to gang rape (*sa4*), pregnancy of a victim (*sa5*), repetition of a crime of the same type other than a repeated crime under the Act on Special Cases concerning the Punishment of Specific Violent Crimes, and the Act on the Aggravated Punishment, etc. of Specific Crimes (*sa6*) and commission of instigation against those who are so directed (*sa7*), the data *GRP_YN*, *VTM_PRGN*, *OFN_PRCD_2*, and *CTR_CMDRABET* in the PGS are used, respectively. All variables except for prosecution's sentencing recommendation (*prose*) and the judge's actual sentence (*judge*) are processed as binary variables and are treated as '0' or '1'.

IV. Regression Analysis

A. *Model Setting*

A model to confirm the following hypotheses is crafted in order to ascertain the influence of the prosecution's sentencing recommendations on the sentencing decisions of judges.

Hypothesis 1. The prosecution's sentencing recommendation influences the judge's sentencing decision.

Hypothesis 2. The judge's sentence tends to be below the level of the prosecution's sentencing recommendation.

Hypothesis 3. The judge's response to the prosecution's sentencing recommendation varies depending on the level of the sentence.

In fact, regarding the sentencing decision, the prosecutor's sentencing recommendation need not be taken into consideration, but it is considered likely that a judge would experience discomfort with the gap between the prosecution's sentencing recommendation and the sentence which is determined. In other words, it is possible for a judge to decide on a sentence by referring to the level of the prosecution's sentencing recommendation. As was stated above, the sample means of the prosecution's sentencing recommendation are on average higher than those of the judges' sentences, which indicates that a judge tends to set a sentence below the level recommended by the prosecutor. For instance, for every one-month increase in the prosecution's sentencing recommendation, the length of the corresponding increase in the sentence set by the judge would be shorter than one month. Lastly, the sensitivity of the judge to the prosecution's sentencing recommendation appears to differ between cases with lower and higher sentence levels. This means that in cases with a lower sentencing level, the nature of the crime in question and the significance of the matter can be considered as minor,

while in cases with a higher sentencing level, the crimes in question and related matters can be regarded as more serious, which may cause the judge to feel a greater sense of responsibility when passing the sentence. Thus, the judge in the latter situation could heighten sensitivity to the prosecution's sentencing recommendation. Thus, this paper attempts to confirm such a hypothesis.

In order to ascertain the influence sentencing recommendations by the prosecution have on a judge's determination of a sentence, this study aims to verify hypotheses 1 and 2 by including the variable of the prosecutor's sentencing recommendation (*prose*) with general or special mitigating or aggravating factors in each trial.

However, concerning hypothesis 3, a conventional least-square regression model (OLS: Ordinary Least Square) cannot readily be used for verification. First, after the analysis groups are ordered according to the length of the judge's sentence in months and then divided into ten sequential groups, the regression analysis can be conducted on each group strategically. At this stage, the method of enumerating estimates of the variable of the prosecution's sentencing recommendation (*prose*) according to each level of sentence (the subset of the population) could be chosen. This may result in sample selection bias, as pointed out by Heckman (1979). The problem of sample selection bias is ignored in many regression analysis models that only draw partial samples from a total population, potentially distorting the estimated results by making random choices of groups with specific dispositions. A further problem arises when the variable of the prosecution's sentencing recommendation (*prose*) is set with the formula of equals $\alpha^{*} prose + \beta^{*} prose^{2} + \cdots,$ which is a type of quadratic function. That is, when differentiated, the formula equals $\alpha + \beta^{*} prose$ and is therefore expected to confirm that the sensitivity changes by β magnification depending on the sentence level. However, this strategy can trigger a multicollinearity problem due to the correlation between the variable of the prosecution's sentencing recommendation (*prose*) and the squared variable ($prose^2$). Therefore, it can be asserted that the strategy involves statistical errors when attempting to verify the differences in the level of influence by the sentencing recommendation of the prosecutor on the determination of the judge's sentencing level in serious criminal cases (with a higher sentence level) as well as in minor cases (with a lower sentence level).

Therefore, rather than applying OLS, it is necessary to select a model capable of addressing the aforementioned problem. Quantile regression,[2] as designed by Koenker and Bassett (1978), utilizes the entire sample in a regression analysis of all levels of penalty, from the lowest to the highest.

[2]Koenker and Basset (1978) conceived of quantile regression, which is able to analyze the influences of independent variables (covariate) at each distribution level of dependent variables, as opposed to the average variation of the dependent variables. Quantile regression is a model in which a hypothesis reflects that the response to sentencing factors, the explanatory variable, and the prosecutor's sentencing may differ according to the distribution level of sentencing by the judge. Essentially, quantile regression is based on the minimization of the weighted absolute deviation for the estimate of conditional quantile functions, while the estimate of OLS is based on the least square method for the estimate of the conditional mean function. Therefore, unlike OLS, quantile regression is not limited to explaining the averages of the dependent variables. It can also explain the determinants of the dependent variables at any level of distribution of the dependent variables.

Model:

$$J = \alpha \times P + \sum_{i=1}^{4} \beta_i \times GD_i + \sum_{i=1}^{4} \gamma_i \times SD_i + \sum_{i=1}^{7} \delta_i \times GA_i + \sum_{i=1}^{7} \lambda_i \times SA_i$$

J : Sentence decided by the judge (by month)
P : Sentence requested by the prosecutor (by month; dummy variables are set within each level of sentence)
GD : General mitigating factors
SD : Special mitigating factors
GA : General aggravating factors
SA : Special aggravating factors

B. *Empirical Results*

Table 4 presents the result of regression analysis according to the distribution unit, and it appears to confirm all of the aforementioned hypotheses.

First, the data for each sentence recommended by the prosecutor appear to show a positive correlation with the judge's sentence. It is fair to state that judges do indeed determine a punishment in consideration of the prosecutors' sentencing recommendations.

Second, when deciding a sentence, judges appear to moderate the sentences suggested by prosecutors within a certain range. Regarding cases with penalties in the lowest 10% (least serious cases), the judges increased their sentences by 0.25 months for every one-month increase by the prosecutors in their recommended sentence. This demonstrates that judges do in fact take the prosecutors' suggested sentence levels into account but tend to sentence more leniently than recommended by prosecutors. Such differences are also represented by the fact that across the entire sample, judges generally issued lighter penalties than prosecutors. Moreover, the sample mean of the sentence level recommended by prosecutors was much higher than that of the judges.

Finally, the quantile analysis results show that the more serious the case (the higher the sentence level), the more sensitively the judges respond to the prosecution's recommendation. In Table 4, a one-month increase in the prosecutor's sentence leads to a 0.25 month increase in the judge's sentence at the lowest 10% of sentences. However, the corresponding values are 0.36 months for the lowest 25%, 0.61 months for the highest 25% (the lowest 75%) and 0.78 months for the highest 10% (the lowest 90%). Cases with a low penalty level are highly likely to be less serious and thus place relatively less of a burden on judges when considering sentencing factors and deciding upon a penalty. On the other hand, cases featuring a higher penalty level are likely to be of a greater gravity and the sentences passed to defendants are likely to be heavier, therefore elevating the risk cost caused by an error of judgment – a heavier burden on the judge when determining a sentence. As a result, it is evident that the higher the sentence level, the greater the dependence of the judge on the prosecutor's sentencing recommendation. In other words, the prosecutor's sentencing recommendation has a greater influence on the judge's decision as the sentence level of the case

TABLE 4—REGRESSION ANALYSIS RESULT: OLS AND QUANTILE REGRESSION

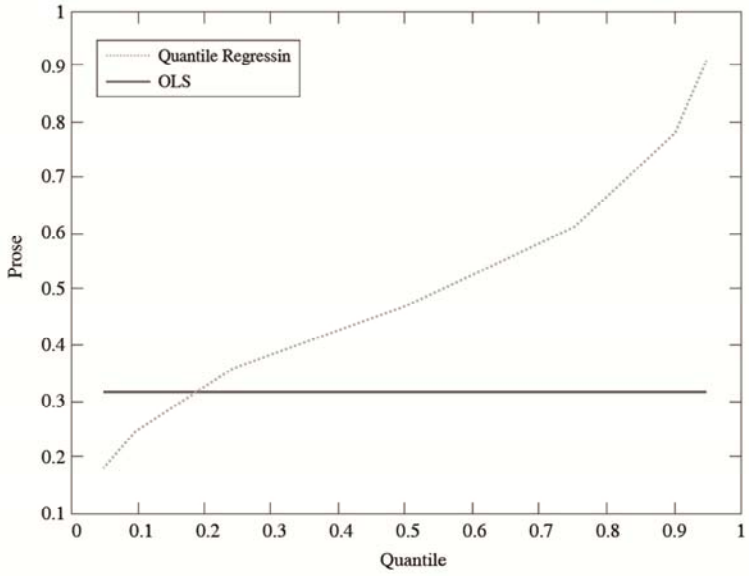
Dependent Variable: Sentence by Judge								
Var	OLS	5	10	25	50	75	90	95
prose	0.3139	0.1773	0.246	0.3621	0.4697	0.6098	0.78	0.9063
	(44***)	(16***)	(22***)	(57***)	(170***)	(995***)	(154***)	(115***)
sd1	0.8605	1.8912	-1.0374	1.2241	0	0.7805	2.04	1.3125
	(0.62)	(1.9*)	-(1.15)	(1.43)	(0)	(5.16***)	(1.64)	(0.75)
sd2	-5.713	-0.9813	-2.4385	-1.3448	0	0	-1.08	-4.125
	(-1.92*)	(-0.48)	(-1.28)	(-0.74)	(0)	(0)	(-0.48)	(-1.09)
sd3	3.8703	2.1013	-0.1176	-0.3103	0	0.6829	3.66	4.125
	(3.81***)	(2.94***)	(-0.17)	(-0.5)	(0)	(6.29***)	(4.23***)	(3.5***)
sd4	1.3273	-3.045	-4.8128	-6	-6	-3.5122	-3.66	-2.8125
	(1.37)	(-4.25***)	(-7.16***)	(-9.89***)	(-16.16***)	(-34.16***)	(-4.48***)	(-2.49**)
gd1	-1.1707	1.9362	2.139	1.6552	2.7273	0.1463	-1.02	-0.1875
	(-1.13)	(2.54**)	(3.04***)	(2.58***)	(6.76***)	(1.34)	(-1.23)	(-0.17)
gd2	-0.2084	-0.4447	3.0374	0.3103	0.7273	3.6585	1.14	-0.5625
	(-0.04)	(-0.41)	(1)	(0.1)	(0.35)	(6.56)	(0.28)	(-0.24)
gd3	-0.5953	-1.3002	-0.0963	-0.3103	0	-0.1463	-1.08	0
	(-0.68)	(-2.05***)	(-0.16)	-(0.58)	(0)	(-1.54)	(-1.4)	(0)
gd4	-0.1154	-2	1.2086	1.1897	2.9091	2.6829	1.26	0.1875
	(-0.08)	(-1.83*)	(1.22)	(1.29)	(4.91***)	(16.25***)	(1)	(0.1)
ga1	4.7856	3.8987	2.5989	0.6207	0.3636	0.5854	0.06	2.8125
	(4.83***)	(5.94***)	(3.95***)	(1.02)	(0.94)	(5.52***)	(0.07)	(2.3**)
ga2	3.7622	0.3827	-0.8342	-0.3621	0.9091	3.3659	2.34	1.3125
	(1.92*)	(0.37)	(-0.81)	(-0.32)	(1.19)	(15.99***)	(1.38)	(0.53)
ga3	-6.9997	-1.9625	-3.016	-2.2759	-2.5455	-4.2927	-1.2	-1.3125
	(-5.04***)	(-1.89*)	(-3.17***)	(-2.67***)	(-4.71***)	(-28.74***)	(-0.96)	(-0.74)
ga4	0.6638	1.8086	2.2353	0.3103	-0.3636	0	-0.06	-1.3125
	(0.67)	(2.55**)	(3.31***)	(0.5)	(-0.93)	(0)	(-0.07)	(-1.03)
ga5	10.6602	-4.6378	-7.9358	-0.6207	2.4545	0.9268	8.88	12.75
	(5.28***)	(-3.4***)	(-5.89***)	(-0.49)	(3.11***)	(4.26***)	(5.31***)	(7.06***)
ga6	-3.0595	0.1914	-0.7701	-3.1034	-7.8182	-1.4634	1.32	6.5625
	(-0.85)	(0.21)	(-0.78)	(-1.49)	(-5.73***)	(-3.6***)	(0.41)	(1.6)
ga7	-13.5579	-13.1481	-25.0374	-20.1724	-6	-11.4634	-11.22	-23.0625
	(-2.37**)	(-11.66***)	(-16.12***)	(-6.61***)	(-2.8***)	(-18.18***)	(-6.57***)	(-12.33***)
sa1	3.4429	1.0187	1.6043	0.931	1	0.4146	1.44	1.3125
	(3.81***)	(1.56)	(2.58***)	(1.68*)	(2.84***)	(4.28***)	(1.8*)	(1.11)
sa2	-7.5733	-14.5611	-3.6898	-4.9655	-6	-11.8293	-3.72	-6.75
	(-1.39)	(-14.74***)	(-1.12)	(-1.53)	(-2.9***)	(-20.51***)	(-0.85)	(-3.84***)
sa3	9.9058	24	20.9519	11.1207	9.9091	2.4878	-0.24	-6.1875
	(1.92*)	(22.58***)	(6.87***)	(5.01***)	(5.26***)	(4.23***)	(-0.16)	(-3.46***)
sa4	-3.7057	7.1445	2.246	-3.8793	-5.2727	-3.5122	-3.78	-0.75
	(-1.63)	(8.24***)	(2.62***)	(-3.1***)	(-6.17***)	(-14.74***)	(-1.89*)	(-0.29)
sa5	5.8542	0.7355	-10.3316	1.9655	5.1818	0.7073	-0.06	0.9375
	(1.44)	(0.78)	(-5.24***)	(0.78)	(3.31***)	(1.6)	-(0.02)	(0.19)
sa6	14.7312	0.2533	4.2567	3.5172	6	8.9268	23.22	34.125
	(6.31***)	(0.19)	(2.87***)	(2.51**)	(6.72***)	(35.7***)	(11.6***)	(12.33***)
sa7	-2.7325	-2.2551	-5.1872	0.8793	-8.5455	-26.9756	-26.74	-31.375
	(-0.28)	(-1.3)	(-2.45**)	(0.15)	(-2.53**)	(-25.84***)	(-9.93***)	(-10.86***)
cons	12.9638	2.88	7.123	9.6207	10.3636	10.8781	7.68	5.625
	(11***)	(3.22***)	(8.7***)	(13***)	(22.84***)	(83.51***)	(7.23***)	(3.72***)
N	2,733							
R^2	0.52	0.219	0.269	0.323	0.333	0.482	0.562	0.605

Note: t-values are in parenthesis. * p<0.10, **p<0.05, *** p<0.01.

increases. Such a tendency was also identified in a paper by Englich and Mussweiler (2001), which showed that in cases with two-month sentences recommended by prosecutors, the judges' decisions reflected little difference from that suggested by law school students (17.21 months). However, in cases in which prosecutors recommended 34-month sentences, the strain of setting the sentence led the judges to respond to the prosecutors' suggestion and pass down sentences averaging 28.70 months; essentially, the heavier the sentence, the greater the judges' dependence on the prosecutors' sentencing recommendation.[3]

In addition, Figure 3 suggests the influence of the prosecution's recommendation on judges' decisions according to quantile of the penalty level. The estimates of OLS show that an increase of one month in the sentence recommended by the prosecutor increases the judges' decision by 0.31 months. Figure 1 is limited to analyzing the data according to the sentence level for OLS estimates showing the same value throughout the section. In Figure 3, however, the OLS estimate is higher than that of quantile regression in the data representing the lowest 20%, which indicates that it is likely to overestimate the judges' decisions, while in the data representative of the lowest 20% and above, the OLS estimate is likely to underestimate the judges' decisions in response to the prosecutors' sentencing recommendations.

FIGURE 3. ANCHORING EFFECT: ESTIMATES OF CHANGES IN ESTIMATES OF PROSECUTORS' SENTENCES BY EACH QUANTILE



[3]It is plausible that this anchoring effect is sensitive to the type of the crimes. Separate regression by the type of sexual crimes reveals qualitatively same results, although the coefficients vary from 0.183 to 0.893. Controlling 28 types of sexual crimes by using dummy variables in the regression does not reveal qualitatively different result with the coefficient of 0.464.

V. Conclusion

Numerous studies have investigated determinants of sentences, whereas only a handful of studies have focused on the relationship between the judge and the prosecution regarding an anchoring effect. This study fills a void in the literature by providing useful information to judicial decision makers. Specifically, a dataset of sex crimes in the Prosecutorial Guideline System over the period from July of 2009 to October of 2011 is used to estimate the determinants of the variable related to prosecutors' sentence recommendations as well as other typical factors. The empirical analysis is based upon quantile regression, as designed by Koenker and Bassett (1978). Several valuable insights can be drawn from the results.

The results overall show that when controlling for the independent variables of mitigating and aggravating factors, the anchoring effect occurs in the jurisdictional procedures for sexual crimes. Moreover, the amount of influence increases as the level of the sentence increases. The categories of crimes are listed in Table A1. Most cases involve more than one type of crime. Further implications follow.

First, the sentence recommended by the prosecutor does have a major influence on the judge's decision, and an anchoring effect was verified. A number of domestic Korean and international research efforts have studied, through simulations, how different levels of sentencing recommendations by prosecutors influence judges' decisions with regard to identical cases. In a study by Park *et al.* (2005), the sentences judges give when a low sentence level was recommended by the prosecutor was much lower than when a longer sentence was recommended. A study by Englich and Mussweiler (2001) similarly demonstrates that when the prosecutor recommends a two-month sentence, the judges responded with 18 months, whereas a 34-month sentencing recommendation by the prosecutor led judges to decide on 28.70 months on average. Moreover, as Martin and Alonso (1997) showed, judges' decisions were close to the prosecutors' requests, and there was a proportional degree of this independency. This indicates that judges anchor their decisions to the sentencing recommendations of prosecutors. Through sentencing recommendations and sentence data from the PGS and the regression analysis model taking special and general sentencing factors into account, this research confirmed that the sentencing recommendation of prosecutors is an important factor in judges' examinations of offences, and the presence of the data on sentencing recommendation led to remarkable changes in the explanatory power of the model.

Second, judges tend to pronounce lighter sentences than those suggested by prosecutors. In Park's study, mentioned above, when the prosecutor recommended a much lower level of penalty than that considered appropriate in the field (57 months), the judge pronounced a sentence which was 15 months below the conventional level. When the prosecutor suggested a much higher level of penalty (10 years), the judges tended to sentence at a level half of that suggested. This study also shows that the sample mean of the prosecution recommendations is higher than that of judges' decisions in general, and among 2,733 cases assessed here, the sentence level handed down by judges exceeded the prosecutor's recommendation in only 131. According to the results of a regression analysis conducted here, a one-month increase in a sentence recommendation by

prosecutors led to an increase of 0.25 to 0.78 months in the judges' sentences from the lowest 10% to the highest 10%. This indicates that judges apply a certain discount to the sentences recommended by prosecutors. Although judges do generally anchor their decisions to the sentence levels requested by prosecutors, judges tend to choose a sentence level lower than that provided by prosecutors.

Third, although prosecutors' sentencing recommendations impact judges' decisions, the degree differs with the sentence level. Specifically, at the lowest level of penalty, a one-month increase in a prosecutor's sentencing recommendation results in a 0.25-month increase in the judge's sentence, while at the highest sentence level, judges' sentences increase by 0.78 months. The prosecution's recommendation influences judges' decisions differently according to the sentence level. This can be also identified in work by Martin and Alonso (1997), in which judges were found to be anchored to the sentence recommended by the prosecutor in cases of rape or incidents with minors, while the anchoring effect appears to be insignificant in sex offences of relatively lower severity, including sexual intercourse by abuse of occupational authority or attempted rape. Judges' sentences were determined to be independent of those of prosecutors. This study attempted to interpret the results in terms of psychology – sex offences including rape or incidents with minors are recognized by society as serious crimes; therefore, judges, who must determine the level of penalty, tend to share the responsibility by accepting the sentence recommended by the prosecutor. However, for offenses including sexual intercourse by abuse of occupational authority or attempted rape, they are deemed to be relatively less serious and thus judges make independent choices. This implies that the anchoring effect can manifest itself to a varying degree according to the gravity of the crime involved.

However, unlike Martin and Alonso (1997), which posits no anchoring effect with less serious crimes, this study found that prosecutors' sentencing recommendations indeed influence judges' decisions, even at less severe sentencing levels. Nonetheless, judges did retain space for sentencing independently in less serious cases, and this discretion caused judges to refer to the sentences recommended by prosecutors to a lesser extent. It is therefore possible to infer that the anchoring of judges to recommendations by the prosecution grows weaker in cases with more lenient sentence levels.

This study has thus far analyzed how sentences recommended by prosecutors influence judges' decisions in an examination of an offense. It holds implications in that it has identified an anchoring effect through South Korean and intentional references making use of simulations, as well as through actual cases derived from the PGS system and sorted through a regression analysis. In addition, the results here indicate a need to create more objective and clear sentencing guidelines in the future which incorporate an effort to mitigate the psychological pressure experienced by judges with regard to serious offences or heinous crimes. This pressure can anchor them to the sentence recommended by the prosecutor.

Nevertheless, this study includes several limitations, as follows. The current paper cannot take into account the endogeneity problem in the analysis. It may be that the prosecutors' demands depend on the (expected) judge's sentence, which indicates the possibility of reverse causality. More refined data analysis or a more elaborate theoretical approach will be able to demonstrate the existence of an

anchoring effect while also addressing this problem.

Secondly, because the study analyzed only those cases pertaining to sex offences, it is necessary to remain cautious against generalizing the results to other crimes. In other words, the nature of the crimes may vary according to the category of the crimes. This may lead to a gap between the levels of penalty recommended by a prosecutor and the judge's confidence level regarding the prosecutor's suggestion. This would result in different levels of the anchoring effect depending on the crime. In order to overcome this limitation, the authors hope to pursue a more systematic follow-up study to analyze all categories of crime, based on this research, and determine more precisely why judges depend on prosecutors' sentencing recommendations.

In addition, further analysis is possible to explain additional factors which influence judges' sentences and to show the anchoring effect more clearly. The data can include more information on sex crimes, such as whether or not they were premeditated, caused mental disorders, or committed by acquaintances. Additional research can identify factors that have more of an impact on judges' decisions.

APPENDIX

TABLE A1—CLASSIFICATIONS OF SEX CRIMES IN KOREA

Classification of Sex Crimes by Names of Offences
Rape
Murder after Rape
Rape and Bodily Injury
Rape Resulting in Death
Bodily Injury Resulting from Rape
Robbery and Rape
Indecent Act by Compulsion
Indecent Act by Compulsion and Bodily Injury
Bodily Injury Resulting from Indecent Act by Compulsion
Rape of a Minor
Indecent Act by Compulsion with a Minor
Bodily Injury Resulting from Indecent Act by Compulsion with a Minor
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Rape of a Minor under Thirteen Years of Age)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Murder after Rape, etc.)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Rape and Bodily Injury, etc.)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Rape, etc. Resulting in Death)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Bodily Injury Resulting from Rape, etc.)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Quasi-Rape of the Disabled, etc.)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Larceny and Rape, etc.)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Intrusion upon a Habitation and Rape, etc.)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Rape Committed by a Relative)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Indecent Act by Compulsion Committed by a Relative)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Quasi-Rape Committed by a Relative)

TABLE A1—CLASSIFICATIONS OF SEX CRIMES IN KOREA (*CONTINUED*)

Classification of Sex Crimes by Names of Offences
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Quasi-Indecent Act by Compulsion Committed by a Relative)
Violation of Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Special Rape)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Special Robbery and Rape, etc.)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Special Indecent Act by Compulsion)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Special Quasi-Rape)
Violation of the Act on Special Cases Concerning the Punishment, etc. of Sexual Violence Crimes (Special Quasi-Indecent Act by Compulsion)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Rape of a Minor under Thirteen Years of Age)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Murder after Rape, etc.)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Rape and Bodily Injury, etc.)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Bodily Injury Resulting from Rape, etc.)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Quasi-Rape of the Disabled, etc.)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Larceny and Rape, etc.)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Intrusion upon a Habitation and Rape, etc.)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Rape Committed by a Relative)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Indecent Act by Compulsion Committed by a Relative)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Quasi-Rape Committed by a Relative)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Quasi-Indecent Act by Compulsion Committed by a Relative)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Special Rape)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Special Robbery and Rape, etc.)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Special Indecent Act by Compulsion)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Special Quasi-Rape)
Violation of the Act on the Punishment of Sexual Crimes and Protection of Victims thereof (Special Quasi-Indecent Act by Compulsion)

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China's Consumer Market: Growth, Changes, and Korea's Opportunities

By JINKOOK LEE*

This paper examines the aspects of changes in China's consumer market since the mid-1980s. By comparing urban and rural residents' expenditures, I find that the rural consumer market has exhibited extraordinary growth. Over the past decade, the consumption growth rate and average propensity to consume by rural residents have surpassed those of their urban counterparts, with the former's consumption patterns becoming increasingly similar to the latter's. Such a phenomenon prevails in rural areas which neighbor second- and third-tier cities where urbanization is progressing rapidly. These findings imply that Korean companies need to diversify their export goods in line with China's expanding rural markets while further differentiating their product composition to satisfy the heterogeneous demands in urban areas. With regard to the government, efforts must be made to strengthen the export cooperative system so that it targets not only urban but also rural markets in China.

Key Word: China's consumer market, Urbanization, Consumption expansion in China, Chinese economy
JEL Code: O12, O47, R11, R58

I. Introduction

The urgency for Korea to make further inroads into China's consumer market is mounting as a countermeasure to the continued drop in Korea's exports to China in recent years. Additionally, the Korea-China FTA and China's tariff cuts in consumer goods have opened up numerous new opportunities in recent years. At the same time, the 13th Five-Year Plan, announced at the Chinese NPC and CPPCC[1] emphasized the necessity to boost domestic demand. Accordingly, we can expect an additional consumption expansion in China.

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[1]In its NPC and CPPCC meetings in March of 2013, the Chinese government announced the 13th Five-Year Plan (2016-20), which aimed at doubling the national per capita income from the 2010 level and raising the current urbanization rate (54%) to 60% by 2020.

Therefore, an important issue for Korean companies with regard to entering the Chinese consumer market is to deliberate on how, where and in what manner to go about devising a strategy. China's consumer market encompasses numerous sub-markets consisting of provinces, prefecture-level regions[2] and urban/rural areas that are all highly heterogeneous in terms of population, income and consumption patterns. Moreover, this diversity urgently calls for intensive market research on and a clear understanding of the target area before jumping into the market. Prime examples include successful front runners, such as Orion, AmorePacific and the E-Land Group, who invested large amounts of time and effort to study market conditions and consumer characteristics before taking action to expand their businesses into China. Consequently, the market information and data accrued during this process have laid the foundations for their success today.

