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THE IMPACTS OF MULTI-BLOCKHOLDER CONTESTABILITY AND COALITION ON THE RISK OF KOREAN COMPANIES

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ABSTRACT

We examine the relationship between multi-blockholder contestability and coalition and firm risk using an unbalanced panel of 646 Korean nonfinancial firms with 7,582 firm-years from 2010 to 2017 (8 years). For multi-blockholder contestability, we use the second-to-first blockholder contestability index and the second-and third-to-first blockholder contestability index. The Herfindahl-Harshman Index Concentration and Herfindahl-Harshman Index Difference are used for a multi-blockholder coalition. Using different measures of contestability, we show that contestability among multiple blockholders is negatively related to beta. It is also shown that the probability (variance) of forming a dominant coalition among multiple blockholders is negatively related to beta. This suggests that contestability and the probability of forming a dominant coalition among multiple blockholders reduce corporate risk. This study expands on the existing literature on the relationship between corporate risk and ownership. This study shows that the multi-blockholder contestability and coalition may be one factor determining the risk of a company. Our findings will contribute to policymakers and investors who are interested in the relationship between corporate risk and blockholder contestability and dispersion in the Korean stock market.

Keywords: Contestability, dispersion, blockholder, beta

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INTRODUCTION

In ownership, there are usually one or more blockholders in a corporation. A blockholder is a shareholder who owns at least 5% of a company's common stock (Dlugosz et al. 2006; Kim & Cho, 2021a). Edmans and Holderness (2017) argue that the most important evidence on blockholders is that they are widespread. There is a difference between the ownership of U.S. firms and that of Korean firms. According to an extensive dataset, a typical U.S. public company has an average of four blockholders (Volkova, 2018). In U.S. firms, the potential for competition and coalitions among blockholders is active. Korean firms also have some blockholders. The first blockholder in Korean firms is the family that consists an affiliated (related) persons and affiliates. The remaining blockholders are institutional investors, foreign investors and the government.

In the field of finance, analysis of corporate risk is a central topic in portfolio theory, asset pricing model, and option valuation. Corporate risk is a very important issue for financial theory and investors (Campbell et al., 2001; Zhang, 2010). Previous studies have analysed the factors that determine corporate risk. Prior studies have been conducted to analyse the relationship between ownership structure and corporate risk (Wang, 2007; Rubin & Smith, 2009; Li et al., 2011; Jankensgård & Vilhelmsson, 2015; Rajverma et al., 2019; Kumari & Kumar, 2020). They report that ownership structure has a negative effect on corporate risk.

Recently, prior studies have conducted theoretical models and empirical analyses that analyse the relationship between firm risk and the ownership structure of blockholders. No theoretical background linking blockholder ownership and firm risk has been done, with the exception of Dhillon and Rosetto (2015). Rossetto and Staglianò (2016) show a negative relationship between a firm's total risk and ownership of the largest blockholder. Anderson and Reeb (2003) find that the impact of founding families on the firm risk depends crucially on the founding family's company. Newton and Paeglis (2019) report that underdiversified long-term shareholders reduce firm risk. Previous studies show that the presence of a major shareholder has a positive effect on monitoring activities (Bloch & Hege, 2003; Gomes & Novaes, 2005). In addition, previous studies also report on the benefits of corporate control by major shareholders (Zwiebel, 1995; Maury and Pajuste, 2005). However, previous studies have been overlooked the relationship between corporate risk and the contestability or coalition among major blockholders within a firm.

There are three reasons for conducting this study. First, previous studies report on the relationship between corporate risk and blockholder's shareholdings.

However, to the best of our knowledge, few previous studies have analysed the relationship between corporate risk and multi-blockholder contestability and coalition. Therefore, this study expands the literature on the link between corporate risk and major shareholders. Second, the ownership structure of Korean companies is different from that of American companies. For example, the largest blockholder of a Korean company is mostly families with affiliated persons and affiliates, whereas the largest blockholder of a U.S. company has a high proportion of institutional investors. Therefore, Korean companies can provide a unique example in analysing the relationship between corporate risk and contestability or coalition among major blockholders. Third, we expect that the possibility of contestability and coalitions among major blockholders will have a negative impact on corporate risk. The reason for this is that the company risk is expected to increase as the monitoring activities of the second-largest shareholders are not carried out.

