

## **Delisting and Information Asymmetry: Evidence from Japanese Stock Market**

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*This paper analyzes the wealth effect of involuntary delisting and opportunistic behavior of large shareholders using the sample of involuntarily delisted firms in the Japanese stock market. The overall evidence is more supportive of inside shareholders of delisted firms demonstrating restrained behavior than blatant opportunistic behavior. The finding that the wealth effect of an involuntary delisting announcement is approximately negative 70% indicates that delisting is a highly disruptive event in Japan. The finding that share devaluation is smaller leading up to the delisting announcement and greater on the delisting announcement with a bank-inside shareholder than without suggests that the market believes the bank-inside shareholder will try to support the troubled firm.*

**Keywords:** involuntary delisting, information asymmetry, opportunistic behavior of inside shareholders, retail individual investors, bank-inside shareholder

**JEL Classification:** G14

### **I. Introduction**

Involuntary delisting of stocks from the exchange is arguably the worst outcome for shareholders. Involuntary delisting is usually triggered by default, suspension of banking transactions, complete write-down of equity, and/or adverse audit opinion among other reasons. This paper investigates the wealth effect of involuntary delisting and the possibility of opportunistic behavior of inside shareholders in the Japanese market.

Unlike the U.S. market, where delisted stocks continue to be traded in the over-the-counter market, liquidity all but disappears as a result of delisting in most other markets including Japan. <sup>1</sup>Thus, an involuntary delisting may lead to a massive shock to the share value in the Japanese market, whereas the illiquidity effect of a delisting is cushioned in the U.S. market. Furthermore, as the information effect of delisting in the Japanese market is much stronger than in other markets, insiders may be more motivated to take advantage of their privileged information. In particular, in jurisdictions where the separation between ownership and management is weak, opportunistic

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<sup>1</sup>In the U.S., stocks that are delisted from regulated exchanges are typically traded in over-the-counter markets, such as OTC Bulletin Board or OTC PINK (a pink sheets market).

behavior of inside shareholders is more probable. Since inside shareholders of Japanese firms are known to be active in firm management, there is concern that inside shareholders of soon-to-be-delisted firms have a strong incentive to use their private information at the expense of outside investors in the Japanese market.

From our analysis of the sample of delisted firms in Japan between 2002 and 2012, some of our findings are listed. (1) The wealth effect of involuntary delisting is approximately negative 70%, indicating that involuntary delisting is a highly disruptive event in Japan, unlike in the U.S. where there is still some liquidity even after a delisting; (2) The one-year buy-and-hold abnormal return (BHAR) prior to a delisting announcement is about negative 60%, indicating that stocks show a significant decline in value before delisting. In addition, the one-year BHAR including the effect of a delisting announcement is as high as negative 90%, indicating that investors holding delisted shares lose nearly all of their investment; (3) We find inside shareholder opportunism is limited. Inside shareholders reduce their shareholdings prior to an involuntary delisting while retail individual investors increase their shareholdings. However, inside shareholders reduce their share ownership by only 2-3%points in the two years leading up to a delisting event, and more specifically, bank-inside shareholders reduce share ownership by only 0.48%point, showing that insiders display a remarkable degree of restraint; (4) The greater the reduction in shareholding of inside shareholders and the greater the increase in shareholding of retail individual investors, the larger the one-year decrease in the stock price prior to delisting; (5) The fall in the share price leading up to a delisting announcement is much less when a bank is an inside shareholder than when a bank is not involved. Also, the fall in share price at the point of a delisting announcement is far greater for when a bank is an inside shareholder than when a bank is not involved. Both findings suggest that the market believes the bank-inside shareholder will try to prevent the insolvency of the ailing firm.

The rest of the paper is organized as follows. In Section II, we present the background and research hypotheses. In Section III, we describe the relevant regulations and institutional environment in regards to delisting in Japan. In Section IV, we describe the sample composition and characteristics of the sample firms. In Section V, we examine the wealth effect of delisting as well as the opportunistic behavior of inside shareholders. Finally, in Section VI, we present the summary of the findings and their implications.

## **II. Background and Research Hypotheses**

The literature on delisting is rather limited. The few empirical studies on delisting examine almost exclusively delisting in the U.S. market. Sanger and Peterson (1990) study the involuntary delisting from NYSE or ASE, and report a fall of about 8.5% in the stock price of delisted firms on the delisting announcement day. Shumway (1997) documents an average delisting return of negative 30% for firms that are delisted due to bankruptcy or other negative reasons. Angel et al. (2004) study the involuntary delisting

from NASDAQ, and report that investors experience a loss of about 22% during the 60 days prior to delisting. We expect that a delisting decision has a significant negative effect on the stock price of delisted firms in Japan as well.