This paper analyzes the growth of and changes in China's consumer market in an effort to gain a better understanding and to discuss the future directions of governmental and corporate strategies. To be specific, changes in urban and rural consumer markets are initially investigated through an analysis of the growth rate of consumption per capita, the average propensity to consume (APC) and consumption patterns by product categories. The consumption trends in the first, second, and third tiers of cities and rural areas were then examined to discover the source of the recent growth in the consumer market. Finally, I estimated the impact of urbanization on the expansion of consumption to evaluate the feasibility and sustainability of China's urbanization policy with regard to expanding consumption.

From a comparison analysis between urban and rural residents' expenditures, I find that the rural consumer market has exhibited extraordinary growth. Since the mid-2000s, the growth rate of consumption and the APC of rural residents have surpassed those of their urban counterparts, with the former's consumption patterns becoming increasingly similar to the latter's. Such a phenomenon prevails in rural areas that neighbor second and third tier cities, where urbanization is progressing rapidly.

Regarding the consumption-boosting effect of urbanization, the estimation results reveal that a 1%p rise in the urbanization rate increases consumption per household by 75 yuan and the total consumption by 26.2 billion yuan on an annual average basis. Depending on which empirical model is used, the magnitude of the effect varies to some extent, but the rate of urbanization is estimated to have a positive effect on consumption in all models.

These empirical results provide crucial implications for both governmental and corporate responses. First, Korean companies must diversify their products in line with China's expanding rural markets while further differentiating their product composition to satisfy the heterogeneous demands in urban areas. With regard to the government, efforts must be made to strengthen the export cooperative system between domestic manufacturers, Korean distributors (operating in China) and logistics companies, targeting not only urban but also rural markets in China.

[2]In China, prefecture-level regions represent a second-level administrative division between provinces (first level) and counties (third level). Prefecture-level regions consist of prefecture-level cities and neighboring prefecture-level rural areas.

The remainder of the paper is organized as follows. Section II reviews the related literature and specifies the paper's contributions. Section III presents the 'big picture' of the growth of the Chinese consumer market. In Section IV, I exhaustively analyze the important aspects of the consumption structure by comparing urban and rural residents' consumption characteristics. Section V discusses the progress in urbanization in China as a crucial factor in the growth of consumption. Section VI provides explanations of the data construction, empirical model, and estimation process used here. Section VII presents the regression results. Finally in Section VIII, I conclude and provide various policy directions for the Korean government and for exporting firms.

II. Related Literature

This paper relies on several groups of existing literature on the Chinese economy. First, the paper contributes to the ongoing literature on consumption- or income-inequality in China. Regarding income disparity, Sicular, Ximing, Gustafsson, and Shi (2007) examined the size of the income gap between urban and rural areas and identified factors which contribute to this gap. Using survey data conducted by the Chinese Academy of Social Sciences (CASS), they found that the locations of residences and education levels were the most crucial factors influencing the income gap. In addition, Candelaria, Daly, and Hale (2013) analyzed the causes of regional wage disparity. Using the National Statistical Yearbook and CEIC data, they found that half of the regional wage gap can be explained by the quality of labor, the elasticity of the labor supply, the industry composition, and by variables related to the geographical location. They also suggest that it is highly likely for the regional wage gap to remain as long as the labor movement is restricted under the Hukou system.

On the topic of consumption disparity in China, Qu and Zhao (2008) investigated consumption disparity between urban and rural households. Based on data from the Chinese Household Income Project (CHIP), they utilized quantile regression and found that the consumption gap was more severe within the low-income bracket than within its high-income counterpart. Investigating the causes of consumption disparity, Emran and Hou (2013) focused on the role of access to the market. They used data from CHIP 1995 and revealed that better access to domestic and international markets has positive effects on per capita consumption. Further, Cai, Chen, and Zhou (2010) examined both consumption and income disparity. They used data from the Urban Household Income and Expenditures (UHIES) study and showed that consumption inequality among urban households tended to increase during the period of 1992-2003 and that the wage gap accounts for 66% of income inequality in total.

The present research belongs to a group of studies of the effect of urbanization on consumption growth in China. Lee and Wu (2013) described the concept, features, and current progress of urbanization in China while also examining the economic impact of urbanization on each industry in China. Regarding its effect on consumption, they separately calculated the effect of urban living and the effect of

migration of rural residents. Choi, Lee, Moon, and Na (2012) studied the relationship between urbanization and economic growth using Chinese regional data. They found that the progress of urbanization had a significantly positive effect on the economy, whereas for mega-cities, it had a negative impact on growth. On the basis of their results, they suggested that fostering many large cities rather than a few mega-cities would be a desirable national strategy for long-term economic growth.

Finally, from a more macroscopic perspective, the present study is related to studies on structural changes in the Chinese consumer market. This group of studies includes various policy papers which investigated the characteristics of the Chinese consumer market. For example, Jee *et al*. (2008) characterized the consumer market while taking various aspects into account, including the major forces behind consumption growth, consumption patterns according to specific products, sales and distribution channels, and geographic distributions of consumers by city. Similarly, Lee (2009) also describes aspects of changes in the Chinese consumer market, concentrating on scales, regions, consumer groups, products, service consumption, and goods distribution channels. As a more comprehensive study, Yang *et al*. (2013) analyzed regional statistics for 288 Chinese cities in an effort to identify the ten leading consumption footholds and to form strategies to make inroads into the Chinese domestic market. Jin and Oh (2013) closely investigated Chinese rural markets. Through a questionnaire survey concentrating on rural households in the suburbs of Beijing, they described the characteristics of rural consumers and their consumption patterns.

The primary goal of the present study is to analyze household consumption patterns and to examine how consumption is affected by demographic characteristics and urbanization in China. With regard to studies of consumption inequality, I utilize micro-data not only at the household level but also at the level of individual characteristics to identify more specific factors contributing to consumption. Regarding the impact of urbanization on consumption, I measured the rate of urbanization at a lower administrative division level (prefecture-level cities) using data from the China City Statistical Yearbook and CEIC and then estimated how much the progress of urbanization affected household consumption in urban and rural areas. Further, on the issue of structural changes in China's consumer market, this paper extends the analysis period for a better understanding of the latest changes using the most recently available data from the China Statistical Yearbook.

III. Growth Trends in China's Consumer Market

The trajectory of China's consumer market shows two growth tipping points as presented in Figure 1. While modest growth has continued since the adoption of reforms and open policies, the first point occurred in the mid-1990s. This was when China opened its domestic market to the outside world to induce a massive influx of foreign capital. Clearly, this led to a boost in the country's consumer market.

The second point appeared in the mid-2000s with the explosive growth in the consumer market on the back of the 11th Five-Year Plan (2006-10), which declared

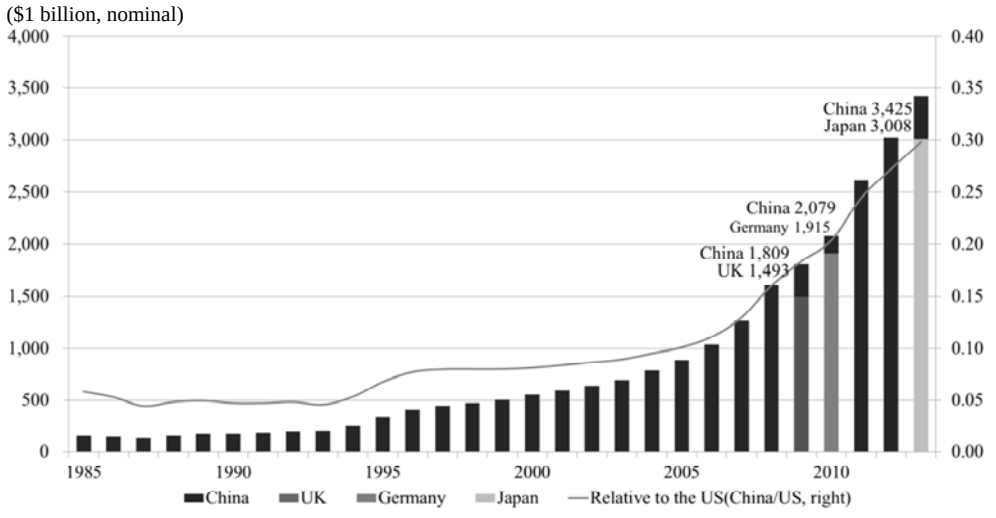

FIGURE 1. GROWTH TRAJECTORY OF CHINA'S CONSUMER MARKET

Source: Created by author, using the World Bank's Household Final Consumption Expenditure (Current US$, 1985-2013).

a growth paradigm shift away from exports and investment and towards domestic demand. Around this time, income rose sharply, as evidenced by the increase in workers' minimum wages of more than 10%. Moreover, in conjunction with the rapid diffusion of internet access, China's post-80s and 90s generations[3] have emerged as a powerful consumer group. Their consumption has contributed to an annual 20% expansion in e-commerce (Korea International Trade Association, 2014). Moreover, due to the government's policy efforts to support rural areas, including consumption subsidies and the modernization of distribution systems, the consumption of rural residents has also risen continuously.

Even during the 2008 global financial crisis, China's consumption climbed on annual by over 10% on an average basis,[4] unlike other countries which were hit by sagging consumption. Consequently, after ranking fifth in the world in 2008, China's consumer market surpassed that of the UK in 2009, that of Germany in 2010 and that of Japan in 2013 to stand at second with a market scale of $3.425 trillion. While the US maintained the leading position as of 2013 at $11.5 trillion, the size of China's consumer market relative to that of the US jumped from 5% in 1990 to 30% in 2013.

[3]Chinese generations born in the 1980s and 1990s were raised under the one-child policy and therefore have grown up in relatively affluent circumstances. They are very familiar with online shopping and have a strong inclination towards high-end, diverse and luxurious consumption.

[4]According to 2009 household consumption expenditures relative to those of 2008 from the World Bank's Household Final Consumption Expenditure study, consumption in the US dropped by $166.7 billion, that in Germany dropped by $114.3 billion, and consumption in the UK fell by $296.5 billion, whereas in China it increased by $202.0 billion.

IV. Consumption Structure: City and Rural Areas

A. *Analysis of per Capita Consumption Expenditures*

This section examines the consumption structure of Chinese consumers, who have sustained the growth of China's consumer market. Consumption per urban resident rose from 673 yuan in 1985 to 18,023 yuan in 2013, while that of rural residents climbed from 317 yuan to 6,626 yuan (See Figure 2).

Over the past three decades, the nominal consumption expenditures of urban and rural residents expanded more than twenty-fold while the consumption ratio, which refers to the consumption per urban resident relative to that per rural resident, increased from 2.1 to 2.7. This implies that the advancement of the consumption level has progressed while the polarization of consumption has become more serious.

However, a closer look reveals that there have been significant changes in the consumption growth of urban and rural areas since 2004. Since peaking at 3.4 in 2003, the consumption ratio has declined continuously. Further, as shown in Figure 3, the growth rate for rural residents of consumption per capita has generally exceeded that of urban residents since 2004. Indeed, although consumption in rural areas has occasionally surpassed that in urban areas in the past, the current trend has continued for the past ten years, raising the call for more attention.

Being well aware of the difficulty in sustaining consumption-driven economic growth without boosting the consumption of rural residents, the Chinese government has implemented active policies to heighten rural consumption since the mid-2000s. Such polices include subsidies to boost car and home appliance

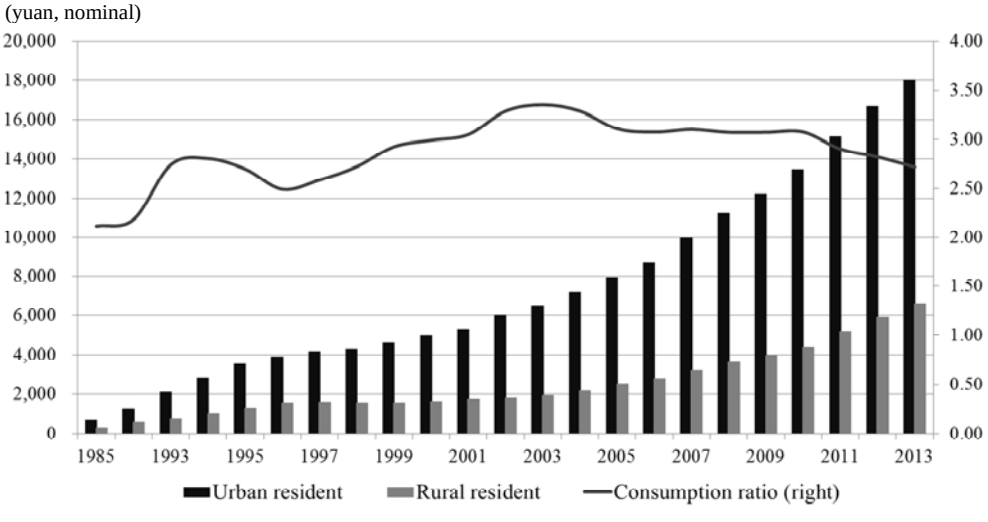

FIGURE 2. CONSUMPTION EXPENDITURE PER CAPITA AND CONSUMPTION RATIO

Source: Created by the author, using data from the China Statistical Yearbook (Consumption Expenditure Per Capita 1985-2013).

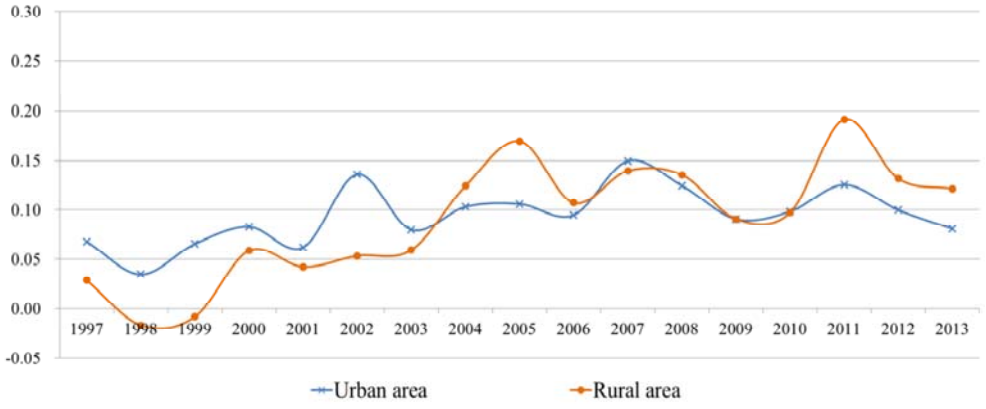

FIGURE 3. GROWTH RATE OF CONSUMPTION PER CAPITA

Source: Created by the author using data from the China Statistical Yearbook (Consumption Expenditure Per Capita 1996-2013).

sales, the '10,000 villages and 1,000 townships market project' to encourage the establishment of wholesale and retail stores in county- and township-level areas, and the 'double-hundred' project to foster 100 large-scale distribution companies and establish 100 wholesale markets. Helped by these efforts, rural consumption has soared owing to numerous changes, such as increases in rural income, increases in income transferred by migrant peasant workers in cities, and the spread of an urban consumption culture to rural areas.

B. *Analysis of the Average Propensity to Consume* (*APC*)

The more active consumption by rural residents can be confirmed by the trends of the average propensity to consume (APC), which refers to the percentage of consumption in disposable income, as shown in Figure 4.

For urban residents, the APC has been on a clear downward trajectory, declining from 0.91 in 1985 to 0.67 in 2013, suggesting that the absolute amount of consumption has risen but that actual spending relative to income has decreased.

In contrast, the APC for rural residents surpassed that of urban residents in 2005, with the APC fluctuating at the 0.80 mark in 1985 and then posting a mark of 0.74 in 2013 (red line in Figure 4). Hence, the extent of the overall decline is more modest than that of urban residents, and even the fluctuation patterns leave room for future rebounds.

Besides consumption expenditures, this study separately identified what is termed 'cash outlay,'[5] particularly for rural areas. The results show that the percentage of cash outlay of rural residents' net revenue increased consistently from 0.49 in 1985 to 0.69 in 2013 (green line in Figure 3). In other words, with reference to cash-only consumption, excluding self-consumption, the APC of rural

[5]The gap between consumption expenditure and cash outlay occurs mostly in spending on food. Farmers consume a part of their crops, and the self-consumption is included in consumption expenditure, but not in cash outlay.

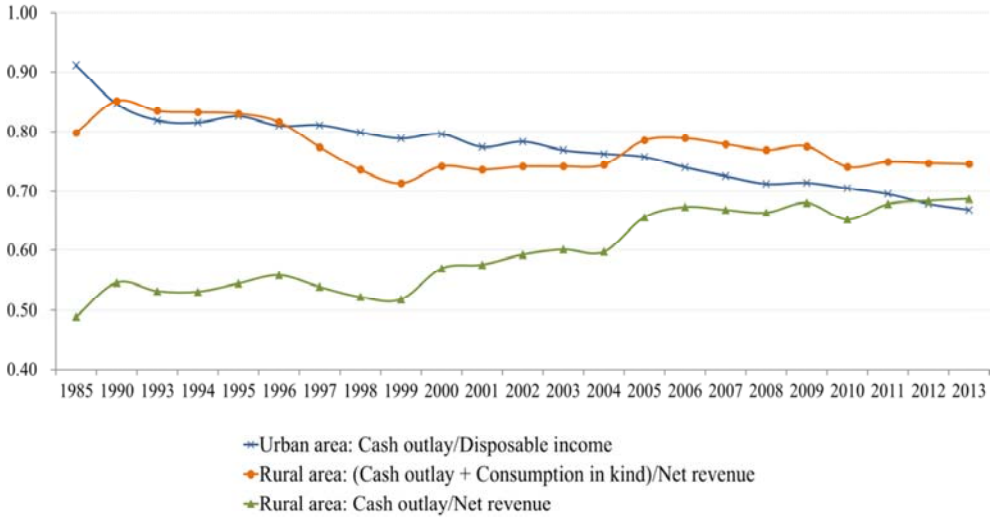

FIGURE 4. TRENDS IN THE APC OF URBAN AND RURAL RESIDENTS

Note: Rural residents' net revenue is equivalent to urban residents' disposable income and is the sum of agricultural entrepreneurial income and off-farm income (wage income, property income and transfer income).

Source: Created by the author using data from the China Statistical Yearbook (Consumption Expenditure Per Capita, Cash Consumption Expenditure Per Capita and Per Capita Income 1985-2013).

residents has improved continuously.

C. *Analysis of Consumption Composition by Item*

The consumption growth rate by item offers a better understanding of the upward trends in urban and rural areas. Table 1 shows the annual average growth rate of the consumption of eight subordinate items that constitute consumption expenditures during the period of 2003-13.

Based on the calculations, the consumption growth rate for rural residents is higher than that of urban residents across all items, except for education, culture and entertainment. Such growth is particularly attributable to the increased cost of medical care resulting from population aging in rural areas, more spending on transportation and communication (such as vehicles and mobile phones), and the greater use of durable household equipment, mainly household appliances.

Accordingly, the consumption patterns of rural residents appear to be gradually

TABLE 1—GROWTH RATE OF CONSUMPTION PER CAPITA BY ITEM: 2003-13 ANNUAL AVERAGE

	Total	Food	Clothing	Residency	Durable household equipment	Transportation and communication	Education, culture and entertainment	Medical care	Other
Urban residents	0.11	0.10	0.12	0.10	0.11	0.14	0.09	0.09	0.13
Rural residents	0.13	0.11	0.15	0.15	0.17	0.17	0.08	0.18	0.15

Source: Created by the author using data on expenditures by item from the China Statistical Yearbook (Consumption Expenditure Per Capita 2003-13).

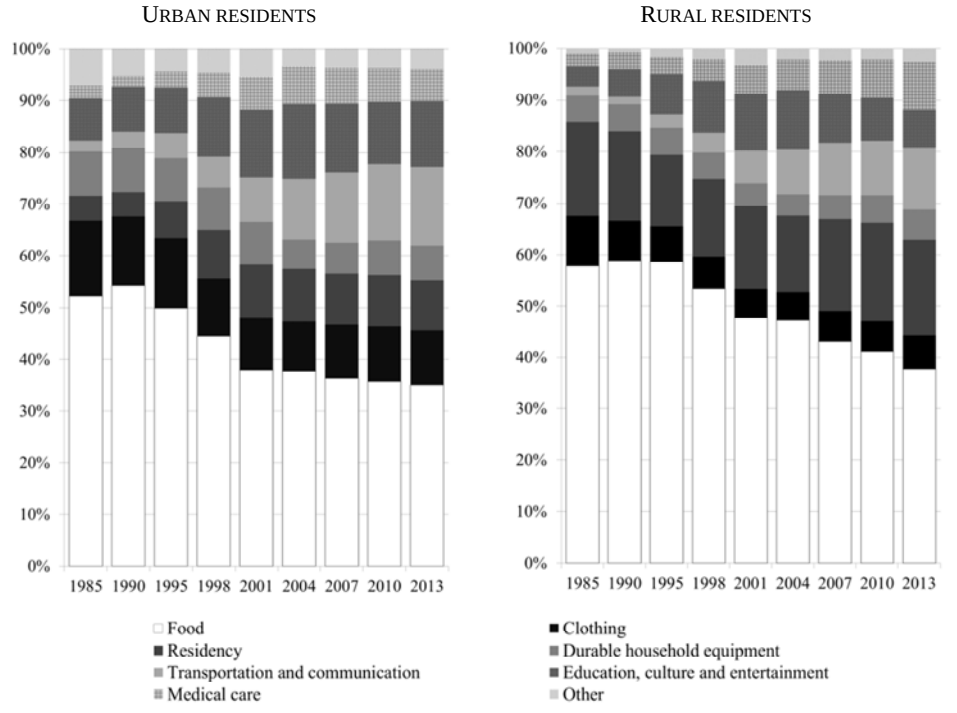

FIGURE 5. CONSUMPTION EXPENDITURE PERCENTAGES BY ITEM

Source: Created by the author using data on expenditures by item from the China Statistical Yearbook (Consumption Expenditure Per Capita 1985-13).

mirroring those of urban residents, at an increasing speed. In Figure 5, which shows the percentages of expenditures by item among total consumption, the percentage of food products has receded rapidly, with Engel's coefficient dropping below 40 in 2013 (35.0 in urban areas and 37.7 in rural areas), while those associated with medical care and transportation and communication climbed for both urban and rural areas.

Overall, the percentages of essential living expenses, including food and clothing, decreased while those linked to spending on health and leisure activities, including transportation and communication, education, culture and entertainment and medical care, increased. This implies that, in line with the increases in income and consumption, China's rural areas today are also experiencing a service economy.

D. *Consumption by Urban and Rural Residents by Tier*

This raises the question of the identity of the main driving force spurring the growth of consumption among China's rural areas. Another pertinent issue is to determine, among urban areas, which if any are experiencing particularly rapid drops in consumption.

In an effort to address these issues, panel data on the consumption of each urban

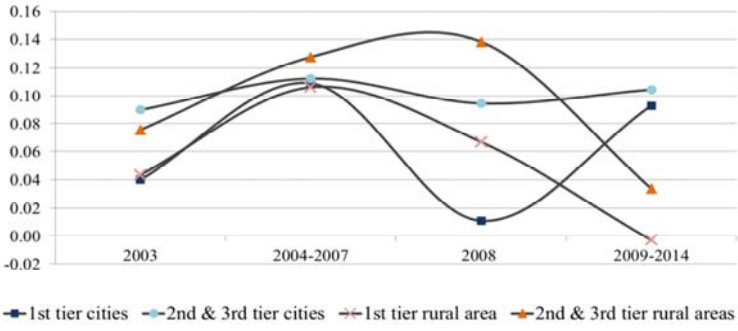

FIGURE 6. GROWTH RATE OF CONSUMPTION PER CAPITA

Source: Created by the author using the CEIC's China Premium Database (Household Survey, 2002-14).

and rural prefecture-level area, from CEIC,[6] were compiled. Additionally, by applying the city classification standards established by the Ministry of Housing and Urban-Rural Development (MOHURD), prefecture-level urban and rural areas were categorized into several tiers.[7] Using this data, I calculated the trajectory of the growth of consumption per capita in rural and urban areas in each tier as well as the changes in consumption expenditures (Figure 6).

The analysis finds that the second and third tiers have spurred the consumption growth in rural areas since the mid-2000s. The growth rate of their consumption per capita recorded an annual average of 13% in 2002-14, even maintaining growth momentum during the 2008 global financial crisis, with the yearly average growth rate rising to 15% since that event.

Meanwhile, consumption in urban areas has decelerated due to the reduced growth in consumption by first-tier residents in areas such as Beijing, Shanghai and Tianjin. These cities responded highly sensitively to global economic fluctuations, and their consumption growth plunged to 1.1% in 2008. Additionally, with the penetration rates of washing machines, refrigerators, TVs, air conditioners and mobile phones at nearly 100% in these cities, their consumer markets have become saturated, and it is mainly replacement demand (mostly for new products) that is driving consumption.

In contrast, consumption growth in second- and third -tier cities has remained steady at a relatively high 11% (growth rate of per capita income also posted an annual average of 12%). These cities are the beneficiaries of the government's SOC investment expansion project, aimed at developing inland mid-western regions, the main destination for migrants from rural areas, and the entry market for distribution companies and consumption goods manufacturers.

[6]CEIC data contain macroeconomic indicators for 128 countries, along with separate data by country and by industry. This study mainly uses the China Premium Database, which is included in the CEIC data.

[7]The classification of first-, second-, and third-tier cities is based on their overall competitiveness (economic power, political status). First-tier cities include Beijing, Shanghai, Guangzhou, Shenzhen and Tianjin, whose economies are more advanced than others; second-tier cities include Nanjing, Xi'an, and Chongqing, where substantial levels of industrialization have been achieved. Third-tier cities include Yinchuan, Xining and Harbin, all of which recently underwent economic development. The list of cities of each tier was sourced from the Korea Chamber of Commerce & Industry (2012).

Among urban prefecture-level cities with consumption per capita exceeding 20,000 yuan, Baoji (14.0%) in Shaanxi province, Botou (13.7%) and Hohhot (13.4%) in Inner Mongolia, and Harbin (12.1%) in Heilongjiang province demonstrated particularly high growth rates. In addition, among rural prefecture-level areas with consumption per capita exceeding 10,000 yuan, Wuhan (15.3%) in Hubei province ranked first, followed by Zhengzhou (14.6%) in Henan province, Xiangtan (14.5%) in Hunan province, and Nanjing (14.3%) in Jiangsu province.

As evidenced above, consumer markets in the rural second and third tiers have taken the lead in boosting China's consumption together with their urban counterparts, which are now on a solid growth track.

V. The Progress of Urbanization in China

Given the above, the question arises as to which economic factors have influenced the growth of the Chinese consumer market. Among various possible causes, this paper focuses on the progress of urbanization as spurred by the Chinese government.[8]

China's urbanization has clearly progressed on each nationally important occasion, including the founding of new China in 1949, the reform and opening up of the country in 1978, the land reform of 1988, and the entry of China into the WTO in 2001. As a result, the rate of urbanization has tended to increase by 0.7%p on average annually since 1978.

