

$$(4) \quad RILLIQ_{iy} = \frac{ILLIQ_{iy}}{\frac{1}{N} \sum_{t=1}^{N_y} ILLIQ_{iy}}$$

Here, *RILLIQ* is adjusted for market-wide liquidity changes and converted into a natural logarithm¹². According to the literature, liquidity has a commonality (Chordia et al. 2000), and its market-wide fluctuation has differential impacts on the price of individual stocks (Amihud 2002). Thus, *RILLIQ* is adjusted for a time series variation of market-wide liquidity changes.

3.3.2 Bid-ask spread

Quoted spread (*SPRD*) is defined as the difference between lowest ask price and highest bid price divided by the mid-price of the quotes. *SPRDs* are calculated every time when best ask and/or bid changes, we compute a time-weighted average spreads for stock *j* on day *t*, and then average them over a year. We exclude any quotes before the opening price.

$$(5) \quad SPRD_{j,t} = \frac{(BestAsk_{j,t} - BestBid_{j,t})}{(BestAsk_{j,t} + BestBid_{j,t}) \div 2}$$

3.4 Firm value

Our proxy for firm value is so-called Tobin's *Q* defined as follow:

$$(6) \quad QRATIO_{j,t} = \frac{(\text{aggregate_market_value}_{j,t} + \text{interest_bearing_debt}_{j,t})}{(\text{total_capital}_{j,t} + \text{interest_bearing_debt}_{j,t}) \div 2}$$

¹² The impact of a change in market-wide liquidity on *ILLIQ* for individual stocks is not uniform: It disproportionately affects low-liquidity stocks (see Amihud 2002 and Chordia et al. 2000).

The financial data for calculating this are from World Scope. When we compute Tobin's q, the cross-holding-adjusted aggregate market value is used.¹³ Table 2 shows the summary statistics of these variables.

3.5 Cross-sectional correlations

Table 3(A) shows the cross-sectional correlations among the variables. *Horizon* is positively correlated with the logarithm of market capitalization (0.3) and negatively correlated with the share turnover ratio (0.11), as shown in Table 3(A). The correlation with the ownership ratios of *Mochiai* are positive (0.3), meaning that the longer *Horizon*, the higher the *Mochiai* ratio. On the other hand, there is almost no correlation between *Horizon* and *Foreigner* (see Table 3(B)).

(Table 3 around here)

4. Empirical Analyses

4.1 Ownership structure and illiquidity

First, we test the relation between investment horizon and illiquidity. Illiquidity and ownership structure may be simultaneously determined. All variables are most likely endogenous and the estimates based on panel least squares are biased and inconsistent. Considering these problems, we use a two-stage estimation method with instrumental variables to obtain a consistent estimate.¹⁴ Our basic regression equation is

$$(7) \quad \text{Illiquidity}_{j,t} = a + b\text{Horizon}_{j,t} + c\text{ConcentrationVariables}_{j,t} + d\text{ControlVariable}(s)_{j,t} + \gamma_{j,t}$$

¹³ Kobayashi (1990) points out that the Mochiai portion should be subtracted from the aggregate market value to calculate Tobin's q.

¹⁴ Woodridge (2002) Chapter 10 -11.

A proxy for market illiquidity is *RILLIQ* and bid ask spread (*SPRD*). For concentration measures, *TOP30*, and a set of *INSIDER* and *NON-INSIDER* are used interchangeably. We also test the interaction between *NON-INSIDER* and investor category holdings). The natural logarithm of a firm's market value (*Log_Size*) is added as control variable.¹⁵ Our instrumental variables are the lagged explanatory variables. Heteroskedasticity is corrected by White diagonal standard errors and covariance corrections.

In model1 of Table4, the coefficient of *Horizon* and *Top30* are positive and significant at the 1% level. It means that the longer the investment horizon, the lower the liquidity, and the higher the concentration, the lower the liquidity. These findings are consistent with H1 and H2.

In model2, *TOP30* variable is separated into insider and non-insider portion of concentration, *INSIDER* and *NON-INSIDER* respectively. The result shows that both variables have positive correlation with illiquidity, the coefficient of insider concentration is much larger than that of non-insider concentration (2.248 vs. 0.379). Insider's ownership concentration have a bigger negative impact on liquidity than non-insider's. It indicates when insiders own large portion of the company's shares outstanding, liquidity provided by existing shareholders are limited to cause large market impact.