The purpose of this study is to examine the relationship between corporate risk and the potential for competition and association among major blockholders of Korean listed companies. In other words, we seek to answer the following questions. First, what impact does the possibility of contestability among multiple blockholders have on corporate risk? Second, how does coalition among multiple blockholders affect firm risk? The differences of this study from previous studies are as follows. First, it focuses on Korean firms, which are different from U.S. firms in terms of ownership and governance structure. This allows us to extend the existing literature and apply it to a case similar to Korean-listed companies. Second, we empirically analyse the relationship between contestability and coalition possibilities among multiple blockholders and firm risk. We expect that contestability and coalition possibilities among multiple blockholders have a significant negative effect on firm risk. In other words, the higher the contestability and coalition potential among multiple blockholders, the lower the risk for Korean firms.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The Relationship between Shareholders Contestability and Firm Risk

The issue of agency problem of type II means the problems between minority shareholders and controlling shareholders (Shapiro 2005). La Porta et al. (2002) argue that control rights mean the right to participate in decisions about the firm. Shleifer and Vishny (1997) argue that control rights may allow the occurrence of expropriation and influence the company's policy by controlling shareholders.

Claessens et al. (2000), La Porta et al., (2002), and Shleifer and Vishny (1997) also find that the concentration of control among controlling shareholders may bring about the expropriation of the minority shareholders. The adverse influence of control rights on firm policy is in accordance with the argument that major shareholders will be able to make the firm obtain a private benefit. Therefore, when the major controlling shareholder exerts by control, the controlling shareholder will seek to allocate the firm's resources to make the private benefits. Controlling blockholders could use the implementation of incentives and policies to get private benefits over the minority blockholers. The agency problem of type II can affect corporate policies such as corporate performance, profit management and corporate risk.

Some previous studies show that there is a negative relationship between the ownership structure of major shareholders and corporate risk. For example, Admati et al. (1994) show that the volatility of a firm's stock price is negatively affected by the ownership of the largest blockholder. Rossetto and Stagliano (2016) find a negative relationship between a firm's total risk and ownership of the largest blockholder. Kumari and Kumar (2020) show that there is a negative relationship between ownership and firm-related risk. However, to the best of our knowledge, no empirical analysis has been conducted on the direct impact of blockholder contestability on corporate risk.

The agency problem of type II can also be applied to Korean companies. This is because Korean companies have the same number of blockholders as American companies. However, it differs from American companies in that the first blockholder is a family including affiliated (related) persons and affiliates. The second and third largest blockholders are institutional investors. Empirical literature reports that blockholder ownership has a negative effect on corporate risk. Therefore, it is expected that the greater (smaller) the contestability between the first major shareholder and the second and third blockholders, the higher (lower) corporate performance (Pombo and Taborda, 2017), and ultimately the smaller (larger) corporate risk. Based on the literature discussion, the relationship between blockholder contestability and firm risk is hypothesized as follows:

H1: Multi-blockholder contestability has a negative influence on firm risk.

The Relationship between Blockholders' Coalition and Firm Risk

Dhillon and Rossetto (2015) show that the presence of large, undiversified shareholders causes internal conflicts of interest with diversified investors. They argue that large shareholders prefer projects with low return risk and small shareholders prefer projects with high return risk. In the case of absenteeism, the

mid-size blockholder can play an important role and have an incentive to shift the risk choice to milder outcomes. Thus, these shareholders serve to mitigate the conflict between the minority and largest shareholders. According to this model, when there is only one blockholder shareholder, there is a negative relationship between a firm's risk-taking and the ratio of the number of shares. However, when there is more than one shareholder, the number of shares of the largest shareholder plays only an indirect role in the risk-taking of the firm. It is the overall ownership that plays a role. It is reasonable to expect that the preference for low-risk policies will be systematically related to the degree of diversification by the largest owners. According to this argument, the more investors' wealth is concentrated in a particular firm, the greater the incentive to monitor that firm's management and limit risk-taking. They present empirical results linking corporate risk and ownership dispersion.