One of the main reasons why the urbanization of China has been receiving governmental attention is its contribution to raising domestic consumption. Urbanization usually occurs in line with swift economic growth and industrialization, increases in the numbers of urban workers, improved market access, and active exchanges of purchase information, all of which ultimately contribute to the growth of consumer markets. While a rise in income directly affects consumption growth, the progress of urbanization can establish a favorable environment for this type of growth.

In Section IV, we observed the relatively high growth of consumption of second- and third-tier cities. This growth and sustainment may be influenced by the recent rapid urbanization of these regions.[9] Indeed, these cities recorded rapid growth in their urbanization rates, as shown in Table 2.

Table 2 lists the urbanization rates of prefecture-level regions for each tier. The rates of cities in the second and third tiers recorded rapid growth of 1.1%p on average annually for the period of 2005-12 and showed urbanization rates of 64% and 41% in 2012, respectively, with sufficient room for additional increases. In contrast, the rates of those in the first tier surpassed 90% on average in 2012 with a rapidly slowing pace; recent regulations that strictly control the sizes of city populations in Beijing and Shanghai are mainly responsible for the slowdown.

[8]Urbanization refers to a social phenomenon in which the proportion of the urban population is increasing or the number of cities larger than small towns is increasing.

[9]Urbanization takes place as manpower in rural areas moves to urban areas or when rural areas are integrated into neighboring cities.

TABLE 2—CHANGES IN THE URBANIZATION RATES OF PREFECTURE-LEVEL REGIONS IN EACH TIER

	'05	'06	'07	'08	'09	'10	'11	'12	Change ('12-'05)
First tier	88.0	88.5	89.0	89.5	89.2	89.8	91.1	91.1	3.1
Second tier	56.8	58.6	59.9	60.6	60.9	62.5	64.3	64.4	7.6
Third tier	33.1	34.8	36.7	36.9	36.0	37.7	40.4	40.6	7.5
Nationwide	43.0	43.9	44.9	45.7	46.6	50.0	51.3	52.6	9.6

Note: The urbanization rate of prefecture-level regions refers to the proportion of the prefecture-level city population among the total population of prefecture-level regions (prefecture-level city + prefecture-level rural area).

Source: Urbanization rates of prefecture-level regions in the three tiers are calculated using CEIC's China Premium Database (Socio Demographic, 2002-14), and the urbanization rate nationwide is calculated using data from the China Statistical Yearbook (Total Population by Urban and Rural Residence 2005-12).

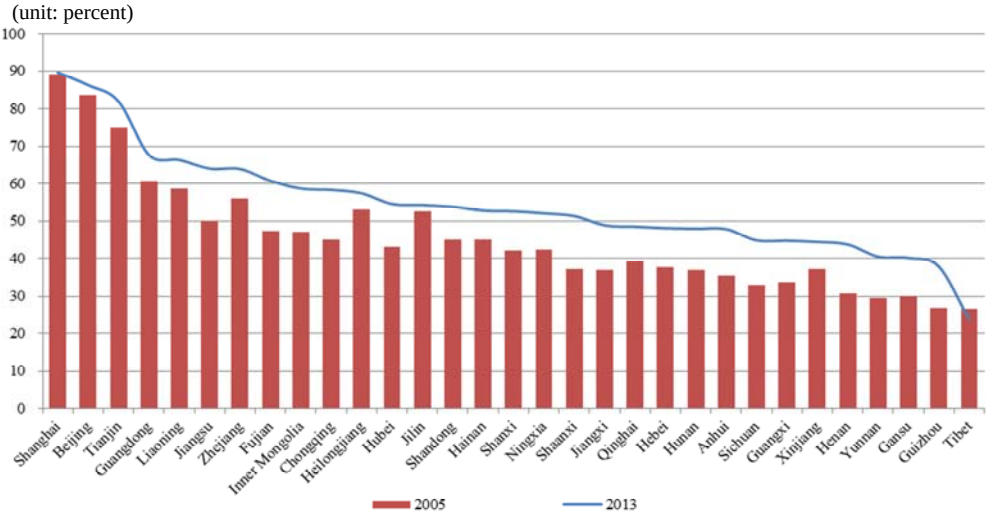

FIGURE 7. THE RATE OF URBANIZATION BY PROVINCE IN CHINA

Source: Created by the author using data from the China Statistical Yearbook (Total Population by Urban and Rural Residence 2005-12).

An examination of the urbanization rate at the province level (see Figure 7) finds several regional differences and changes over time. As of 2013, the urbanization rate of the eastern coastal region in China is much higher than the rates in other regions. The rates in Shanghai (89.6%), Beijing (86.3%), and Tianjin (82.0%) exceed 80%, reaching the level of developed countries. The rates for Guangdong (67.8%), Liaoning (66.5%), Jiangsu (64.1%), Zhejiang (64.0%), and Fujian (60.8%) all exceed 60%. On the other hand, southwest regions including Sichuan, Hainan, Yunnan, and Guizhou exhibit urbanization rates in the range of 35-45%, lower than the level of the east coast by around 20%p.

In comparison with the urbanization rate in 2005,[10] we note that rapidly progressing urbanization is not a unique phenomenon confined to the eastern coastal region but is instead a fairly general trend in the northeast, northwest,

[10]The information on populations at the province level was released in 2005 for the first time.

TABLE 3—STANDARD DEVIATION OF THE URBANIZATION RATE BETWEEN PROVINCES

	'05	'06	'07	'08	'09	'11	'12	'13
Standard Deviation	15.4	15.1	14.9	14.9	14.6	14.5	14.2	13.9

Note: The urbanization rate in 2010 is omitted due to a lack of information on provincial populations for that year.

Source: Created by the author using data from the China Statistical Yearbook (Total Population by Urban and Rural Residence by provinces 2005-13).

central, and southwest regions as well.

As a result, a standard deviation of urbanization decreased continuously from 15.4%p in 2005 to 13.9%p in 2013 (see Table 3). Urbanization has proceeded across all regions in China such that its regional disparity has shrunk. This implies that market potential and attractiveness are growing in most parts of China other than in the eastern coastal region, where the fruits of economic growth were concentrated until recently.

VI. The Consumption-boosting Effect of Urbanization

A. *Data*

In the previous chapter, we examined the growth of and structural changes in the Chinese consumer market mainly using province-level consumption data. Henceforth, I utilize micro-data at the individual/household/city level to proceed with an in-depth analysis. The ultimate goal is to identify how and how much the household consumption would be affected by urbanization and various household or individual characteristics. The data used in this section is described below.

Household and Individual-level Data

First, I utilize the Chinese Household Income Project (henceforth "CHIP"), which is generated based on household surveys carried out in China.[11] CHIP provides information on household consumption and household members' characteristics. In addition, the survey separates urban and rural areas. Thus, for each year, CHIP is composed of the four sub-datasets of urban households, urban individuals, rural households, and rural individuals.

Given that household-level datasets primarily contain annual consumption expenditures for each category, I compiled the total consumption of a household by summing food, clothing, residence, and durable good expenditures, as listed in Table 4.

Individual-level data have various characteristics for each household member, such as the relationship to the householder, gender, age, occupation, education

[11]CHIP was firstly constructed in 1988 by the Chinese Academy of Social Sciences (Beijing) by domestic and foreign scholars who studied Chinese consumption and income and their distributions. Currently, Beijing Normal University is in charge of the survey (Gustafsson *et al*. 2014). CHIP data can be obtained from the ICPSR website (http://www.icpsr.umich.edu/icpsrweb/ICPSR/series/243).

TABLE 4—DESCRIPTIVE STATISTICS: CONSUMPTION BY ITEM IN THE CHIP HOUSEHOLD DATA

(1,000 yuan, real)

	Urban Household						Rural Household				
	1988	1995	1999	2002	2007	2008	1988	1995	2002	2007	2008
Food	2.2	8.4	7.8	8.3	15.2	14.0	1.2	2.3	3.7	6.8	4.8
Clothing	-	2.2	1.7	2.1	3.6	3.1	-	0.5	0.6	0.8	2.2
Residency	1.3	0.7	1.5	2.2	3.5	3.0	0.08	0.9	1.5	2.6	-
Durable household goods	-	2.8	1.5	1.4	2.3	-	-	0.5	0.4	0.8	-
Transport. and communication	0.06	0.4	1.0	2.2	3.4	-	0.03	0.2	0.7	1.6	-
Education, culture and entertainment	0.06	0.9	2.0	3.3	4.1	3.1	0.08	0.5	0.7	1.4	2.5
Medical care	0.1	0.6	1.3	1.5	2.7	2.1	0.1	0.2	0.5	1.0	2.4
Other	0.3	0.6	0.7	0.7	1.5	4.8	0.1	0.5	1.0	0.4	-
Total consumption	3.8	16.4	18.5	21.9	36.3	29.9	1.5	5.8	9.2	15.5	10.3
No. of obs.	9,009	6,931	4,500	6,835	4,998	4,051	10,258	7,998	9,200	8,000	7,999

Note: All spending variables are transformed into real variables using the Consumer Price Index (CPI) with the reference year 2008.

Source: Chinese Household Income Project (CHIP, 1988-2008).

TABLE 5—DESCRIPTIVE STATISTICS: PERSONAL CHARACTERISTICS IN CHIP INDIVIDUAL DATA

	Urban Individual						Rural Individual				
	1988	1995	1999	2002	2007	2008	1988	1995	2002	2007	2008
Male	0.49	0.50	0.50	0.49	0.50	0.50	0.51	0.51	0.52	0.52	0.51
Age	32.3	35.7	38.4	38.2	39.1	39.8	28.0	30.4	33.0	35.3	36.0
Educational period	6.4	9.5	9.9	9.6	11.3	10.8	3.56	5.01	6.61	7.65	8.88
Minority	0.02	0.04	0.04	0.04	0.01	0.03	0.05	0.08	0.14	0.01	0.03
Disability	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.03
Retirement	0.07	0.14	0.18	0.17	0.21	0.22	0.00	0.00	0.00	0.01	0.01
Married	-	0.65	0.68	0.67	0.66	0.68	-	0.53	0.56	0.60	0.59
No. of obs.	31,827	21,698	12,060	20,632	14,683	14,709	51,352	34,739	37,966	31,791	32,171

Note: All characteristics except age and educational period are binary variables.

Source: Chinese Household Income Project (CHIP, 1988-2008).

level, marital status, and whether one is retired, disabled, or a minority member see Table 5). Since the survey began in 1988, CHIP has been made available for years 1988, 1995, 1999, 2002, 2007, and 2008. I utilize all years in the analysis here.[12]

Prefecture-level Data

Another necessary variable in this research is the rate of urbanization, which is calculated as the proportion of urban population. We can simply create this using the provincial population data in the China Statistical Yearbook, following many previous studies. However, doing this would cause a considerable gap in terms of the observation level, i.e., the urbanization rate at the province level and consumption expenditures at household level.

Because each province in China is composed of urban areas, rural areas, prefecture-level, and county-levels districts, it is highly possible that quite heterogeneous consumption patterns exist within the same province. For a more accurate analysis, therefore, we need to make the gap in the observation level as

[12]Although CHIP provided a wealth of micro information, one major constraint was that the latest data (since 2008) was not available while conducting this research. Fortunately, CHIP for the year 2013 was recently released. The growth paradigm of the Chinese economy has been changing quickly towards domestic demand, especially after the global economic crisis in 2008. This may have significantly affected consumption trends thereafter. Using the CHIP 2013 data may allow for an analysis of possible changes.

narrow as possible. In this regard, I calculate the urbanization rate in prefecture-level regions by utilizing the China City Statistical Yearbook.

A prefecture-level region refers to the second grade of administrative districts in China, with several third-grade districts as well, such as city-controlled districts, county-level cities, counties, and autonomous counties. Among these subdivisions, this research recognizes the former two subdivisions as urban areas. Thus, the rate of urbanization of a prefecture-level region is defined as the percentage of the population living in a city-controlled district or a county-level city out of the total population in the prefecture-level region.[13]

B. *Empirical Specifications*

To estimate the impact of urbanization on consumption, I matched the urbanization variable derived from the China City Statistical Yearbook with the CHIP data. As a link variable to merge the two datasets, I used the Chinese administrative code number of each prefecture-level region.[14]

It is also important to note that during the sample period of 1988-2008, inflation accompanied by economic growth occurred consistently. Taking this into account, I converted nominal consumption expenditures into actual variables using the CPI of each year with the reference year 2008.

The econometric analysis is composed of two parts. The first part is based only on CHIP household data and examines how spatial/temporal factors and household characteristics affect household consumption. The estimation model has the following form,

$$y_{ijt} = X_{it}\beta + \sum_{j} \gamma_j D_{jt} + \sum_{t} \delta_t T_t + u_{ijt}, \tag{1}$$

where y_{ijt} denotes the annual household consumption of household i living in region j in year t. X_{it} is a vector of household characteristics, including the number of household members. D_{jt} is a vector of dummy variables representing various categories of regions. Specifically, D_{jt} includes information about a household's location (either a first-, second-, or third-tier city or a rural area. T_t is a vector of dummy variables for each year. u_{ijt} is an i.i.d. error term.

For a more comprehensive analysis, the second part utilizes all datasets, i.e., CHIP household data, CHIP individual data, and the urbanization rate. The estimation model has the following form:

[13]A city-controlled district is associated with vigorous economic, social, cultural activities based on a high population density. Therefore, it serves an actual urban function within a prefecture-level region. County-level cities are generally experiencing rapid industrialization and urbanization.

[14]CHIP data contains administrative codes per se, but China's City Statistical Year Book does not. To overcome this problem, I closely compared the Chinese name of each prefecture-level region in China's City Statistical Year Book with the name in the administrative codebook of the National Bureau of Statistics of China. The codebook is available at the website of the National Bureau of Statistics of China (http://www.stats.gov.cn/tjsj/tjbz/xzqhdm/201504/t20150415_712722.html).

$$y_{ipjt} = \theta U_{pt} + X_{it}\beta + \sum_j \gamma_j D_{jt} + \sum_t \delta_t T_t + u_{ijt} \quad (2)$$

This model emphasizes the key variable of the urbanization rate, U_{PT}. U_{PT} denotes the urbanization rate of a prefecture-level region P in year t. Further, the vector X_{it} represents a greater variety of household and individual characteristics, including the existence of post-80s or 90s generations, the average educational period, the number of males, the presence of disabled persons, the number of retirees, and workers by firm type in a household. These variables are originally available at the individual level; thus, I convert them into household- level variables by counting the number of people in a family corresponding to the cases.

As an estimation method, we may undertake a panel data analysis when considering that the data period of CHIP is 1988-2008. However, each of the individual, household, and prefecture-level regions does not continuously exist during the sample period, generating a crucial limitation for a panel analysis. Consequently, I adopt a pooled regression while controlling for time and region (province, each tier of city and rural) fixed effects. The estimation results are provided in the following section.

VII. Empirical Results

A. *Estimation Results Based on CHIP Household-level Data*

Table 6 reports the regression estimates from the various models used here. In model (1) as a basic specification, I undertook a regression of total consumption of households in terms of spatial and temporal variables. The estimates indicate that urban households spend more than rural families by 13,510 yuan on an annual basis.

To verify the credibility of the estimates, Table 7 calculates the per capita consumption gap from the China Statistical Yearbook and then multiplies it by the average number of household members to derive the household consumption gap. The average gap for 1988-2008 is 14,667 yuan. It was found that the parameter from the CHIP household-level data is somewhat lower than the figure from the national statistics, but we can assess it as a fairly realistic figure.

While summing the expenditures on each item to create the total consumption from CHIP, I found that some values for certain items were missing. Considering the higher spending by urban residents on each item, the missing values may lead to a relatively low consumption gap from CHIP compared to that from the China Statistical Yearbook.

The estimation results of model (1) in Table 6 also indicate that the consumption level has been generally increasing as time passed. For example, a household total consumption in 2007 is higher than in the base year 1988 by 21,790 yuan. This result is fairly consistent with the ongoing trend of Chinese consumption increment. However, the spending level in 2008, which is lower than in 2007, raises doubts. This is likely due to difference between the survey questions. Unlike other years, 2008 survey asked a minimum cost to live out of above poverty

TABLE 6—ESTIMATION RESULTS: HOUSEHOLD LEVEL DATA

Dep. variable: Total consumption (1,000 yuan, real)	Model (1)	Model (2)	Model (3)	Model (4)
No. of household members	1.292***	0.115***	1.351***	1.288***
	(0.0339)	(0.0341)	(0.0342)	(0.0341)
Living in urban	13.51***		13.65***	13.30***
	(0.108)		(0.106)	(0.0996)
Y1995	9.059***	9.280***	8.785***	8.901***
	(0.136)	(0.149)	(0.139)	(0.135)
Y1999	11.54***	17.47***	11.07***	11.20***
	(0.225)	(0.237)	(0.226)	(0.222)
Y2002	13.73***	11.97***	13.54***	13.66***
	(0.135)	(0.143)	(0.137)	(0.134)
Y2007	21.79***	19.58***	23.04***	22.06***
	(0.153)	(0.153)	(0.146)	(0.146)
Y2008	15.53***	13.66***	16.79***	15.79***
	(0.155)	(0.155)	(0.149)	(0.149)
Living in a first-tier city		20.39***		
		(0.300)		
Living in a second-tier city		10.25***		
		(0.152)		
Living in a third-tier city		3.325***		
		(0.171)		
Living in a second-tier rural			2.623***	
			(0.260)	
Living in a third-tier rural			0.313**	
			(0.147)	
Northeast				1.545***
				(0.187)
Bo Hai Bay				4.503***
				(0.167)
East				5.520***
				(0.132)
Southeast				9.001***
				(0.166)
Northwest				0.596***
				(0.196)
Southwest				1.234***
				(0.127)
Province dummies	Y	N	N	N
Constant	-7.935***	0.0911	-9.798***	-11.55***
	(0.407)	(0.183)	(0.198)	(0.203)
No. of observations	79,275	79,275	79,275	79,275
R-squared	0.404	0.283	0.351	0.384

Note: This table reports the regression results based on CHIP household level data. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Standard errors are in parentheses.

TABLE 7—CONSUMPTION GAP: PER CAPITA AND PER HOUSEHOLD

	Average	1988	1995	1999	2002	2007	2008
Consumption gap (per capita, nominal)	4,059	559*	2,227	3,038	4,196	6,774	7,582
Consumption gap (per capita, real)	4,570	1,050*	2,958	3,687	5,069	7,197	7,582
No. of household members	3.2	3.5	3.1	3.0	3.0	2.9	3.6
Consumption gap (per household, real)	**14,667**	3,711*	9,260	11,093	15,302	21,126	27,510

Note: Consumption gaps in 1988 are estimates as indicated by *. I estimate them by applying the average growth rates of the consumption gaps between 1985 and 1990.

Source: China Statistical Yearbook and CHIP (1988-2008).

level rather than asking the actual amount of expenditure. Therefore, this can underestimate the actual total consumption of 2008.[15]

In addition, as the number of household members increase by one, the total consumption tends to rise by 1,292 yuan per year. Considering the recent relaxation of Chinese birth control (from one child to two children per household), the result has an important economic implication in that it will clearly increase the demand for infants' goods.

The model (2) controls for each tier of city to identify the consumption gap between those cities.[16] The results show that households living in 1st, 2nd, and 3rd tier cities, respectively, spend more than those living in base area (other small urban and rural households) by 20,390 yuan, 10,250 yuan, and 3,325 yuan. This implies that China faces significant consumption disparity not only between urban and rural area, but also between each tier of cities.

Similarly, model (3) controls for each tier of rural to see if the rural areas neighboring cities exhibit higher level of expenditures compared to other small rural areas. Since 1st tier rural does not exist in the sample, 2nd and 3rd tier rural areas are specified. The parameters indicate that households in 2nd and 3rd tier rural areas, respectively, consume more than those in other rural by 2,623 yuan and 313 yuan. This can occur because increased demand for high value-added crops by urban households contributes to rises in rural income and because the increasing number of migrant workers transfer their cash to family in rural.

Finally, model (4) presents the consumption disparity between regional parts of China (Northeast, Bo Hai Bay, East, Southeast, Northwest, Southwest, and Center as a base part). From the estimates, we can confirm that the eastern coastal region exhibits significantly higher consumption expenditure. To be specific, households in Southeast, East, and Bo Hai Bay area, respectively, exhibit higher level of consumption than those in Center region by 9,001 yuan, 5520 yuan, and 4503 yuan. Along with various types of consumption disparity (urban and rural, each tier of city, each tier of rural), the results provide clear evidence on consumption gap between regional parts in China.

C. *Estimation Results Based on the Comprehensive Data*

Henceforth, we utilize all datasets to perform a more comprehensive analysis. The primary aim is to examine the effect of urbanization and various household/individual characteristics on the boost in consumption. Table 8 presents the regression results.

According to model (1), urban households are likely to spend more than rural families by 8,664 yuan on average. The consumption gap between urban and rural households appears to be 36% lower than the estimate in part A, as the model

[15]Until 2007, for example, the CHIP survey asked "How much did your family spend on food?", but in 2008 survey asked "How much food per year do you think your whole family needs to rise above the poverty level?"

[16]I defined first-, second- and third-tier cities by applying the city criteria in the Korea Chamber of Commerce and Industry (2012). The first tier includes the most economically powerful cities, such as Beijing, Shanghai, Tianjin, Guangzhou, and Shenzhen. The second tier refers to those cities where there has been much progress in urbanization and industrialization (e.g., Nanjing, Xi'an, and Chongqing). The third tier includes various cities which have experienced meaningful economic development in recent years.

TABLE 8—ESTIMATION RESULTS: COMPREHENSIVE DATA

Dep. variable: Total consumption (1,000 yuan, real)	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Living in urban	8.664***	9.031***		8.259***	8.165***
	(0.184)	(0.197)		(0.201)	(0.190)
Urbanization rate	7.532***	7.484***	7.370***	8.685***	6.722***
	(0.252)	(0.254)	(0.250)	(0.238)	(0.235)
Existence of post-80s generation	0.434**	0.756***	0.561***	0.743***	0.455**
	(0.189)	(0.186)	(0.191)	(0.191)	(0.187)
Existence of post-90s generation	1.711***	2.140***	2.204***	2.135***	1.850***
	(0.189)	(0.190)	(0.195)	(0.195)	(0.191)
Educational period	0.342***	0.711***	0.911***	0.746***	0.750***
	(0.0256)	(0.0207)	(0.0206)	(0.0212)	(0.0208)
No. of married residents	0.845***	1.078***	0.710***	0.968***	1.018***
	(0.0748)	(0.0718)	(0.0738)	(0.0740)	(0.0724)
No. of males	0.550***	0.794***	0.443***	0.972***	0.799***
	(0.0768)	(0.0740)	(0.0735)	(0.0751)	(0.0745)
No. of minorities	0.0891	0.111	-0.636***	-0.690***	-0.301***
	(0.0902)	(0.0905)	(0.0795)	(0.0797)	(0.0792)
No. of disabled	-0.427*	-0.546**	-0.425*	-0.388*	-0.551**
	(0.221)	(0.220)	(0.227)	(0.227)	(0.222)
No. retirees	0.961***	-0.288***	0.643***	-0.224**	-0.256**
	(0.114)	(0.0996)	(0.0992)	(0.103)	(0.100)
No. of workers	0.352***				
	(0.0639)				
No. of workers at state-owned firm		-0.0196	1.207***	-0.176*	-0.125
		(0.0908)	(0.0821)	(0.0931)	(0.0905)
No. of workers at joint-stock firm		2.725***	4.188***	3.966***	3.067***
		(0.348)	(0.359)	(0.359)	(0.351)
No. of workers at foreign firm		4.846***	6.179***	6.928***	5.147***
		(0.542)	(0.560)	(0.558)	(0.546)
No. of workers at collective firm		0.895***	2.039***	1.177***	0.916***
		(0.105)	(0.103)	(0.107)	(0.105)
No. of workers in private firm		0.645***	1.453***	1.274***	1.001***
		(0.113)	(0.115)	(0.115)	(0.112)
Average educational period of workers	0.459***				
	(0.0187)				
Living in a first-, second-, or third-tier city	N	N	Y	N	N
Living in a second- or third-tier rural	N	N	N	Y	N
Regional dummies*	N	N	N	N	Y
Province dummies	Y	Y	N	N	N
Year (1995-2008)	Y	Y	Y	Y	Y
Constant	-12.31***	-10.71***	-9.647***	-12.21***	-12.90***
	(0.476)	(0.469)	(0.243)	(0.258)	(0.250)
No. of observations	56,076	56,076	56,076	56,076	56,076
R-squared	0.393	0.388	0.345	0.346	0.376

Note: 1) This table reports the regression results based on a comprehensive dataset, including CHIP household-level data, CHIP individual-level data, and the China City Statistical Yearbook. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Standard errors are in parentheses. 2) Regional dummies include indicator variables for the northeast, Bo Hai Bay, east, southeast, northwest, and the southwest regions.

controls not only for urban dummies but also for the urbanization rate such that the explanatory power of the urban dummies is reduced to a corresponding amount.

Regarding the effect of the urbanization rate, the estimate is 7.532. Considering the unit of the rate (0 to 1) and the total consumption (1,000 yuan), the estimate

indicates that a 1%p increase in the urbanization rate tends to raise household consumption by 75.3 yuan and China's total consumption by 25.8 billion yuan. In terms of the national economy, the magnitude of the effect corresponds to an increase in China's total consumption of 0.58% and a rise in the GDP of 0.14%. Notably, this magnitude is a direct (or causal) effect of urbanization; i.e. with all other conditions being equal, rural residents migrating to cities enjoy easier access to consumer markets and have more product choices, which raises consumption. When considering indirect effects such as income growth, employment expansion, and infrastructure investments to accommodate migrants, the impact of urbanization on spending would be much greater.

Regarding various household and individual characteristics, the results confirm that households having post-80s or post-90s generations are likely to consume more by 434 yuan and 1,711 yuan, respectively.[17] Those generations are highly skilled with computers and information systems and thus shop online frequently with strong preferences for product diversification. Although data limitations prohibit us from identifying their consumption patterns after 2008, they may have higher purchasing power than the magnitude implied by the estimated coefficient considering their massive spending since the mid and late 2000s.

About the educational effects on consumption, we can consider two paths. First, as a person becomes more educated, that person tends to spend more on educational expenditures such as textbooks, tuition fees, and educational activities. Further, indirectly, more educated people tend to have high-paying jobs, and higher income leads to more consumption. To verify the educational effect, I control for a household's average educational period. The estimate indicates that an increase of one year in the training period raises the expenditures of a household by 342 yuan. In addition, when the educational period of workers participating in the labor market increases by one year, it is likely to boost household consumption by as much as 459 yuan. The fact that the education level of Chinese people has steadily improved in recent years leads to a more positive outlook on the growth of China's consumer market.

VIII. Summary and Policy Implications

China's rural areas have been paid little attention as Korea makes inroads into Chinese consumer markets. However, this paper confirms that the rural consumer market has exhibited extraordinary growth and that rural second- and third-tier areas have played a leading role in supporting the growth of the Chinese market, along with their urban counterparts. Moreover, given that urbanization boosts consumption not only in cities but also in rural areas neighboring their cities, the rural consumer market is highly likely to expand.