Model3 examines whether large presence of specific investor category has relation with liquidity under the concentrated ownership. We are interested here in the magnitude and direction of the investor category's influence. We insert cross-term variables such that (*NON-INSIDER* x holding ratio of investor category such as *Foreign*, *Indiv*, and *Crosshld*) as explanatory variables. The result shows that *Foreign* and *Indiv* are insignificant, but

¹⁵ Amihud (2002) shows a high negative correlation (-0.614) between firm size and RILLIQ. In our case the correlation is -0.57.

Crosshld has a significant positive coefficient with *ILLIQ*. It means that only case where the high non-insider concentration is associated with high cross-holding ratio, illiquidity increases. The result indicates not only how large the concentration but also what types of investors own such large proportion. Cross-holders own shares not for pure investment purpose, does not trade, and provide less commitment to monitoring, so that other market participants see these factor negatively for liquidity. In case of foreigner and individuals, their short horizon investment style mitigate negative effect from asymmetric information on liquidity.

Next we use *SPRD%* to run regression equation (8), where *SPRD%* is the percentage of bid-ask spread in year *t* for firm *j*. Since the severity of asymmetric information affects the size of the spread, we expect that the higher the *TOP30*, the wider the spread. We include number of trades per day (*Trade*), relative tick size (*Tic/Price*)¹⁶ as control variables.

In table 5, the coefficient of *TOP30* is positive and significant, however that of *HORIZON* is insignificant. As Goyenko et.al. (2009) suggest that the results support notion that bid-ask spread is directly related to adverse selection cost and ownership concentration is more important than investment horizon. In model2 both of *INSIDER* and *NON-INSIDER* show positive correlation with *SPRD%*, the coefficient of *INSIDER* is larger than that of *NON-INSIDER* (0.4365 vs. 0.2079). It means that higher concentrations by insiders as well as non-insiders increase the bid-ask spread which is contrary to Rubin (2007) which reports negative correlation between insider holdings and bid-ask spread. Our result indicates that insider holdings are related to asymmetric information.

¹⁶ Unlike the New York Stock Exchange, the TSE uses a tick size that is a step function of share price. In the sample period of 2004 and 2007, the tick size is ¥1 for stocks priced below ¥2000, ¥5 for stocks priced between ¥2,001 and ¥3,000, ¥10 for stocks priced between 3,001 and ¥30,000. For further detail, see TSE(2010)

Model3 examines investor categories' effect on liquidity. The coefficients of *Foreign x NON-INSIDER* and *Crosshld x NON-INSIDER* are positive, but that of *Indiv x NON-INSIDER* is negative. Large presence of cross-holders and foreigners increase adverse selection cost, while individuals mitigate it. It shows that foreigners have superior information which increases information asymmetry among investors.

4.2. Ownership, liquidity, and their effects on firm value

We extend an analysis to the relation among investment horizon, ownership concentration and firm value. Tobin's q (*QRATIO*) is used as a proxy for the firm's market valuation. The basic regression equation is

$$(8) \quad QRATIO = a + bHorizonVariable + cConcentrationVariables + dControlVariables + \varepsilon$$

where horizon variable and concentration variables are same as equation (8) and the debt asset ratio (*Debtasset*) and the profit growth rate (*Growth*) are included as control variables. *Debtasset* is calculated as total debt divided by total assets, and *Growth* is calculated as the one-year growth rate of the ordinary profit which is equivalent to income before extraordinary items and taxes. In order to avoid endogeneity problem, we use the two-stage estimation with instrumental variables to obtain a consistent estimate. Our instrumental variables are the lagged explanatory variables. A panel regression analysis is carried out according to the result of the Hausman test which rejects the random effect model for both time and cross section, and then the fixed time-effect model is selected.¹⁷

¹⁷ The Hausman test rejects the random effect model at p = 0.0099 with equation (6) and at p = 0.0012 with equation (7).