The possibility of forming a coalition of blockholders within a company is determined by whether the ownership structure is centralized or dispersed. Previous studies analyse the effect of blockholder ownership dispersion on corporate risk. Merton (1987) argues that a large number of investors will affect stock prices. Faccio et al. (2011) find that firms managed by large diversified blockholders make higher-risk investments, as opposed to companies managed by undiversified blockholders. Jankensgård and Vilhelmsson (2015) show that firm risk increases with the number of shareholders. Rajverma et al. (2019) show that family firms with concentrated ownership have higher corporate risk. They further show that family control and concentration of family ownership affect the level of risk. Newton and Paeglis (2019) report that under diversified long-term shareholders reduce firm risk. Previous studies have not shown consistent results on the effect of blockholder dispersion on corporate risk.

The widespread distribution of ownership means that the blockholders are more likely to form a coalition. In the case of Korean companies, families are the largest blockholder. As Dhillon and Rosetto (2015) model and the study on the negative relationship between blockholders coalition and firm risk, we expect that there is a negative relationship between the coalition among multi-blcokholder and firm risk.

H2: Multi-blockholder coalition have negative influence on firm risk.

METHOD

Sample and Data

Our data consists of firm-level information from the TS-2000 (similar to COMPUSTAT in the U.S.) provided by the Korea Association of Listed Companies, as well as the KIS VALUE Library (similar to CRSP in the U.S.) provided by the Korea Investors Service corporation. The final sample consists of 7,582 firm-year observations for 646 non-financial corporations listed on Korean exchanges between 2010 and 2017. The sample was selected based on the following criteria. First, we exclude firms for which financial statements are not available from both TS-2000 and KIS VALUE Library. Second, we do not include the financial sector, such as banking, securities, and insurance, because their capital structure and business methods differ from those of the manufacturing sector. Third, in order to control the impact of outliers on the results of the analysis, the top 1% and bottom 1% of each variable were removed.

Model and Variables Measures

Equation (1) is used to analyse the effect of multiple blockholder rivalry and association on firm risk. The empirical analysis is conducted by panel analysis using panel data. The fixed-effects model has the advantage of not biasing the estimation results even if there is a correlation between the issuing and independent variables. Breusch and Pagan (1980) proposed the Lagrange multiplier test to confirm the existence of firm characteristic effects and time (year) characteristic effects, and the Hausman test to confirm that the fixed effects model is more suitable than the random-effects model.

In this study, beta is used as a proxy for risk. We use four independent variables: contestability1, contestability2, the concentration of Herfindahl-Harshman Index, and the difference in Herfindahl-Harshman Index. This study uses the control variables: the number of small shareholders, Tobin's Q, leverage, ROA, and turnover. In this study, a panel regression model was applied through statistical testing procedures such as the Hausman test and the Lagrange multiplier test.

$$Beta_{it}=\alpha_0+\beta_1 BlockholdersContestability(orDispersion)_{it-1}+\beta_2 X_{t-1}+\mu_t+\lambda_t+\varepsilon_{it} \quad (1)$$

Where blockholder contestability includes contestability1 and contestability2. Dispersion includes Herfindahl-Hirschman Index concentration and Herfindahl-Hirschman Index difference. X means control variable: Number of small shareholders, Tobin's Q, leverage, ROA, and turnover. μ means firm

characteristics affect. λ means time characteristics affect. ε is the error, i mean firms 1, ..., *N. t* or *t* – 1 means 2010 to 2017. The reason for using one period lag for the independent and control variables in model 1 is to control the dynamic adjustment of the actual beta over time.

In line with the existing empirical studies on firm risk and multi-blockholder ownership, we consider one variable to measure firm risk. In this study, we use beta for corporate risk based on Rossetto and Staglianò (2016). Beta is measured as the regression coefficient of a market model in which the daily stock returns of firms are regressed on the market portfolio for the period included in the annual sample.

Following Pombo and Taborda (2017), we define a blockholder as investors with subscription rights that represent between 5% and 50% of the ownership of a listed company. We use two measures of blockholder contestability: (i) the ratio of the second blockholder to the first blockholder (contestability1), and (ii) the ratio of the second and third blockholders to the first blockholder (contestability2).