Based on the discussions above, we consider proper response measures for

[17]In the sample data, I define a person as a member of the post-80s generation when he or she is aged from 18 to 27 years old as of 2007 and from 19 to 28 years old as of 2008. Similarly, a person is considered as a member of the post-90s generation if he or she is aged from 8 to 17 years old as of 2007 and from 9 to 18 years old as of 2008.

Korean firms and government. With regard to Korean manufactures of consumer goods, they need to expand their product lines to China's rural markets. One of the easiest means of reaching rural consumers is via online shopping platforms such as Alibaba's Rural Taobao. As of now, the majority of Korean products sold online in China appear to include cosmetics, clothing and accessories. However, when considering that rural markets have exhibited growing consumption rates for durable household equipment, more effort to engage rural markets is required, especially by Korean manufacturers of large household appliances, kitchen appliances, household goods and processed food products.

In order to increase the possibility of purchasing in rural areas, Korean companies should be fully aware of the unique purchase environment there. In rural regions, online shopping takes place under O2O (online-to-offline) commerce, where operators of offline service-center serve as shopping agents and recommend commodities for visitors. Therefore, Korean companies must visualize service centers in local areas as well as online platforms as targets for active marketing and advertising.

In the markets of urban second- and third-tier areas, consumer preferences are quite heterogeneous (with factors such as urban residents, migrant workers, replacement demand, new demands, and online and offline demand levels). Therefore, it is important to present a wide variety of product categories with differentiated characteristics. To cope effectively with the characteristics of such a market, Korean distributors in China need to release diverse products ranging from high-quality goods to private brand products in cooperation with large and small manufacturers in Korea. Furthermore, taking into account the growing demand for cultural and entertainment products as well as the influential power of the Korean Wave, there should be more collaboration between large distributors and Korean entertainment companies.

The Korean government should focus on strengthening the cooperative export system between Korean distributors in China, domestic manufacturers, and logistics companies. At the same time, it must tighten the connection between various fiscal programs related to exports, distribution, logistics and SMEs, which have been handled separately by their respective governmental departments. Strong connections between supporting policies can provide greater incentives for relevant industries to participate in the export cooperative system. Through this environment, purchasing data pertaining to local demand complied by Korean distributors in China is immediately transferred to domestic manufacturers. They can then manufacture and promptly send goods to Chinese consumers through efficient logistics and clearance procedures.

Furthermore, surveys and analyses of local markets in China must be conducted at a much more micro level. Although TradeNAVI currently serves as an information portal for China, it is not specific enough to provide relevant information for Korean firms entering the Chinese market. The surveys need to be performed on a micro level regarding product prices, quality, sales and purchase routes in urban and rural prefecture-level areas. Moreover, information about market conditions, such as the urbanization rate, distribution system, the degree of market competition, consumption constraints and consumption-boosting policies must be monitored consistently. For more detailed market research, surveys need to

utilize sales data about respective distribution channels and product items, which are usually established by private data-collecting companies in China.

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Korean Housing Cycle: Implications for Risk Management (Factor-augmented VAR Approach)†

By HYUCK-SHIN KWON, DOO WON BANG AND MYEONG HYEON KIM*

This paper proposes an integrated risk-management framework that includes 1) measuring the risk of credit portfolios, 2) implementing a (macro) stress test, and 3) setting risk limits using the estimated systematic latent factor specific to capture the housing market cycle. To this end, we extract information from a set of real-estate market variables based on the FAVAR methodology proposed by Bernanke, Boivin and Eliasz (2005). Then, we show the method by which the estimated systematic factor is applied to risk management in the housing market in an integrated manner within the Vasicek one-factor credit model. The proposed methodology is well fitted to analyze the risk of slow-moving and low-defaultable forms of capital, such as alternative investments.

Key Word: Housing Cycle, FAVAR, Risk Management
JEL Code: R3, E17, G32

I. Introduction

South Korea's housing market has been highlighted for its contribution to the overall economy, which has been suffered from feeble consumer spending and sagging industrial output. South Korea's brisk property market with housing transactions and pre-sales of new apartments soaring across the nation, due to record-low interest rates and inexpensive household mortgages, is touching the boundary of a speculative bubble.[1] At present, an oversupply of new houses and tighter lending rules may signal a property market bubble within the coming years.

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[1] "Apartment prices have soared to 300 million won ($272,000) over the past three months on the news of rebuilding aged flat houses" citing a realtor's interview with The Korea Times.

The importance of risk management in the real-estate market is growing rapidly.[2]

However, identifying the risk profile is a Herculean task with regard to the real-estate market. Practitioners have relied on a rather ad-hoc approach to calculating the default probability of housing and construction firms. To be specific, employing loan-specific predictors such as delinquencies, interest in arrears, or loan-to-value (or debt- equity) ratios and other idiosyncratic drivers have been the norm after controlling for macroeconomic variables. In terms of holding portfolios, however, these idiosyncratic drivers should be diversified away.[3] Empirically, Duffie *et al*. (2009) find strong evidence of the presence of common latent factors, and Aron and Muellbauer (2016) emphasize the role of latent factors in the modeling and forecasting of mortgage delinquencies and foreclosures.

In this paper, we ask relevant but nuanced questions: what is the systematic (latent) factor within the housing market and its role in the risk management? What are the policy implications? To study these issues, we utilize the Vasicek one-factor credit model as our baseline model, which has served as the basis of the internal ratings-based approach in Basel II (see Vasicek, 1987, 1991, 2002). We illustrate the Vasicek one-factor model, where defaults are determined by a latent common factor. Borrower i's asset value A_i is assumed to depend on systematic factor Z and idiosyncratic component ε_i. Then,

$$A_i = \omega_i Z + \sqrt{1-\omega_i^2}\varepsilon_i,$$

where Z and ε_i are independent standard normal variables and the default event is triggered if $A_i < \Phi^{-1}\left(\overline{PD_i}\right)$. Here, PD_i is the unconditional default probability. The parameter ω_i is an asset value correlation between A_i and A_j. When $\omega_i = \omega$ for all i, the parameter ω is known as the common asset correlation, and we assume that ω_i is a constant for the same credit grade i.[4] Then, the conditional default probability (PD) is given as follows:

$$\begin{aligned} PD_i(Z) &= Prob(A_i \le \Phi^{-1}\left(\overline{PDi}\right) | Z) \\ &= Prob\left(\omega_i Z + \sqrt{1-\omega_i^2}\varepsilon_i \le \Phi^{-1}\left(\overline{PD_i}\right)\right) \\ &= \Phi\left[\varepsilon_i \le \frac{\Phi^{-1}\left(\overline{PD_i}\right) - \omega_i Z}{\sqrt{1-\omega_i^2}}\right] \end{aligned}$$

[2]We will use the terms "housing" and "real-estate" market interchangeably.

[3]The model is very similar to the traditional CAPM in that each asset has idiosyncratic and systematic risk components. In a large portfolio of homogenous assets, the only systematic risk matters as the idiosyncratic risk is diversified away. However, as Chen *et al*. (2006) point out, because the bank's aggregate terminal payoff is significantly fat-tailed, this skewness remains even when the holding of an infinitely large number of loans in its portfolio does not disappear. We assume no remaining fat tails in the payoffs of housing market firms for illustration purposes.

[4]An important implication is that asset value and defaults are independent, conditional on the realization of the systematic factor *Z*.

In the context of the Vasicek single-factor model, a certain type of difficulty arises regarding how the systematic factor (Z) is defined in the housing market. An economic interpretation of the latent factor is by nature the state of the economy, as the loans and leases are directly related to the ups and downs of business cycles.[5] In this regard, we postulate that the systematic factor is the housing business cycle. That is, conditional PDs of housing and construction firms are a function of the housing cycle, in which conditional PDs decrease during the housing bubble periods and increase during the housing bust times.

This paper aims to deliver an integrated risk-management methodology to include 1) measuring the risk of credit portfolios, 2) implementing a (macro) stress test, and 3) calculating the risk limits for resource allocation using an estimated systematic factor specifically designed to capture the housing market cycle. Using proprietary parameters from the Korea Housing & Urban Guarantee Corporation (KHUG), whose main business includes a guarantee business, we propose a new integrated means of risk management with empirical results.[6]

We take a direct approach to capture the systematic factor dynamics by building a representative housing market index. Following common practices in constructing indices, we use factor methods. To this end, we infer information from a set of real-estate market variables by applying the FAVAR methodology proposed by Bernanke *et al*. (2005). Then, we show how to apply the estimated systematic latent factor to risk management specific to the housing market in an integrated manner.

Managing risk at KHUG is particularly challenging because the guarantee exposures are listed as off-balance-sheet items and its exposures are closely related to most durable goods, especially houses; thus, the risk profiles between houses and financial products such as stocks and bonds are significantly different in terms of the distributions of the default probability and liquidity. Therefore, applying the traditional risk-management scheme would be naive and misleading when attempting to measure precise risk amounts. In this regard, the idea of constructing a housing market index is particularly useful for two reasons. First, the amount of the "surety" claim by the "obligee" varies greatly depending on the business cycle, as the risk is highly interdependent among guarantee exposures because the scale of damage is closely related to economic fluctuations.[7] Secondly, there are considerable limitations to risk diversification among guarantee exposures due to the strong positive correlation; thus, guarantee insurance has a special characteristic closely related to the systemic risks existing in the overall economy. We believe that our proposed methodology is very well fitted to analyze the risks associated with slow-moving and low-defaultable forms of capital such as alternative investments.

Because the housing market accounts for a large proportion of the Korean economy, and given that more than 80% of the asset value possessed by individuals is skewed to real estate, it is undoubtedly important to understand housing market

[5]Figure 1 in Bruche and Gonzlez-Aguado (2010) exhibits clearly that a systematic factor related to the business cycle appears to dance between the default probability and the loss given default measure.

[6]See Appendix for details.

[7]A guarantee business appears to be financially sound with high profits during economic booms, but it suffers large losses and is likely to become insolvent during economic depressions.

fluctuations and their impact on actual business cycles. Considering the statement that the main policy goal in the housing market is to achieve stability in various dimensions, such as rents, property prices, supply and demand, and credit amounts, the Korean government has been known to use colorful policy measures. In this regard, we propose an integrated risk-management framework which captures the Korean housing cycle based on the FAVAR approach. Based on this cycle, we provide several policy implications for the Korean housing market in a timely and ex-ante manner.

The remainder of this article is organized as follows: Section II describes how we construct the systematic factor. Section III describes our choice of real-estate variables. Section IV presents the estimated latent factor and its power to capture the Korean housing cycle, and Section V proposes three risk-management applications. Section VI provides several housing policy implications. Section VII offers concluding remarks and discusses limitations.

II. Model Specification

This section describes our modeling approach to extract the systematic factor. Vector Autoregression (VAR) models have been an important tool in applied macroeconomics since Sims (1980). Many contemporaneous studies indicate that large VARs can be quite competitive with regard to forecasting.[8] Factor-augmented Vector autoregressive (FAVAR) models have enjoyed increasing levels of popularity for forecasting macroeconomic variables (see Abbate *et al.*, 2016; D'Agostino *et al.*, 2013). In a similar vein, we base our modeling approach on the FAVAR model, originally proposed by Bernanke *et al.* (2005).[9] Following the recent trend in macroeconomic modeling, we start with time-varying-parameter FAVARs in which the coefficients and loadings change (see Primiceri, 2005; Koop and Korobilis, 2014). To be precise, we use extensions of factor-augmented VARs which jointly model a large number of real-estate variables used to construct the systematic latent factor with key macroeconomic variables. We describe our modeling approach briefly below.

Let Y_t be a M x 1 vector of observable economic variables and F_t be vector of unobserved factors whose joint dynamics of $\Gamma_t = \left(Y_t', F_t'\right)$ are given by the following two equations,

$$\Gamma_t = c_t + \sum_{i=1}^{p} B_{t,i} \times \Gamma_{t-i} + \upsilon_t, \tag{1}$$

[8]See Bańbura *et al.* (2010), Carriero *et al.* (2009), Carriero *et al.* (2011) Carriero *et al.* (2012), Koop and Korobilis (2014).

[9]The FAVAR model has several advantages. Employing the factor model is a way to mitigate omitted variable bias, and research has demonstrated that the FAVAR model has superior long-term predictability useful for stress-testing.

$$X_t = \Lambda_t^z Z_t + \Lambda_t^y Y_t + \varepsilon_t \tag{2}$$

where the Y vector consists of a set of three endogenous macroeconomic variables, $Y_t = [real\ GDP_t,\ inflation_t,\ policy\ rate_t]$. These variables constitute the general equilibrium of the Korean economy. F_t is the latent factor, which we interpret as the housing cycle. The error terms υ_t and ε_t are assumed to follow a normal distribution with a zero mean and covariance matrixes Q_t and V_t, respectively. Additionally, time-varying coefficients are assumed to evolve as follows:

$$\begin{bmatrix} \Lambda_t^z \\ \Lambda_t^y \\ B_{t,i} \end{bmatrix} = \begin{bmatrix} \Lambda_{t-1}^z \\ \Lambda_{t-1}^y \\ B_{t-1,i} \end{bmatrix} + \begin{bmatrix} \nu_t \\ \varphi_t \\ \eta_t \end{bmatrix}, \quad where \begin{bmatrix} \nu_t \\ \varphi_t \\ \eta_t \end{bmatrix} \sim N\left(\begin{bmatrix} w_t & 0 & 0 \\ 0 & N_t & 0 \\ 0 & 0 & R_t \end{bmatrix} \right)$$

All errors in equation (1) are correlated over time and with each other and all elements in the coefficient matrix $B_{t,i}$ are properly vectorized to match the dimension of Γ_t. All variance-covariance matrices are modeled to evolve with the EWMA (exponentially weighted moving average) process with the same decay parameters used in Koop and Korobilis (2014). Equation (1) is employed to model the dynamic interactions of the index with the macroeconomic variable Y_t, and equation (2) is used to extract the latent housing market index from various real-estate variables X_t.

This econometric specification is important for two reasons. First, the multivariate model with all variables in the system equation can better characterize their comovement and interdependence. Second, purging the effect of macroeconomic conditions from the housing market cycle is done so that the estimated factor reflects information solely associated with the real-estate sector. That is, including Y_t on the right-hand side of equation (2) is intended to ensure that the systematic factor reflects only housing market information. By doing this, we purge housing information from the effects of current macroeconomic conditions.[10] 10 In this regard, employing $\Lambda_t^y Y_t$ makes a significant difference.[11]

III. Data Description

In this section, we describe our choice variables and sample data. Instead of aggregating all possible real-estate variables, we carefully choose candidate

[10]There may be a type of post-crisis bias which states that some housing market cycles would be estimated using financial crisis data at the time of the financial crisis, leading to the bias. Because we focus on risk-management applications, and given that the financial crisis in Korea was known to be relatively mild compared to those in developed countries, we presume that the post-crisis bias would be negligible here.

[11]Hatzius *et al.* (2010) employ a similar approach for the same reason.

TABLE 1—16 CANDIDATE REAL-ESTATE VARIABLES (X_t)

Factor Dimension	Variable Name
Price	Transaction-based Sales Price Index for Apartments
	House Price Index
	Jeonse Price Index
	Ratio of Jeonse to Purchase Price for Apartments
	Construction Cost Index
Quantity: (Construction)	Number of Households Approved for Sales
	Value of Construction Completed at Current Prices
	Amount of Order Received for Housing Construction
	Ratio of Sold Units to Total Units of New Apartments
	Number of Guaranteed Housing Units
Quantity: (Stock)	Apartment Transaction Volume
	Number of Unsold New Apartment Housing Units after Completion
	Unsold New Apartment Housing Units
Others	KB's Buyer's Market Response Index
	Amount of Mortgage Loan
	Mortgage Spread

variables based on the DiPasquale and William's (1996) four-quadrant model of the real-estate market. The four factor dimensions of the four-quadrant model are rent, price, construction, and stock. In addition to these factors, we consider three more factor dimensions. First, we take the dynamic (transaction amount) factor dimension into account because the four-quadrant model has been criticized for its static nature. Next, we consider the credit factor dimension to include price and quantity of the mortgage. Our last factor dimension of interest is a unique real-estate contract called 'Jeonse', which contains cross-market information on rents, Jeonse, and the property market.[12]

For practical purposes in the policy and economic analysis, we have four factor dimensions after regrouping the seven abovementioned factors (rent, price, construction, and stock, transaction, credit, and Jeonse). In sum, we consider a total of 16 real-estate variables from the four factor dimensions (price, construction, stocks & transactions, and others). Note that we separate the quantities of housing into two physical components: the number of houses being produced and the number of houses on the market at a given point (stock) or for some period of time (transaction).[13]

These factor dimensions contain information about several types of price indices, new residential constructions, housing starts, apartment transaction volumes and mortgage amounts, among others. We also include cross-market information such as the ratio of the Jeonse amount to the purchase price for the apartment. We access monthly frequency data spanning from the beginning of 2006 to the end of 2016, and all non-stationary data are properly transformed to ensure stationarity. In total, 16 variables are described in Table A1.[14]

[12]Jeonse, or a full rent deposit, is a real-estate term unique to South Korea, referring to the way apartments or other types of the house are leased. The Korean Jeonse system is an intermediate form of the lease and home sales markets both in a legal and economic sense. See Appendix for details.

[13]Note that the final variables of our choice are not precisely aligned with those in DiPasquale and Williams's four-quadrant model to include a set of information specific to the Korean housing market.

[14]Refer to Appendix for a detailed description. Here, KB represents Kookmin Bank.

IV. Korean Housing Cycle

This section contains our estimated systematic factor describing the Korean housing cycle. Figure 1 captures a time series of the estimated systematic factor. The estimated systematic factor exhibits several intriguing observations. First, the estimated factor coincides with major real-estate market fluctuations, including the 2008 financial crisis, 2011's DTI regulation and 2014's relaxed LTV & DTI regulation. To be specific, the factor reached its lowest level four months after Lehman Brothers collapsed in September of 2008, and the estimated factor appears to conform to major real-estate policies effectively.

After 2008, the Lee Myung-Bak administration (17th term for 2008-2012) announced approximately 18 real-estate measures and after its inauguration in 2013, the Park Geun-Hye administration (18th term for 2013-2017) announced 14 real-estate policy packages. Many housing policies have exhibited different and possibly paradoxical effects on real-estate market, thus displaying the phenomenon of 'the fool in the shower'.[15]

The bottom line is that Korean housing cycles are strongly steered by the government. To be a good proxy for the housing cycle, therefore, it is imperative to capture the effects of housing policies effectively. We show that our estimated factor meets this requirement well by describing how well the systematic factor responds to several representative policy events.

FIGURE 1. ESTIMATED SYSTEMATIC FACTOR

Note: Time series of the estimated systematic factor.

[15]Before the Lee's regime, the government implemented a comprehensive real-estate tax, a transfer tax system, and other measures to curb demand. The housing policies during the Lee's presidency were largely attributable to the expansion of supply in the public sector, the revitalization of transactions focusing on unsold pre-sale units, and the stabilization of the pre-sale and rental market. However, the effects of the counter-measures were limited. The policy packages during the Park's regime except for the latest one released on Nov. 3 in 2016 focused on deregulation and boosting the market. The policy packages during the Park's regime except for the latest one released on Nov. 3 in 2016 focused on deregulation and boosting the market.

The 2011 DTI regulation had several adverse effects on the housing market. The greatest impact was the sharp drop in the transaction volume. In February of 2012, the number of apartment transactions across the country decreased by 20% compared to that in February of 2011, when no DTI regulations were in effect. The impact of the DTI regulation on housing prices was even greater. As of the end of February of 2012, the housing market in the Seoul metropolitan area fell 0.2% in the previous year, while the apartment market fell 0.4%. Our estimated factor continued to decrease after the 2011 DTI regulation. It was in fact a turning point to observe how the DTI regulation was affecting the market.

The relaxed LTV & DTI regulations of 2014 were one aspect of the massive government policy package called "Choinomics."[16] With the potential of flat-lining economic growth, the finance minister implemented a US$39 billion fiscal stimulus package and the Bank of Korea cut interest rates twice by an accumulated 50 basis points to 2 percent. In addition, to counter stagnating property prices during 2013 and early 2014, mortgage-lending rules were also eased. These measures led to a 2.4% increase in apartment prices during 2014, whilst mortgage lending and borrowing for long-term rents increased significantly.

The relaxed LTV & DTI regulation of 2014 contributed to the recovery, though it lost its contributional power for late 2015 and 2016. After this deregulation, our estimated factor continued to increase until early 2015 and then reversed, decreasing until early 2016 due to supply-side shocks.

Based on the anecdotal interpretations, we verify that the estimated systematic factor captures the effects of the Korean housing policies, thus represents the Korean housing cycle well. Interestingly, we verified that the estimated factor dynamics conforms to a time-series of the auction price in the apartment auction market. The auction price is generally known to reflect housing market dynamics very well due to the existence of marginal traders and their trading activities.[17]

V. Risk-Management Applications

This section proposes three practical risk-management applications: 1) measuring the risk of credit portfolios by credit ratings, 2) stress-testing, and 3) setting the credit risk limit using the estimated factor in an integrated framework.

A. *Risk Measurement*

The first practical application is to measure the risk of holding credit assets and portfolios. Measuring credit risk requires risk components such as exposure, conditional default probabilities, and loss given default. Marginal default

[16]The term Choinomics represents a series of expansionary policies the government pursued under Finance Minister Choi Kyung Hwan. Under him, the government has sought to stimulate the economy through a set of expansionary measures. For instance, it eased regulations on mortgages and expanded fiscal spending by unleashing a US$39 billion fiscal stimulus package.

[17]Chun (2013) and Seo and Jeong (2013) report a positive correlation between the apartment price index and auction prices.

probabilities can be calculated based on different methodologies, such as a structural model or a reduced-form model, or from rating agencies related to default probabilities. We calculate the conditional default probabilities of Vasicek model, $PD_i(F)$, based on the estimated systematic factor (F_t) from equation (2). Here, i denotes credit ratings ranging from AAA to D for a total of 15 classifications.[18] We set $\Phi^{-1}(PD_i)$ to be the i grade's long-term unconditional default probability, μ_i. Subsequently, we have the following equation:

$$PD_i(F_t) = \Phi\left[\varepsilon_i \le \frac{\mu_i - \omega_i F_t}{\sqrt{1-\omega_i^2}}\right] \tag{3}$$

We borrow the empirical parameters for exposure, the LGDs and the CCFs from KHUG. Regarding the loss given default measures, the convention is to use historical data depending on the seniority of the claims analyzed and to assume that they are constant across time and across seniority levels.

The two panels in Figure 2 display the time series of the conditional PDs of portfolios with a credit grade of A^+ and the relationship between the conditional PDs and the realization of F depending upon the parameter ω, respectively.[19] The risk dynamics of the two conditional PDs is plotted in the first panel, in which several empirical anecdotes mentioned in section IV appear to be well captured.

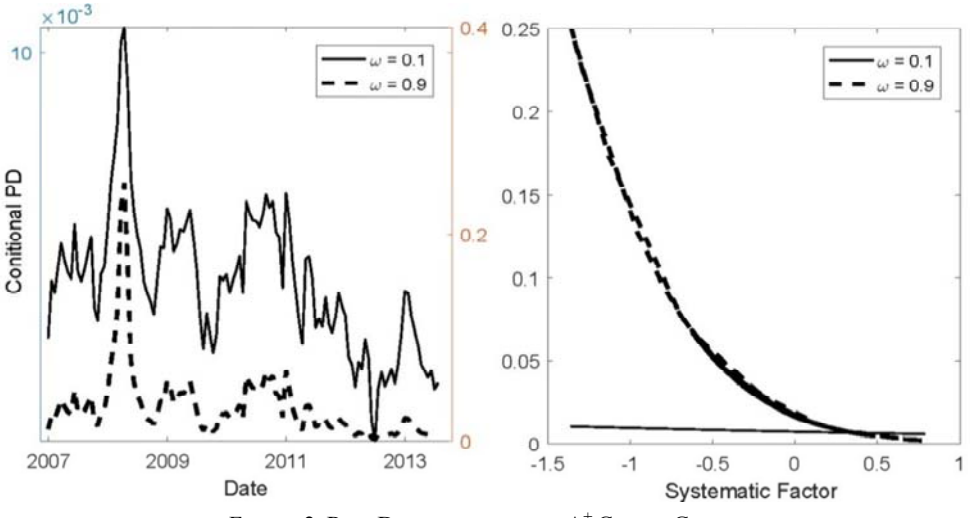

FIGURE 2. RISK DYNAMICS FOR THE A^+ CREDIT GRADE

Note: Time series of conditional PDs for two given values of ω and the relationship between the realization of Z and the conditional PDs. The A credit grade ranging from AAA to A^- is assigned to more than 83% of total credit risk exposure in housing sales guarantee products.

[18]The credit conversion factor (CCF) is an additional risk component of the guarantee product.

[19]The A credit grade, ranging from AAA to A^-, accounts for more than 83% of all credit risk exposure in housing sales guarantee products. Our choice of the A^+ credit grade is for illustrative purposes.

The conditional PDs spiked during the financial crisis given the two ω values, in this case 0.1 and 0.9. When the housing policies favorable to the housing market were announced, the conditional PD decreased correspondingly, and increased otherwise. The relationship between the conditional PDs and the realization of the systematic factor is given in the second panel. For a given housing market shock F, we have the conditional probability of default on assets within the same credit grade. The ratio of conditional PDs for the two ω values varies, ranging from a minimum value of 0.3190 to a maximum value of 24.3071. The roles of ω in calculating the conditional PDs are larger in the realm of a lower realization of F and are smaller otherwise; thus, there exists an asymmetric effect.

B. *Forecasting and Stress Test*

This section presents the method by which a recursive forecast is combined with (macro) stress-testing. Unlike the stress-testing practice in the banking sector, it is difficult to implement stress-testing properly in the housing market, mainly because the credit risk of holding housing-related claims and portfolios is difficult to model, as is simulating the conditional PDs, because housing portfolios are collateralized by the physical houses. Therefore, there is little relevant historical default data information. For safe assets, calculations based on historical data may not be sufficiently reliable to determine the default estimate probability, as few defaults are observed. These low-default assets pose an estimation problem and present some difficulty when attempting to simulate expected default rates (Basel Committee on Banking Supervision, 2005).

The proposed methodology utilizes the estimated systematic factor. Because the latent factor is purged from the effect of macroeconomic conditions forming the simplest DSGE (dynamic stochastic general equilibrium), our final estimated factor reflects information solely associated with the real-estate sector. This approach enables us to forecast and simulate the default rates based on the Vasicek one-factor model in a structural framework.

Figure 3 displays the time series of three macroeconomic variables and the estimated latent factor. The shaded area in Figure 3 exhibits the predicted paths of four variables for the one-year period spanning from November of 2016 to November of 2017. The two panels in the first row show the time series of the predicted real GDP and inflation, whilst the two panels in the second row exhibit the predicted policy rate and estimated factor. We observe that the conditional mean prediction of the housing cycle exhibits a sharp fall for three consecutive months and then shows stable dynamics for the remaining period.

