

# Managerial Entrenchment and Antitakeover Provisions in Japan

**Kaoru Hosono \*, Miho Takizawa,  
and Kotaro Tsuru**

We analyze the characteristics of the firms that introduce anti-takeover provisions using a Japanese firm-level dataset. We find that the likelihood of the adoption of antitakeover provisions is correlated positively with firm age and the proportion of cross-shareholding and negatively with the share of managerial ownership. The adoption of antitakeover measures is suggested to be motivated by self-protection on the part of managers and is influenced by the conflicts of interest between managers and shareholders. We also find that the operating performance or the stock market valuation does not affect the likelihood of the adoption of antitakeover provisions.

*Keywords:* Antitakeover provisions, Entrenchment, Japan

*JEL Classification:* G34

\* Corresponding Author, Visiting Fellow, Gakushuin University, Department of Economics, 1-5-1 Mejiro, Toshima-ku, Tokyo 171-8588, Japan, (Tel) +81-3-3986-0221, (Fax) +81-3-5992-1005, (E-mail) kaoru.hosono@gakushuin.ac.jp; Associate Professor, Toyo University, Department of Economics, 5-28-20 Hakusan, Bunkyo-ku, Tokyo 112-8606, Japan, (Tel) +81-3-3945-7423, (Fax) +81-3-3945-7667, (E-mail) takizawa@toyo.jp; Senior fellow, Research Institute of Economy, Trade and Industry, 11th Floor, Annex, Ministry of Economy, Trade, and Industry (METI), 1-3-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8901, Japan, (Tel) +81-3-3501-8289, (Fax) +81-3501-8416, (E-mail) tsuru-kotaro@rieti.go.jp, respectively. The authors are grateful to the Editor, Referees, and the participants at the seminar of RIETI for their helpful comments and suggestions. K. Hosono and K. Tsuru acknowledge the support of RIETI and the Grant-in-Aid for Scientific Research (C) No. 20530228, Japan Society for the Promotion of Science. K. Hosono also acknowledges the support of the Grant-in-Aid for Scientific Research (S) No. 22223004, Japan Society for the Promotion of Science. Views expressed in this paper are those of the authors and do not necessarily reflect those of the institutions to which the authors belong.

[Seoul Journal of Economics 2011, Vol. 24 No. 3]

## I. Introduction

Why do some firms adopt takeover defense measures and others do not? The question of what motivates the adoption of antitakeover provisions has attracted many researchers interested in corporate governance as well as policymakers. If firms are more likely to adopt antitakeover provisions when their performance deteriorates or when managers behave in their own interest, then antitakeover provisions can prevent a takeover that will discipline managers and increase firm values by removing them (*e.g.*, Manne 1965). However, if firms tend to adopt antitakeover provisions when they are in danger of a takeover that breaches the trust among the stakeholders including managers and workers, then antitakeover provisions can protect firms from a value-destroying takeover (*e.g.*, Shleifer and Summers 1988).

We examine whether managers adopt antitakeover provisions to aim for managerial entrenchment, that is, to prevent the loss of their own positions after takeovers. To this end, the Japanese experience serves as a quasi-natural experiment. In May 2005, the Japanese government released guidelines for antitakeover provisions, which endorse the Delaware takeover jurisprudence developed in the 1980s in the US. Since then, many firms have adopted poison pills, although no firms have previously adopted antitakeover provisions then. We consider the sudden emergence of antitakeover provisions in Japan a good opportunity to study the relationship between *ex ante* firm characteristics and the decision on whether to adopt antitakeover provisions. Without such an opportunity, it would be difficult to distinguish the causal relationship between whether firm performance affects the decision to adopt antitakeover provisions and whether the adoption of antitakeover provisions affects firm performance. Distinguishing the causal relationship is one of the most important contributions we make to the literature of antitakeover provisions.

Studying Japanese firms has one additional advantage. In the US, managers are widely assumed to have the capability to adopt a poison pill at anytime without shareholder approval.<sup>1</sup> Conversely, the Japanese guidelines previously mentioned strongly recommend that defensive measures be adopted with shareholder approval at a general meeting of

<sup>1</sup> Latent poison pills seem to be valid according to a precedent set by a Delaware Supreme Court ruling in 1995 (Coates 2000; Danielson and Karpoff 2006).

shareholders.<sup>2</sup> Following this guideline, most Japanese firms adopt defensive measures along with their shareholders' approval at general meetings. This process enables a clear distinction between adopting and non-adopting firms, making our analysis of the motives for the adoption of antitakeover provisions meaningful. Notably, shareholders' approval fails to prohibit completely the managerial entrenchment in Japan. Although the Pension Fund Association, which engages in the management of the assets of pension funds, often votes against the antitakeover provisions according to its guideline, other large shareholders, such as banks and firms belonging to the same business group and cross-held shares, favor the incumbent managers and vote for the antitakeover provisions.

Using Japanese firm data from 2005 to 2008, we investigate the relationship between *ex ante* firm characteristics and the decision on adopting antitakeover provisions. Although some previous studies applied event study methodologies to US firms to investigate how the stock price responds to the announcement on the adoption of antitakeover provisions, event studies are difficult to apply to Japanese firms because Japanese firms often release multiple pieces of information simultaneously together with the antitakeover provisions.

Whereas the operating or market performance measures are found to be insignificantly related to the likelihood of adopting antitakeover measures, the proxies for managerial entrenchment, including the share of cross-shareholdings, are closely related to it. Our results suggest that although the shareholders' approval is effective to some extent in preventing poorly performing firms from adopting antitakeover provisions, the shareholders' approval is disabled by the cross-shareholdings. The positive effect of cross-shareholdings strongly suggests the managerial entrenchment motive to adopt antitakeover provisions.

A vast literature exists on the motives for and consequences of antitakeover provisions. One strand of the literature, to which this article belongs, studies the *ex ante* characteristics of firms that adopt provisions (Strong and Meyer 1990; Davis 1991; Mallette and Fowler 1992;

<sup>2</sup> The guidelines postulate that, to prevent the board of directors from abusing its discretion, (1) there must be a mechanism whereby shareholders can express their own will regarding the takeover defense measures at the annual general meeting of shareholders, (2) defensive measures should include provisions which establish objective criteria for determining the conditions under which the defensive measures would be terminated by the board of directors, or (3) importance should be placed on the judgment of independent outsiders.

Sundaramurthy 1996; Davis and Greve 1997; Danielson and Karpoff 1998). Another strand of the literature investigates the *ex post* effect of adopting antitakeover provisions on market-based performance. Most of these studies used the short-term event study methodology and obtained mixed results (DeAngelo and Rice 1983; Linn and McConnell 1983; Jarrell and Poulsen 1987; Malatesta and Walkling 1988; Ryngaert 1988; Strong and Meyer 1990; Bhagat and Jefferis 1991; Brickley *et al.* 1994).

Recently, Gompers *et al.* (2003) and Bebchuk *et al.* (2009) investigate the long-run market performance in terms of abnormal stock returns or Tobin's  $Q$ , finding a negative relation between antitakeover indexes, which count the number of antitakeover provisions and *ex post* market performance. However, their findings do not necessarily imply that antitakeover measures impair market performance. Lehn *et al.* (2007) suggest that firms with low market valuation are more likely to adopt antitakeover provisions and not *vice versa*. Straska and Waller (2010) document that Tobin's  $Q$  actually increases in antitakeover provisions for firms with low bargaining power and high potential agency costs. Apart from market-based performance, some papers study operating performance. Danielson and Karpoff (2006), among others, examine the long-run operating performance and find that operating performance modestly improves during the five-year period after the poison pill adoption.

The current article contributes to the literature examining the *ex ante* characteristics of firms that adopt antitakeover provisions. The unique Japanese regulatory environment alleviates the endogeneity issue that has potentially plagued previous studies as mentioned previously. Considering that the majority of earlier studies focused on US firms, this article also adds useful information on the motives for adopting antitakeover provisions among firms in a country where corporate laws and governance are different from those in the US.<sup>3</sup> However, we fail to obtain sufficiently long-run data to investigate the *ex post* long-run performance because only several years have passed since Japanese firms have begun to adopt antitakeover provisions.

The remainder of this article is organized as follows. In Section 2, we briefly describe an overview of hostile takeovers and antitakeover provisions in Japan. In Section 3, we present some hypotheses on the motives for adopting antitakeover provisions based on previous studies. In

<sup>3</sup>Evidence outside the US is scarce. Rose (2005) examines the influence of takeover defenses on long-term investments, excess liquidity, and capital structure using Danish firm data.

Section 4, we describe our dataset and estimation methodology. In Section 5, we present our baseline results. In Section 6, we discuss robustness. Section 7 concludes with some policy implications.

## **II. Overview of Hostile Takeovers and Antitakeover Provisions in Japan**

In Japan, hostile takeovers were almost nonexistent until the early 2000s. Without markets for corporate control, main banks played a leading role in Japanese corporate governance from the 1960s to the 1980s (Tsuru 2000). Although there were some hostile bids by domestic and foreign investors towards the end of the 1980s (“the bubble period”), they were unsuccessful. Traditionally, cross-shareholdings within a business group prevent hostile takeovers. As cross-shareholdings were gradually dissolved in the 1990s when stock prices stagnated and mark-to-market accounting was partially introduced, hostile takeover bids gradually increased. However, hostile raiders were still foreign-affiliated funds at the beginning of the 2000s. Hostile takeovers were often regarded as creating a poor reputation or even as socially unacceptable. Since then, some domestic firms have begun to attempt hostile takeover bids against other domestic firms. Faced with the increasing threat of hostile takeovers by domestic firms, Japanese firms have sought defensive measures. Milhaupt (2005) describes the changing situation in the early 2000s in Japan as follows:<sup>4</sup>

No conventional wisdom seemed more accurate and enduring than the disdain for U.S.-style hostile takeovers in Japan—the land of stable, friendly shareholders, expansive views of corporate purpose that go well beyond shareholder wealth maximization, and abiding social concern for the preservation of harmonious relationships. But things change, and predictions are risky. For the past year, Japan has been riveted by a series of contests for corporate control, featuring sharp-elbowed tactical maneuvering, strategic litigation, and creative use of corporate law to craft defensive measures (p. 2172).