The estimated results are shown in Table 6. *HORIZON* is negatively correlated with the firm value. It means that longer investment horizon of shareholders has negative impact on firm value. This is interpreted as illiquidity effect. *TOP30* is positively correlated with the firm value. The result supports the notion that block-holders influence corporate governance and improve performance. On the issue of trade-off between monitoring and liquidity (H5), this result indicates that positive impact of monitoring activity is larger than negative impact of illiquidity caused by concentration¹⁸. This is a unique and important finding of this study in the relation of corporate governance and market microstructure.

In model2 *INSIDER* and *NON-INSIDER* are significant. The coefficient of *NON-INSIDER* is slightly larger than that of *INSIDER* (0.0122 vs. 0.0100, respectively). We expect pressure from non-insider block holder is larger than that from insiders, but the difference is not as large as expected.

Model3 examine whether specific investor category influences to firm value. The variable of (*NON-INSIDER* x investor category such as *Foreign*, *Indiv*, and *Crosshld*) shows differential effects on firm value. As we expect, *Foreign* has a significantly positive relation with Q-ratio, but *Crosshld* has a significantly negative relation. The results support Leleux, Vermaelen, and Banerjee (1995) that analyze the impact of large block-holders on firm performance in France and find that the identity of the block-holders is crucial.

These findings indicate that ownership structure and its composition affect firm's valuation. If there is high crossholding relationship, market participants judge the firm to be lax in

¹⁸ As a related study, Gaspar and Massa (2007) examine the trade-off between ownership, liquidity and firm value. They find that the effect of ownership on Tobin's Q is not statistically significant after controlling the endogeneity of ownership by IV estimate.

corporate governance and discount the firm's value. Ignorance of corporate governance severely deteriorates firm's valuation as well as liquidity.

(Table 6 around here)

4.3 Robustness check,

As a robustness check, we investigate how changes in *HORIZON* and *TOP30* affect liquidity measures. We will see the lagged relationship between them. When a company's weighted average of investment horizon or concentration of ownership changes, existing and new shareholders must buy or sell shares in the market. It affects our measures of liquidity and firm value on the same year due to large movement of position made by institutions and foreign investors. For our purpose to confirm robustness of the relation among ownership, liquidity and firm value, we should ask the following question. When a firm's ownership concentration declines, what happens to liquidity and firm value on the following year? Thus the equation (9) is estimated with three different dependent variables.

(9)

$$\Delta Variables(ILLIQ, Value)_{j,t} = a + b_1 \Delta HORIZON_{j,t-1} + b_2 \Delta TOP30_{j,t-1} + b_3 \Delta ControlVariables_{j,t} + \gamma_{j,t}$$

Dependent variables $\Delta Variables$ a change of ILLIQ, SPRD, and QRATIO. In equation (9) where $\Delta ILLIQ$ is the change in ILLIQ for stock j from year t-1 to year t. $\Delta SPRD\%$ is the change in percent bid-ask spread of stock j from year t-1 to year t. $\Delta QRATIO$ is the change in QRATIO of stock j from year t-1 to year t. In addition to $\Delta HORIZON$ and $\Delta TOP30$, we

include $\Delta Market_ILLIQ$ for $\Delta ILLIQ$, $\Delta Tic \div \Delta Price$ ¹⁹ for $\Delta SPRD\%$, and $\Delta Debtasset$ and $\Delta Growth$ to as control variables,

The results are presented in Table 7. With respect to $\Delta ILLIQ$, larger $\Delta HORIZON$ causes greater deterioration on liquidity. Increasing insider ownership is positively correlated with illiquidity on the next year, increasing non-insider ownership has the opposite effect on illiquidity.

With respect to $\Delta SPRD\%$, $\Delta HORIZON$ has negative coefficient. It means that increased short-term shareholders increases adverse selection risk for other market participants. When insider and non-insider concentration increases, the bid-ask spread widens as well.

With respect to $\Delta QRATIO$, $\Delta Insider$ and $\Delta Non-Insider$ at $t-1$ have positive impact on firm value. This supports the notion that higher concentration improves governance and firm value. Maug (1998), for instance, suggests that the characteristics of the large shareholders, such as institutions, and their organizational structure are potentially important aspects for the success of monitoring activities. $\Delta HORIZON$ have negative but insignificant relation with $\Delta QRATIO$.

In summary, investment horizon and ownership concentration are important factors that influence both liquidity and value of firm's share. When they change, there are associated changes in liquidity and firm value.