Sanger and Peterson (1990) and Macey, O'Hara, and Pompilo (2008) document that the bid-ask spread triples and the volatility doubles in the OTC market after involuntary delisting. They propose the liquidity hypothesis that the reduction in liquidity due to delisting is the primary cause of the fall in stock prices. In addition, Harris, Panchapagesan and Wener (2008) examine 1,098 delisted NASDAQ firms that subsequently traded in the OTC Bulletin Board and/or the Pink Sheets. They find that trading volume declines by two-thirds; effective spreads triple; and volatility triples. We expect that the negative effect of delisting would be greater in Japan because there is limited trading of delisted stocks in Japan compared to in the U.S..

The Phoenix market was founded by the Japan Securities Dealers Association in March 2008. As there was no public market for investors to cash in delisted shares prior to the Phoenix market, it was proposed that the introduction of the Phoenix market would lessen the liquidity concern on delisted stocks. We would expect that the introduction of the Phoenix market could affect the liquidity effect of delisting. However, it is questionable whether improved liquidity would be observed as the trading of delisted stocks in the Phoenix market is limited.

A number of prior studies present empirical evidence indicating that insiders have far superior information regarding the firms that they manage than do retail investors, and they trade based on their informational advantage.<sup>1</sup> In particular, in markets where there is weak separation of ownership and management, inside shareholders are more likely to engage in direct management or exert control over the operations of the firm. Thus, insider trading manifests itself through changes in the share ownership of inside shareholders. Fama and Jensen (1983) have proposed that inside shareholders have an incentive to transfer the resources of the firm either directly or indirectly to themselves in pursuit of private benefits, undermining the interest of outside investors. Therefore, the analysis of changes in shareholding of inside shareholders prior to involuntary delisting would shed additional light on the opportunistic behavior of inside shareholders.<sup>2</sup> Consistent with the agency hypothesis, we expect that inside shareholders will reduce their share ownership in order to avoid incurring foreseeable losses as a firm falls into financial distress and spirals down to the point of involuntary delisting.

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<sup>1</sup>Insider trading has been investigated in a number of contexts. Lakonishok and Lee (2001) provide a comprehensive study on insider trading.

<sup>2</sup>Ideally, one would investigate the trading activities by investor type prior to involuntary delisting. However, in the absence of trading data by investor type in the Japanese market we examine the change in the ownership structure in this paper.

On the other hand, a number of studies, including Barber et al. (2009) and Odean (1998, 1999), point out that retail individual investors are prone to make irrational investment decisions and document that investment performance of retail individual investors falls short of that of institutional investors due to the informational disadvantage. Also, many studies, including Ashiq, Sandy, and Oliver (2008) and Battalio and Mendenhall (2005), report evidence of information asymmetry among heterogeneous groups of investors along with the consequent differences in their trading behaviors around the disclosure of firm information. For example, institutional investors are shown to earn profits by informed trading prior to earnings announcements. The abnormal returns from unexpected earnings announcements are between negative 2% and 2%. Considering a much stronger information effect of involuntary delisting, there exists a much stronger motivation for acquiring and analyzing information on delisting. Because of informational disadvantages, we expect that retail individual investors are more likely to increase share ownership of delisted firms prior to involuntary delisting. On the other hand, outside institutional shareholders are less likely to increase share ownership of delisted firms prior to involuntary delisting.

Charitou, Louca and Vafeas (2007) contend that the likelihood of becoming involuntarily delisted from NYSE is associated with a firm's board of directors and ownership characteristics. Cross-share ownership across related firms is widely practiced in Japan (Kaplan, 1994; Kaplan and Minton, 1994; Kang and Shivdasani, 1995; Kang and Shivdasani, 1997). In particular, banks own sizable equity stakes of related firms and are therefore at the center of the governance structure of related firms (Hoshi et al., 1990; Weinstein and Yafeh, 1998; Morck et al., 2000; Imai, 2007; Sakawa et al., 2014). This study proposes to investigate the effect of the unique Japanese corporate governance structure on the changes in ownership stakes prior to delisting, and more specifically, the effect of bank share ownership on the same.