Along with the predicted path of the systematic factor, we consider three simulated shock paths under the assumption that unit standard deviation, two standard deviations, and three standard deviations are imposed on the systematic latent factor.[20] The size of a shock applied to structural VAR systems is traditionally measured as either the one-unit or the one-standard-deviation shock of the structural error. Note that the conditional mean forecast is implemented under a

[20]In statistics, the 68-95-99.7 rule refers to when 68.27%, 95.45% and 99.73% of the values lie within one, two and three standard deviations of the mean, respectively.

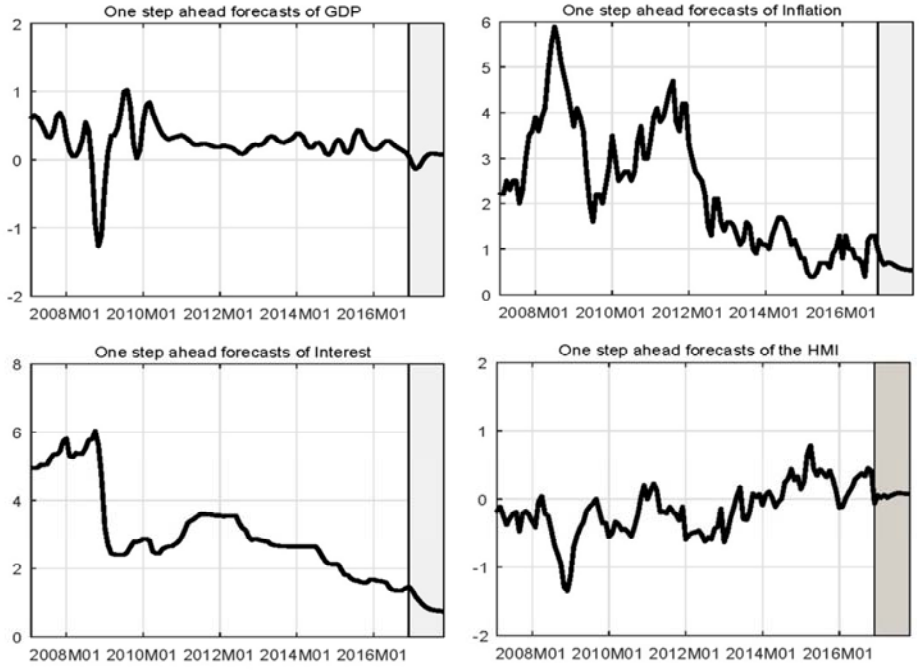

FIGURE 3. THE SYSTEMATIC FACTOR FORECAST UNDER THE DSGE FRAMEWORK

Note: A set of three endogenous economic variables, the real GDP_t, $inflation_t$, $policy\ rate_t$ is given along with the systematic factor (F_t). These endogenous variables constitute the general equilibrium of the Korean economy together with the housing market.

structural VAR framework whose identification strategy with regard to the structural shocks in the transition equation is uses the lower-triangular Cholesky decomposition to analyze the effects of endogenous economic variables on the housing cycle.

The left panel in Figure 4 captures the simulated paths when negative one, two and three standard deviation shocks are imposed on the systematic factor, that is, on the housing market cycle. The panel on the right displays the corresponding conditionally stressed PDs for claims and portfolios with the A^+ credit grade based on equation (3). Any stress test, whether micro or macro, has key elements such as the set of risk exposures subjected to stress, a scenario that defines (exogenous) shocks that stress those exposures, and a measure of the outcome. In this regard, based on the various predicted paths of the latent factor, we calculate the VaR amounts given the parameter values of different risk components, including the exposures, LGDs, and CCFs. The risk horizon for the predicted risk components is set as one year, from November of 2016 to November of 2017. Total exposure for the A^+ credit grade is approximately 27.7 trillion won.

Table 2 contains risk measures as VaR (value at risk) amounts for the A^+ credit grade. The two panels in Table 2 exhibit the VaR amounts for hypothetical values of $\omega = 0.1$ and $\omega = 0.5$, respectively. We observe the important role of the

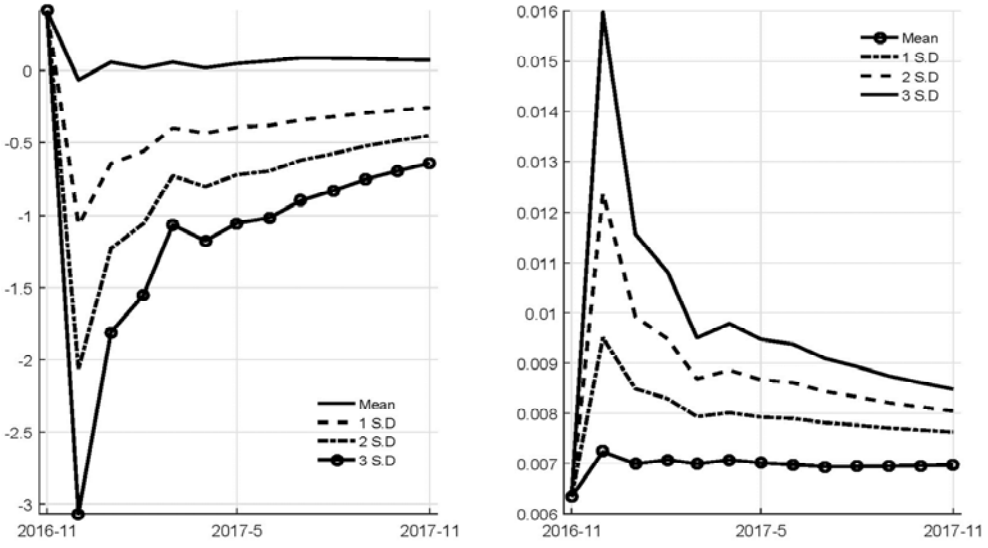

FIGURE 4. (MACRO) STRESS TEST

Note: The left panel captures the simulated shock paths for negative one, two and three standard deviations of the systematic factor and the right panel displays the corresponding conditional stressed PDs with a ω value of 0.1.

TABLE 2—VAR AMOUNTS FOR A^+ CREDIT GRADE

(UNIT: 0.1 BILLION WON)

Date	Panel A: ω = 0.1				Panel B: ω = 0.5			
	Mean	1 S.D.	2 S.D.	3 S.D.	Mean	1 S.D.	2 S.D.	3 S.D.
2016/12	1,370	1,757	2,219	2,759	539	2,426	6,592	11,701
2017/05	1,331	1,489	1,616	1,752	443	931	1,531	2,389
2017/11	1,323	1,439	1,510	1,585	424	746	1,016	1,361

parameter ω in the capturing of the degree of sensitivity to the systematic factor.

VaR amounts when ω is equal to 0.1 increase relatively at a mild pace from 175.7 billion won to 275.9 billion won in December of 2016, while VaR amounts with $\omega = 0.5$ increase rapidly from 242.6 billion won to 1170.1 billion won for the corresponding simulated shocks. An interesting observation is the time-series dynamics of the VaR amounts in Panel B when $\omega = 0.5$. The VaR amounts plummet as time passes. On the other hand, the VaR amounts in Panel A with $\omega = 0.1$ decrease moderately. A surprising result is that at the end of the risk horizon in November of 2017, the final VaR amounts in Panel B with $\omega = 0.5$ are far less than those in Panel A with $\omega = 0.1$.

C. *Credit Risk Limit*

Theoretically speaking, setting risk limits is a function of the risk policy, which includes the risk capacity and the appetite inside the organization.[21] We describe briefly how to set risk limits when the confidence interval (CI) is set to 95%.

[21]This risk appetite framework is consistent with current industry best practices and regulatory expectations.

Currently, KHUG calculates the credit risk limit (CRL) using the following formula,

$$\mathrm{CRL}_t = min\left\{\text{Eligible Captial}_t,\ \alpha_{95\%} \times \text{Exposure}_t\right\}$$

where $a_t = \dfrac{UL_t}{Exposure_t}$ and the denominator UL_t is the unexpected loss amount. We estimate the value of $\alpha_{95\%}$ from its historical probability distribution with a 95% confidence interval. The economic meaning of alpha is the time series of internal risk perception and risk tolerance manifestation inside KHUG. This approach is vulnerable to the criticism that setting risk limits is done in a backward-looking manner. To mitigate this argument, we modify $\alpha_{95\%}$ to include the estimated latent factor, which captures the housing cycles through the time-varying confidence interval; that is, $\alpha_{95\%}$ becomes α_{Ft} through the $CI\left(F_t\right)$ conditioning of the size of the housing market shock.

In practice, a risk limit has three components: a risk metric, a risk measure that supports the risk metric, and a certain bound. Following the common practice, our approach to setting up the limit is described below: We start by fitting the historical data of the estimated systematic factor to a probability distribution, after which we calculate the area into which the predicted mean path of the systematic factor falls. For a normal distribution, for example, we verify whether the values of the predicted systematic factor are at 68%, 95%, or 99.73%. When the predicted systematic factor falls into the normal region, such as within 90%, we calculate area VaR amounts under the predetermined confidence interval. We then proceed to calculate $\alpha_{95\%}$ from its probability distribution. In contrast, when the factor value breaches the predetermined threshold, for instance when it is at 75% or 90%, we switch $\alpha_{95\%}$ to α_{Ft}, a new confidence interval over which the systematic factor hovers. We then calculate the value of α_{Ft} given the new confidence interval $CI\left(F_t\right)$. Afterward, we multiply the current exposures by the numeric of α_{Ft} to determine the VaR amounts. One conceptual advantage worth mentioning is that because the confidence interval is a function of the predicted systematic factor, setting risk limits can be implemented in a timely and forward-looking manner.

VI. Policy Implications

In addition to the risk-management application, we investigate whether it is possible to search for policy implications using the estimated housing cycle. To do this, we initially examine how shocks to the Korean housing cycle propagate to economic fluctuations using an impulse-response analysis based on equation (1).

The upper panel of Figure 5 exhibits how the real GDP variable responds over time to a one-unit increase in the exogenous housing cycle shock and the lower panel shows how the inflation variable reacts over time to a one-unit increase in the

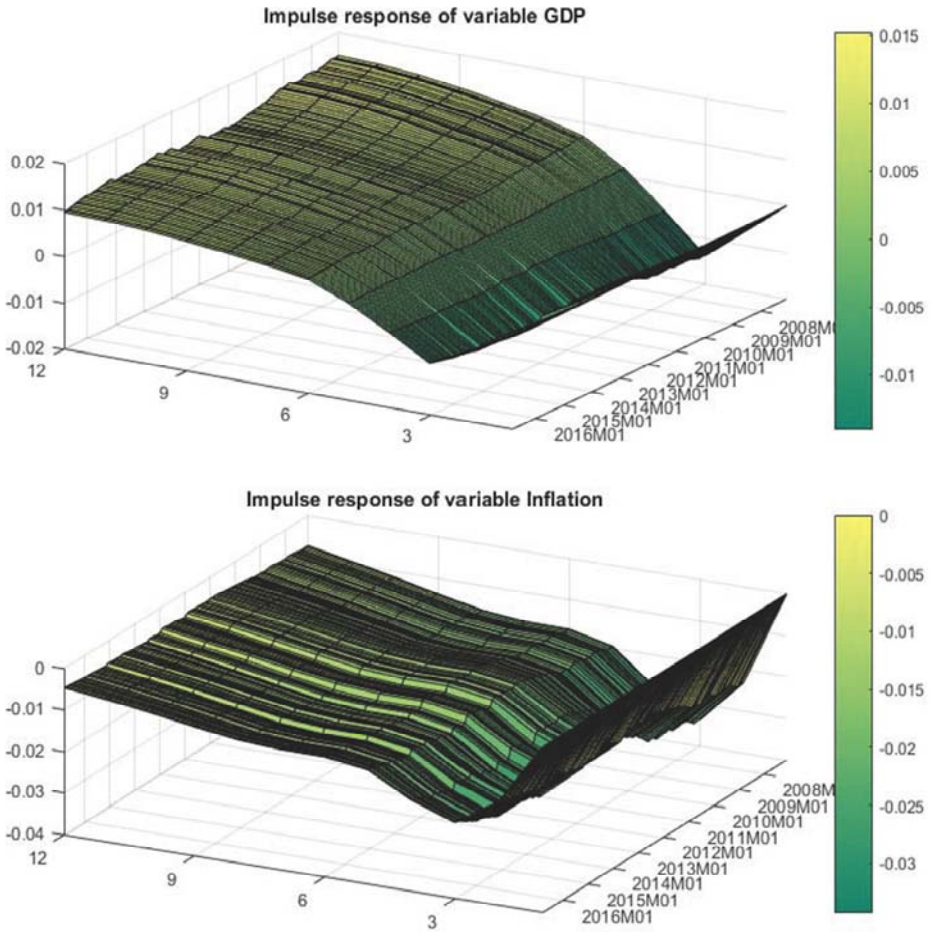

FIGURE 5. IMPULSE-RESPONSE DYNAMICS OF REAL GDP AND INFLATION

Note: The upper panel plots the impulse-response dynamics of housing market shocks to the real gross domestic product in a time-varying manner. The lower panel plots the time-varying impulse-response dynamics of housing market shocks to inflation. Response periods are 12 months and the data ranges from the beginning of 2006 to the end of 2016.

exogenous shock according to the estimated systematic factor in a time-varying manner in both cases. The impulse response dynamics are the estimated change in a set of macroeconomic variables following a one-standard-deviation shock to the Korean housing cycle. As indicated by the two panels in Figure 5, this type of shock to the Korean housing cycle leads to a decline both in the real GDP and inflation within the first three months. Considering the fact that housing capital is a slow-moving and low-defaultable variable, this result is rather surprising because the two macroeconomic variables respond very quickly to the housing market shock. Past that point, the real GDP and inflation gradually return to their initial values in nine months. One intriguing observation is that the degree of the responses of the two macroeconomic variables to a one-unit increase of the exogenous shock according to the estimated systematic factor decreases mildly. For

example, the magnitude of the declines in the real GDP and inflation continue to decrease from 2008 to 2016. This result is comparable to the findings of Koop and Korobilis (2014), who proposed a financial condition index and investigated the impulse response dynamics of a set of macroeconomic variables to a shock to the index. They found that this type of shock to the financial condition index causes rather wild impulse responses of the macroeconomic variables and that the magnitude of the response increases dramatically after the 2008 global financial crisis. These findings provide several important economic implications for policymakers, especially for macroprudential supervision purposes.

VII. Conclusion

This paper proposes an integrated risk-management methodology that includes 1) measuring the risk of credit portfolios, 2) implementing a (macro) stress test, and 3) calculating risk limits using the estimated systematic factor specific to capture the housing market cycle. To be a good proxy for the housing market cycle, it is indispensable to capture the effects of housing policies, as Korean house market cycles are strongly steered by the government in a 'fool in the shower' manner. To this end, we construct a systematic factor from real-estate market variables based on the FAVAR methodology proposed by Bernanke *et al*. (2005). The proposed methodology is particularly useful for analyzing the risks of alternative investments, whose risk profiles are significantly different from those of financial products such as stocks and bonds in terms of the distribution of the default probability and liquidity. Furthermore, our impulse response analysis provides important implications for policymakers.

Our study has several limitations. The role of interest rates in the housing market has been well recognized; thus, a single-factor model is needed as an extension to include the interest rate factor for a clearer picture of the conditional PDs. In addition, our empirical analysis is restricted to guarantee portfolios with A^+ credit grades only; thus, incorporating the correlation between loss given default measure and the default probabilities, or between the default probabilities for different credit grades in the calibration of the relevant credit models, is omitted. This would be tolerable in the sense that our main focus is on proposing a new risk management approach. An interesting development would be to explore the role of a discrete survival model and a dynamic conditional correlation within the scope of risk-management applications.

APPENDIX

Description of Jeonse: Jeonse, or key money deposit, is a real-estate term unique to South Korea that refers to the way apartments or other types of housing are leased. Instead of paying monthly rent to a landlord, a large lump-sum payment is deposited into the landlord's bank account for the duration of the contract. By law, Jeonse contracts

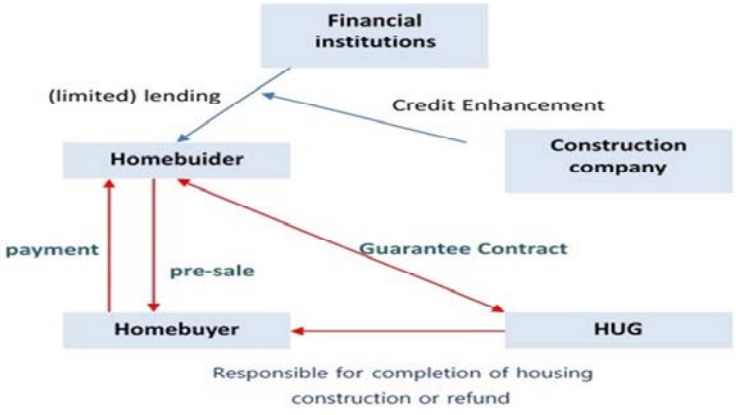

FIGURE A1. CONSTRUCTION FINANCE UNDER PRE-SALE SCHEMES

usually apply for two years. At the end of the contract, the deposited amount is returned to the renter. Jeonse does not involve monthly rental payments. Instead, tenants provide landlords with a deposit for the duration of the lease and landlords should repay the lump sum to tenants at the end of the tenancy, as noted above. Jeonse has been mutually beneficial both for landlords and tenants because the landlord can expect capital gains from rising housing prices during housing booms and tenants can also lease at prices which are lower relatively to real-estate sales prices. In addition, the Jeonse system eliminates the likelihood that tenants will default on monthly rents. In general, landlords prefer Jeonse because Jeonse enables them to purchase property leveraged with Jeonse contract funds. There also exists a rollover and possibly liquidity risk in the sense that landlords may not be able to pay back the full sum at the end of the contract, as they typically invest the large sum of money from Jeonse contracts to buy other properties or invest in longer-term financial assets. In this regard, Kim and Shin (2012) analyzed rents from the viewpoint of financial transactions and defined Jeonse as a housing repo contract between a homeowner and a tenant as collateral for housing. Understanding the Jeonse system is crucial to understand the Korean housing market more deeply.

Description of Pre-Sale Guarantee System: Korea has pre-sale and pre-sale guarantee systems which apply to the supply of new houses. The housing pre-sale system permits housing builders to receive a portion of the house price from the buyer before the housing is completed. This is equivalent to those activities in which construction companies receive the construction costs in advance. The Korea Housing and Urban Guarantee Corporation (HUG) was established in accordance with Article 16 of the NHUF (National Housing and Urban Fund) Act to improve housing well-being and encourage urban regeneration projects, thereby contributing to a better quality of life of the public by providing various guarantees, implementing national projects, and effectively operating and managing NHUF. Its main business areas include a guarantee business for housing that guarantees housing completion, guarantees rental deposits, and guarantees cooperative housing completions. Examples include the completion of housing construction or the refund of a down-payment and intervening payments made in cases where a

project owner fails to fulfil its obligations under pre-sale agreement due to bankruptcy, insolvency, or other circumstances. A detailed business description is provided on the HUG homepage

In Korea, the pre-sales system is very popular. Homebuyers pay a certain percentage of the deposit (usually 10% of housing price) upon signing the contract, paying the remaining balance based on an installment schedule that is linked to the construction schedule. When they move into a newly constructed house, they pay the last installment, which is at least 20% or more of the contract price. Figure A1 shows the development finance under pre-sale schemes. To purchase land, homebuilders make use of their equity or loans. In a pre-sale scheme, homebuyers are exposed to the risk of default of the homebuilders; therefore, in order to eliminate this risk, the KHUG provides construction completion guarantee services for future homeowners.

TABLE A1—DESCRIPTION OF 16 CANDIDATE VARIABLES (X_t)

Factors	ariables	Description
Price	ransaction-based Apartment Price Index	This index provides market trend information by analyzing the transaction price level and the rate of change of the declared apartment in the inventory of apartments nationwide and is used as reference data for government policies (Source: Korea Appraisal Board).
	Housing Price Index	The housing price index is a weighted value of the housing, housing type, and housing stock computed using the Laspeyres formula (Source: Kookmin Bank).
	Jeonse Price Index	The Jeonse Price Index is a weighted value of the Jeonse, Jeonse type, and Jeonse stock computed using the Laspeyres formula (Source: Kookmin Bank).
	Ratio of Jeonse to Apartment Prices	The Jeonse-to-apartment-price ratio is the ratio of the yearly rental to the house price (Source: Kookmin Bank).
	Construction Cost Index	This index is based on direct construction costs provided by Korea Institute of Construction Technology.
Quantity 1: Construction	The Number of Households Approved for Sale	The number of housing units approved for pre-sale public notice by authority (Source: Ministry of Land, Infrastructure and Transport)
	Value of Construction Completed at Current Prices	The amount of construction investment that the construction company can receive from owners or developers after the completion of construction (Source: Ministry of Land, Infrastructure and Transport)
	Number of Orders Received for Housing Construction	The number of contracts between developers and construction companies (Source: Ministry of Land, Infrastructure and Transport)
	Ratio of Sold Units to Total Units of New Apartments	The ratio of sold units to total units of new apartments that developers can sell (Source: Ministry of Land, Infrastructure and Transport)
	Number of Guaranteed Housing Units	The number of houses guaranteed by the KHUG
Quantity 2: Stock	Apartment Transaction Volume	Residential apartment transaction volume (Source: Korea Appraisal Board)
	Number of Unsold New Apartment Housing Units after Completion	The number of unsold new apartment housing units among new apartments that developers can sell after completion (Source: Ministry of Land, Infrastructure and Transport)
	Unsold New Apartment Housing Units	The number of unsold new apartment housing units among new apartments that developers can sell before completion (Source: Ministry of Land, Infrastructure and Transport)
Others	KB's Buyer's Market Response Index	The Buyer's Market Response Index is constructed by selecting one of the three types of real-estate brokerage: selling advantage, buying superiority, and coherence. When the Buying Leading Index is 100, the selling price and purchase price are at the same level.
	Amount of Mortgage Loans	The total amount of credit incurred by financial institutions (Source: Bank of Korea)
	Mortgage Spread	The mortgage spread is the difference between treasury yields and interest rates on mortgages (Source: Bank of Korea).

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Treasury Stock Sales and Management Rights Protection: Conflicts of Interest between an Owner-manager and Small Shareholders†

By SUNG ICK CHO*

This paper investigates the sales process of treasury stocks, while most previous research studies treasury stock repurchases. The sales of treasury stocks are an important measure to protect management rights only in Korea, as Korea's laws and systems allow treasury stock sales according to the board's resolution and not by the decisions made at the general shareholders' meetings. The board's resolution, which considers the owner-manager's interest on management rights, can cause damages to small shareholders. Considering (i) the economic characteristics of treasury stocks, (ii) other countries' institutions and experiences, (iii) a theoretical assessment of the possibility of small shareholder losses, and (iv) lessons from Korea's actual instances, Korea's present system should be corrected at least in the mid and long term. Even in the short-term, rules pertaining to sales enacted by the board's resolution inducing small shareholder losses should be overhauled. The autonomous discipline by various stakeholders could be an ideal measure by which to monitor owner-manager's decisions. In addition, temporary intervention measures, such as government examinations, could be implemented to protect small shareholders.

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I. Introduction

In this paper, I examine the role of treasury stock 'sales' with regard to protecting management rights. There have been numerous existing research works on stock repurchases, and a considerable number of papers have studied the relationship between repurchasing stocks and the protection of management rights. However, research aimed directly at treasury stock sales is rare,[1] possibly because most repurchased stocks are instantly retired and not kept in the firm in many countries, including the U.S.

In Korea, unlike in other countries, treasury stock sales play a key role in protecting management rights.[2] One example is a designated sale of treasury stocks to a friendly group, who vote in favor of an owner-manager.[3] When splitting a company off *à la* an equity spinoff, Korea's Commercial Act allows the allocation of new firm's stock to an existing firm in proportion to its treasury stock shares. Thus, the equity spinoff, in which treasury stocks are involved, would be a useful scheme to retain, protect, and transfer management rights.

Essentially, a stock repurchase is a means of delivering economic benefits to general shareholders.[4] When a firm repurchases its own stocks, shareholders who accept the repurchase offer can convert their shares into cash. In this sense, stock repurchases have the same economic meaning as dividend payments.[5] However, stock repurchases in Korea have a different objective. Korean firms rarely incinerate repurchased stocks, unlike firms in other countries. Moreover, we can find numerous cases in which firms sell treasury stocks to a third party in favor of a dominant stockholder. These designated sales only considering the dominant stockholder's interests can damage small shareholders' interests, and such possibilities have already been reported.[6] These experiences have made treasury stock sales one of the most pressing issues in the area of corporate governance in Korea. As a result, multiple bills, which I will thoroughly examine later in this work, have been proposed in the National Assembly of Korea to amend the management system of treasury stocks. Thus, studies of the legal aspects and the economic effects of designated sales of treasury stocks are urgent.

[1]Exceptionally, Youn (2005) recognized the importance of treasury stock sales as well as stock repurchases, and he empirically analyzed the effects of the possession of treasury stocks. He did not, however, aim directly at sales process of treasury stocks. Kim and Lim (2017) empirically showed that the sales of repurchased stocks in Korea are related to the corporate governance structure and that these sales can be used to protect management rights.

[2]Some argue that the *chaebols* have only a few meaningful protection tools, such as supermajority voting and a golden parachute, besides the sales of treasury stocks. However, using treasury stocks is very effective for protecting management rights. Moreover, there are indirect measures; *chaebols* can mobilize institutional investment firms and ask for government intervention, and the boards of *chaebol* affiliates can also exploit internal resources for their owner-managers.

[3]In this paper, the following three terms are often used interchangeably: an owner-manager, a dominant stockholder, and a large shareholder.

[4]I will explain the motives for stock repurchases in detail in Section II.

[5]The difference between stock repurchases and dividend payments lies in who receives the money. In stock repurchases, only shareholders who accept the offer receive the cash, but dividends go to all relevant shareholders.

[6]In Section V, I display several instances of the designated sale of treasury stocks. Among these instances, some cases, including two cases of Hyundai Elevator, may serve only the owner-manager's interest. It is strongly alleged that such cases would harm general and small shareholders' interests. A few cases, such as those of Hyundai Elevator and Samsung C&T Corporation, were litigated in court.

Given this urgency, this paper theoretically analyzes how the sales of treasury stocks are used to protect management rights and how this affects small shareholders' interests.[7] The theoretical model incorporates an owner-manager's problem, in which he manages treasury stocks to maximize his own interest. Obviously, the owner-manager's managing policy of treasury stocks affects other stockholders' interests. Subsequently, I investigate and interpret several real-world instances based upon a theoretical analysis. This work also examines several countries' institutions as they pertain to treasury stocks and attempts to find a solution to overhaul Korea's institution in terms of corporate governance.

This paper starts by checking the mechanism of management rights protection using treasury stocks. I contrast the repurchasing-and-reselling process with the repurchasing-retiring-and-issuing process.[8] In the former process, which many Korean firms have adopted, the treasury stocks can be protective of management rights, unlike in the latter process. This is possible because Korea's current law intends a discrepancy between the two schemes, which I will explain in Sections II and VI. I also contrast Korea's institution of treasury stocks with those of other countries and explain why treasury stocks play a vital role in protecting management rights in Korea's institutional and historical context.