(Table 7 around here)

¹⁹ This is an adjustment of the effects of the TSE's step-wise tick table.

5. Conclusions

We empirically show that the weighted average investment horizon of a firm's ownership structure affects its liquidity. In addition, investment horizon and monitoring management influence a firm's value.

Our empirical results are summarized in the following four points.

(i) The latent investment horizon relates to a firm's market liquidity. The latent investment horizon is computed from the ownership structure and the average investment horizon of the investor categories. The longer the latent investment horizon, the lower the liquidity.

(ii) Concentrated ownership has negative impact on liquidity. The investor categories considered in this study are insider, non-insiders, foreign, cross-holding and individuals. When insiders own large proportion of the shares, negative effect is larger compared to the case where non-insiders own large proportion of the shares. Effects from concentrated ownership depend upon who owns them. Under the concentrated ownership, the higher the cross-holding, the lower liquidity. The greater foreign ownership widens *SPRD%* but not *ILLIQ*. This indicates asymmetric information effects is more important for bid-ask spread measures.

(iii) The investment horizon influence firm value. A shorter investment horizon has a positive impact on firm value.

(iv) Ownership structure affects firm value by signaling a firm's corporate governance status. The higher the cross-holding, the lower the firm value. Monitoring by foreign investors, however, contribute improvement of market liquidity as well as the firm's valuation directly.

The results support the notion that the composition and investment horizon of ownership structure influence market liquidity and firm value. It indicates that a weighted average investment horizon of the firm's shareholders is an important characteristics of firm's ownership structure with respect to liquidity and value.

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Figure 1. Ownership ratio trends by investor category.

This figure shows the trend in the ownership structures of Japanese companies for the period 2002 to 2007. The foreigner ownership ratio is that at the end of the fiscal year as reported by QUICK-AMSUS. The *antei* (stabilizing holding) and mochiai ratios of each stock are estimated by the NLI Research Institute. A mochiai holding occurs when two listed companies mutually hold shares, confirmed through disclosed materials. An *antei* holding refers to cases where the ownership of a firm's shares by banks and life insurance companies is disclosed but the firm's holdings of the counterparty shares cannot be confirmed by disclosed materials. The mochiai figures are included in the *antei* holding ratio. The sample includes stocks in the First and Second Sections of the TSE.

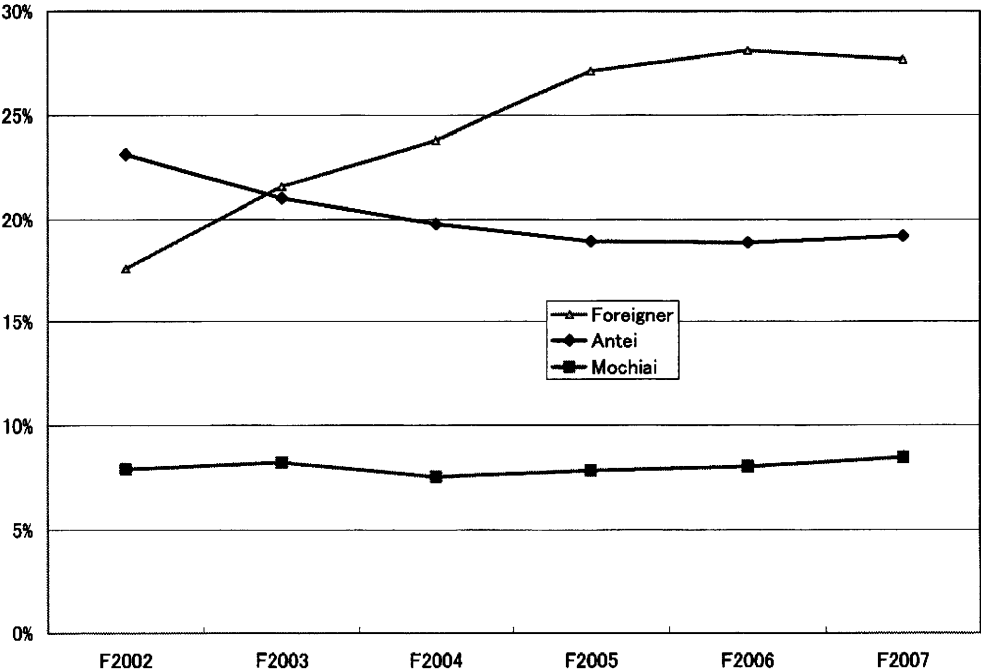


Table 1. Average investment horizon by investor category.