In May 2005, the Japanese government released the guidelines for antitakeover provisions, which endorse the Delaware takeover jurispru-

<sup>4</sup> Schaede (2006) also describes the sudden emergence of the market for corporate control in the early 2000s in Japan.

**TABLE 1**  
NUMBER OF FIRMS THAT ADOPTED ANTITAKEOVER PROVISIONS

	Number of firms
FY2005	47 (1.2%)
FY2006	149 (4.0%)
FY2007	237 (6.1%)
FY2008	132 (3.5%)
Total	565 (14.8%)

Sources: Commercial Law Center Inc. and Recof.

Note: The percentages of firms that adopted antitakeover provisions among all listed firms are shown in parentheses.

dence developed in the 1980s in the US.<sup>5</sup> Since then, many firms have adopted antitakeover provisions consisting of poison pills. Table 1 shows that firms adopting antitakeover provisions numbered zero in FY2004, 47 in FY2005, and 132 in FY2008.<sup>6</sup> By the end of 2008, one-seventh of the firms listed in the Tokyo Stock Exchange had adopted antitakeover provisions. Among the various types of antitakeover provisions, the prior warning type is extremely popular. In this type of provision, an existing rule must be followed by bidders pursuing takeovers, and the breach of the rule leads to the implementation of defensive measures, such as the issuance of new stock reservation rights.

### III. Hypotheses

What are the motives for adopting antitakeover provisions? This article examines whether managers adopt them to aim for managerial entrenchment, that is, to protect themselves from the threat of losing their positions through takeovers. We classify the motives for entrenchment into two categories: the various measures of firm performance likely to depend on managers' efforts or quality and the firm characteristics that facili-

<sup>5</sup>The guidelines are entitled, "Guidelines for Takeover Defense Measures for the Joint Interests of Firm Value and Shareholders." The guidelines stress three principles of takeover defense measures: (i) protection and enhancement of corporate value and the interests of shareholders as a whole, (ii) placement of emphasis on prior disclosure and shareholders' will, and (iii) assurance of the necessity and reasonableness of defense measures and prevention of excessive defense measures.

<sup>6</sup>The fiscal year begins on April 1 and ends on the final day of the following March.

tate managerial entrenchment. In addition to these two entrenchment motives, we consider the probability of being a target of a takeover beyond the managers' control, at least in the short run.

#### *A. Poor Performance*

Hostile takeovers can function as a disciplinary device for management by replacing managers of poorly performing firms, thereby improving efficiency and shareholder values. Poorly performing firms are likely to be targeted for takeover because the acquirers can improve firm performance to a significant extent by replacing the managers (Manne 1965). The worse the performance of a firm in terms of operating performance or stock market valuation, the more likely that managers adopt anti-takeover provisions to aim for entrenchment. Furthermore, firms with abundant liquid assets may adopt such provisions because they are not required to return such assets to the stockholders even if they cannot find growth opportunities. Hence, firms with abundant liquid assets tend to spend them on inefficient projects for the sake of the managers' private benefit (Jensen 1986). Such firms are likely to be targets of hostile takeovers and consequently adopt antitakeover provisions.

We summarize the relationship between firm performance and the adoption of antitakeover provisions in the following three hypotheses, along with some relevant empirical evidence.

#### **Hypothesis 1-1:** Poor operating performance

If a firm's operating performance is relatively poor, the firm is more likely to adopt antitakeover provisions.

Malatesta and Walkling (1988) show that, during the mid-1980s in the US, firms that adopted poison pills had seen significantly lower profitability in a previous year than firms that failed to adopt poison pills. Conversely, Mallette and Fowler (1992) find no significant relationship between the return on equity and the adoption of poison pills in 1988 in the US.

#### **Hypothesis 1-2:** Poor stock market performance

If stock market valuation is relatively low, the firm is more likely to adopt antitakeover provisions.

Strong and Meyer (1990) examine US firms and find that firms that

adopted poison pills had lower price-to-earnings ratios. Davis and Stout (1992) also find that firms with lower market-to-book ratios are more likely to be a target of a takeover. Conversely, Davis (1991), Sundaramurthy (1996), and Davis and Greve (1997) find that the market-to-book ratio is insignificantly related to the adoption of poison pills.

**Hypothesis 1-3:** Liquidity

Firms with more liquid assets are more likely to adopt antitakeover provisions.

Using a sample of Japanese firms, Xu (2007) finds that firms with high liquid asset ratios and low Tobin's  $Q$  are likely to be targets of hostile takeovers by some activist funds.

*B. Entrenchment*

Several firm characteristics can be proxies for how solidly managers entrench themselves from outside shareholders: firm age, CEO's tenure, board composition, managerial stock ownership, and cross-shareholding, among others.

a) Firm Age

Old firms tend to have inflexible organization and face difficulty in adapting to the changes in the environment. Furthermore, they tend to oppose a drastic change of management and adopt antitakeover provisions to protect the status quo.

**Hypothesis 2-1:** Firm age

Old firms are more likely to adopt antitakeover provisions.

Davis and Stout (1992) show that, in the US, older firms are more likely to be a target of takeovers.

b) CEO's Tenure

When a CEO holds his/her position for an extended period of time, he/she can exert a stronger influence on the board, including the appointment of directors, and thus can entrench himself/herself from outsiders. He/she is likely to adopt poison pills to strengthen further his/her grip on his/her firm.



**Hypothesis 2-2:** CEO's tenure

Firms at which the CEO has a long tenure are more likely to adopt antitakeover provisions.

Malette and Fowler (1992) study the companies included in Standard and Poor's 500 Index and find a positive, although statistically insignificant, correlation between the CEOs' tenure and the likelihood of the adoption of poison pills.

c) Board Composition

Outside directors are more likely to be objective and independent of management than insiders (Fama 1980; Fama and Jensen 1983). Outside directors are expected to monitor managers for the sake of their shareholders. Hence, firms with a board composed of a high proportion of insiders tend to adopt antitakeover provisions because such board is likely to agree with the current managers (Davis 1991; Mallette and Fowler 1992; Sundaramurthy 1996; Danielson and Karpoff 1998).

**Hypothesis 2-3:** Board composition

Firms with a board composed of a high proportion of insiders and a smaller proportion of independent outsiders are more likely to adopt antitakeover provisions.

Empirical evidence from US firms is mixed. Mallette and Fowler (1992) and Sundaramurthy (1996) find that the correlation between the share of outside directors and the likelihood of adopting poison pills is positive, although insignificant, for US firms. Conversely, Danielson and Karpoff (1998) find that the lower the proportion of inside directors, the more likely the firm is to adopt poison pills; they find this relationship to be significant. Davis (1991) and Davis and Greve (1997) find results similar to those of Danielson and Karpoff (1998), although the results are insignificant.

d) Managerial Stock Ownership and Cross-Shareholdings

Ownership has a great effect on the extent to which managers' interests are aligned with those of their stockholders. A larger share of managerial stock ownership suggests a greater degree of alignment between the two. A lower share of managerial ownership may result in conflicts of interests and managerial entrenchment and hence the adoption of antitakeover provisions (Malatesta and Walking 1988; Davis 1991; Mallette

and Fowler 1992). In contrast, a larger share of managerial ownership can empower managers and result in entrenchment (Fama and Jensen 1983; Demsetz and Lehn 1985). These two opposing arguments concerning managerial ownership may be settled by examining the non-linear effects on the degree of firm value. Morck *et al.* (1988) find an inverse U-curve relationship between managerial ownership and firm value.

In addition to managerial ownership, cross-shareholdings in a business group have been used as a takeover defense measure in Japan since capital accounts were liberalized in 1964. A high share of cross-shareholdings suggests that managerial entrenchment is solid and can indicate a high likelihood of adopting antitakeover provisions.

**Hypothesis 2-4:** Managerial ownership as the alignment of manager/shareholder interests

Firms with a lower share of managerial ownership are more likely to adopt antitakeover provisions.

**Hypothesis 2-5:** Managerial ownership as entrenchment

Firms with a higher share of managerial ownership are more likely to adopt antitakeover provisions.

**Hypothesis 2-6:** Cross-shareholding

Firms with a higher share of cross-shareholding are more likely to adopt antitakeover provisions.

Many empirical studies on US firms find that a low share of managerial ownership results in a high likelihood of adopting poison pills (Malatesta and Walkling 1988; Strong and Meyer 1990; Davis 1991; Mallete and Fowler 1992; Davis and Greve 1997; Danielson and Karpoff 1998). In contrast, Sundaramurthy (1996) finds a U-curve relationship between the share of managerial ownership and the likelihood of adopting poison pills.

### *C. Other Factors Affecting the Probability of Being a Target of a Hostile Takeover*

Other factors affect the probability that a firm may become a target of a hostile takeover. Considering that these factors are beyond the managers' control at least in the short term, they increase the likelihood of

adopting antitakeover provisions either for managerial entrenchment or for the prevention of a breach of trust. The factors we consider are firm size, stock liquidity and ownership, leverage, and adoption of antitakeover provisions by rivals, among others.

a) Firm Size

Acquirers, when financially constrained, can acquire a firm more easily when the target firm is small in terms of market value (Comment and Schwert 1995; Davis and Greve 1997). To protect themselves, small firms tend to adopt antitakeover provisions.

**Hypothesis 3-1:** Firm size

Firms with a smaller market value are more likely to adopt antitakeover provisions.