The first measure is the contestability index 2nd to 1st blockholder defined as the ratio of the stocks of the second blockholder to the shares of the largest one, that is:

$$\text{Contestability1} = \frac{\textit{Share 2nd blockholder}}{\textit{Share 1st blockholder}} \tag{2}$$

When the top two blockholders have equal voting power, the index approaches 1. The closer the index is to 1, the more the second blockholder can counter the power of the first blockholder, and the more optimal policy is to form a coalition. The closer the number is to 1, the more the second blockholder is able to challenge the power of the first blockholder. The relevance of this indicator increases in the case of firms that do not have absolute control and in the case of multiple blockholders where the first blockholder can form a coalition with the second blockholder to gain a dominant position.

The second measure proxies the ability of the 2nd plus the 3rd largest blockholders to challenge and monitor the largest blockholder. It is defined as:

$$\text{Contestability2} = \frac{\textit{(Share 2nd blockholder + Share 3rd blockholder)}}{\textit{Share 1st blockholder}} \tag{3}$$

Dispersion is defined as two Herfindahl-Hirschman Index (HHI) type measures. First, the standard HHI is constructed using the first to fourth-largest blockholders (Haron, 2018; May et al., 2018):

$$\text{HHI concentration} = \sum_{i=1}^{4} S_i^2 \tag{4}$$

Where is the shareholding of blockholder. A higher HHI indicates the presence of a large blockholder and its inherited dominance. This is a clear result for the segment of firms with dominant blockholders, which accounts for about 50% of the sample described above. In the 45% of the sample where non-dominant large blockholders are identified, the HHI concentration is always lower than in firms with dominant blockholders.

The second dispersion estimate emphasizes the difference between subsequent blockholders to measure their dispersion:

$$\text{HHI differences} = \sum_{i=1}^{4} \left(S_i^2 - S_{-i}^2 \right) \tag{5}$$

Where is the share of blockholder's shares, and other blockholders different from *i*. The HHI difference is a measure of blockholder distribution. The higher the index the larger the distance (in stocks) between blockholders.

Ownership and financial variables are included in the empirical estimation to capture firm characteristics and behaviour, especially those related to the blockholder structure (Rossetto & Staglianò, 2016; Jankensgård & Vilhelmsson, 2015; Newton & Paeglis, 2019; Kim et al., 2020; Kim & Cho, 2021b; Kumari & Kumar, 2020; Cho et al., 2018; Cho & Lee, 2020; Ra, 2021). To measure the size of the investor base, we use the number of small shareholders (NSS) on the TS-2000 (Korea company information) ownership list which includes shareholders who own at least 0.1% of the company. Merton (1987) argues that a large number of investors will affect stock prices. Jankensgård and Vilhelmsson (2015) report a positive relationship between the number and ownership of minority shareholders and the volatility of stock returns. We expect the number of small shareholders to have a positive impact on corporate risk. Previous studies use Tobin's Q as a proxy for growth options and show the positive relationship between Tobin's Q and corporate risk (Pástor and Veronesi, 2003; Cao et al., 2008; Jankensgård & Vilhelmsson, 2015). We estimate Tobin's Q as the ratio of the market value of assets to the book value of assets. The market value of assets is calculated by the book value of assets plus the book value of equity minus the book value of equity (Morck et al., 1988; Yermack, 1996; Kaplan & Zingales, 1997).

Previous studies show mixed results between leverage and corporate risk. There are studies showing a positive (+) relationship between leverage and corporate risk (Dennis & Strickland, 2004; Faccio et al., 2011; Li et al., 2011), and there is a negative (–) relationship between leverage and corporate risk. There are also studies showing relevance (Cao et al., 2008; Pástor & Veronesi, 2003). Leverage is measured as the ratio of liabilities to equity. High leverage implies a scenario in which a company is under financial stress, making managerial decisions more difficult. Previous studies also show mixed results between profitability and corporate risk. It shows a positive relationship (Faccio et al., 2011; Jankensgård & Vilhelmsson, 2015) and a negative relationship (Pástor & Veronesi, 2003; Wei & Zhang, 2006) between profitability and corporate risk. We use ROA as a proxy for profitability. ROA is the ratio of net income (bottom line) to assets. Prior studies use stock liquidity as a factor in determining corporate risk. This study uses the stock turnover ratio as a proxy for stock liquidity. Previous studies report a positive relationship between stock turnover and corporate risk (Dennis & Strickland, 2004; Li et al., 2011). Turnover is measured as the ratio of daily volume to the number of listed shares in a day. Table 1 defines the variables used in this study.