The investment horizon by investor category is computed from the annual turnover ratio, that is, the average of the aggregated market value of an investor category's ownership at the start and end of each year divided by the total trading amount of the investor category during the year.

Fiscal Year	Foreigner	Individuals	Non-financial Corporates	Trust Banks	Insurance	Banks
2004	0.414	0.531	7.488	1.238	15.451	11.515
2005	0.331	0.304	5.711	1.065	18.845	13.143
2006	0.303	0.393	6.615	1.206	21.274	17.568
2007	0.219	0.373	6.773	0.959	16.659	15.650

Unit: year.

Source: TSE's Share Ownership Survey, and the Investment Trends by Investor Category.

Table 2. Summary statistics.

This table shows the summary statistics of the explanatory variables. Here, *HORIZON* is a weighted average of the investment horizons of sample firms, *TOP30* is the sum of the top 30 shareholders' holdings divided by the total number of shares outstanding, *QRATIO* is Tobin's $q = (\text{aggregate market value} + \text{interest-bearing debt}) / (\text{total capital} + \text{interest-bearing debt})$, where the aggregate market value is adjusted for the cross-holding proportion of ownership. *Crosshld*, *Foreign*, *Indiv* are the percentages of ownership of firm j 's investor categories (cross-holding, foreigner and individuals) at the end of fiscal year t

	FY	Mean	Median	Maximum	Minimum	Std Dev.	#Obs.
<i>HORIZON</i> (Year)	ALL	4.81	4.89	10.12	0.28	1.34	6,695
	2004	4.72	4.82	8.00	0.28	1.24	1,672
	2005	5.29	5.40	10.12	0.43	1.45	1,680
	2006	5.29	5.40	10.10	0.43	1.45	1,680
	2007	4.66	4.83	8.63	0.31	1.30	1,686
<i>TOP30</i> (%)	ALL	50.84	50.60	91.38	0.73	15.74	6,604
	2004	51.16	51.11	91.20	4.96	15.64	1,633
	2005	51.40	51.08	91.38	3.89	15.71	1,649
	2006	50.46	50.10	90.19	2.59	15.66	1,658
	2007	50.36	50.05	88.51	0.73	15.92	1,664
<i>QRATIO</i>	ALL	1.25	1.05	18.91	-9.33	0.88	6,685
	2004	1.22	1.05	12.89	0.22	0.77	1,657
	2005	1.48	1.22	18.91	-9.33	1.14	1,667
	2006	1.29	1.10	11.90	-7.50	0.87	1,676
	2007	1.01	0.89	9.26	0.24	0.59	1,685
<i>Crosshld</i> (%)	ALL	9.22	7.34	55.22	0.00	8.55	6,695
	2004	9.14	7.40	49.64	0.00	8.32	1,657
	2005	9.12	7.35	53.02	0.00	8.42	1,672
	2006	9.25	7.32	55.22	0.00	8.63	1,680
	2007	9.36	7.30	53.11	0.00	8.83	1,686
<i>Foreign</i> (%)	ALL	12.80	9.48	78.27	0.00	11.91	6,695
	2004	12.63	9.17	73.65	0.05	11.81	1,657
	2005	12.55	9.22	77.63	0.05	11.68	1,672
	2006	13.18	9.97	77.45	0.00	12.07	1,680
	2007	12.84	9.42	78.27	0.00	12.07	1,686
<i>Indiv</i> (%)	ALL	32.10	29.46	95.98	1.81	17.06	6,695
	2004	32.90	30.57	93.51	2.90	16.76	1,657
	2005	31.48	28.58	95.40	2.02	16.74	1,672
	2006	31.71	29.17	95.98	1.81	17.08	1,680
	2007	32.32	29.57	95.37	2.85	17.60	1,686

Note: Some of the minimum values of Tobin's q (*QRatio*) are negative due to the negative equity capital of the distressed firm.

Table 3 Correlations.

Panel A. Correlation between horizon, size, and turnover.