Davis (1991) and Davis and Greve (1997) find that, among US firms, firms with smaller market values are more likely to adopt poison pills. Conversely, Comment and Schwert (1995) find that firms with a larger asset size tend to adopt poison pills in the US.

b) Stock Liquidity and Ownership

If stocks are held more by foreigners, individuals, or other dispersed investors and less by stable stockholders, including business partners and financial institutions, stocks become more liquid; hence, hostile takeovers are more likely to be successful (Danielson and Karpoff 1998). Xu (2007) finds that in Japan, when the share of dominant stable shareholders is low, firms are more likely to be targets of hostile takeovers.

The share of institutional stockholders potentially exerts two competing effects. If institutional investors, including foreign investors, have a short horizon and easily sell their shares in response to tender offers, firms whose shares are held by institutional investors are likely to adopt antitakeover provisions (Davis and Stout 1992; Mallette and Fowler 1992). However, if institutional investors behave themselves in the interest of general stockholders, a large share of institutional investors may find difficulty in adopting antitakeover provisions (Sundaramurthy 1996).

**Hypothesis 3-2:**

(i) Dominant shareholders

A low share of ownership by dominant shareholders and a high share of small shareholders result in a high likelihood of adopting

antitakeover provisions.

(ii) Institutional shareholders (with short time horizons)

A high share of ownership by institutional shareholders results in a high likelihood of adopting antitakeover provisions.

(iii) Institutional shareholders (as a monitor)

A high share of institutional shareholders results in a low likelihood of adopting takeover provisions.

Davis (1991) and Davis and Greve (1997) find that in the US, a low concentration of ownership results in a high likelihood of adopting poison pills. As for the effects of institutional investors, many researchers find a positive correlation between the share of institutional shareholders and the likelihood of adopting poison pills for US firms (Strong and Meyer 1990; Davis 1991; Mallette and Fowler 1992; Davis and Greve 1997; Danielson and Karpoff 1998), although Sundaramurthy (1996) finds no significant correlation between them.

c) Leverage

Hostile takeovers are often conducted to redistribute free cash flow to stockholders by raising the leverage (Jensen 1989). Low-levered firms are more likely to be targets; hence, they adopt antitakeover provisions.

**Hypothesis 3-3:** Firms with lower debt-to-asset ratios are more likely to adopt antitakeover provisions.

Davis and Stout (1992) find that in the US, firms with low debt-to-asset ratios are more likely to be targets. Xu (2007) finds a similar tendency of Japanese firms.

d) Adoption of Antitakeover Provisions by Rival Firms

As more firms in the same industry adopt antitakeover provisions, firms without antitakeover provisions are more likely to become targets (Davis 1991). The adoption of antitakeover provisions may not result in a deterioration of the stock market if many firms have already adopted them, mitigating a CEO's hesitation about it.

**Hypothesis 3-4:** The adoption of antitakeover provisions by a high proportion of firms in a given industry results in a higher likelihood of adopting antitakeover provisions by other firms in the industry.

Davis (1991) finds no significant correlation for US firms between the proportion of firms in a given industry that adopted antitakeover provisions and the likelihood of each firm in adopting them.

#### IV. Data and Methodology

Our data source for financial statements and measures of corporate governance is the NEEDS-Corporate Governance Evaluation System, abbreviated as NEEDS-CGES, published by the Nikkei Digital Media. NEEDS-CGES is a dataset containing various measures of corporate governance, including ownership structure and board members.

Sample firms are firms listed on stock exchanges in Japan,<sup>7</sup> except for firms determined to be delisted, real estate investment trusts, exchange-traded funds, preferred stocks, the Bank of Japan, firms listed in the foreign country section of the Tokyo Stock Exchange, and venture funds listed on the Osaka Stock Exchange. The numbers of sample firms are 3761, 3809, 3937, and 3883 in March 2005, March 2006, March 2007, and March 2008, respectively.

We use the financial statements of the accounting year prior to the decision to adopt antitakeover provisions. Most Japanese firms use an accounting year that begins in April and ends in March. Therefore, when we examine a decision to adopt antitakeover provisions that occur between April 2005 and March 2006, we use the financial statements for the year ending in March 2005. If firms adopt a different accounting year, we use the financial statements for the year prior to the decision to adopt antitakeover provisions.

Our data sources for the adoption of antitakeover provisions are a member service provided by the Commercial Law Center Inc. (CLC or *Shoji Homu Kenkyu Kai* in Japanese) and the firms' press releases. Data from CLC include the names of firms adopting antitakeover provisions, the dates of their adoptions, and the contents of the provisions. Another possible data source for antitakeover provisions is the *Monthly MARR* published by RECOF. We have confirmed that our sample is more comprehensive than the *Monthly MARR* in that all of the firms contained in the *Monthly MARR*, which adopted antitakeover provisions, are included among our sample firms.

We estimate the likelihood of adopting antitakeover provisions using

<sup>7</sup> The Tokyo, Osaka, Nagoya, Sapporo, and Fukuoka exchanges and JASDAQ, Tokyo Mothers, and Osaka Hercules exchanges.

the following probit model for each accounting year, in which the dependent variable, *Poison*, takes the value of unity if the firm adopted antitakeover provisions and zero otherwise.

$$\begin{aligned}
 \text{Poison}_i^* &= \text{Const.} + x'_{i,A}\beta_A + x'_{i,B}\beta_B + x'_{i,C}\beta_C + e_i & (1) \\
 \text{Poison}_i &= 1 & \text{Poison}_i^* > 0 \\
 \text{Poison}_i &= 0 & \text{Poison}_i^* \leq 0
 \end{aligned}$$

The dependent variable, *Poison*<sup>\*</sup>, is a latent variable affecting the decision of firms *i* on the adoption of antitakeover provisions. Three vectors of explanatory variables, *A*, *B*, and *C*, represent relevant measures of the hypotheses described in the previous section. *Const.* is a constant, and  $\beta$ s are coefficient vectors on each vector of explanatory variables. *e* is a random error. We briefly describe the explanatory variables. The Appendix contains the details of the variables.

The first set of explanatory variables represents the measures of firm performance: returns on assets (ROA), Tobin's *Q*, price-to-book ratio (PBR), and liquid asset ratio. Hypotheses 1-1 to 1-3 suggest that ROA, Tobin's *Q*, and PBR take negative coefficients and that the liquid asset ratio takes a positive coefficient.

The second set of explanatory variables represents measures of managerial entrenchment: firm age, CEO's tenure, proportion of outside directors, share of managerial ownership, and share of cross-holdings. Hypotheses 2-1 to 2-6 suggest that the firm age, CEO's tenure, and share of cross-holdings take positive coefficients, whereas the share of outside directors takes negative coefficients. The share of managerial ownership takes either a positive or negative coefficient.

The third set of explanatory variables consists of control variables affecting the likelihood of becoming a target of hostile takeovers: the logarithm of market-valued equity, the share of ownership by dominant shareholders, the share of ownership by institutional investors, the share of minority shareholders, the debt-to-asset ratio, and the proportion of firms that adopted antitakeover provisions in the industry of the firm. Hypotheses 3-1 to 3-4 suggest that the logarithm of market-valued equity, the share of dominant shareholders, and the debt-to-asset ratio take negative coefficients, whereas the share of institutional investors, the share of minority shareholders, and the proportion of the firms that adopted antitakeover provisions in the industry take positive coefficients.

**TABLE 2**  
DESCRIPTIVE STATISTICS

Difference of means test FY2005					
	Firms adopted antitakeover provisions (A)	Firms not adopted antitakeover provisions (B)	Mean (A)	Mean (B)	Difference of means (A - B)
ROA	47	3698	0.064	0.066	-0.003
Tobin's Q	47	3639	1.476	1.490	-0.014
PBR	47	3626	1.937	2.243	-0.305
Liquid asset ratio	47	3558	0.299	0.242	0.057 **
Firm age	47	3714	52.468	45.609	6.860 *
CEO's tenure	47	3714	3.936	6.987	-3.051 **
Proportion of outside directors	47	3714	0.094	0.070	0.025
Share of managerial ownership	47	3626	0.046	0.094	-0.047 **
Share of cross-holdings	47	3618	0.092	0.074	0.018
Logarithm of market-value equity	47	3601	10.895	9.798	1.097 ***
Share of dominant shareholders	47	3714	0.044	0.146	-0.103 ***
Share of institutional investors	47	3594	0.241	0.133	0.108 ***
Share of minority shareholders	46	3655	0.225	0.227	-0.002
Debt-to-asset ratio	47	3706	0.498	0.547	-0.049
Difference of medians test FY2005					
	Median (A)	Median (B)	Difference of medians (A - B)		
ROA	0.045	0.048	-0.003		
Tobin's Q	1.346	1.256	0.090		
PBR	1.113	1.074	0.039		
Liquid asset ratio	0.264	0.204	0.060		
Firm age	55.000	49.000	6.000 **		
CEO's tenure	2.000	4.000	-2.000		
Proportion of outside directors	0.000	0.000	0.000		
Share of managerial ownership	0.014	0.022	-0.008		
Share of cross-holdings	0.092	0.050	0.042 ***		
Logarithm of market-value equity	10.702	9.579	1.123 ***		
Share of dominant shareholders	0.000	0.000	0.000 ***		
Share of institutional investors	0.196	0.080	0.116 ***		
Share of minority shareholders	0.201	0.215	-0.015		
Debt-to-asset ratio	0.500	0.554	-0.054		

(Table 2 Continued)

**TABLE 2**  
(CONTINUED)

Difference of means test FY2006					
	Firms adopted antitakeover provisions (A)	Firms not adopted antitakeover provisions (B)	Mean (A)	Mean (B)	Difference of means (A - B)
ROA	149	3643	0.073	0.070	0.002
Tobin's Q	149	3581	1.468	1.741	-0.273
PBR	149	3576	2.020	2.675	-0.656
Liquid asset ratio	148	3496	0.265	0.258	0.007
Firm age	149	3636	61.101	46.086	15.015 ***
CEO's tenure	149	3660	5.060	7.035	-1.975 ***
Proportion of outside directors	149	3660	0.091	0.081	0.010
Share of managerial ownership	149	3555	0.026	0.097	-0.071 ***
Share of cross-holdings	147	3544	0.108	0.063	0.045 ***
Logarithm of market-value equity	147	3428	4.587	4.513	0.074
Share of dominant shareholders	149	3660	0.030	0.151	-0.120 ***
Share of institutional investors	149	3554	0.276	0.147	0.129 ***
Share of minority shareholders	149	3593	0.209	0.213	-0.004
Debt-to-asset ratio	149	3654	0.477	0.536	-0.059
Proportion of the firms that adopted antitakeover provisions in the industry	149	3660	0.015	0.012	0.003 ***

(Table 2 Continued)

Table 2 summarizes the descriptive sample statistics of the above variables. Table 2 also reports the test statistics on whether the means and medians are different for firms that adopted antitakeover provisions and those that did not.<sup>8</sup>

<sup>8</sup> For the equality of medians, we conducted a non-parametric two-sample test. This test checks the null hypothesis that the two samples are drawn from populations with the same median. The chi-squared test statistic is computed.