Table 1
Definition of variables

Acronyms	Variable name	Definitions
BT	Beta	The regression coefficient of a market model in which the daily stock returns of firms are regressed on the market portfolio for the period
CO1	Blockholder Contestability 1	Share 2nd blockholder/Share 1st blockholder
CO2	Blockholder Contestability 2	(Share 2nd blockholder + Share 3rd blockholder)/Share 1st blockholder
HHIC	Herfindahl-Hirschman Index concentration	$\Sigma_{i=1}^{4} S_i^2$, Where S_i is the share of i_{th} blockholder's shares
HHID	Herfindahl-Hirschman Index differences	$\Sigma_{i=1}^{4}\left(S_i^2 - S_{-i}^2\right)$, Where S_i is the share of i_{th} blockholder's shares, and S_{-i} other blockholders different from i
NSS	Number of Small Shareholders	Log (The number of shareholders who own at least 0.1% of the company)
Q	Tobin's Q	The ratio of the market value of assets to the book value of assets
LV	Leverage	Debt/Equity
ROA	Return on Assets	Net Income/Assets
TU	Turnover	The ratio of daily volume to the number of listed shares in a day

EMPIRICAL RESULTS

Descriptive Statistics

Table 2 presents descriptive statistics on firm risk, contestability and diversification, and firm characteristics. The sample covers 7582 firm years for all variables. The average beta is 0.7440. This is smaller than the average value of 0.812 for U.S. firms reported by Rossetto and Staglianò (2016). The difference in beta between Korean and U.S. companies is estimated to be due to differences in analysis period and sample size. The average contestability1 and contestability2 for the blockholder are 0.1370 and 0.1800, respectively. This is smaller than 0.381 and 0.581 for the blockholder in Pombo and Taborda (2017). This difference seems to be due to the ownership structure between the two countries. In other words, it is believed that this is because the share of the second-largest shareholder of Korean companies is relatively low. This means of HHIC and HHID are 0.2060 and 0.1990 respectively. This is smaller than 0.348 and 0.234 in the blockholder of Pombo and Taborda (2017). For each variable, outliers deviating from the top 1% and bottom 1% were removed, resulting in a somewhat stable distribution of the variables.

Table 2
Descriptive statistics

Variables	Acronyms	Obs.	Mean	Std. dev.	25P	50P	75P
Beta	BT	7582	0.7440	0.3990	0.4610	0.7210	1.0040
Contestability1	CO1	7582	0.1370	0.2090	0.0000	0.0000	0.2200
Contestability2	CO2	7582	0.1800	0.2950	0.0000	0.0000	0.2650
Herfindahl-Hirschman Index concentration	HHIC	7582	0.2060	0.1390	0.1000	0.1770	0.2780
Herfindahl-Hirschman Index difference	HHID	7582	0.1990	0.1420	0.0920	0.1700	0.2680
Log (Number of Small Shareholders)	NSS	7582	8.2410	1.2030	7.4440	8.1060	8.8850
Tobin's Q	Q	7582	1.1304	0.7633	0.7621	0.9458	1.2461
Leverage	LV	7582	1.0032	1.0628	0.3346	0.6859	1.2758
Return on Assets	ROA	7582	0.0290	0.0750	0.0050	0.0310	0.0650
Turnover	TU	7582	0.1690	0.2700	0.0290	0.0740	0.1730

Note: All variables are winsorized at the top and bottom 1 percentile to mitigate the impact of outliers.

Correlation Analysis

Table 3 shows the correlations among the variables as measured by Pearson correlation analysis. Contestability2 (CO2) and beta have a negative correlation at the 5% level. We can also see that there is a significant negative correlation between HHIC or HHID and beta at the 1% level, except for ROA. There is a significant positive correlation between firm characteristics and beta. For the regression coefficients, we also measure the variance inflation factor (VIF) separately. Although not shown here, the VIF value for ROA is the largest at 1.20. However, it is smaller than 10.0, which is used as a criterion for multicollinearity (Kennedy, 2008). Therefore, the issue of multicollinearity in the regression output is not a concern.