In the fourth section, I analyze the sales process of treasury stocks. Through a theoretical analysis, I formulize when sales of treasury stocks are harmful to small shareholders and when protecting management rights via the sales of treasury stocks can be beneficial to them. To identify these conditions, I consider a synergy effect from integrated management, investment efficiency, and a control premium for the dominant stockholder. In addition to theory, investigating actual instances can concretize situations in which small shareholders experience losses. In Section V, I list several cases of treasury stock sales, explain the transaction processes in detail, and analyze the economic effects on the interested parties. From the examinations of theory and actual instances, I can provide certain hints with regard to an overhaul of the institutions of treasury stocks. In the last part of the paper, I assess a few bills proposed in the National Assembly of Korea and look for a plan to convert the insight gained through the analysis offered here into implementable policies.

II. Treasury Stocks and the Protection of Management Rights

A. *Literature Review: Motives for Stock Repurchases*

Unfortunately, most existing studies focus on "stock repurchases" and not "stock sales," which is the main topic in this paper. The only exception, to the best of the knowledge of the author, is the study of Kim and Lim (2017), which empirically analyzes the motives behind treasury stock sales. However, some "stock

[7]This is one of the main contributions in this paper. As far as I know, this paper is the first to develop a model explaining an optimal choice of selling treasury stocks.

[8]The current Commercial Act of Korea distinguishes between the two processes, while treasury stock sales and new stock issuances have the same economic nature. For more detailed discussions, see Song (2014).

repurchases" works are also directly related to this paper, especially if they deal with management right issues. These papers, including Shin and Kim (2010), Jung and Kim (2013), and many other works, will be examined later in this section.

This review section begins with the research on the motives behind stock repurchases, and there are a few such motives which are often mentioned. The first motive is known as the leverage hypothesis, in which firms utilize stock repurchases to adjust firm leverage levels. Repurchasing the firm's own stocks reduces equity capital and thus increases the debt-to-equity ratio. Firms can take managerial advantage such as a reduction of corporate taxes given the high debt-to-equity ratio (Masulis, 1980). When a firm calculates an optimal debt-to-equity ratio and the actual ratio is less than the optimal level, the firm may repurchase stocks to meet the optimality condition (Dittmar, 2000). The literature on Korean firms agrees with the leverage hypothesis on the whole. Yoon, Kim, and Lee (2004) showed that firms with a low leverage ratio repurchased stocks more often. Lee and Joo (2005), Lee and Lee (2006), and Kim, Cha, and Jeong (2012) found similar results.

The second stream in the literature considers a stock repurchase as a tool to deliver financial compensation to relevant shareholders. The dividend substitution hypothesis explains that firms want to pay dividends at a stable level and thus use stock repurchases to spend additional earnings (Bajaj and Vijh, 1990).[9] For some reasons, a firm's value can be under-evaluated, and the firm may want to send a signal about this under-valued situation to the stock market (the under-evaluation hypothesis). If the signal is understood well, the firm's stock price will rise (Comment and Jarrell, 1991). The tax-saving hypothesis suggests that stock repurchases are preferred to dividends if the income tax rate for dividends is greater than the capital gain tax rate (Ofer and Thakor, 1987).

Studies on the Korean economy on financial compensation via stock repurchases do not display a consensus, unlike in the leverage hypothesis. Yoon, Kim, and Lee (2004) obtained negative results for the dividend substitution hypothesis and the under-evaluation hypothesis. Lee and Joo (2005) added a negative result for the under-evaluation hypothesis. Lee and Lee (2006) and Kim, Cha, and Jeong (2012) found results which did not support the dividend substitution hypothesis, whereas the under-evaluation hypothesis was supported. These results implicitly suggest that stock repurchases in Korea are implemented for several different purposes in addition to the financial compensation motive.[10]

Another stream in the literature on motives for stock repurchases seeks these motives by examining owner-manager's tunneling behaviors. The free-cash-flow

[9]When firms make money (earnings), they can pay dividends or repurchase their own stocks. For dividend payments, the firm's earned surplus and cash are used, but the firm takes nothing. For stock repurchases, the firm also uses cash, but it takes its own stock. This is, however, only paper without any economic value. Both measures use the firm's funds without any benefit in return. Thus, dividend payments and stock repurchases are economically equal from the firm's perspective. Note that the retirement of repurchased stock only confirms that it is only worthless paper. On the shareholders' side, the above two measures can differ. Dividends go to all relevant shareholders, but for stock repurchases, the firm's earned surplus amounts are delivered only to shareholders whose stocks are repurchased by the firm.

[10]In the previous footnote, I insist that firms can obtain only "paper" from the stock repurchase. Capital market participants, however, considers this paper to have some value. In Korea, the "paper" can be sold according to the dominant stockholder wishes, meaning that the "paper" has some value to the dominant stockholder and thus has certain economic effects on all relevant market participants.

hypothesis explains a mechanism that consumes part of the cash flow via stock repurchases, which can prevent an owner-manager from abusing the firm's resources (Jensen, 1986; Nohel and Tarhan, 1998). Inversely, an owner-manager can exploit stock repurchases to take private gains. If he has significant shares, including stock options, he has an incentive to raise stock prices via stock repurchases. This is known as the opportunism hypothesis (Fried, 2001).

With regard to the free-cash-flow hypothesis, most studies in the Korean literature have found supportive results. Yoon, Kim, and Lee (2004), Lee and Joo (2005), Lee and Lee (2006), and Kim, Cha, and Jeong (2012) confirmed this hypothesis by analyzing data form Korean firms. Byun and Pyo (2006) showed that the opportunism hypothesis was upheld in their analysis of large shareholders' stock sales.

The last stream in the motive research is about the protection of management rights, which is the main concern in this paper. Bagnoli, Gordon, and Lipman (1989) theoretically argued that a firm's value may be over-evaluated when the firm repurchased its own stocks. Thus, taking over a firm that repurchased stocks may produce smaller return than desired by the taker. Harris and Raviv (1988) and Stulz (1988) illustrated a process consisting of a stock repurchase, a stock price rise, and a takeover cost increase. In addition, the cost can be magnified when the stock repurchase is carried out by debt financing. Bagwell (1991) explains a mechanism by which the takeover cost increases, when the stock repurchase reduces outstanding stocks, especially when it exhausts stocks with low asking prices. Then, a potential bidder for management rights experiences a significant increase in the takeover cost and the transaction cost.

Yoon, Kim, and Lee (2004) empirically tested a hypothesis which held that small firms tend to repurchase stocks to protect their management rights, but they could not obtain a decisive result. The hypothesis that a firm whose manager does not have sufficient shares would repurchase stocks, suggested by Lee and Joo (2005), is also not supported by empirical tests. Lee and Lee (2006) examined the causal relationship between the owner-manager's shares or foreigners' shares and stock repurchases, though their results supported the management rights protection hypothesis only partially.[11] Unlike the papers discussed above, Kim, Cha, and Jeong (2012) found that the fewer shares an owner-manager owns, the more often stock repurchases occur.

The study by Shin and Kim (2010), which directly focused on the relationship between stock repurchases and management rights protection, examined several variables, such as the dominant stockholder's shares, the share difference between the largest and the second largest shareholders, ownership structures, and the personal characteristics of dominant stockholders. In addition, Shin and Kim (2010) derived a result which showed that stock repurchases were utilized for management rights protection, also showing that there was some potential to damage small shareholders' interests. Jung and Kim (2013) showed that fewer stock repurchases were implemented when firms had additional management rights protection tools such as supermajority voting and a golden parachute. This result

[11]At certain durations, this hypothesis was upheld. They, however, found other durations for which the hypothesis was not supported.

argues indirectly that stock repurchases can be used for management rights protection. Wang, Song, and Kim (2014) discovered that non-controlling large shareholders sell stocks when their firms repurchase stocks. Their study did not prove that stock repurchases were carried out for the protection of management rights, but it showed that stock repurchases could discourage takeover bidders.

B. *Sales of Treasury Stocks and the Protection of Management Rights*

In the last part of the previous section, I presented theories and several studies of stock repurchases for the protection of management rights. This section explains the protection mechanism of sales (and possession) of treasury stocks, in addition to the previously discussed stock repurchases.

Youn (2005) summarized the protection mechanisms as follows: (i) stock repurchases in the open market increase the dominant stockholder's voting share,[12] (ii) stock repurchases exhaust outstanding stocks, which increases takeover costs, and (iii) repurchased stocks can be sold to friendly groups when a threat to management rights exists. The first two mechanisms are activated merely by buying stocks, but the last one arises only when selling stocks. Youn (2005), who acknowledged the importance of treasury stock sales in terms of management rights protection, empirically tested the management rights protection hypothesis considering the possession of one's own stocks, as well as stock repurchases. Unfortunately, the test could not obtain a positive result which supported the hypothesis. Kim and Lim (2017) conducted the most unique work which investigated the relationship between management rights protection and treasury stock sales, to the best of the author's knowledge. From an empirical assessment, this study found that companies with good governance incinerated repurchased stocks more often, while companies with bad governance sold more treasury stocks. These sales would be for the protection of management rights.

Henceforth, I explain in detail the mechanism by which the designated sales of treasury stocks serve as a management rights protection tool. Once stock repurchases are implemented, the number of outstanding stocks decreases by the repurchased amount, which could be kept or retired. In contrast, both issuing new stocks and selling the repurchased stocks increase outstanding stocks, giving the company money or assets in return for the (out-bound) stocks. Theoretically, the process of repurchasing stocks, retiring them, and issuing new stocks is identical to the process of repurchasing stocks and reselling them. Essentially, stock prices reflect the firm value and the number of outstanding stocks, and both treasury stock sales and new stock issuances have the same impact on the number of outstanding stocks and the recruited amount of money. If there is a dilution effect of new stock issuances, we can also expect the same effect in the case of treasury stock sales.

In Korea, there is a significant difference between treasury stock sales and new stock issuances, in both legal and institutional terms. Article 342 in Korea's Commercial Act allows firms to sell their own stocks upon a resolution by the

[12]All shareholders who do not accept such stock repurchases can increase their voting share proportionally. Thus, stock repurchases do not directly prevent potential bidders from attempting a takeover. However, stock repurchases may increase the takeover cost, as explained in the previous section.

board of directors.[13] This implies that any firm, more specifically, the board of the firm, can sell its treasury stocks to whomever it chooses. Owing to this allowance, Korean firms can use the designated sales of treasury stocks as a management rights protection tool. On the new stock issuance side, Article 418 in the aforementioned Act requires a guarantee of existing shareholders' (proportional) rights. When a firm issues new stocks, it should allot proportionally the new stocks to existing shareholders.[14] Thus, the new stock issuance cannot be used as a protection tool.

Why do these two processes with identical circumstances economically differ institutionally? It is known that the 2011 revision of Korea's Commercial Act originally intended to reconcile the treasury stock sales process and the new stock issuance process.[15, 16] This means that legislators likely understood the rule on treasury stock sales, made in the actual revision, and knew it precisely. Therefore, the 2011 legislation would respond to the necessity to discriminate the treasury stock sales process from the new stock issuance process.

The judicial precedents confirm the intentions behind the legislation. In 2015, Samsung C&T Corporation (hereinafter Samsung C&T) and Cheil Industries Inc. (hereinafter Cheil Industries) merged. During the merger process, Samsung C&T sold its treasury stocks to KCC which declared its support for the merger, but Elliot Management Corporation (hereinafter Elliot) applied for an injunction against the treasury stock sale. Elliot argued that the sale violated the principle of shareholder equality, which should be considered during the issuance of new stocks. The court, however, approved the sale, as Article 342 in Korea's Commercial Act allowed such a sale. The court also explained that there had been numerous discussions of the sales process of treasury stocks in relation to earlier legislation during the revision processes, but meaningful changes remained elusive.[17] Thus, the court understood that the legislators of the current Act intended to support Article 342 without any changes.

If a firm simply wants to collect new funds, there is no reason to distinguish between the process of treasury stock sales and the process of new stock issuances. Thus, the main role of the distinctive treatment between two processes is to make the third-party allotment of treasury stocks possible. Note that the current legal system in Korea allows the board of directors to choose the buying side, implying that the owner-manager can choose their partner at will.[18] To sum up, we can understand that Article 342 allows a firm to use treasury stocks to protect

[13]Before 2011, Korea's Commercial Act prohibited even a firm's possession of its own stocks.

[14]It is possible to allot new stocks to a designated third party according to a decision to do so during a general shareholders' meeting. The Korean Supreme Court, however, adjudicated the designated allotment of new stocks to protect management rights as illegal.

[15]Lee (2016), p.4.

[16]The pre-announced version of the Commercial Act in 2006 by the department of justice inserted Provision ② into Article 342, which required the process of treasury stock sales to follow the process of new stock issuances (Chung, 2015, p.16).

[17]Supreme Court, 2008Da50776, Decision Date: Jan. 30, 2009.

[18]As explained earlier, Korea's courts judge that new stock allotments to third parties for the protection of management rights are illegal, whereas treasury stock sales are not. However, we have one exceptional low-court precedent. Unlike most judicial precedents, this precedent held that the designated sales of treasury stocks for the protection of management rights were illegal (Seoul Western District Court, 2006KaHap393, Decision Date: Mar. 24, 2006).

management rights.

If treasury stocks are sold to a specific party, the voting power of all existing shareholders decreases. At times, however, it becomes possible for every party involved to benefit due to the designated sales of treasury stocks, despite the losses of existing shareholders' proportional rights. For example, existing shareholders may welcome treasury stock sales if a third party creates major business synergy with the firm which sells its stocks. In this paper, I will also examine the economic effect of treasury stock sales which create such a synergy effect, as well as the economic implication of such processes. However, typically the designated sale of treasury stocks disappoints some stockholders.

Before proceeding to the next section, I examine the legal aspects of treasury stock sales further. The legal reasons which hold that two processes are treated equally are that (i) they have identical economic characteristics, and (ii) both are capital transactions under business accounting standards. The funds (or assets) obtained from treasury stock sales are posted as a capital surplus. In this view, court decisions which consider a transaction involving treasury stocks as a profit-and-loss transaction are incorrect (An, 2011; Song, 2014).

On the other hand, the two processes should be distinguished also because stockholders' gains from transactions involving treasury stocks are reflective and collateral benefit stemming from the firm's business decisions. The firm or board does not need to protect this type of benefit. In other words, the benefit is not significant enough to restrict the asset management decisions of firms. Following this logic, the court may uphold its view that transactions involving treasury stocks are indeed profit-and-loss transactions and that there is no need to guarantee preemptive rights to new stocks by existing shareholders (Lee, 2006).

In terms of the profit-and-loss transactions, treasury stocks have economic value, akin to cash or gold, for instance. That is, the buying and selling of treasury stocks do not differ from the buying and selling of gold, and thus both types of financial decisions could be carried out upon a resolution by the board. However, treasury stocks have no economic value (footnote 9). Only if we consider the economic characteristics of the treasury stocks, we should consider them as capital transactions.

III. Foreign Institutions on Treasury Stocks and their Implications

In this section, I investigate institutions with regard to treasury stocks in the U.S., Japan, Germany, and UK and examine treasury stock laws and practices in each country. To describe how these institutions handle treasury stocks, we need to explain three phases with regard to the management of treasury stocks: buying, retaining, and selling. Although this paper's main concern is on selling these types of stocks, the regulations affecting the buying and retaining of these stocks are also important when attempting to understand the mechanisms in place which attempt to protect management rights with regard to the use of treasury stocks. After examining other countries' institutions, I compare the findings to the situation in Korea, especially with regard to the Commercial Act revised in 2011 and the Capital Market Act. This comparison reveals the institutional and historical

contexts about why and how treasury stocks play a vital role in protecting management rights in Korea.

A. *United States*

The U.S. is one of the most generous countries with regard to the managing and regulating of treasury stocks. The U.S. Model Business Corporation Act allows stock repurchases in principle and only regulates funding plans, i.e., stock repurchases should not be financed by debt (Article 6.31).[19, 20] It is believed that debt financing could harm the company's financial condition, and thus harm small shareholders' interests. Rule 10b-18 of the U.S. Securities and Exchange Commission also imposes specific conditions on stock repurchases but allows stock trades via the capital market in general.[21] Korea's Commercial Act, revised in 2011, is quite similar to the U.S. Model Business Corporation Act in terms of stock repurchases. In Korea, there are no meaningful regulations on stock repurchases besides a similar funding restriction for these repurchases.

With reference to the possession and sales of treasury stocks, each state has its own practices. In California, repurchased stocks should be retired.[22, 23] In New York and Delaware, the possession of treasury stocks is allowed, and the sales process follows the new stock issuance process as a whole,[24] but certain decisions such as sales prices are delegated to the board of directors. For a clearer understanding of the treasury stock sales practices in the U.S., it is necessary to examine court decisions. U.S. court precedents appear to respect existing shareholders' preemptive rights, and they have prohibited treasury stock sales as a means by which to change the existing ownership structure.[25] That is, the designated sales of treasury stocks to protect management rights were not allowed in court decisions and precedents.

With regard to treasury stock sales, Korea's Commercial Act is similar to the laws in New York and Delaware, which adopt traditional legal capital rules. Under these laws, treasury stock sales by board resolutions are allowed in principle. Kim (2006), however, points out that some U.S. legislation, including the Model Business Corporation Act, has abolished the traditional rules, now, disallowing the possession of treasury stocks.

[19]Do (2006), p.141.

[20]The specific regulations on funding for repurchases differ across states. Firms in California can repurchase stocks even without a capital surplus, but Delaware restricts the amount of stock repurchases up to the amount of capital surplus funds (Kim, 2006).

[21]Kim (2006), p.271.

[22]Chung (2015), p.12.

[23]The revised U.S. Model Business Corporation Act removes the concept of treasury stocks, meaning that these repurchased stocks should be retired, as they are in California.

[24]Do (2006), p.142.

[25]Chae (2007) listed seven U.S. precedents, all of which prohibited treasury stock sales to change the exiting ownership structure, from 1891 to 1925 (p.135).

B. *Japan*

Japan drastically changed their treasury stock management system with the revision of their Commercial Act in 2001. At the time, the possession of treasury stocks was allowed in principle, and also allowed were arbitrary sales decisions by boards of directors (Commercial Act 2001, Article 211.1) However, the sales process should follow the new stock issuance process (the above Act, Article 211.3), because the sales of treasury stocks and the new stock issuance are considered to be identical in terms of their economic characteristics.[26, 27]

Chung (2015) argued that the revision of Korea's Commercial Act was significantly affected by Japanese law due to (i) the change from prohibiting the possession of treasury stocks to allowing their possession, and (ii) the delegation of a significant role to the board of directors.[28]

Korea's system for treasury stock sales, however, is much more generous to the owner-manager of the firm compared to the law in Japan. The board can decide upon the sales process at will, unlike in Japan, and the preemptive rights of existing shareholders do not have to be respected. This additional generosity presents the appearance that the legislation could be a result of lobbying, as the owner-manager can now use treasury stock sales as a management protection tool according to this legislation.

C. *United Kingdom*

In the U.K., stock repurchases are prohibited in principle (Companies Act 2006, Article 658.1). The U.K., however, has added exceptions and has relaxed regulations on stock repurchases.[29] Until 1980, the U.K.'s court precedents did not allow any types of stock repurchases. In 1980, the country revised the Companies Act to incorporate a prohibition clause for stock repurchases. In 1981, stock repurchases were allowed only with permission granted during a general shareholders' meeting.[30] In 1985, the newly revised Companies Act allowed stock repurchases upon a resolution by the board, and only if the articles of association of the firm approved the resolution (the above Act 1985, Article 690.1).

For treasury stock sales, Article 560.2.b of the Act explicitly admits the preemptive right of existing shareholders, indicating that the sales process differs from that in Korea, in which the board can decide the details of treasury stock sales, including who will buy the stocks.

[26]Do (2006), p.147.

[27]The Japanese legal system changed again in 2005. The Corporation Law was newly enacted, and the articles pertaining to the sales process were moved to Article 199 in the Corporation Law.

[28]Chung (2015) argues that Korea's Commercial Act as revised in 2011 only considers a few countries' experiences, especially Japan's.

[29]Kim (2010), p.137.

[30]Do (2006), p.143.

D. *Germany*

Germany also prohibits stock repurchases in principle, like the U.K. Germany's Stock Law (Aktiengesetz), enacted in 1937, approved only a few exceptional stock repurchases. The number of exceptions, however, was increased through the revised Stock Law in 1978 and through the Corporate Law actions in 1985 and 2009.[31] It is important to note the cases in which stock repurchases are allowed: (i) stock repurchases not exceeding 10% of issued stocks with permission granted during a general shareholders' meeting, and (ii) stock repurchases under significant, direct, and desperate circumstances. It is known that stock repurchases in Germany do not occur often, but the regulation was relaxed recently.

With regard to treasury stock sales, Article 53a in the Stock Law respects the preemptive rights of existing stockholders and declares the principle of shareholder equality.

E. *Implications from Other Countries' Institutions*

The experiences of the U.S., Japan, U.K. and Germany confirm that treasury stocks cannot be used as a management protection tool, except in a few instances in the U.S. and in Europe (in EU countries), while also prohibiting stock repurchases in principle.[32, 33] Under these regulations, it is difficult for an owner-manager who controls the board to use treasury stocks to protect his management rights.

With regard to treasury stock sales, nearly all countries except for a few states in the U.S. demand that the sales process should follow the process of new stock issuances. In the U.S., a recent trend is to require the retiring of the repurchased stocks. Even when allowing the possession of repurchased stocks, the sales process should follow the process of new stock issuances. A few states which maintain traditional legal capital rules, including Delaware, respect the preemptive rights of existing shareholders, even in a loose sense. This was established by court precedents in earlier times. In addition, the U.S. has various tools to protect small shareholders, such as class action lawsuits. They can use these tools in order to make up for their losses when a resolution by the board causes some damage to them. Such a system could preemptively discipline the board and prevent them from making malicious decisions using treasury stocks.

From these examples in the U.S. and Japan, we learn that relaxing regulations on stock repurchases is not enough for treasury stocks to become a management protection measure. More important than relaxation would be whether or not to admit the preemptive rights of existing shareholders. Except for a few states in the U.S. which have well-organized civil compensation schemes, we cannot find any

[31]The relaxation of the regulation on stock repurchases in Germany was in response to the EU Societas Europaea Directive 2, which demanded this measure. For a detailed discussion, refer to Kim (2010).

[32]According to Chung (2015), France also prohibits stock repurchases but only allows stock repurchases up to 10% with permission from a general shareholders' meeting, as in Germany (France Commercial Law, Article 225.209).

[33]Recent changes by European countries to relax regulations on stock repurchases are understood to mean that actions affecting treasury stocks can support a firm's financing strategy but not support large shareholder's management right.

case to distinguish the treasury stock sales process from the new stock issuance process. Only Korea's Commercial Act distinguishes between the two processes.

In the next section, I present a theoretical model in which I examine the economic effects of treasury stock sales by means of board resolutions, focusing especially on the economic effects on each stakeholder associated with the firm. This examination of the economic effects provides some defense for utilizing treasury stocks as a management rights protection tool. When the synergy effect of integrated management is strong enough, management rights protection via treasury stock sales may be beneficial to small shareholders as well.

IV. Treasury Stock Sales for Management Rights Protection: A Theory

Consider two firms: termed here 1 and 2. A person, a large shareholder (denoted as L in this section), has shares l_1 of firm 1, and shares l_2 of firm 2. Suppose that L is managing both firms; that is, this entity controls both boards. The other shareholders, such as small shareholders (denoted as S here), collectively own shares s_1 of firm 1 and s_2 of firm 2. The firms also have their own stocks, with t_1 and t_2 denoting each firm's own shares. It is also assumed that there are no other shares; that is, $l_i + s_i + t_i = 1$ for each i.[34]

Initially, L enjoys (pecuniary or non-pecuniary) benefits by managing the firms. The control premiums for each corresponding firm are denoted here as p_1 and p_2. The premium in each case exclusively belongs to the current manager.

Suppose that firm 1 can earn π_1 when it operates normally. Firm 2 can also earn π_2. When firm 1 uses its investment funds to buy the treasury stocks of firm 2, firm 1 earns only φ. It is also assumed that $\pi_1 \geq \varphi + t_2\pi_2$. The assumption implies that firm 1 can earn during normal operation more than when it uses its funds on firm 2 because the acquisition of firm 2's shares can occur at any time. Hence, better or at least equally valued opportunities may exist.

If a person manages both firms simultaneously, synergy may be realized via this type of integrated management scheme.[35] The synergy adds α_1 to the value of firm 1 and α_2 to the value of firm 2.[36] Under the single-firm management scheme, the firms respectively earn π_1 and π_2. Under the integrated management scheme, firm 1 earns $\pi_1 + \alpha_1$ or $\varphi + \alpha_1$ and firm 2 earns $\pi_2 + \alpha_2$.

[34]This assumption does not include the shares of a takeover bidder. Considering the interest of a takeover bidder unnecessarily complicates the model presented in this paper. In this paper, I concentrate on the gains and losses of a large shareholder and small shareholders and the conditions which causes conflicts of interest between them.

[35]The synergy effect comes from the integrated (or simultaneous) management of multiple firms. This may be related to "economies of scope" or "efficiency gains from vertical integration." It can be interpreted as a type of "diversification premium" or "insurance benefit." However, synergy may arise more often when both firms are closely related in terms of their business activities.

[36]Here, I assume that the synergy from integrated management (α) is positive, which implies that managing two firms simultaneously can improve efficiency. A negative effect, however, is also possible, due to management complexity, diseconomies of scale, and other issues which can arise.

First, consider a situation without any threat to the management rights of firm 2. In this case, integrated management is better for both L and S unless the synergy effects are zero. Each firm can earn more with the integrated management scheme. This model does not consider the possibility of tunneling by L (that is, an owner-manager).

Second, the owner-manager faces a threat to the management rights of firm 2 and should therefore choose between the relinquishment of management rights and the protection of these rights by buying the treasury stocks of firm 2 using the investment money of firm 1. When relinquishing management rights, L obtains $\frac{l_1}{l_1+s_1}\pi_1 + p_1$ from firm 1 and $\frac{l_2}{l_2+s_2}\pi_2$ from firm 2. When protecting these rights, L obtains $\frac{l_1}{l_1+s_1}(\varphi+\alpha_1) + p_1 + \frac{l_1}{l_1+s_1}t_2(\pi_2+\alpha_2)$ from firm 1 and $l_2(\pi_2+\alpha_2)+p_2$ from firm 2.

L considers (i) the effect of synergy stemming from the integrated management scheme (α_1 and α_2), (ii) the size of the control premium for firm 2 (p_2), and (iii) the efficiency loss from losing an investment opportunity ($\pi_1-\varphi$). Although the efficiency loss is not ignorable, L would choose to protect the management rights of firm 2 exploiting the investment funds of firm 1 if the synergy effect and the control premium are large enough.

At this time, I check the payoffs for S. When L does not protect the management rights of firm 2, S obtains $\frac{s_1}{l_1+s_1}\pi_1$ from firm 1 and $\frac{s_2}{l_2+s_2}\pi_2$ from firm 2. When protecting the management rights, S can obtain $\frac{s_1}{l_1+s_1}(\varphi+\alpha_1) + \frac{s_1}{l_1+s_1}t_2(\pi_2+\alpha_2)$ from firm 1 and $s_2(\pi_2+\alpha_2)$ from firm 2.