**TABLE 2**  
(CONTINUED)

Difference of medians test FY2006			
	Median (A)	Median (B)	Difference of medians (A - B)
ROA	0.064	0.053	0.010 **
Tobin's Q	1.759	1.571	0.188 **
PBR	1.307	1.199	0.108 **
Liquid asset ratio	0.243	0.218	0.025 **
Firm age	59.000	48.000	11.000 ***
CEO's tenure	3.000	4.000	-1.000 *
Proportion of outside directors	0.000	0.000	0.000 ***
Share of managerial ownership	0.005	0.024	-0.019 ***
Share of cross-holdings	0.099	0.039	0.061 ***
Logarithm of market-value equity	4.517	4.367	0.151 ***
Share of dominant shareholders	0.000	0.000	0.000 ***
Share of institutional investors	0.263	0.097	0.167 ***
Share of minority shareholders	0.182	0.197	-0.015
Debt-to-asset ratio	0.475	0.543	-0.068 **
Proportion of the firms that adopted antitakeover provisions in the industry	0.011	0.009	0.002 ***

*(Table 2 Continued)*

Several features are evident from Table 2. First, the differences in performance measures are unclear. For example, although the means of Tobin's Q are lower for firms adopting antitakeover provisions than those not adopting them in some years, the medians of ROA and Tobin's Q are higher for firms adopting such provisions. Second, firm age and the share of cross-shareholdings are significantly higher, and the share of outside directors and the share of managerial ownership are significantly lower for firms adopting antitakeover provisions than those not adopting them in terms of both means and medians, consistent with Hypotheses 2-1, 2-6, 2-3, and 2-4, respectively. Third, among the control variables, the share of ownership by dominant shareholders and the debt-to-asset ratio are significantly lower, and the share of ownership by institutional investors is significantly higher for firms adopting antitakeover provisions than for firms not adopting them, consistent with Hypotheses 3-2(i), 3-3 and 3-2(ii), respectively, although the significance levels of the debt-to-asset ratio vary depending on the year. Moreover, the proportion of firms

For the equality of means, we conducted a t-test.

**TABLE 2**  
(CONTINUED)

Difference of means test FY2007					
	Firms adopted antitakeover provisions (A)	Firms not adopted antitakeover provisions (B)	Mean (A)	Mean (B)	Difference of means (A - B)
ROA	234	3409	0.074	0.070	0.004
Tobin's Q	232	3349	1.479	1.759	-0.280 **
PBR	232	3344	2.098	2.716	-0.618 **
Liquid asset ratio	231	3274	0.260	0.259	0.001
Firm age	234	3426	58.274	46.317	11.957 ***
CEO's tenure	234	3426	7.650	8.062	-0.412
Proportion of outside directors	234	3426	0.072	0.082	-0.010
Share of managerial ownership	230	3328	0.045	0.102	-0.057 ***
Share of cross-holdings	232	3312	0.100	0.060	0.040 ***
Logarithm of market-value equity	232	3351	10.905	10.072	0.833 ***
Share of dominant shareholders	234	3426	0.036	0.158	-0.122 ***
Share of institutional investors	230	3324	0.230	0.141	0.089 ***
Share of minority shareholders	232	3361	0.209	0.213	-0.004
Debt-to-asset ratio	234	3420	0.510	0.537	-0.027 **
Proportion of the firms that adopted antitakeover provisions in the industry	234	3426	0.061	0.049	0.012 ***

(Table 2 Continued)

adopting antitakeover provisions in the industry is higher for firms adopting antitakeover provisions, consistent with Hypothesis 3-4.

## V. Baseline Results

Table 3 shows the baseline year-by-year estimation results. The first and second rows show the coefficient and marginal effects on the mean

**TABLE 2**  
(CONTINUED)

Difference of medians test FY2007			
	Median (A)	Median (B)	Difference of medians (A - B)
ROA	0.060	0.053	0.007 **
Tobin's Q	1.233	1.195	0.038 *
PBR	1.581	1.567	0.014
Liquid asset ratio	0.238	0.218	0.020 *
Firm age	58.000	48.000	10.000 ***
CEO's tenure	5.000	5.000	0.000
Proportion of outside directors	0.000	0.000	0.000
Share of managerial ownership	0.009	0.025	-0.016 ***
Share of cross-holdings	0.087	0.036	0.051 ***
Logarithm of market-value equity	10.794	9.833	0.961 ***
Share of dominant shareholders	0.000	0.000	0.000 ***
Share of institutional investors	0.215	0.091	0.124 ***
Share of minority shareholders	0.198	0.197	0.001
Debt-to-asset ratio	0.515	0.546	-0.031 **
Proportion of the firms that adopted antitakeover provisions in the industry	0.050	0.048	0.002 ***

*(Table 2 Continued)*

value of each explanatory variable. Given that ROA, Tobin's Q, and PBR are highly correlated with one another, we include these variables one by one.

*A. Performance*

Among the performance measures, none of the ROA, Tobin's Q, or PBR is significant for any year, failing to support Hypothesis 1-1 or 1-2.<sup>9</sup> Considering the results for year 2005, the liquid asset ratio is significantly positive, consistent with Hypothesis 1-3. However, the significance of the liquid asset ratio disappears in year 2006 and thereafter.

<sup>9</sup> As a robustness check, we used the deviations from the industry-median of the performance measures to control for the effects of industrial shocks to firm performance and found no significant coefficients on the performance measures. The results are available from the authors upon request.

**TABLE 2**  
(CONTINUED)

Difference of means test FY2008					
	Firms adopted antitakeover provisions (A)	Firms not adopted antitakeover provisions (B)	Mean (A)	Mean (B)	Difference of means (A - B)
ROA	129	3355	0.067	0.065	0.002
Tobin's Q	130	3299	1.178	1.377	-0.199 **
PBR	130	3289	1.425	2.375	-0.950
Liquid asset ratio	131	3208	0.238	0.251	-0.013
Firm age	131	3374	61.221	45.324	15.897 ***
CEO's tenure	131	3374	7.290	7.981	-0.691
Proportion of outside directors	131	3374	0.060	0.090	-0.031 ***
Share of managerial ownership	130	3291	0.051	0.107	-0.056 ***
Share of cross-holdings	128	3282	0.120	0.060	0.060 ***
Logarithm of market-value equity	130	3310	10.642	9.763	0.879 ***
Share of dominant shareholders	131	3373	0.028	0.164	-0.136 ***
Share of institutional investors	130	3283	0.206	0.136	0.069 ***
Share of minority shareholders	131	3327	0.212	0.211	0.002
Debt-to-asset ratio	131	3352	0.530	0.537	-0.007
Proportion of the firms that adopted antitakeover provisions in the industry	131	3373	0.140	0.105	0.036 ***

(Table 2 Continued)

### B. Entrenchment

Table 3 suggests that firms with a high degree of managerial entrenchment tend to adopt antitakeover provisions.

First, firm age takes positive and marginally significant coefficients in one specification (with ROA as a performance measure) for years 2006 and 2008, consistent with Hypothesis 2-1.

Second, the share of managerial ownership takes negative and sig-

**TABLE 2**  
(CONTINUED)

Difference of medians test FY2008			
	Median (A)	Median (B)	Difference of medians (A - B)
ROA	0.057	0.050	0.007
Tobin's Q	1.101	1.089	0.012
PBR	1.240	1.278	-0.037
Liquid asset ratio	0.214	0.209	0.005
Firm age	61.000	46.000	15.000 ***
CEO's tenure	4.000	5.000	-1.000
Proportion of outside directors	0.000	0.000	0.000 **
Share of managerial ownership	0.010	0.028	-0.018 ***
Share of cross-holdings	0.105	0.032	0.073 ***
Logarithm of market-value equity	10.575	9.460	1.115 ***
Share of dominant shareholders	0.000	0.000	0.000 ***
Share of institutional investors	0.177	0.084	0.094 ***
Share of minority shareholders	0.180	0.192	-0.012
Debt-to-asset ratio	0.549	0.547	0.002
Proportion of the firms that adopted antitakeover provisions in the industry	0.138	0.087	0.051 ***

Notes: We conduct two-sample t-tests with equal variances for the mean tests and non-parametric two-sample tests for the median tests.

\*, \*\*, and \*\*\* statistically significant at 10%, 5%, and 1%.

nificant coefficients for years 2006 and 2007, and a marginally significant coefficient for year 2008, suggesting that managerial ownership serves the alignment of interests between stockholders and managers (Hypothesis 2-4).

Third, the share of cross-shareholdings takes positive and significant coefficients for years 2006, 2007, and 2008. Although firms with a high share of cross-shareholdings are unlikely to be targets of hostile takeovers (Xu 2007), they tend to adopt antitakeover provisions. This result strongly suggests a strong motive for managerial entrenchment (Hypothesis 2-6).