Table 3
Correlation matrix among variables

	BT	CO1	CO2	HHIC	HHID	NOS	Q	LV	ROA	TU
BT	1									
CO1	–0.01	1								
CO2	–0.02**	0.95***	1							
HHIC	–0.19***	–0.29***	–0.28***	1						
HHID	–0.18***	–0.36***	–0.36***	0.99***	1					
NOS	0.27***	0.12***	0.11***	–0.24***	–0.24***	1				
Q	0.14***	0.03***	0.04***	–0.13***	–0.13***	0.18***	1			
LV	0.09***	0.02**	0.02**	–0.06***	–0.06***	0.11***	0.00	1		
ROA	–0.01	0.05***	0.06***	0.09***	0.08***	–0.05***	0.06***	–0.34***	1	
TU	0.10***	–0.09***	–0.09***	–0.17***	–0.15***	0.18***	0.13***	0.02***	–0.14***	1

Note. This table presents the Pearson correlation matrix for all variables. All variables are defined in Table 1. ***, ** indicates significance at the 1%, 5% levels, respectively.

The Effects of Multi-blockholder Contestability and Coalition on the Firm Risk

Table 4 shows the results that the effects of multi-blockholder contestability and coalition on the beta. In models 1 and 2, we analyse the relationship between the beta and the contestability of the blockholder. In models 3 and 4, we also examine the relationship between the beta and blockholder dispersions. In model 1, we use the contestability of the blockholder as contestability 1. In model 2, we also use the contestability of the blockholder as contestability2. In model 3, we use the blockholder dispersion as Herfindahl-Hirschman Index concentration. In model 4, we also use the blockholder dispersion as Herfindahl-

Hirschman Index difference. In all models, the Lagrange multiplier test shows that the firm and time characteristic effects were significant at the 1% level. The Hausman test confirmed that the fixed effects model was more effective than the random-effects model. Also, the goodness of fit of the models is significant at the 1% level.

Table 4
The multi-blockholder contestability and coalition on the risk

Beta	Model 1	Model 2	Model 3	Model 4
Constants	0.246***	0.248***	0.324***	0.308***
	(3.44)	(3.47)	(4.36)	(4.16)
Number of Small Shareholders$_{t-1}$	0.059***	0.059***	0.054***	0.055***
	(6.57)	(6.57)	(5.91)	(6.02)
Tobin's Q$_{t-1}$	0.063***	0.064***	0.062***	0.062***
	(9.69)	(9.76)	(9.50)	(9.52)
Leverage$_{t-1}$	–0.010	–0.010	–0.011*	–0.011*
	(–1.64)	(–1.61)	(–1.73)	(–1.74)
Return on Assets$_{t-1}$	0.236***	0.241***	0.239***	0.237***
	(3.46)	(3.53)	(3.50)	(3.47)
Turnover$_{t-1}$	0.039**	0.038**	0.041**	0.042**
	(2.02)	(1.99)	(2.15)	(2.16)
Contestability 1$_{t-1}$	–0.088***			
	(–3.39)			
Contestability 2$_{t-1}$		–0.080***		
		(–4.30)		
Herfindahl-Hirschman Index concentration$_{t-1}$			–0.226***	
			(–4.38)	
Herfindahl-Hirschman Index difference$_{t-1}$				–0.192***
				(–3.78)
Year effect	Yes	Yes	Yes	Yes
R-squared	0.0511	0.0520	0.0521	0.0515
Observations	7582	7582	7582	7582
Number of *i*	646	646	646	646
F-value	21.91***	22.34***	22.39***	22.08***
Maximum VIF	1.18	1.18	1.18	1.18
Lagrange multiplier test	1762.25***	1749.80***	1608.47***	1622.73***
Hausman test	49.35***	49.57***	52.09***	52.51***