To simplify the discussion, assume that the shares of L, S, and the treasury shares amount correspondingly to one third,[37] $\pi_1=\pi_2\equiv\pi$, and $\alpha_1=\alpha_2\equiv\alpha$. Hence, L obtains $\frac{1}{2}\pi+\frac{1}{2}\varphi+\alpha+p_1+p_2$ in the protection case and $\pi+p_1$ in the non-protection case. Thus, L wants to protect management rights if $\alpha+p_2>\frac{1}{2}(\pi-\varphi)$. That is, L allows the efficiency loss and takes the treasury stocks of firm 2 using the investment funds of firm 1 if the efficiency loss is less than the sum of the synergy effect and the control premium for firm 2.

The payoffs for S depend on the decision by L. When L does not protect

[37]In fact, this assumption could be excessive. If firm 1 takes all of the treasury shares of firm 2, L's control right for firm 2 equates to two thirds, which exceeds the necessary numbers of shares to control firm 2. This amount is at most half. One easy way to resolve this excessiveness is to modify the assumption for the sake of convenience from (1/3, 1/3, 1/3) to (1/4, 1/4, 1/2). This modification makes the algebra more complicated. However, the critical factors to determine the gains and losses of L and S are φ and α. Thus, the above modification would not alter the major outcomes of the model.

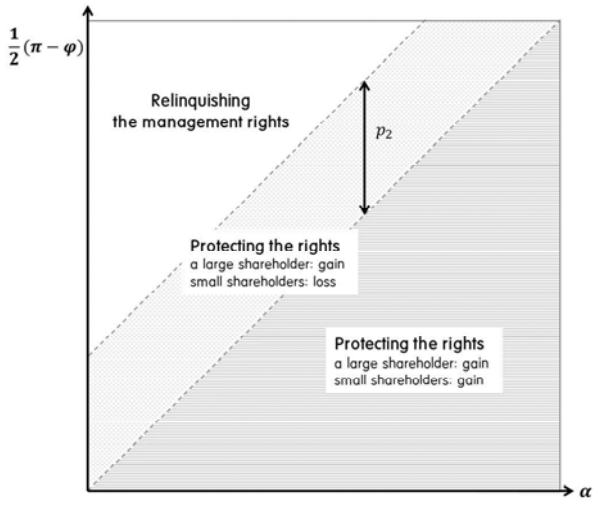

FIGURE 1. THE PROTECTION OF MANAGEMENT RIGHTS AND GAINS AND LOSSES OF STAKEHOLDERS

the management rights of firm 2, S receives π ($\frac{1}{2}\pi$ for the shareholders of firm 1 and $\frac{1}{2}\pi$ for those of firm 2). When protecting management rights, S obtains $\frac{1}{2}\pi+\frac{1}{2}\varphi+\alpha$. Thus, S is better when L protects management rights if $\alpha > \frac{1}{2}(\pi-\varphi)$. If $\alpha < \frac{1}{2}(\pi-\varphi)$, S prefers not to protect the management rights. The important aspect here is that S considers only the synergy effect of integrated management and the efficiency loss incurred when losing investment opportunities, unlike L, who also considers the size of the control premium.

In summary, we have three regions where the interests of L and S exhibit different patterns. In $\frac{1}{2}(\pi-\varphi) > \alpha + p_2$, L relinquishes the management rights, and there is no damage to S. There exists a major efficiency loss which forces L to give up these rights; thus, S is not exploited by the greed of L. In $\frac{1}{2}(\pi-\varphi) < \alpha$, L protects the management rights. This protection benefits S because the efficiency loss is not very large. In the third region, $\alpha < \frac{1}{2}(\pi-\varphi) < \alpha + p_2$, L protects management rights, which generates damage to S. The size of efficiency loss is not ignorable and in fact is greater than the synergy effect. L, however, protects the management rights considering the control premium. These results are summarized in Figure 1.

Thus far, I have discussed the interests of S as a whole while not distinguishing between the shareholders of firm 1 from those of firm 2. Obviously, the two groups

may include different persons. In the non-protection case, the shareholders of firm 1 and those of firm 2 receive $\frac{1}{2}\pi,$ respectively. In the protection case, S of firm 1 obtain $\frac{1}{2}\left(\varphi+\frac{1}{3}\pi\right)+\frac{2}{3}\alpha,$ and S of firm 2 receive $\frac{1}{3}(\pi+\alpha).$ Because $\varphi+\frac{1}{3}\pi\le\pi,$ S of firm 1 will be better only if α is large enough. S of firm 2 will be better also only if α is large enough, because their shares are reduced from $\frac{1}{2}$ to $\frac{1}{3}.$

It is important to check the region of $\alpha<\frac{1}{2}(\pi-\varphi)<\alpha+p_2$ in detail, where the protection of management rights leads to losses for $S,$ because $\alpha<\frac{1}{2}(\pi-\varphi)<\frac{1}{2}\pi,\ \ \pi>2\alpha.$ For S of firm 2, they receive better payoffs in the non-protection case because they obtain $\frac{1}{3}(\pi+\alpha)$ when management rights are protected and $\frac{1}{2}\pi$ when these rights are not protected. Under this condition, L protects the management rights, and hence S of firm 2 suffer losses. The synergy effect is not enough to make up for the dilution effect on their reduced shares.

For S of firm 1, the gains or losses are not obvious. The difference in the payoffs between the protection case and the non-protection case is $\frac{1}{2}\varphi+\frac{1}{6}\pi+\frac{2}{3}\alpha-\frac{1}{2}\pi$ that is $\left\{\alpha-\frac{1}{2}(\pi-\varphi)\right\}+\left\{\frac{1}{6}\pi-\frac{1}{3}\alpha\right\}.$ The first term is negative, and the second term is positive. It is important to note that S for both firms are damaged if the first term dominates the second term.

Additional Discussion

Given the above discussions, I uncovered the possibility that S would experience losses given the decision by $L.$ This possibility arises even when L only (legally) exploits the resources of firm 1 and does not utilize illegal instruments such as tunneling. Henceforth, I extend the discussion to the additional scenarios of illegal tunneling, successful investments using money from treasury stock sales, and others.

First, we examine the case of **illegal tunneling by *L*.** At this stage, L would consider tunneling when calculating the size of the control premium. That is, p_2 increases and the interval of $[\alpha,\alpha+p_2]$ therefore expands. As shown above, when the size of the efficiency loss, $\frac{1}{2}(\pi-\varphi),$ is in the interval described above, L protects the management rights of firm 2 and S incur losses. Thus, illegal

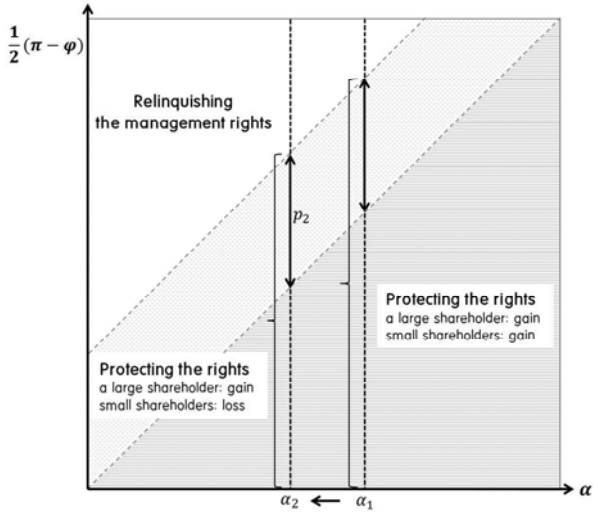

FIGURE 2. THE POSSIBILITY OF SMALL SHAREHOLDERS' LOSSES WHEN THE FIRM VALUE DECREASES

tunneling increases the possibility of damage to S.

In the second case, **tunneling decreases the firm value**. While tunneling increases the controlling shareholder's profits, it would violate the firm's value. That is, $\pi+\alpha$ could be reduced due to tunneling. For simplicity, we assume that tunneling reduces α[38] and that a change of α does not affect the size of p_2. Given that the tragedy which befalls S occurs with the probability assigned in the interval, $[\alpha, \alpha+p_2]$, the possibility of this tragedy may increase or may not depending on the distribution of the efficiency loss $(\pi-\varphi)$. If the efficiency loss is distributed uniformly and independently of α, a change of α does not affect this possibility because the length of p_2 remains the same. On the condition that L protects the management rights, the possibility of tragedy befalling S could increase. Under the reduced α, the possibility of protection definitely decreases, but the possibility of a tragedy for S likely remains at a similar level (Figure 2).

In fact, tunneling can be one of the major considerations for L. If tunneling reduces the value of the firm and increases the control premium as well, we should consider two cases the above together. This leads to a more of a possibility of a tragedy for S.

Third, I examine the case in which **money obtained from treasury stock sales increases the value of firm 2**. The previous model does not consider revenue from treasury stock sales. These sales, however, provide money (or assets in kind), even when they are urgently carried out under a threat affecting management rights.[39]

[38]The model in this paper gives the same quantitative result both when α is reduced and when $\pi+\alpha$ is reduced. Thus, the assumption of the reduced α is allowed. However, it is more realistic to consider the case of a reduction of π and not α. Unfortunately, this consideration makes the model unnecessarily complicated.

[39]Firm 2 can secure funds at any time through sales or new stock issuances. Thus, rushed sales under a threat of management rights may not take place at a reasonable price. Moreover, the unexpectedly secured funds may not

Obviously, the newly injected money would increase the value of the firm in general.

At this stage, the new value of firm 2 is ψ, which is greater than π. I assume that $\psi = \frac{3}{2}\pi$. This is the case if the increase in the firm value precisely reflects the increase in circulated stocks.[40] Similar to the previous analysis, we know that the payoff for L is $\pi + p_1$ in the non-protection case and $\frac{3}{4}\pi + \frac{1}{2}\varphi + \alpha + p_1 + p_2$ in the protection case. This implies that L protects the rights of firm 2 when $\alpha + p_2 > \frac{1}{2}(\pi - \varphi) - \frac{1}{4}\pi$. For S, they receive π in the non-protection case and $\frac{3}{4}\pi + \frac{1}{2}\varphi + \alpha$ in the protection case. Thus, protection benefits S if $\alpha > \frac{1}{2}(\pi - \varphi) - \frac{1}{4}\pi$. Compared to the basic analysis, the possibility that protection leads to larger payoffs for both L and S increases. This is a fairly obvious result, as the value of firm 2 increases. However, there is still the possibility that the decision by L will harm S. The probability may or may not increase according to the distribution of $\pi - \varphi$. When the efficiency loss is uniformly distributed, the probability of a tragedy for S is identical to that in the basic model.

Fourth, I check the possibility that **treasury stock sales cannot create proper value**. That is, we assume that $\psi < \frac{3}{2}\pi$.[41] At this time, sales cannot increase the value of firm 2 in proportion to the increase in outstanding stocks. When $\pi < \psi < \frac{3}{2}\pi$, management rights protection could be more rational compared to that in the basic model but less rational compared to the third extension. On the other hand, the fact that firm 2 does not take reasonable compensation would mean

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be used properly, thus incurring an efficiency loss.

[40]Because treasury shares do not have economic value, the existing value, π, consists of the portion $\left(\frac{1}{2}\pi\right)$ for a large shareholder and the portion $\left(\frac{1}{2}\pi\right)$ for small shareholders. At this point, the treasury shares are sold. If the selling price is precise and the cash inflow increases the firm value proportionally, the new firm value would be $\frac{3}{2}\pi$. However, treasury stock sales for management rights protection are usually discounted, and rushed sales can hardly be utilized for appropriate investment opportunities.

The firm 2 can secure the money at any time through the sales or new stock issuance. Thus, the urgent sales under a threat for management right might not achieve reasonable compensation. Moreover, the unexpectedly secured funds might not be used properly, that is the efficiency loss would happen.

[41]The basic model assumes that $\psi = \pi$, and the extension in the third discussion assumes that $\psi = \frac{3}{2}\pi$. This extension assumes that ψ is between the two models.

that firm 1 can gain additional benefits. This in turn implies a larger value of φ and thus a smaller value of $\pi - \varphi$. The reduced efficiency loss explains that management rights protection could be rationalized more easily.

The fifth case is such that **the synergy effect by integrated management is endogenously linked to the willingness of L to protect management rights**. Suppose that a firm has a sudden and urgent necessity to protect its management rights. To meet this necessity, L would mobilize affiliates' funds. The mobilized affiliates may have, however, no business synergy with the firm in crisis or may have some synergy. In fact, if a firm in a large conglomerate has a great amount of synergy with other affiliated firms, the firms may already have share relationship, such as parent-subsidiary firms. Thus, there is a strong presumption that the newly appeared savior, who has funds to spare, has little synergy with the desperate firm. In such a case, a smaller α may imply a larger p_2; that is, L may want to protect the management rights of firm 2 despite the exceedingly low synergy effect. Under this specification, I denote the new synergy effect and the new control premium as $\tilde{\alpha}$ and $\tilde{p}_2$, respectively, and these are correlated with each other. I also assume that $\tilde{\alpha} + \tilde{p}_2 = \alpha + p_2$.[42] Because $\tilde{\alpha} < \alpha$, $[\tilde{\alpha}, \tilde{\alpha} + \tilde{p}_2] \supset [\alpha, \alpha + p_2]$. That is, the possibility of a tragedy befalling S increases in this new situation.

We can think of another case in which **the firm 2's value increases after a take-over**. This occurs when a newly introduced manager is more competent than an existing manager. A take-over may occur when the existing manager does not run the firm well. In fact, one of the greatest examples of damage from the management rights protection for S is losing an opportunity to take a good manager via a take-over.

If the new manager significantly improves the firm value, L willingly relinquishes the management rights and S would welcome the take-over. If the new manager's ability is somewhat limited and does not cover the control premium, L protects management rights. This leads to losses for S.

When the new manager increases the value of the firm, the firm earns more; that is, π and $\pi - \varphi$ increase. Figure 3 shows that the protection would occur less often when $\pi - \varphi$ increases depending on the distribution of α. If α is distributed uniformly and independently of $\pi - \varphi$, the probability of protection decreases and the probability of a loss for S increases conditional on the presence of protection.

The last discussion is about a white knight.[43] Until now, I have discussed on the sales from one affiliated firm to another affiliated firm in one conglomerate.

[42]The equation implies that the decision standard pertaining to the protection of management rights by L does not change with regard to that in the basic model. If L wants to protect these rights despite the small synergy effect, it implies that the control premium could be very large. That is, $\tilde{\alpha} + \tilde{p}_2 \geq \alpha + p_2$.

[43]Unlike the previous extensions, the extension for the white knight is not an instant extension of the basic model at this point. Essentially, the takeover by the white knight is the outcome of bargaining between the owner-manager of firm 2 and the white knight. The basic model concentrates on efficient (and selfish) decision making from the viewpoint of the owner-manager of firm 2 without considering the interest of the white knight. Thus, the extension here should be understood as a simple offering of an additional explanation of the small shareholders' interest *à la* the basic model. Obviously, cautious analysis is needed when applying this to actual instances.

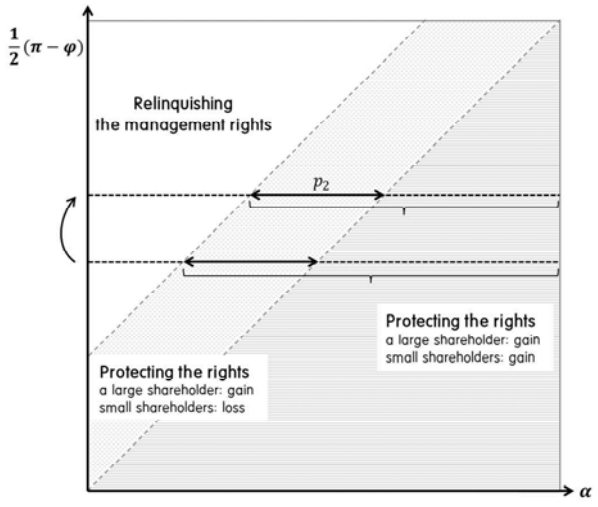

FIGURE 3. THE POSSIBILITY OF SMALL SHAREHOLDERS' LOSSES WHEN THE FIRM VALUE INCREASES

A white knight, which is not an affiliated firm, cannot make a synergy with the threatened firm.[44] Moreover, the control premium does not belong to the white knight. Therefore, the sale to the white knight is only possible when the purchase of treasury stocks is profitable enough to the white knight (or the manager of the white knight). This indicates that the threatened firm should guarantee a sufficient payoff to the white knight. It is highly likely that this guarantee harms S of the threatened firm.

When the white knight takes over the treasury shares for firm 2, L takes $\frac{1}{2}\varphi+\frac{1}{2}\alpha+p_1$ from firm 1 and $\frac{1}{3}\pi+\frac{1}{3}\alpha+p_2$ from firm 2. If L does not protect management rights, L receives $\frac{1}{2}\pi+p_1+\frac{1}{2}\pi.$ Thus, L of the threatened firm sells treasury stocks to the white knight if $\alpha+p_2>\frac{1}{2}(\pi-\varphi)+\frac{1}{6}(\pi+\alpha).$ Compared to the decision standard in the basic model, L requires a larger value of α or a greater p_2 to protect management rights, as some part of the earnings of firm 2 and the synergy effect from the integrated management scheme goes to the white knight. The second term on the right hand side in the above case of inequality is the leaked value to the white knight.

For S of the threatened firm, the payoff decreases from $\frac{1}{2}\pi$ to $\frac{1}{3}(\pi+\alpha)$ when L sells the treasury stocks for firm 2 to the white knight. If the synergy

[44]Of course, the synergies between the firm 1 and the firm 2 occur, since the owner-manager protects his management right by the treasury stock sales to the white knight.

effect is not large enough, the sale leads to losses for S. It is important to note that L would sell treasury stocks to the white knight only if the control premium (p_2) is sufficiently large. If the synergy effect (α) is not large enough, S must experience losses, which is highly probable. On the other hand, S of firm 1 obtains $\frac{1}{2}\pi$ when treasury stocks are not sold and $\frac{1}{2}(\pi+\alpha)$ when these stocks are sold. That is, they realize a better payoff when L sells the treasury stocks of the firm 2 to the white knight.[45]

V. Treasury Stock Sales for Management Rights Protection: Cases

In this section, I present some real-world cases of treasury stock sales. When discussing these cases, I infer the objectives of the sales and determine the economic effects on the stakeholders, especially the small shareholders. The theoretical analysis in the previous section suggests that each case can be evaluated by (i) measuring the size of the synergy effect when using the integrated management scheme, and (ii) calculating the size of the efficiency loss incurred when losing other investment opportunities. In addition, we should gauge the size of the control premium. Unfortunately, this paper does not assess concrete figures but instead formulates plausible storylines to evaluate each item, as follows.

A. *Hyundai Motor Company's Treasury Stock Sales in 2001*

The first instance is the occasion in which Hyundai Motor Company (hereinafter HMC) sold its treasury stocks to Incheon Steel[46] in March of 2001. This case consisted of two trades. First, HMC paid 294.8 billion won to Incheon Steel for 9.74% shares of Kia Motors which had been owned by Incheon Steel. Second, Incheon Steel paid 185.7 billion won to HMC for its treasury stocks (in an amount of 4.87%). Thus, Incheon Steel did not use any money. The trades are summarized as follows: Incheon Steel's shares for Kia Motors were exchanged for HMC's treasury stocks and 109.1 billion won (Figure 4).

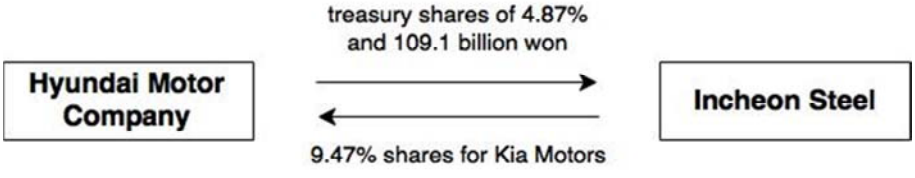

FIGURE 4. THE TRADE BETWEEN HMC AND INCHEON STEEL IN MARCH OF 2001

[45]In fact, firm 1 is not involved in the treasury stock sales between firm 2 and the white knight. Thus, the gains of S are unexpected benefits.

[46]Incheon Steel changed its name to INI Steel in July of 2001 and was renamed as Hyundai Steel in March of 2006.

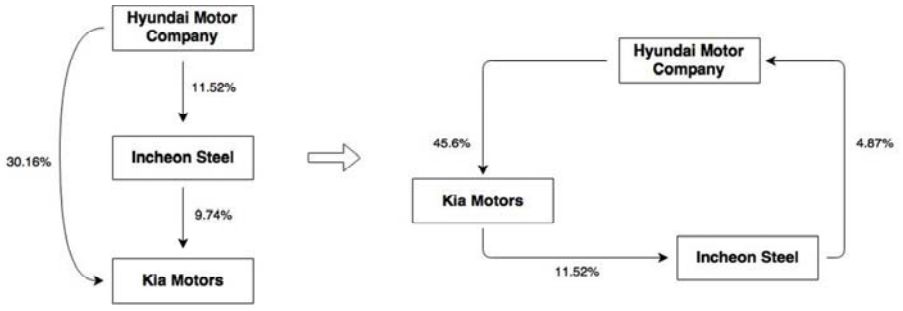

FIGURE 5. THE CHANGE IN THE GOVERNANCE STRUCTURE OF HYUNDAI MOTOR GROUP

Kia Motors was acquired in 1998 by the Hyundai Motor Group (hereinafter HMG). Thus, it was necessary to raise shares for Kia Motors and related firms so as to strengthen the controlling power of the HMG owner. The trade currently being examined enhanced the owner-manager's controlling power for HMC by empowering its treasury stocks with voting rights. The shares for Kia Motors were merely re-positioned.

We can evaluate this trade in terms of the theory introduced in the previous section. First, we can expect considerable business synergy, as HMC, Kia Motors, and Incheon Steel are closely linked in terms of their production processes. Incheon Steel provides production materials to HMC and Kia Motors, and both HMC and Kia Motors produce cars. Both car companies could enjoy economies of scale and offer a well-differentiated lineup of products through integrated decision-making processes. This synergy among these companies suggests that the treasury stock trade would be beneficial to not only for the owner-manager but also for small shareholders.

Second, we analyze the investment efficiency for the buyer firm, Incheon Steel in this case. Incheon Steel disposed of their shares in Kia Motors and secured the share of HMC and 109.1 billion won in cash. Given that the synergy between Incheon Steel and Kia Motors and HMC is not very distinctive, the investment would not be harmful to Incheon Steel.

Third, the trade results on the side of HMC would not be satisfactory. HMC paid 294.8 billion won and took the shares of Kia Motors. We can expect that HMC realized some synergy by taking the shares of Kia Motors, but the shares originally belonged to Incheon Steel, an affiliate of HMG; therefore, there would be no additional opportunities to enhance the integrated decision-making process. Moreover, HMC could not sell the shares of Kia Motors so that the owner of HMG could retain his control of Kia Motors. Therefore, the purchase of noncurrent assets would not be very appropriate in terms of opportunity cost. One additional item to note is that the treasury stock sale empowered HMC's treasury stocks with voting rights. The owner-manager of HMG could increase his voting rights for HMC, thus damaging the proportional rights of small shareholders. The possibility of small shareholder losses suggests that the size of the control premium cannot be ignored for the owner-manager. Indeed, the control power for HMC, Kia Motors, Incheon Steel, and Hyundai Mobis, which constitutes a circular shareholding structure, is extremely important in controlling the whole of HMG. Therefore, the control

premium for HMC could not be small.

In fact, the trade did not intend only to enhance the control of HMC but also aimed at governance restructuring of HMG overall. This implies that the trade may not consider investment efficiency as a top priority. This possibility becomes more evident when examining the following trades.

The actual reason why Incheon Steel sold its shares of Kia Motors is that Kia Motors took over the shares of Incheon Steel from HMC on that day. Due to the prohibition of cross-shareholding in Korea, Incheon Steel should dispose of its shares in Kia Motors. HMC should also dispose of its shares in Incheon Steel by selling them to Kia Motors in order to sell its treasury stocks to Incheon Steel.

Before the trade, HMC owned shares in both Incheon Steel and Kia Motors, and Incheon Steel held stocks in Kia Motors. After the trade, circular shareholding arose as Incheon Steel owned HMC, which owned Kia Motors, which owned Incheon Steel again. The change is summarized in Figure 5.

According to Lim and Jun (2009) and Yang and Cho (2014), circular shareholding does not carry any actually existing capital such as treasury stocks; therefore, it severely violates the principle of capital adequacy and creates fictitious voting rights, which reduces small shareholders' actual voting rights. Thus, the trades among HMC, Kia Motors, and Incheon Steel would bring about non-ignorable damage to small shareholders' proportional rights.

In summary, we should consider both (i) the infringement of small shareholders' rights and (ii) the owner-manager's concern over controlling the entire business group in addition to the opportunity cost associated with HMC investment funds when evaluating the trade between HMC and Incheon Steel.

For a detailed analysis of small shareholders' gains or losses in this case, it is necessary to know what the investment opportunities considered by HMC were and what business perspectives Kia Motors took, including their investment plans, financing strategies, and payout schemes, as well as other detailed elements. Here, I will not make such a detailed assessment. I can, however, conclude that the trade has non-ignorable possibilities of small shareholders' losses and that the owner-manager would consider the control premium as more than a trifling issue.

B. *Hyundai Elevator's Treasury Stock Sales in 2003*

After Mong-hun Chung, the owner-manager of the Hyundai Group, passed away in 2003, foreign investors bought stocks in Hyundai Elevator (hereinafter HE) aggressively. HE decided to sell its treasury stocks (in an amount of 7.67%) to six companies, including KCC; these stocks were owned by the family of the founder of the Hyundai Group, Ju-yung Chung, but were not affiliated with the Hyundai Group any longer, in order to protect its management rights.

The buyer firms were not affiliated with the Hyundai Group and there was therefore no synergy effect from any integrated management scheme. In addition, there was no control premium for the buyers, as they would not participate in managing HE. Thus, we can guess that they would not buy the shares of HE if there were better investment opportunities.[47] That is, we can expect that HE would

[47]In fact, the executive managers of buyer firms could consider their own interests and not the buyer firms'

offer significant benefits. If this is the case, there would be no damage to the small shareholders of the buyer firms.

With regard to the selling firm's gains or losses, we can expect the possibility of losses. The treasury stock sales of HE may not have been a well-planned trade; indeed it was a 'rushed sale.' Thus, the sale price would be discounted,[48] or non-pecuniary offers would be provided. In addition, it was difficult to expect that the money obtained from the sale would be used overly appropriately.

For the small shareholders of HE, they lost some of their proportional rights when the treasury stocks were empowered with 7.68% voting rights. However, these losses would not been made up sufficiently. The newly secured funds would not be enough, and it would not be easy for HE to find satisfactory investment opportunities.