However, the CEO's tenure and the share of outside directors do not take significant coefficients. The guidelines strongly suggest that the judgment of outside directors should be valued when deciding on the adoption of antitakeover provisions as a means of ensuring their necessity and validity. The guidelines may have an effect, such that firms with a higher share of outside directors may be more likely to adopt anti-

**TABLE 3**  
WHAT FIRMS DO ADOPT ANTI-TAKEOVER PROVISIONS?: PROBIT MODEL  
Adopted FY2005

Explanatory variable	(1)			(2)			(3)		
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
ROA	0.0475	0.0010	0.08	-0.0184	-0.0004	-0.36	-0.0188	-0.0004	-0.63
Tobin's Q							1.2613	0.0262 ***	2.57
PBR									
Liquid asset ratio	1.1647	0.0243 **	2.47	1.2128	0.0254 **	2.49			
Firm age	-0.0002	0.0000	-0.07	-0.0004	0.0000	-0.14	-0.0006	0.0000	-0.2
CEO's tenure	-0.0196	-0.0004 *	-1.69	-0.0198	-0.0004 *	-1.71	-0.0198	-0.0004 *	-1.72
Proportion of outside directors	0.3073	0.0064	0.68	0.3178	0.0066	0.7	0.3375	0.0070	0.74
Share of managerial ownership	-1.3526	-0.0282	-1.6	-1.2885	-0.0269	-1.53	-1.2701	-0.0264	-1.5
Share of cross-holdings	-0.0817	-0.0017	-0.1	-0.1097	-0.0023	-0.13	-0.1693	-0.0035	-0.19
Logarithm of market-value equity	0.0851	0.0018 *	1.65	0.0887	0.0019 *	1.69	0.0923	0.0019 *	1.76
Share of dominant shareholders	-1.3814	-0.0288 ***	-2.74	-1.3568	-0.0284 ***	-2.7	-1.3536	-0.0281 ***	-2.7
Share of institutional investors	0.2958	0.0062	0.54	0.2989	0.0063	0.55	0.2836	0.0059	0.52
Share of minority shareholders	0.2109	0.0044	0.34	0.2361	0.0049	0.38	0.2371	0.0049	0.38
Debt-to-asset ratio	0.1374	0.0029	0.38	0.1345	0.0028	0.38	0.2001	0.0042	0.54
Constant	-3.2434	***	-5.14	-3.2601	***	-5.14	-3.3179	***	-5.17
Number of obs	3427			3427			3427		
LR chi <sup>2</sup>	48.63			48.77			49.28		
Prob > chi <sup>2</sup>	0			0			0		
Pseudo R <sup>2</sup>	0.0997			0.0999			0.101		
Log likelihood	-219.67			-219.60			-219.35		

(Table 3 Continued)

TABLE 3  
(CONTINUED)

Explanatory variable	(1)			(2)			(3)		
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
ROA	0.3260	0.0143	0.49	-0.0535	-0.0023	-0.88	-0.0165	-0.0007	-0.52
Tobin's Q									
PBR	-0.3179	-0.0140	-0.87	-0.2645	-0.0115	-0.71	-0.2926	-0.0128	-0.79
Liquid asset ratio	0.0037	0.0002 *	1.66	0.0034	0.0001	1.51	0.0036	0.0002	1.58
Firm age	-0.0034	-0.0002	-0.52	-0.0038	-0.0002	-0.57	-0.0036	-0.0002	-0.54
CEO's tenure	0.2867	0.0126	0.85	0.2922	0.0127	0.87	0.2772	0.0121	0.83
Proportion of outside directors	-3.2521	-0.1430 ***	-3.84	-3.1475	-0.1373 ***	-3.75	-3.1711	-0.1386 ***	-3.77
Share of managerial ownership	1.7420	0.0766 ***	2.92	1.7106	0.0746 ***	2.86	1.7187	0.0751 ***	2.87
Share of cross-holdings	0.0922	0.0041 *	1.9	0.1167	0.0051 **	2.37	0.1108	0.0048 **	2.16
Logarithm of market-value equity	-1.9019	-0.0837 ***	-4.89	-1.8831	-0.0821 ***	-4.83	-1.8857	-0.0824 ***	-4.84
Share of dominant shareholders	1.2196	0.0536 ***	3.56	1.2826	0.0559 ***	3.78	1.2654	0.0553 ***	3.74
Share of institutional investors	0.3422	0.0151	0.78	0.3420	0.0149	0.78	0.3322	0.0145	0.76
Share of minority shareholders	-0.8931	-0.0393 ***	-1.24	-0.9355	-0.0408 ***	-1.35	-0.8871	-0.0388 ***	-1.33
Debt-to-asset ratio	4.9801	0.2190	-3.19	5.4426	0.2373	-3.4	5.3515	0.2338	-3.16
Proportion of the firms that adopted antitakeover provisions in the industry									
Constant	-2.0345	***	-5.74	-2.0428	***	-5.82	-2.0773	***	-5.74
Number of obs	3392			3395			3395		
LR chi <sup>2</sup>	210.25			211.14			210.6		
Prob > chi <sup>2</sup>	0			0			0		
Pseudo R <sup>2</sup>	0.1746			0.1753			0.1749		
Log likelihood	-496.94			-496.63			-496.89		

(Table 3 Continued)

**TABLE 3**  
(CONTINUED)

Explanatory variable	(1)			(2)			(3)		
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
Adopted FY2007									
ROA	0.7243	0.0616	1.4	0.0047	0.0004	0.16	0.0012	0.0001	0.10
Tobin's Q							0.0009	0.0001	0.00
PBR							0.0018	0.0002	0.92
Liquid asset ratio	-0.0233	-0.0020	-0.08	-0.0102	-0.0009	-0.03	0.0062	0.0005	1.34
Firm age	0.0018	0.0002	0.91	0.0019	0.0002	0.94	-0.1171	-0.0100	-0.39
CEO's tenure	0.0061	0.0005	1.32	-0.1202	-0.0103	-0.40	-2.0410	-0.1745 ***	-4.18
Proportion of outside directors	-0.0869	-0.0074	-0.29	-2.0423	-0.1744 ***	-4.16	1.1897	0.1017 **	2.34
Share of managerial ownership	-2.1819	-0.1856 ***	-4.4	1.1973	0.1022 **	2.35	0.0824	0.0070 **	2.34
Share of cross-holdings	1.1973	0.1018 **	2.36	0.0826	0.0071 **	2.33	-2.2649	-0.1937 ***	-7.06
Logarithm of market-value equity	0.0793	0.0067 **	2.24	-2.2651	-0.1934 ***	-7.06	0.2509	0.0215	0.71
Share of dominant shareholders	-2.3070	-0.1962 ***	-7.18	0.2478	0.0212	0.70	-0.3838	-0.0328	-1.00
Share of institutional investors	0.1884	0.0160	0.53	-0.3877	-0.0331	-1.01	-0.2073	-0.0177	-0.91
Share of minority shareholders	-0.3576	-0.0304	-0.93	-0.2128	-0.0182	-0.95	2.9288	0.2505 ***	2.68
Debt-to-asset ratio	-0.1689	-0.0144	-0.75	2.9185	0.2492 ***	2.67			
Proportion of the firms that adopted antitakeover provisions in the industry	2.8940	0.2462 ***	2.63						
Constant	-2.2451		*** -5.43	-2.2417		*** -5.42	-2.2387		*** -5.39
Number of obs	3357			3367			3362		
LR chi <sup>2</sup>	236.82			234.61			234.2		
Prob > chi <sup>2</sup>	0			0			0		
Pseudo R <sup>2</sup>	0.1426			0.1411			0.1409		
Log likelihood	-712.24			-714.04			-713.90		

(Table 3 Continued)



TABLE 3  
(CONTINUED)

Explanatory variable	Adopted FY2008					
	(1)		(2)		(3)	
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
ROA	0.5124	0.0207	0.94	-0.1574	-0.0063	-1.34
Tobin's Q	-0.1462	-0.0059	-0.37	-0.0803	-0.0032	-0.20
PBR	0.0048	0.0002 *	1.90	0.0032	0.0001	1.31
Liquid asset ratio	0.0029	0.0001	0.51	0.0013	0.0001	0.23
Firm age	-0.4251	-0.0172	-1.05	-0.4108	-0.0165	-1.01
CEO's tenure	-1.0781	-0.0436 *	-1.83	-0.9491	-0.0381	-1.63
Proportion of outside directors	1.4403	0.0582 **	2.41	1.2653	0.0508 **	2.12
Share of managerial ownership	0.1030	0.0042 **	2.45	0.1251	0.0050 ***	2.94
Share of cross-holdings	-2.5188	-0.1018 ***	-5.50	-2.5722	-0.1033 ***	-5.63
Logarithm of market-value equity	-0.0863	-0.0035	-0.19	-0.1083	-0.0043	-0.24
Share of dominant shareholders	-0.2527	-0.0102	-0.55	-0.3269	-0.0131	-0.72
Share of institutional investors	0.1582	0.0064	0.54	0.0926	0.0037	0.32
Share of minority shareholders	3.1535	0.1275 ***	4.02	3.1318	0.1257 ***	4.02
Debt-to-asset ratio	-3.2803	***	-6.46	-3.1199	***	-6.25
Proportion of the firms that adopted antitakeover provisions in the industry	3215			3222		
Constant	182.68			182.05		
Number of obs	0			0		
LR chi <sup>2</sup>	0.1718			0.1691		
Prob > chi <sup>2</sup>	-440.31			-447.29		
Pseudo R <sup>2</sup>						
Log likelihood						

Notes: We estimate the probit model in which the dependent variable takes the value of unity if the firm adopted antitakeover provisions and zero otherwise.

\*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%, respectively.