Note. *t*-value is shown in parenthesis. The Lagrange multiplier test shows whether the firm and time characteristic effects is significant. The Hausman test statistic shows whether a correlation between the explanatory variable and the individual special effects is significant. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Our findings can be summarised as follows. First, in models 1 and 2 of Table 4, we find that multi-blockholder contestability has a significant negative (–) influence on beta (model 1: coefficient = –0.088, *t*-value = –3.39; model 2: coefficient = –0.080, *t*-value = –4.30). This means that the higher (lower) contestability among major blockholders, the lower (higher) corporate risk (hypothesis 1: accept). These results are similar to previous studies that showed a negative relationship between the ownership structure of blockholder and corporate risk (Admati et al., 1994; Kumari & Kumar, 2020; Rossetto & Staglianò, 2016). This result is similar to the work of Newton and Paeglis (2019) who analysed the relationship between individual blockholder shareholders and systematic risk. However, this study is different from previous studies in that it analyses the effect of multi-blockholder contestability on corporate risk. Korean firms differ from American companies in that the first blockholder is a family including affiliated (related) persons and affiliates. This means that the largest blockholder of Korean companies has significant voting rights. Because the first blockholder has the will and ability to monitor the manager, it has the ability to easily prevent the robbery of the manager's profits. Therefore, it is judged that corporate risk is reduced.

Second, in models 3 and 4 of Table 4, we also find that multi-blockholder coalition has a significant negative (–) influence on beta (model 3: coefficient = –0.226, *t*-value = –4.38; model 4: coefficient = –0.192, *t*-value = –3.78). This means that the higher (lower) coalition among major blockholders, the lower (higher) corporate risk (hypothesis 2: accept). This result is consistent with previous studies that a distributed ownership structure has a negative (–) effect on corporate risk (Merton, 1987; Newton & Paeglis, 2019). However, it is different from previous studies that a distributed ownership structure has a positive (+) effect on corporate risk (Faccio et al., 2011; Jankensgård & Vilhelmsson, 2015; Rajverma et al., 2019). As a result, there is a possibility that major shareholders within Korean companies will form alliances with other major shareholders to share the stolen profits, resulting in lower corporate risk.

To diagnose heteroscedasticity, we additionally perform a White test. We confirmed that the results of the analysis reject the null hypothesis [chi2(54) = 1037.19, prob>chi2 = 0.000)]. As a result of our analysis considering heteroscedasticity, the regression coefficient of Contestability1 was –0.085 (*t*-value = –3.84), and the regression coefficient of Contestability2 was –0.083 (*t*-value = –5.33). Also, the regression coefficient of HHIC was –0.348(*t*-value = –8.39), and the regression coefficient of HHID was –0.320(*t*-value = –7.86). These results are similar to the analysis results in Table 3.

Third, this result shows that there is a positive relationship between the number of small shareholders and beta. This is different from the results of Merton (1987) and Wang (2007). They argue that there is a negative relationship between the number of shareholders and corporate risk. However, this result is similar to that of Jankensgård and Vilhelmsson (2015). We confirm that the number of small shareholders has a positive effect on the firm risk. The factor used as a proxy variable for growth options in previous studies is Tobin's Q. The results show that Tobin's Q has a positive influence on corporate risk. These can be seen as the higher the growth opportunity, the higher the corporate risk. This result is similar to that of prior studies (Pástor & Veronesi, 2003; Cao et al., 2008; Jankensgård & Vilhelmsson, 2015). Black (1986) argues that the volatility of stock returns is determined by leverage. In this study, we show that there is a negative relationship between firm risk and leverage in models 3 and 4. These results are consistent with studies that show a negative relationship between firm risk and leverage (Pástor & Veronesi, 2003; Cao et al., 2008). We show that profitability (ROA) is related to high beta. This is consistent with previous studies that show a positive relationship between firm risk and profitability (Faccio et al., 2011; Jankensgård & Vilhelmsson, 2015). We use the turnover rate as the liquidity of stocks. This result shows that there is a positive relationship between firm risk and turnover (Dennis & Strickland, 2004; Li et al., 2011).

Robustness Test

We analysed several robustness tests. First, we add the ownership of the fourth and fifth blockholders as a proxy for blockholder contestability. Contestability3 measures the ratio of the number of shares in the second, third, and fourth blockholders to the number of shares in the largest blockholder. Contestability4 measures the ratio of the number of shares in the second, third, fourth, and fifth blockholders to the number of shares in the largest blockholder. The results of the analysis (Table 5) show that there is a negative relationship between the contestability of a blockholder and its beta at the 1% level, as in Table 4, even when the blockholder ownership extends to the fifth blockholder shareholder. This means that contestability among major blockholders remains the same even if the fourth and fifth blockholder are included. Perhaps this is due to the relatively high shareholdings of the 1st blockholder of Korean companies.