This table shows the correlation between *HORIZON*, *TOP30*, *Log market value*, and *Turnover*. Here, *HORIZON* is a weighted average of the investment horizons of each firm (equation(2)), and *TOP30* is the sum of the top 30 shareholders' holdings divided by the total number of shares outstanding and *Market value* is the number of shares outstanding multiplied by the stock price at the end of the fiscal year. *Turnover* is calculated as the daily trading volume divided by the number of shares outstanding. The correlation coefficients are estimated annually and averaged over the years 2004 to 2007.

	<i>HORIZON</i>	<i>TOP30</i>	<i>Log Size</i>	<i>Turnover</i>
<i>HORIZON</i>	1	0.4631	0.2917	-0.1108
<i>TOP30</i>	0.4631	1	0.0130	-0.1347
<i>Log Size</i>	0.2917	0.0130	1	0.0350
<i>Turnover</i>	-0.1108	-0.1347	0.0350	1.0000

Panel B. Correlation between *HORIZON* and investor category's holding ratios.

This table shows the correlation between the *HORIZON* and the holding ratios of investor categories such as foreign, cross-holding, and individual investors. The correlation coefficients are estimated annually and averaged over the years 2004 to 2007.

	<i>HORIZON</i>	<i>Foreign</i>	<i>Crosshld</i>	<i>Indiv</i>
<i>HORIZON</i>	1	-0.0298	0.3493	-0.7557
<i>Foreign</i>	-0.0298	1	-0.1221	-0.4885
<i>Crosshld</i>	0.3493	-0.1221	1	-0.1224
<i>Indiv</i>	-0.7557	-0.4885	-0.1224	1

Table 4 Panel least squares analysis of illiquidity.

This table shows the relation of illiquidity with investment horizon and the ownership concentration ratio for stocks in the First and Second Sections of the TSE over the period 2004 to 2007. The results are from the panel least square regressions. The fixed period effect model is selected as a result of the Hausman test. In order to avoid endogeneity problem, we use the two-stage estimation with instrumental variables to obtain a consistent estimate. Our instrumental variables are the lagged explanatory variables. $RILLIQ_{j,t}$ is the relative ILLIQ for firm j defined by equation (3), $\log_Size_{j,t}$ is the natural logarithm of firm j 's market value at the end of March, $HORIZON_{j,t}$ is the weighted average of the holding period for firm j 's stockholders in year t , $TOP30$ is the sum of the top 30 shareholders' holdings divided by the total number of shares outstanding and $Crosshld_{j,t}$ and $Foreign_{j,t}$ are the percentages of ownership of firm j 's investor categories at the end of fiscal year t . $a, b, c, d,$ and e are parameters to be estimated and γ is an error term. Heteroskedasticity is corrected by White diagonal standard errors and covariance corrections.

<i>Dependent Variable: RILLIQ</i>						
	Model1		Model2		Model3	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
<i>HORIZON</i>	0.1724	15.94	0.2751	17.60	0.2656	13.60
<i>TOP30</i>	0.7418	8.22				
<i>INSIDER</i>			2.2483	12.97	0.0212	11.92
<i>NON-INSIDER</i>			0.3785	4.03		
<i>NON-INSIDER*Foreign</i>					-0.0046	-1.52
<i>NON-INSIDER*Indiv</i>					0.0051	1.42
<i>NON-INSIDER*CrossHld</i>					0.0159	5.38
<i>Log Size</i>	-1.0736	-146.30	-1.0697	-143.50	-1.0416	-87.60
<i>Intercept</i>	2.0914	24.21	1.6658	16.87	1.6756	10.40
Adjusted R-squared	0.817		0.823		0.823	
Observations	4,899		4,899		4,899	