LR chi<sup>2</sup> is the Likelihood Ratio (LR) Chi-Square test that at least one of the predictors' regression coefficients is not equal to zero in the model.

Prob > chi<sup>2</sup> is the probability of obtaining this chi-square statistic (LR chi<sup>2</sup>) if there is in fact no effect from the predictor variables.

takeover provisions. One may suspect that firms may have increased the number of their outside directors to enable them to adopt antitakeover provisions in accordance with the guidelines after they were released. If this is the case, then the estimated coefficient is biased upwards. To deal with this possible endogeneity, the shares of outside directors as of 2004 are later used as an instrumental variable before the guidelines were released to estimate the likelihood of adopting antitakeover provisions in year 2006 and thereafter.

### *C. Control Variables*

First, the logarithm of market value takes positive and significant coefficients, contradicting Hypothesis 3-1. A small firm may find it difficult or costly to adopt antitakeover provisions. Comment and Schwert (1995) also find a positive correlation between firm size and the likelihood of adopting poison pills for US firms, insisting that adopting poison pills requires a fixed cost including attorneys' fees, hence exhibiting a scale economy.

Second, the share of ownership by dominant shareholders takes negative and significant coefficients for all years, consistent with Hypothesis 3-2(i). The share of ownership by institutional shareholders takes positive and significant coefficients for year 2006, suggesting that institutional investors have short-time horizons [Hypothesis 3-2(ii)] rather than work as effective monitors, although this result holds only for one year.

Third, the debt-to-asset ratio takes negative and significant coefficients for year 2006, consistent with Hypothesis 3-3.

Finally, the proportion of firms adopting antitakeover provisions in the industry of the firm takes positive and significant coefficients for years 2007 and 2008, consistent with Hypothesis 3-4.

### *D. Discussion*

A key finding of the baseline estimation results is that, whereas the operating or market performance measures are insignificantly related to the likelihood of adopting the antitakeover measures, the proxies for the managerial entrenchment are closely related to it.

One reason for the irrelevance of firm performance may be that firms with poor performance cannot adopt antitakeover provisions because shareholders will disagree to them based on the judgment that such provisions will deprive them of their opportunity to replace the current poor managers with more able ones. For example, the internal guideline

set by the Pension Fund Association, which engages in the asset management of pension funds, postulates that it votes for the antitakeover provisions only if the managers clearly explain that the provisions will be effective in enhancing the long-term shareholder values. The poor performance may be regarded as violating their standards. Furthermore, the fixed cost of adopting antitakeover provisions may also discourage poorly performing firms to adopt them. The positive effect of firm size on the likelihood of adopting them suggests a significant fixed cost.

The positive effect of the share of cross-shareholdings on the likelihood of antitakeover provisions suggests that the shareholders' approval at the general meeting is not so effective to prevent managerial entrenchment motive, especially when banks and firms in the business group mutually own the shares. Firms with a higher share of cross-shareholdings, being less likely to be targets of hostile takeover and yet are more likely to adopt antitakeover provisions, suggest a strong motive for managerial entrenchment by those firms.

The negative effect of managerial ownership and the positive effect of firm age on the likelihood of adopting antitakeover provisions are also suggestive of the managerial entrenchment motive. High managerial ownership serves as the alignment of interests between managers and shareholders, whereas old firms may tend to have inflexible organizations and be inclined to protect the status quo.

We interpret the positive effect of the share of institutional investors on the adoption of antitakeover provisions observed in 2006 to suggest that firms with liquid stocks are more likely to be a takeover target and hence are more likely to adopt antitakeover provisions. However, pension funds, among others, may behave in the interest of shareholders and tend to vote against antitakeover provisions according to their guidelines. Thus, institutional investors include not only pension funds that invest in stocks through trust accounts of banks but also life insurance companies that often form a business group and cross-hold shares. Our weak result of the share of institutional investors may reflect such variety of institutional investors.

We do not interpret our results to suggest the conflict of interest between large shareholders and minority shareholders. The share of ownership by the dominant shareholders is actually found to have a negative effect on the adoption of antitakeover provisions. Furthermore, managers of Japanese firms affiliated with a business group are not majority shareholders themselves.<sup>10</sup> Unlike those in other East Asian countries, corporations in Japan are widely held, and state-controlled or family-

controlled firms are rare (Claessens *et al.* 2000).

Both the share of cross-shareholdings and the share of dominant shareholders are related to the ownership of the majority shareholder and thus should have little reason for showing opposite signs to each other. However, most of the dominant shareholders are the parent companies of their affiliated companies; thus, they tend to maximize their joint profits. Conversely, cross-shareholdings form a weekly-tied business group and hence do not tend to demand aggressively value maximization of each other but rather tend to protect the incumbent managers of each other. These differences may result in the opposite effects on the adoption of antitakeover provisions.

## VI. Robustness

In this section, we verify the robustness of the baseline results by changing the specifications. To save space, we show the results only for ROA as a performance measure. Nevertheless, most of the results do not change when we use Tobin's  $Q$  or PBR.<sup>11</sup>

### A. Non-linear Effects of Ownership Structures on the Adoption of Antitakeover Provisions

Managerial ownership may have non-linear effects on the adoption of antitakeover provisions, given its two opposing effects: aligning managerial motives with shareholders' interests versus empowering managerial entrenchment. Morck *et al.* (1988) find an inverse U-curve relationship between managerial ownership and the firm value. To consider such non-linear relationships, we add the squared value of the share of managerial ownership to the explanatory variables. Column 1 in Table 4 shows the estimation results. In year 2006, only the level of managerial ownership share is significant and negative, whereas in year 2008, only the squared value of managerial ownership is significant and negative. In both cases, managerial ownership share has a negative effect on the adoption of antitakeover provisions. In year 2007, the level and squared values of the managerial ownership share are both significant

<sup>10</sup> Claessen *et al.* (2000) show that the proportion of firms in which managers are from the controlling family is only 37.2 percent in Japan, the lowest among the nine East Asian countries, including Korea (80.7 percent).

<sup>11</sup> The results for Tobin's  $Q$  and PBR are available from the authors upon request.

**TABLE 4**  
NON-LINEAR EFFECTS OF OWNERSHIP STRUCTURES  
Adopted FY2005

Explanatory variable	(1)			(2)			(3)		
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
ROA	0.072	0.001	0.110	0.077	0.002	0.120	-0.007	0.000	-0.010
Liquid asset ratio	1.177	0.022 **	2.480	1.211	0.025 **	2.540	1.143	0.024 **	2.440
Firm age	0.000	0.000	0.090	0.000	0.000	-0.090	0.000	0.000	-0.050
CEO's tenure	-0.021	0.000 *	-1.860	-0.020	0.000 *	-1.740	-0.020	0.000 *	-1.710
Proportion of outside directors	0.336	0.006	0.730	0.322	0.007	0.710	0.297	0.006	0.650
Share of managerial ownership	1.918	0.036	0.820	-1.570	-0.032 *	-1.700	-1.299	-0.027	-1.540
Share of managerial ownership^2	-9.690	-0.180	-1.350						
Share of cross-holdings	0.082	0.002	0.090	-0.197	-0.004	-0.220	-0.043	-0.001	-0.050
Share of managerial ownership * cross-holdings dummy				1.024	0.021	0.760			
Logarithm of market-value equity	0.102	0.002 *	1.910	0.088	0.002 *	1.710	0.082	0.002	1.590
Share of dominant shareholders	-1.281	-0.024 **	-2.480	-1.371	-0.028 ***	-2.710	-2.521	-0.052 **	-2.130
Share of dominant shareholders^2							2.270	0.047	1.130
Share of institutional investors	0.353	0.007	0.630	0.313	0.006	0.570	0.321	0.007	0.580
Share of minority shareholders	0.332	0.006	0.530	0.246	0.005	0.390	0.192	0.004	0.310
Debt-to-asset ratio	0.175	0.003	0.480	0.161	0.003	0.450	0.140	0.003	0.390
Constant	-3.597	***	-5.280	-3.310	***	-5.180	-3.197	***	-5.060
Number of obs	3427			3427			3427		
LR chi <sup>2</sup>	51.12			49.16			49.79		
Prob > chi <sup>2</sup>	0			0			0		
Pseudo R <sup>2</sup>	0.1048			0.1007			0.102		
Log likelihood	-218.43			-219.40			-219.09		

(Table 4 Continued)





TABLE 4  
(CONTINUED)

Explanatory variable	(1)			(2)			(3)		
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
ROA	0.742	0.035	0.980	0.809	0.041	1.080	0.848	0.077	1.120
Liquid asset ratio	0.022	0.001	0.060	-0.025	-0.001	-0.060	-0.064	-0.002	-0.160
Firm age	0.005	0.000 **	2.050	0.005	0.000 *	1.820	0.005	0.000 *	1.850
CEO's tenure	0.000	0.000	0.050	0.002	0.000	0.370	0.001	0.000	0.250
Proportion of outside directors	-0.448	-0.021	-1.130	-0.537	-0.027	-1.360	-0.549	-0.010	-1.380
Share of managerial ownership	2.466	0.117 *	1.640	-0.516	-0.026	-0.890	-0.587	-0.133	-1.060
Share of managerial ownership <sup>2</sup>	-7.852	-0.374 **	-1.990						
Share of cross-holdings	1.270	0.060 **	2.170	1.101	0.056 *	1.890	1.020	0.084 *	1.760
Share of managerial ownership * cross-holdings dummy				-0.164	-0.008	-0.210			
Logarithm of market-value equity	0.089	0.004 **	2.110	0.069	0.003 *	1.670	0.072	0.005 *	1.740
Share of dominant shareholders	-2.008	-0.096 ***	-4.450	-2.126	-0.108 ***	-4.780	1.159	0.003	0.680
Share of dominant shareholders <sup>2</sup>							-10.778	-0.464 *	-1.750
Share of institutional investors	-0.123	-0.006	-0.280	-0.189	-0.010	-0.420	-0.199	0.011	-0.450
Share of minority shareholders	-0.053	-0.003	-0.120	-0.198	-0.010	-0.440	-0.175	-0.022	-0.390
Debt-to-asset ratio	0.259	0.012	0.900	0.221	0.011	0.770	0.223	-0.008	0.770
Proportion of the firms that adopted antitakeover provisions in the industry	1.759	0.084 **	2.330	1.740	0.088 **	2.310	1.750	0.142 **	2.310
Constant	-3.356	***	-6.230	-2.920	***	-5.840	-2.961	***	-5.940
Number of obs	3327			3327			3327		
LR chi <sup>2</sup>	122.24			117.05			122.27		
Prob > chi <sup>2</sup>	0			0			0		
Pseudo R <sup>2</sup>	0.1154			0.1105			0.1154		
Log likelihood	-468.44			-471.04			-468.43		

Notes: We estimate the probit model in which the dependent variable takes the value of unity if the firm adopted antitakeover provisions and zero otherwise.