Table 5
The multi-blockholder contestability and coalition on the risk 2

Beta	Model 1	Model 2
Constants	0.247***	0.246***
	(3.45)	(3.44)
Number of Small Shareholders$_{t-1}$	0.059***	0.059***
	(6.58)	(6.58)
Tobin's Q$_{t-1}$	0.064***	0.064***
	(9.79)	(9.79)
Leverage$_{t-1}$	–0.010	–0.010
	(–1.58)	(–1.56)
Return on Assets$_{t-1}$	0.243***	0.243***
	(3.56)	(3.56)
Turnover$_{t-1}$	0.038**	0.038**
	(1.98)	(1.98)
Contestability3$_{t-1}$	–0.073***	
	(–4.50)	
Contestability4$_{t-1}$		–0.069***
		(–4.53)
Year effect	Yes	Yes
R^2	0.0523	0.0523
Observations	7582	7582
Number of *i*	646	646
Maxium VIF	1.18	1.18
F-value	22.45***	22.47***
Lagrange multiplier test	1744.21***	1740.68***
Hausman test	49.66***	49.72***

Note. *t*-value is shown in parenthesis. The Lagrange multiplier test shows whether the firm and time characteristic effects are significant. The Hausman test statistic shows whether a correlation between the explanatory variable and the individual special effects is significant. ***, ** indicate significance at the 1%, 5% levels, respectively.

Second, we use the Shapley value of the top three shareholders used by Pombo and Taborda (2017) as a proxy for multi blockholders contestability. The Shapley value as a solution to cooperative games measures the probability that the largest shareholder will form a coalition with one of the following two largest shareholders. Structurally, the Shapley value is the value of any company in which the largest shareholder owns 50% or more of the company's stock rights, as it means absolute shareholder management. The analysis shows that there was a significant negative association between Shapley value and beta (coefficient = –0.079, *t*-value = –3.22).

CONCLUSION

We investigated the relationship between blockholder contestability (and diversification) among blockholders and corporate risk using a cross-section of Korean stock exchange-listed companies.

The results show that blockholder contestability is associated with lower beta. This suggests that the smaller the contestability for control among the major blockholders, the greater the corporate risk. The reason for this is that most of the first blockholders in the ownership structure of Korean companies are related to families with affiliated persons and affiliates. The second-largest shareholder is institutional investors. Therefore, this suggests that the systematic risk of Korean companies is related to the contestability and the possibility of allocations among major blockholders. We also found that the decentralised nature of the blockholder is associated with lower corporate risk. This result implies that firms that are more likely to form a dominant coalition between the first and subsequent blockholders are less sensitive to broad market shocks.

In general, there are systematic risks and unsystematic risks. It is known that systematic market risk is caused by macroeconomic factors. However, this study explores the relationship between beta representing systematic risk and ownership structure. Of the ownership structure, this study analyses the effect of the contestability and the possibility of allocations among major blockholders on systematic risk. This study has implications from a literature point of view. Newton and Paeglis (2019) analyse the relationship between systematic risk and individual blockholder. However, this study analyses the relationship between systemic risk and multi-blockholder contestability and coalition. Therefore, this study expands on the existing literature on the relationship between corporate risk and blockholder ownership. This study can also be applied in practice. It can be multi-blockholder contestability and coalition as one factor determining corporate risk. This fact can be utilised for companies similar to the ownership structure of Korean companies. In particular, the results can provide policy implications to policymakers who establish financial policies and can also provide an opportunity for investors to have a different view of the factors that determine systematic risk.

However, this study has the following limitations, and future research directions are suggested as follows. First, this study used only systematic risk as a proxy for corporate risk. In the future, it is necessary to analyse the volatility and the idiosyncratic risk as proxy variables for corporate risk. Second, this study used five control variables that affect systematic risk. However, it is necessary to introduce more diverse control variables in the future. For example, inside equity is related to the risk initiatives of managers (Prendergast, 2002; Edmans &

Gabaix, 2011). Third, this study was analysed through panel regression analysis based on panel data. In the future, it is necessary to analyse through the system GMM. System GMM uses not only the level variable of the dependent variable but also the lagged value of the differential variable as an additional tool variable. Therefore, this is known as a more efficient estimator.

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