C. *Hyundai Elevator's Treasury Stock Sales in 2006*

In July of 2006, Hyundai Express purchased HE's treasury shares in an amount of 65.97 billion won. Because the two firms were operating in very different business areas, the business synergy would not be very significant. Hyundai Express, a logistics firm, would have some synergy with any firm in general, but integrated management with HE would not produce extra effects other than general synergy.

On the other hand, the control premium for HE would be very large, as HE was a critical player in the governing of the Hyundai Group overall;[49] moreover, HE itself was a large-scale business. In other words, the control premium for HE included the control premium for the Hyundai Group overall.

At this stage, we examine the investment efficiency for Hyundai Express. The takeover of treasury stocks in HE by Hyundai Express was not a normal investment, indeed it was done to protect management rights for HE and for the re-organization of the governance structure of the Hyundai Group. Therefore, it was highly likely that the investment was not profitable. This discussion suggests that the treasury stock trade mainly concerned the control premium for HE, rather than the efficient utilization of idle money of Hyundai Express. And such concern would harm interests of the small shareholders of HE and Hyundai Express.

Moreover, the treasury stock sale was accompanied by a trade between HE and Hyundai Merchant Marine (hereinafter HMM). On that day, HMM paid 25.54 billion won to HE and took 18.67% of shares in Hyundai Express owned by HE. In order for Hyundai Express to buy the treasury shares in HE, HE should dispose of its shares in Hyundai Express due to the prohibition on cross-shareholding. Three months later, Hyundai Express issued new stock and HMM paid 14.4 billion won for this new stock issuance. These trades are summarized in Figure 6.

The trades summarized in Figure 6 drastically changed the governance structure

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interests. Indeed, Hyundai families met and discussed how they would cope jointly with the threat of the management rights for HE.

[48]The sale price was lower by more than 10% than foreign investors' disposal prices immediately after the treasury stock sale.

[49]HE is the largest shareholder in Hyundai Merchant Marine (hereinafter HMM), and HE and HMM have non-ignorable shares for most companies affiliated with the Hyundai Group.

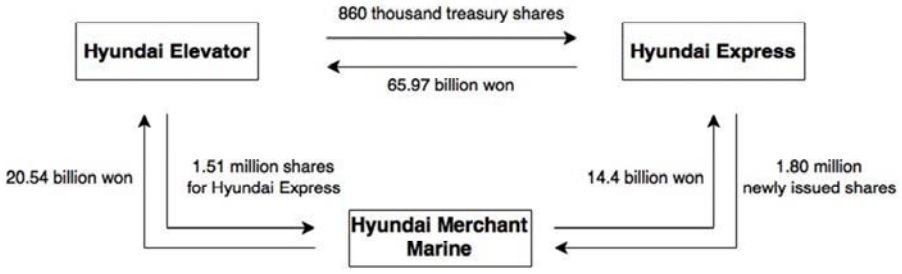

FIGURE 6. THE TRADES FOR SHARES AMONG HE, HYUNDAI EXPRESS, AND HMM IN 2006

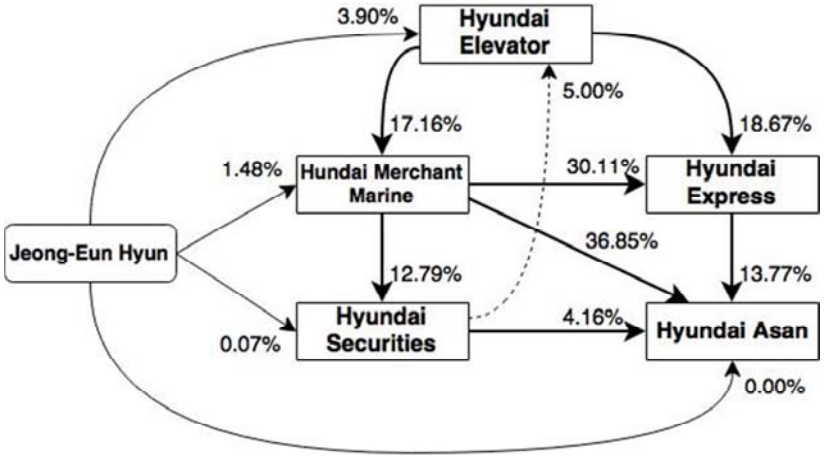

FIGURE 7. THE SHARE STRUCTURE OF MAJOR AFFILIATES OF THE HYUNDAI GROUP AT THE END OF 2005

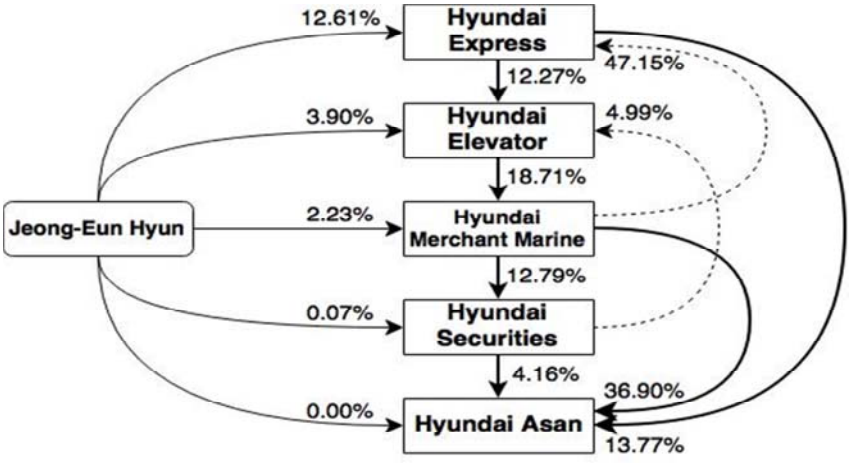

FIGURE 8. THE SHARE STRUCTURE OF MAJOR AFFILIATES OF THE HYUNDAI GROUP AT THE END OF 2006

of the Hyundai Group. The structure originally possessed many doubly and triply connected shareholding relationships, including an instance of circular shareholding. The newly changed structure removed several multiple connections and re-organized the governance structure in the form of a chain with a few multiple connections. The new structure, however, included one additional instance of circular shareholding in the form of Hyundai Express-HE-HMM, which would do severe damage to the proportional rights of the small shareholders of relevant companies. Figure 7 and Figure 8 compare the situation before and after the re-organization.

D. *HMC Investment Securities' Treasury Stock Sales in 2008*

In April of 2008, HMC Investment Securities (hereinafter HMC IS) sold its treasury shares at a level of 8.65% to HMC, Kia Motors, Hyundai Mobis, Hyundai Steel, and Hyundai AMCO, which are core affiliates of HMG.

The trade involved a preceding trade. HMG acquired 29.76% of the shares of Shinheung Securities in January of 2008 and changed the company's name to HMC IS. HMG increased its share amount to 38.41% with the above treasury share trade, as HMG considered that an amount of 29.76% of the shares was not enough to maintain proper control over its rights.

In fact, it cannot be expected that the above trades brought meaningful synergy effects to the companies involved. The core part of the trades is that the engaged companies were chosen because they had idle funds. Thus, those involved would experience losses from the viewpoint of opportunity cost. They could use the money for more valuable investment opportunities, but the investment was adequately satisfactory to the owner-manager, who wanted to launch a financial business.

The treasury share sale did not occur under an urgent threat of control rights. Instead, the sale was for preemptive purposes to strengthen the control rights of a newly acquired firm. Thus, the small shareholders of HMC IS would not experience losses, if the treasury stocks were not sold at a discounted price.

E. *Samsung SDI and Cheil Industries' Treasury Stock Sales in 2014*

In June of 2014, Samsung SDI (hereinafter SDI) and Cheil Industries disposed of their treasury shares in Samsung Electronics (hereinafter SE). SE paid 34.42 billion won to SDI and 14.3 billion won to Cheil Industries. SE originally held shares at an amount of 20.4% in SDI while holding no stocks in Cheil Industries. Thus, the merger of the two firms (SDI and Cheil Industries) would decrease SE's shares in the merged company to 13.5%. To maintain their control rights for SDI, SE bought all of the treasury shares owned by SDI and Cheil Industries, and SE secured shares in an amount of 19.6% in the newly merged SDI.

First, we examine the synergy among the three involved companies. Because both SDI and Cheil Industries produce electronic materials and parts, the synergy with SE would not be small. Second, the control premium for SDI was not insignificant either. SDI played an important role on the lower rungs of the

ownership structure of the Samsung Group. The group's ownership structure around SDI was as follows: Samsung Everland-Samsung Life Insurance (hereinafter SLI)-SE-SDI-multiple affiliates. This implies that the control rights for SDI critically influenced the control aspects of the Samsung Group.

The investment efficiency of SE, however, could not be satisfactory. To invest nearly 50 billion won in the affiliates' shares would be somewhat wasteful considering that it would be difficult to sell the shares off.

To determine whether the trade generated gains or losses for the small shareholders of SE, we should compare the synergy effect with the investment inefficiency as described above. Moreover, the owner-manager of SE, who concerned over the control premium for SDI, could buy the shares of the affiliates, despite the fact that the investment inefficiency was greater than the synergy effect.

F. *Samsung Fire & Marine Insurance's Treasury Stock Sales in 2014*

In June of 2014, Samsung Fire & Marine Insurance (hereinafter SFMI) sold 4% of its treasury shares to SLI, and took 4.79% of Samsung C&T's shares, owned by SLI, and 41.7 billion won (Figure 9).

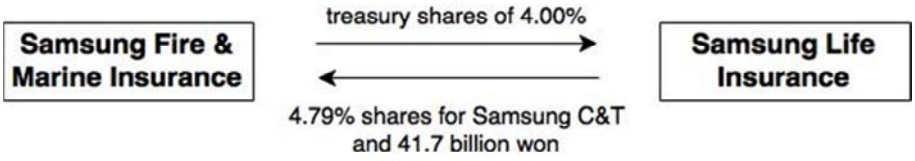

FIGURE 9. THE TRADE BETWEEN SFMI AND SLI IN JUNE OF 2014

This trade was one of SLI's share-transactions in which SLI disposed of shares of non-financial affiliates and increased their shares in financial affiliates. The structure change, however, did not create any vicious share relationships such as circular shareholdings, which differs from the previous cases of HMC and HE.

The synergy between SLI and SFMI would be significantly large, because they operated similar insurance businesses. On the side of SLI, the securement of SFMI's shares using Samsung C&T's shares would not be harmful. It could dispose of the shares of Samsung C&T, which would not produce any synergy with SLI. On the side of SFMI, the newly obtained shares of Samsung C&T would not be very valuable, and we should consider that the size of the outstanding stocks increased and small shareholders' proportional rights were therefore damaged.

The owner-manager, however, would not consider only the synergy effect and the investment efficiency, but also the control premium for SFMI and Samsung C&T.

G. *Cheil Worldwide's Treasury Stock Sales in 2014*

SE purchased 10% of the treasury shares of Cheil Worldwide in November of 2014. The purchase price was 22.08 billion won. Unlike other treasury stock sales by the Samsung Group, this trade was not connected to other transactions.

SE, an electronic company, would not have considerable synergy with Cheil Worldwide, an advertising company. SE may have better investment opportunities at more than 20 billion won than the securement of shares in Cheil Worldwide.

Thus, the treasury stock sale by Cheil Worldwide may generate (i) losses for small shareholders of SE because they lose better investment opportunities, and (ii) damage to the proportional rights of the small shareholders of Cheil Worldwide. Of course, the damage to the small shareholders could be recovered if Cheil Worldwide used the newly recruited funds properly.

H. *Samsung C&T's Treasury Stock Sales in 2015*

Samsung C&T sold its treasury shares (5.76%, 64.7 billion won) to KCC, a white knight. The trade was a 'rushed sale' to handle Elliot's opposition to the merger of Samsung C&T and Cheil Industries.

The story and details are quite similar to those associated with HE's treasury stock sales in 2003, as both are cases in which white knights took over treasury stocks. There was no synergy with the white knight, and the white knight could not enjoy a control premium. The proportional rights of the small shareholders of Samsung C&T may have been damaged.

I. *Summary of Instances and Implications*

In this section, I reviewed several cases of treasury stock sales *à la* the previous section's theoretical approach. A treasury stock sale could be beneficial to small shareholders as well as to the owner-manager. The small shareholders of the buying firm can gain benefits when the synergy effect with the selling firm is large enough. In the trade between SLI and SMFI, the small shareholders of SLI would enjoy some benefits given that the trade strengthened the relationship with SMFI, which could provide a significant synergy effect.

However, it would be more common for the small shareholders to experience losses. These types of sales, mainly concerning a control premium, could harm the small shareholders of both the buying firm and the selling firm. In addition, the small shareholders of the selling firm would experience losses in their proportional rights. They would thus lose some of their voting power.

The 'rushed sale' to protect the management rights can reduce the value of the firm, if the seller discounts the stock price or offers some non-pecuniary benefits to the buying firm. In the cases of HE and Samsung C&T, both firms disposed of their treasury shares to white knights in a hurry. For the small shareholders of the buying firm, taking the affiliate's shares could not be the best investment decision given that such assets do not have sufficient liquidity. If the owner-manager wants to retain control rights to the selling firm, the buying firm should retain the shares. For example, SE purchased the shares of Cheil Worldwide, and SE needed to retain the stocks to maintain management rights over Cheil Worldwide. In fact, the acquisition would not realize significant synergy from the integrated management of SE and Cheil Worldwide. From the viewpoint of SE and the small shareholders of SE, the investment may not be very appropriate. Moreover, such an

inappropriate investment could create losses in the form of opportunity costs.

However, it is highly likely that the instances in this section would bring benefits to the owner-manager, who is also the decision maker. These trades actually occurred. The decision makers can calculate their gains and losses thoroughly. However, it is difficult to determine whether small shareholders would realize gains or losses. In this paper, I examine only certain possibilities for gains and losses.

This examination can be performed in a more precise manner, if we have more relevant data. The synergy between two firms could be calculated from the inter-industry relationships, the trading volume between the two firms, and the sizes of the economies of scale, among other factors. The investment earning rate, stock earning rate, Tobin's q, and several management indices can serve as proxies for the investment efficiency of the buying firm. For the losses of proportional rights, we can utilize the amounts of the decrease in the voting rights after the treasury stock sales.

Using the above variables, we can formulate several guidelines, formulas, indices, or check lists. Offering these to small shareholders, potential shareholder, and stock market participants in treasury stock sales cases could relieve small shareholders' losses and could affect owner-managers' decisions.

When I discussed the nature of treasury stock sales, I suggested that treasury stock sales for the protection of management rights would be disciplined in the long term. This contention is consistent with the economic characteristics of treasury stock sales. However, current institutions and the current legal system could be maintained if we consider the synergy effects. Even in this case, trades leading to losses by small shareholders should be regulated. Of course, such regulations would be designed so as not to disturb policy goals and to preserve the synergy effect. Thus, measuring small shareholders' losses and comparing these losses with the positive synergy effect are important tasks. In the next section, I examine the policy implications in more detail and check a few bills which have been proposed in the National Assembly of Korea.

VI. Regulations for Treasury Stock Sales and Policy Considerations

Before discussing policy measures to discipline treasury stock sales, here we examine the role of treasury stocks in the equity spinoff process, which is one of the most pertinent recent issues related to the management rights transfers. Note that many proposed bills to amend the Commercial Act deal with equity spinoff cases. This paper focuses on the mechanism by which treasury stock sales protect management rights, but the legal perspectives of treasury stocks, informed by treasury stock sales research, could be applied to equity spinoff cases in the same fashion.

In equity spinoff cases, in which one company is divided into two companies such as a holding company (mostly an existing and continuing legal entity) and an operating company (mostly a newly established legal entity), existing shareholders receive shares in both companies in proportion to their existing share ratios. Imagine that a company issues eighteen stocks and A and B have nine stocks each.

If the company is split off and a newly established company issues six stocks, A and B will then each take three stocks of the newly established company. At this point, suppose that the company, not yet split, purchases six stocks, three from A and three from B. The company then has six stocks; A has six, and B has six. The voting rights of A and B are each 0.5, as treasury stocks do not have voting rights, but the new stocks for the newly established company are allotted to A, B, and the existing company: two to A, two to B, and two to the existing company. In summary, the new stocks are assigned to the treasury shares owned by the existing company. Thus, the owner-manager can increase his voting rights during the equity spinoff process if the existing company possesses treasury stocks.

Yoon (2015b) argues that the allotment of new stocks to treasury shares is not reasonable given that the ownership structure of the newly established company may differ simply in terms of whether or not treasury shares exist. Yoo (2014) also suggests that new stocks should not be allotted to the treasury shares to ensure consistency in the management of the legal system; treasury shares should not have voting rights in any case.

In fact, discussions centering on the allotment of new stocks should occur and should consider the legal aspects as they pertain to treasury stocks. The current legal system and precedents in the court consider a trade of treasury stock as a profit-and-loss transaction. From the perspective of a profit-and-loss transaction, the treasury stocks owned by the issuing company have economic value. The behavior by which the company buys treasury stocks is equivalent to the behavior by which the company buys gold, land, or machines. The company which possesses treasury shares has rights equal to those of outside shareholders whose stocks have economic value.

Song (2014), however, argues that treasury stocks have no economic value. Earlier in the paper, I also explained the economic characteristics of treasury stocks. Economically, the treasury stocks in the possession of the issuing company are ‘not-yet-issued stocks.’ Thus, it is obvious that they have no economic value. Considering that a trade in treasury stocks is a capital transaction, the right to claim new stocks by treasury shares is denied during the process of an equity spinoff. We cannot put economic value where there is no economic value.

In the handling treasury stock sales, the focus of this paper, the current legal system considers these sales as profit-and-loss transactions. The sales decisions for gold, land, or machines are delegated to the board of directors. Thus, the sales of treasury stocks can be determined by the board as well, meaning that we should consider both problems of treasury stock sales and of new stock allotments simultaneously when we fix the current system for better treasury stock management. If the system for treasury stock sales is fixed in order to prevent losses by small shareholders, the system for new stock allotments during equity spinoffs should be fixed as well.

Henceforth, we assess two proposed bills to amend the Commercial Act. The first is a bill that was proposed by Yongjin Park and other members of the National Assembly in Korea in July of 2016. The bill prohibits the allocation of new stocks for treasury shares. In addition, the existing company should discard its treasury shares when the equity spinoff process begins. The intention of this legislation was to fix the current system, which creates an asymmetric effect on the ownership

structure among shareholders. Although the bill considers that treasury stocks do not have economic value and thus demands the removal of treasury stocks during an equity spinoff, it does not refute Article 342, which allows board resolutions on treasury stock sales. Putting no economic value on treasury stocks means that treasury stock trades are capital transactions. In this case, Article 342 should be revised, and treasury stock sales should follow the new stock issuance process. In conclusion, the bill does not consider legal consistency carefully.

The second bill to be examined was proposed by Youngsun Park and other members of the National Assembly in June of 2016. This bill targets Article 342 directly. It adds Article 342 ②, which requires that "treasury stocks should be disposed of in proportion to the existing shares." Thus, this revision can be understood as meaning that the preemptive rights of the existing shareholders must be guaranteed. The bill, however, does not attempt to revise Article 418. This is a precise reversal to the previously examined bill by Yongjin Park. By the same logic, the two articles should be fixed simultaneously.

In addition to these two bills, many similar bills have been proposed. All of these bills consider the possibility of small shareholder losses and introduce measures to remedy these losses. None of the proposed amendments, however, express a solid understanding of the economic characteristics of treasury stocks fully, akin to how the current legal system misunderstands treasury stocks.

On the other hand, there are logical reasons to oppose the revision of the current system. The first is that the current legal system does not provide any effective means by which to protect management rights, except through the use of treasury shares. Choi (2016) states that revising the Commercial Act on treasury stock management should be done along with the introduction of other measures to bolster management rights protection.[50] In such a case, why should we protect management rights? If a foreign speculative capital fund (or company), which pursues short-term profits, attacks domestic firms, management rights protection could be helpful to the national economy. Moreover, there is no guarantee that a new manager would improve the value of the firm. The new manager also has a private interest, as exemplified in the description of tunneling earlier in the paper.

However, this argument should answer the following questions. The first question asks why management rights protection is needed, even allowing for damage to small shareholders. The second asks whether the use of treasury shares for management rights protection is the best option, despite the fact that such protection is worthwhile in some situations. Yoon (2015a) argues that treasury stock sales according to a resolution by the board are too excessively protective in favor of the owner-manager, although the necessity of measures to protect management rights is accepted.

The second argument supporting the current system is that the relaxation of treasury stock management is a worldwide trend. Indeed, regulations pertaining to treasury stock management have been eased in the EU, Japan, and in other countries. EU countries have expanded the exceptions for conditions on treasury stock sales. Japan turned the policy perspective into an allowance in principle. The

[50]Kabyoon Jeong and other members of the National Assembly proposed a revision to the Commercial Act, including dual-class stocks and poison pills in order to protect management rights.

goal of these relaxation efforts, however, is to assist the financial management of firms, not to ensure management rights protection. The discussions in Section III explain that managing treasury stocks in relation to small shareholder losses has been strictly regulated in all countries, including those of the EU and Japan.

Considering (i) the economic and legal characteristics of treasury stocks, (ii) the proposed bills to revise the Commercial Act, and (iii) the logic for and against the current system, the current system for treasury stock management should be corrected in the mid and long term. Clearly, such a correction should be in good agreement with the economic characteristics of treasury stocks and should prevent damage to small shareholders.

The theoretical analysis in Section IV, however, suggests that the current system can in fact help small shareholders. The protection of management rights can increase the synergy effect, and this boost is welcomed by small shareholders as well as the owner-manager of the company. Thus, the possibility of "good protection for both" should be considered during the process of correcting the current treasury stock management system.

From this point, I consider short-term measures to overhaul the system while assuming that there are no changes of the legal perspectives on treasury stocks. These measures should discipline the resolutions made by the board so as not to cause damage to small shareholders. However, it is not an easy task to differentiate between "good protection" and "bad protection."

Most desirably, a market (autonomous control by stakeholders) is ideal to discipline treasury stock sales. When behavior can lead to either good or bad results and when it is difficult to evaluate the result of a decision, the market can play a critical role that a government or a public authority cannot perform. Each shareholder can judge the owner-manager's decisions according to their own interests. While some think that the disposal of treasury stocks would be helpful for themselves, others may display their opposition; some sell their shares, others may file a lawsuit. The aggregation of shareholders' decisions shall determine whether or not a treasury stock trade is successful.

Some remedies, however, should be taken such that the market or an autonomous discipline can work well. To protect small shareholders' interests, the roles of outside board members are important. They can monitor board decisions led by the owner-manager. However, to rely on outside board members, their independence should be guaranteed. There are many studies of the independence of outside board members in Korea. Mostly, their independence is not sufficient, thus it is necessary to find certain other measures to improve the independence of outside board members.

Institutional investors can also protect small shareholders. In fact, institutional investors have a duty of good faith to their investors. To protect their investors, they should monitor, evaluate, and respond to investee companies' decisions. They can make proposals to the board of directors, display their opinions in general shareholder's meetings, sue for damages, or sell their shares. These roles could be more important in Korea, because many institutional investors are affiliates of large conglomerates. That is, the owner-manager of a firm can control relevant institutional investors. In such a case, a well-organized stewardship code and pressure on institutional investors to follow this code could motivate institutional

investors to protect small shareholders.

The small shareholders can also help themselves. They can form joint opinions at general shareholder's meetings. They can also claim damages in court. However, cooperation among small shareholders is costly, and the expected benefit from damage claims in the form of lawsuits would not be very large. The concentrated vote system, recently discussed, can be a tool by which small shareholders can monitor proceedings. Small shareholders can elect an ombudsman as a board member, and the introduction or overhaul of a class act can help small shareholders in their monitoring roles.

The second best means of disciplining treasury stock disposal is intervention by the government or by a public authority. Public intervention can be considered as a temporary measure until autonomous discipline by the market matures. We can consider an ex-ante or ex-post examinations of treasury stock disposal by the Fair Trade Commission, Financial Services Commission, Financial Supervisory Service, or relevant public bodies. The Financial Supervisory Service had in fact examined the issuance of bonds with warrant until September of 2013. The bonds carried stocks, and thus the trade could affect existing shareholders' interests. In these examinations, the public body should investigate other investment opportunities besides treasury share takeovers. These can include business plans using money from the treasury stock sale, losses of the proportional rights of the small shareholders, and others.

To moderate the business uncertainty which public interventions may cause, guidelines can be used. Guidelines prepared by related associations or by a stock exchange office can assist selling/buying companies, small shareholders, institutional investors, and potential investors, among others. They can serve as information manuals for investors and as a warning sign for companies or an owner-manager.

However, public intervention can incur the following two concerns. The first is that this type of intervention can crowd out autonomous discipline by the market. It is well known that public interventions generally constrict the market function. The second aspect is that these interventions can indulge certain behaviors at companies. In cases in which the public body pre-approves a trade and the trade leads to losses by small shareholders, the court would not be favorable to small shareholders due to their pre-approval.

Thus, public intervention should be designed while considering these two concerns. Intervention should be implemented temporarily until the market function will work, and it should help the market function mature. An examination should not be interpreted as an ultimate conclusion, and pre-examined firm behaviors can be re-evaluated by the court or by relevant authorities.

VII. Concluding Remarks

This paper examined mechanisms which serve to protect management rights through the use of treasury stock sales. With regard to treasury stock sales, I reviewed the current legal system, the legal and economic characteristics of the sales behavior, and the theoretical model of conflicts of interest between large and

small shareholders.

The examination of the economic characteristics of treasury stock sales suggests that the current legal system would misunderstand these characteristics, and would thus operate from erroneous perspectives. Thus, the legal system is in need of reform over the mid and long term.

However, the theoretical analysis provides the possibility that the current system could be beneficial for small shareholders and for an owner-manager. When the synergy effect between a buying firm and a selling firm is large enough, the protection of control rights may benefit small shareholders. They can avoid efficiency losses from separate management schemes. The results of the analysis here suggest that abolishing the current system would create greater inefficiency; thus, reform of the current system should incorporate other measures to remedy areas of inefficiency.

An ideal study of treasury stock sales should include both a theoretical analysis and an empirical assessment. This paper could not attempt a full-scale empirical study using numerical data. Instead, I reviewed several cases of actual treasury stock sales. For each case, I reviewed the sales from the viewpoint of the theory developed in Section IV and gauged the possibility of gains or losses to small shareholders. In several considerable cases, I found the possibility that an owner-manager would make decisions based on only his own interests in spite of losses borne by small shareholders.

In conclusion, the current system of managing treasury stock sales should be reformed in order to protect small shareholders, in the mid and long term. These reforms are supported by (i) an examination of the economic characteristics of treasury stock sales, (ii) the implications ascertained from other countries' systems and operations, and (iii) lessons learned by observing actual instances. However, the theoretical considerations suggest a positive effect of controlling rights protection, and treasury stock sales are a crucial tool with which to protect these rights, at least for now. Thus, reform of the current system is necessary to consider the re-organization of the control rights market simultaneously. In the meantime, public regulations could be a measure by which to manage treasury stock sales. However, public intervention should be implemented temporarily until the market function matures, and should be designed to complement and improve the market function.

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