\*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%, respectively.

LR chi<sup>2</sup> is the Likelihood Ratio (LR) Chi-Square test that at least one of the predictors' regression coefficients is not equal to zero in the model.

Prob > chi<sup>2</sup> is the probability of obtaining this chi-square statistic (LR chi<sup>2</sup>) if there is in fact no effect from the predictor variables.



with negative and positive signs, respectively, suggesting a U-shaped effect of managerial ownership. However, in most of the relevant regions, managerial ownership has a negative effect on the adoption of antitakeover provisions. [The proportion of firms with the share of managerial ownership exceeding the bottom level (45 percent) is only 3 percent in our sample.] Managerial ownership serves to alleviate the conflict of interests between managers and shareholders in most cases.

The effect of managerial ownership on the adoption of antitakeover provisions may also depend on whether the share of cross-shareholding is high. We construct the dummy that takes one if the share of cross-shareholding exceeds its median (4 percent) and add the intersection of this dummy and the share of managerial ownership to the explanatory variables. Column 2 of Table 4 shows the estimation result. In year 2007, the interaction term is negative and significant, while the coefficient on the share of managerial ownership is still negative and significant. This finding suggests that the interest-alignment effect of managerial ownership is stronger (or the entrenchment effect is less serious) if the share of cross-shareholding is high. However, the coefficient on the share of cross-shareholding itself is notably still positive and significant. A disciplining effect of cross-shareholding, if any, exists only in 2007 on the condition that managerial ownership is sufficiently high. In other years, such a significant interaction is unobserved, and the entrenchment effect of cross-shareholding dominates.

Ownership of the dominant shareholder may also have an ambivalent relation to the adoption of antitakeover provisions. For example, the dominant shareholder with ownership above 50% may not care whether the provisions are adopted, whereas the dominant shareholder with ownership below 50% may oppose these provisions. We add the squared value of the share of dominant shareholders to the explanatory variables. Column 3 of Table 4 shows the estimation results. In years 2007 and 2008, the squared values are negative and significant, whereas the level values are insignificant, suggesting that the share of dominant shareholders monotonically decreases the likelihood of the adoption of antitakeover provisions.

### *B. Endogeneity of the Share of Outside Directors*

After the guidelines were published in 2005, the firms that wanted to adopt antitakeover provisions might have increased their share of outside directors to comply with the guidelines before they actually

**TABLE 5**  
 ENDOGENEITY OF THE SHARE OF OUTSIDE DIRECTORS:  
 PROBIT MODEL WITH ENDOGENOUS REGRESSORS

Adopted FY2006		
Explanatory variable	Coef.	Z-value
ROA	0.260	0.39
Liquid asset ratio	-0.317	-0.87
Firm age	0.003	1.54
CEO's tenure	-0.004	-0.56
Proportion of outside directors	-0.038	-0.09
Share of managerial ownership	-3.288 ***	-3.86
Share of cross-holdings	1.753 ***	2.94
Logarithm of market-value equity	0.095 **	1.97
Share of dominant shareholders	-1.853 ***	-4.76
Share of institutional investors	1.246	3.64
Share of minority shareholders	0.345 ***	0.79
Debt-to-asset ratio	-0.885 ***	-3.17
Proportion of the firms that adopted antitakeover provisions in the industry	5.273	1.31
Constant	-2.017 ***	-5.7
Number of obs	3391	
Wald $\chi^2$ (13)	140.59	
Prob > $\chi^2$	0	
Log likelihood	3436.14	
Wald test of exogeneity (/athrho=0): $\chi^2(1)=1.54$ Prob > $\chi^2=0.2149$		
Adopted FY2007		
Explanatory variable	Coef.	Z-value
ROA	1.026 *	1.75
Liquid asset ratio	-0.040	-0.14
Firm age	0.002	0.91
CEO's tenure	0.007	1.45
Proportion of outside directors	0.037	0.1
Share of managerial ownership	-2.156 ***	-4.35
Share of cross-holdings	1.007 **	2.01
Logarithm of market-value equity	0.053	1.53
Share of dominant shareholders	-2.215 ***	-6.93
Share of institutional investors	0.086	0.25
Share of minority shareholders	-0.401	-1.07
Debt-to-asset ratio	-0.114	-0.51
Proportion of the firms that adopted antitakeover provisions in the industry	1.812 *	1.7
Constant	-1.978 ***	-4.94
Number of obs	3499	
Wald $\chi^2$ (13)	147.7	
Prob > $\chi^2$	0	
Log likelihood	3263.39	
Wald test of exogeneity (/athrho 0): $\chi^2(1)=0.80$ Prob > $\chi^2=0.3712$		

(Table 5 Continued)

**TABLE 5**  
(CONTINUED)

Adopted FY2008		
Explanatory variable	Coef.	Z-value
ROA	0.899	1.21
Liquid asset ratio	-0.100	-0.25
Firm age	0.005 **	2.07
CEO's tenure	0.003	0.53
Proportion of outside directors	-0.039	-0.07
Share of managerial ownership	-0.660	-1.12
Share of cross-holdings	1.158 **	2.01
Logarithm of market-value equity	0.070 *	1.71
Share of dominant shareholders	-2.164 ***	-4.9
Share of institutional investors	-0.242	-0.55
Share of minority shareholders	-0.167	-0.37
Debt-to-asset ratio	0.168	0.59
Proportion of the firms that adopted antitakeover provisions in the industry	1.737 **	2.31
Constant	-2.967 ***	-6.08
Number of obs	3411	
Wald chi <sup>2</sup> (13)	87.56	
Prob > chi <sup>2</sup>	0	
Log likelihood	2744.27	
Wald test of exogeneity ( $\theta=0$ ): $\chi^2(1)=1.78$ Prob > $\chi^2=0.1827$		

Notes: \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%, respectively. The Wald test of exogeneity shows that the error terms in the structural equation (probit) and the reduced-form equation for the endogenous variable (*i.e.*, the share of outside directors) are not significantly correlated, suggesting that the endogeneity bias in the baseline estimation is not significant.

adopted them. To deal with such potential endogeneity, we estimate the likelihood of adopting antitakeover provisions in year 2006 and thereafter by conducting instrumental variable probit estimation using the share of outside directors as of year 2004 as instruments. Table 5 shows the estimation results. A Wald test of exogeneity shows that the error terms in the structural equation (probit) and the reduced-form equation for the endogenous variable (*i.e.*, the share of outside directors) are insignificantly correlated, suggesting that the endogeneity bias in the baseline estimation is insignificant. The coefficients on the share of outside directors are insignificant, as in the baseline results.

### C. Free Cash Flow Hypothesis

The free cash flow hypothesis (Jensen 1986) posits that firms with more liquid assets but with less growth opportunities tend to be targets of hostile takeovers. Xu (2007) supports this hypothesis using Japanese firm data. These firms may be more likely to adopt antitakeover provisions. To test this hypothesis, we use a dummy variable, which takes unity if Tobin's  $Q$  is below its median for each year (*i.e.*, 1.075, 1.203, 1.204, and 1.105 in years 2005, 2006, 2007, and 2008, respectively) and zero otherwise, and use as an explanatory variable the intersection of this dummy and the liquid asset ratio. To save space, we omit the table of this result.<sup>12</sup> Nevertheless, this intersection term does not take significant coefficients in any year.

### D. Firm Value Protection Hypothesis

Firms may adopt antitakeover provisions to protect the firm value from hostile takeovers that destroy the firm value either by breaching the long-run implicit contract between managers and workers or by redirecting the firm operation towards maximizing short-run cash flow. To explore this hypothesis, we assume two alternative specifications.

First, according to the breach of trust hypothesis, firms are more likely to adopt antitakeover provisions when their operating performances temporarily deteriorate. This move will cause a downward bias in the operating performance measures. We deal with this potential bias by using operating performance measures averaged over three years up to the previous year. Although we omit the table,<sup>13</sup> most of the coefficients are similar to the baseline results except firm age, which turns out to be insignificant.

Next, we investigate whether firms tend to adopt antitakeover provisions when they are rich in long-run investment opportunities. As a measure of long-run investment, we use research and development expenditures as a proportion of sales; it is referred to as "R&D intensity" hereinafter. Firms may adopt antitakeover provisions to protect themselves from the curtailment of R&D intensity based on a short-run viewpoint or from the transfer of intelligent assets to other firms

<sup>12</sup> The results, including the intersection term of the  $Q$  dummy and the liquid asset ratio, are available from the authors upon request.

<sup>13</sup> The results using the three-year average operating performance measures are available from the authors upon request.