Table 5 Panel least squares analysis of Bid-Ask Spread

This table shows the relation of bid-ask spread with investment horizon and the ownership concentration ratio for stocks in the First and Second Sections of the TSE over the period 2004 to 2007. The results are from the panel least square regressions. The fixed period effect model is selected as a result of the Hausman test. In order to avoid endogeneity problem, we use the two-stage estimation with instrumental variables to obtain a consistent estimate. Our instrumental variables are the lagged explanatory variables. $SPRD\%_{i,t}$ is time-weighted quoted bid-ask spread divided by midprice, $\log_Size_{j,t}$, is the natural logarithm of firm j 's market value at the end of March, $HORIZON_{j,t}$ is the weighted average of the holding period for firm j 's stockholders in year t , $TOP30$ is the sum of the top 30 shareholders' holdings divided by the total number of shares outstanding, and $CrossHld_{j,t}$, $Foreign_{j,t}$ and $Indiv_{j,t}$ are the percentages of ownership of firm j 's investor categories at the end of fiscal year t . $a, b, c, d,$ and e are parameters to be estimated and γ is an error term. Heteroskedasticity is corrected by White diagonal standard errors and covariance corrections.

<i>Dependent Variable: SPRD%</i>						
	Model1		Model2		Model3	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
<i>HORIZON</i>	-0.0073	-1.17	0.0058	0.58	0.0045	0.39
<i>TOP30</i>	0.2463	6.00				
<i>INSIDER</i>			0.4365	3.99	0.5741	4.65
<i>NON-INSIDER</i>			0.2079	4.68		
<i>NON-INSIDER*Foreign</i>					0.0129	8.44
<i>NON-INSIDER*Indiv</i>					-0.0087	-4.99
<i>NON-INSIDER*CrossHld</i>					0.0048	2.59
<i>Log Trade</i>	-0.3588	-38.25	-0.3573	-39.79	-0.4031	-33.96
<i>TIC/VWAP</i>	1.0237	27.99	1.0376	26.02	1.0870	23.52
<i>Intercept</i>	4.0277	42.77	3.9523	45.89	4.5395	35.86
Adjusted R-squared	0.656		0.657		0.666	
Observations	4,899		4,899		4,899	

Table 6 Panel least squares analyses of Tobin's q.

This table shows the relation between firm value and investment horizon, ownership concentration, and ownership ratios for foreigners, individuals, and cross-holding for First- and Second-Section stocks of the TSE over the period 2004 to 2007. To avoid any endogeneity problems, we employ lagged variables as instrumental variables. The fixed period effect model is selected as a result of the Hausman test. In order to avoid endogeneity problem, we use the two-stage estimation with instrumental variables to obtain a consistent estimate. Our instrumental variables are the lagged explanatory variables. Here, *QRATIO* is Tobin's $q = (\text{aggregate market value} + \text{interest-bearing debt}) / (\text{total capital} + \text{interest-bearing debt})$, where the aggregate market value is adjusted for the cross-holding proportion of ownership. *Foreign*, *Indiv* and *Crosshld* are the same as in equation (7). *Debtasset* is calculated as total debt divided by total assets, and *Growth* is calculated as the one-year growth rate of the ordinary profit which is equivalent to income before extraordinary items and taxes. Heteroskedasticity is corrected by White diagonal standard errors and covariance corrections.

<i>Dependent Variable: QRATIO</i>								
	Model1		Model2		Model3		Model4	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
<i>HORIZON</i>	-0.2004	-7.09	-0.2130	-5.09	-0.0544	-1.53	-0.0839	-2.20
<i>TOP30</i>	0.0118	6.51						
<i>INSIDER</i>			0.0100	2.69	0.0080	2.20	0.0068	1.73
<i>NON-INSIDER</i>			0.0122	5.73				
<i>NON-INSIDER*Foreign</i>					0.0002	3.03	0.0001	2.56
<i>NON-INSIDER*Indiv</i>					0.0001	1.43		
<i>NON-INSIDER*CrossHld</i>					-0.0003	-6.39	-0.0003	-6.27
<i>Debt/Asset</i>	-0.0044	-2.74	-0.0044	-2.73	-0.0027	-1.81	-0.0024	-1.72
<i>Growth</i>	-1.2369	-2.28	-1.2390	-2.28	-1.1628	-2.26	-1.1564	-2.26
<i>Log Size</i>	0.1990	12.83	0.1986	12.96	0.1397	5.19	0.1186	5.97
<i>Intercept</i>	1.0916	5.56	1.1441	4.58	0.9661	3.17	1.4066	5.32
F stats	134.6		118.2		100.5		111.5	
Prob(F-statistic)	0.000		0.000		0.000		0.000	
Observations	4,892		4,892		4,892		4,892	