**TABLE 6**  
FIRM VALUE PROTECTION HYPOTHESIS: PROBIT MODEL

Explanatory variable	Adopted FY2005			Adopted FY2006		
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
R&D intensity (R&D expenditure as a proportion of total assets)	-0.386	-0.009	-0.35	-1.934	-0.101	-1.06
ROA	-0.622	-0.014	-0.74	0.523	0.027	0.7
Liquid asset ratio	0.856	0.020	1.57	-0.263	-0.014	-0.69
Firm age	0.000	0.000	-0.1	0.004	0.000*	1.84
CEO's tenure	-0.024	-0.001*	-1.85	-0.002	0.000	-0.32
Proportion of outside directors	0.146	0.003	0.28	0.422	0.022	1.22
Share of managerial ownership	-0.919	-0.021	-1.01	-3.155	-0.164***	-3.64
Share of cross-holdings	-0.242	-0.006	-0.27	1.675	0.087***	2.77
Logarithm of market-value equity	0.110	0.003**	2	0.092	0.005*	1.9
Share of dominant shareholders	-1.774	0.000***	-2.88	-1.884	-0.001***	-4.79
Share of institutional investors	0.043	0.001	0.07	1.133	0.059***	3.2
Share of minority shareholders	-0.108	-0.002	-0.16	0.203	0.011	0.45
Debt-to-asset ratio	-0.025	-0.001	-0.06	-0.849	-0.044***	-2.87
Proportion of the firms that adopted antitakeover provisions in the industry				6.616		1.58
Constant	-3.105	***	-4.65	-2.061	***	-5.72
Number of obs	2784			3037		
LR chi <sup>2</sup>	42.21			186.82		
Prob > chi <sup>2</sup>	0.0001			0		
Pseudo R <sup>2</sup>	0.0969			0.162		
Log likelihood	-196.72			-483.15		

(Table 6 Continued)

through scorched earth strategies. The data source for R&D intensity is a database published by the Development Bank of Japan. The sample size is slightly smaller than the size in the baseline estimation (*i.e.*, 2784, 3037, 2727, and 2607 in years 2005, 2006, 2007, and 2008,

**TABLE 6**  
(CONTINUED)

Explanatory variable	Adopted FY2007			Adopted FY2008		
	Coef.	Marginal Effect	Z-value	Coef.	Marginal Effect	Z-value
R&D intensity (R&D expenditure as a proportion of total assets)	-0.062	-0.007	-0.13	-0.110	-0.005	-0.11
ROA	0.784	0.084	1.18	0.777	0.037	1.33
Liquid asset ratio	0.056	0.006	0.18	0.037	0.002	0.09
Firm age	0.001	0.000	0.58	0.004	0.000*	1.7
CEO's tenure	0.007	0.001	1.37	0.002	0.000	0.32
Proportion of outside directors	0.000	0.000	0	-0.845	-0.040*	-1.85
Share of managerial ownership	-2.058	-0.221***	-3.91	-1.655	-0.079**	-2.35
Share of cross-holdings	1.256	0.135**	2.39	1.215	0.058*	1.91
Logarithm of market-value equity	0.068	0.007*	1.85	0.074	0.004*	1.67
Share of dominant shareholders	-2.236	-0.240***	-6.65	-2.604	-0.125***	-5.35
Share of institutional investors	0.226	0.024	0.61	0.018	0.001	0.04
Share of minority shareholders	-0.296	-0.032	-0.73	-0.412	-0.020	-0.83
Debt-to-asset ratio	-0.177	-0.019	-0.73	0.242	0.012	0.77
Proportion of the firms that adopted antitakeover provisions in the industry	2.143	0.230*	1.87	3.312	0.159***	3.96
Constant	-2.075	***	-4.78	-2.959	***	-5.43
Number of obs	2727			2607		
LR chi <sup>2</sup>	186.05			162.52		
Prob > chi <sup>2</sup>	0			0		
Pseudo R <sup>2</sup>	0.1224			0.168		
Log likelihood	-666.79			-402.31		

Notes: We estimate the probit model in which the dependent variable takes the value of unity if the firm adopted antitakeover provisions and zero otherwise. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1%, respectively.

respectively). Table 6 shows the results. The coefficients for R&D intensities are negative and insignificant, which does not support the short-

**TABLE 7**  
PANEL ESTIMATION

Random effects probit model		
Explanatory variable	Coef.	Z-value
ROA	1.894	1.32
Liquid asset ratio	0.154	0.18
Firm age	0.017***	2.81
CEO's tenure	-0.005	-0.32
Proportion of outside directors	1.146	1.35
Share of managerial ownership	-13.425***	-8.25
Share of cross-holdings	6.845***	4.83
Logarithm of market-value equity	0.780***	7.41
Share of dominant shareholders	-13.771***	-14.14
Share of institutional investors	-0.484	-0.5
Share of minority shareholders	0.150	0.15
Debt-to-asset ratio	-2.957***	-4.51
FY2006 dummy	4.064***	10.97
FY2007 dummy	7.007***	15.44
FY2008 dummy	8.306***	16.86
Constant	-20.243***	-14.31
Number of obs	14122	
Number of groups	3840	
Wald chi <sup>2</sup>	515.98	
Log likelihood	-1950.6493	
Likelihood-ratio test of rho=0	2384.53	
Prob >= chibar <sup>2</sup>	0.00	

Notes: We estimate a random effects probit model. The dependent variable is a dummy that takes unity if the firm adopted antitakeover provisions in the given year or before and zero otherwise. \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5%, and 1% respectively.

termism hypothesis. Most of the other variables are similar to the baseline estimation results. We also use R&D expenditures as a proportion of total assets and obtain insignificant coefficients for them.

*E. Panel Estimation*

As a final robustness check, we pool the data from year 2005 to year 2008 and apply a panel data estimation method. If a firm's decision on adopting antitakeover provisions is hit by idiosyncratic shocks that do not change over time, a random-effect probit model is the appropriate model. The dependent variable is a dummy that takes unity if the firm adopted antitakeover provisions in the year or before, and zero otherwise. The explanatory variables are lagged one year as in the baseline

model. The proportion of firms adopting antitakeover provisions in the industry of the firm is excluded from the explanatory variables because its value is unavailable as of year 2005. We add year dummies to the explanatory variables.

Table 7 shows the estimation results. The specification test favors the random-effect probit model against the pooled probit model. The results are similar to the baseline results, and the performance measures are insignificant. Among the entrenchment measures, firm age, share of managerial ownership, and share of cross-shareholdings are significant with the expected signs. Among the control variables, the logarithm of market value, the share of dominant shareholders, and the debt-to-asset ratio are significant, with the same signs as in the benchmark year-by-year estimation results.

## VII. Conclusions

We tested the managerial entrenchment hypothesis as a motive for adopting antitakeover provisions using Japanese firm data over the period of April 2005 to March 2009. Specifically, we tested whether a firm's operating performance measures and the entrenchment measures are related to the likelihood of adopting antitakeover provisions. Our results are summarized as follows:

(1) Firm performance, as measured by ROA, Tobin's Q, and PBR, is not correlated with the likelihood of adopting antitakeover provisions.

(2) Managerial entrenchment, as measured by older firm age, lower share of managerial ownership, and higher share of cross-shareholdings, is significantly correlated with the likelihood of adopting antitakeover provisions.

(3) Market liquidity, as measured by a lower share of ownership by dominant shareholders and a higher share of ownership by institutional investors, is significantly correlated with the likelihood of adopting antitakeover provisions. The liquid asset ratio, debt-to-asset ratio, and proportion of firms adopting antitakeover provisions in the industry are also significantly correlated with the likelihood of adopting antitakeover provisions.

In sum, although firms do not tend to adopt antitakeover provisions in response to the deterioration of operating performance, they are more likely to do so when managerial entrenchment is more solidified. The positive correlation between the share of cross-shareholdings and the



likelihood of adopting antitakeover provisions, in particular, strongly suggests the entrenchment motive because firms with a higher share of cross-shareholdings are less likely to be targets of hostile takeover and yet are more likely to adopt antitakeover provisions.

We plan to investigate the effects of antitakeover provisions on long-term performance, either in terms of market-based or operating performance, as post-adoption data will accumulate over time.

*(Received 9 November 2010; 12 January 2011; Accepted 19 January 2011)*

## **Appendix: Definitions of Variables**

### *A. Variables Measuring Performance*

ROA: Current profits as a proportion of total assets as of the previous accounting year.

Tobin's Q: The sum of market-valued stocks and book-valued debt as a proportion of total assets, including unrealized profits (or losses) of subsidiaries and affiliates.

PBR: Market-valued stocks as a proportion of book-valued shareholders' equity.

Liquid asset ratio: The sum of cash and deposits, securities, and securities for investment as a proportion of total assets. We delete firms with negative liquid assets from the sample.

### *B. Variables Measuring Entrenchment*

Firm age: The difference between the current year and the year when the firm was established. The latter is available in Quarterly Company Report (Kaisha Shiki Ho) published by Toyo Keizai Shimpo Sha.

CEO's tenure: The difference between the current year and the year when the current CEO took his/her position.

Share of outside directors: The number of outside directors as a proportion of the total number of directors.

Share of managerial ownership: Share of stocks held by managers. Firms that are estimated to be more than 100 percent held by managers are excluded from the sample.

Share of cross-holdings: Share of stocks held by listed companies whose shares are held by the firm, as estimated by Nissei Life Insurance

(NLI) Research Institute.

### C. Control Variables

Logarithm of market-valued equity: Natural logarithm of market-valued equity.

Share of ownership by dominant shareholders: Share of controlling firms that own more than a 15 percent share of the firm.

Share of ownership by institutional investors: Shares of ownership by foreigners excluding foreign corporations, trust accounts, and special accounts of life insurance companies.

Share of minority shareholders: Share of ownership by individuals and firms that own fewer than 50 trading units.

Debt-to-asset ratio: Total debt as a proportion of total assets.

The proportion of firms that adopted antitakeover provisions in the industry of the firm: Available only for accounting year 2005 and thereafter.

R&D intensity: Expenditures on research and development as a proportion of sales. The data source is the Financial Statement Data Bank published by the Development Bank of Japan.

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