A bank-inside shareholder may act differently from other inside shareholders in the face of a delisting of an affiliated firm. Banks have a greater reputational concern since arguably their major asset is reputation. As a result, a bank-inside shareholder would be less inclined to compromise the bank's reputation by front-running outside shareholders dumping the distressed firm's shares. At the same time, a bank-inside shareholder anticipates that if they reduce share ownership of a firm going through hard times, their actions would send a strong negative signal about the future solvency of the firm to other investors. This negative signal may deter the bank-inside shareholder from adjusting their share ownership downward. Therefore, we expect that bank-inside shareholders are less likely to reduce their share ownership prior to a delisting announcement than other inside shareholders.

Differences in legal environments between Japan and the U.S. can have an influence on the effect of delisting in Japan. Generally speaking, the legal frameworks governing

the legal rights of shareholders in insolvency and the laws regarding distribution of assets in bankruptcy are similar in Japan and the U.S. For example, Japanese firms in financial distress may apply for court-supervised corporate reorganization and avoid outright liquidation.<sup>3</sup> However, there is anecdotal evidence that a corporate reorganization in Japan is less flexible and is less conducive to successful reorganization and possible relisting on other exchanges than in the U.S.<sup>4</sup> For example, Wruck(1990) reports that in the U.S.83% of the firms that file for court-supervised bankruptcy, known as Chapter 11, successfully reorganize and emerge out of bankruptcy. Clearly the reduced prospect of successful reorganization in Japan would increase the value destruction associated with delisting and increase the incentive of inside shareholders to reduce share ownership prior to delisting. Therefore, the difference in firm value destruction between Japan and the U.S. may be due to differences in legal environments between the two countries, such as the low success rate of reorganization in Japan compared to the U.S., and to the difference in liquidity of delisted stocks between the two countries.

### **III. Delisting Process in Japan**

For investor protection and orderly operation of the market, both the Tokyo Stock Exchange and other stock exchanges instituted the delisting regulation.<sup>5,6</sup> The specific reasons for involuntary delisting as stated in the delisting rules include false statements in disclosure documents, suspension of bank transactions, bankruptcy, reorganization proceedings, liquidation, suspension of business activities, inappropriate merger, unfair dealings with a controlling shareholder, late submission of disclosure documents, violation of the listing agreement, failure to delegate shareholder services to an agent, restriction on transfer of shares, failure to comply with the rules of the designated book-entry transfer organization, unreasonable restrictions on shareholders' rights, involvement of anti-social groups, and other reasons.

When the stock exchange discovers that a listed firm may fall under one or more of the delisting criteria, the stock exchange will designate the firm either as a security under supervision (for examination) for reasons including false statement in securities reports,

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<sup>3</sup> There are three types of reorganization laws in Japan: the Corporate Reorganization Law, the Civil Rehabilitation Law and the Corporate Arrangement under the Commercial Code.

<sup>4</sup> For example, in an article on Wall Street Journal dated May 28, 2012, Inagaki reports that the fastest return to the market in Japan was six years and ten months for retailer Yaohan Japan, while most companies in the U.S. aim to emerge from bankruptcy protection within 18 months.

<sup>5</sup>The discussion in this section is based on the listing rules of the Tokyo Stock Exchange, JASDAQ and other stock exchanges, as found on the homepages of the stock exchanges.

<sup>6</sup>Other stock exchanges include JASDAQ, MOTHERS, Osaka Stock Exchange, Sapporo Stock Exchange, Nagoya Stock Exchange, etc. Although each stock exchange has slightly different criteria for delisting, the main reasons stated in the regulations for involuntary delisting and the delisting processes are the same.

unfair representations and violations of the listing agreement, or as a security under supervision (for confirmation) for other reasons. Subsequently, the exchange makes this designation known to the public. During this time, the stock exchange will conduct an examination to clarify whether a trigger event is present in this firm. If a trigger event is identified, a delisting decision will be made for this firm. If the firm is deemed capable of addressing the problems, it will be designated as a security on alert and will be asked to address the problems during a remedial period. In general, the firm designated as a security on alert has an obligation to report on its improvement every year; the time limit of the remedial period is 3 years. If improvement is not proven, then the firm is delisted.

If a delisting decision is made against a firm, the stock exchange will designate the firm as a security to be delisted and a notice is served to the public. In principle, the one month trading period starts from the next trading day of the delisting announcement and ends on the day before the firm is actually delisted, in such a way that the existing shareholders can trade their shares. In March 2008 Japan Securities Dealers Association founded the Phoenix market, where investors can trade delisted stocks. However, such trades rarely occur in practice. Therefore, the improvement of liquidity of delisted stocks due to the introduction of the Phoenix market is limited.

## **IV. Sample and Descriptive Statistics**

### **1. Sample construction**

The sample period extends from January 2002 to December 2012. The accounting and ownership data of delisted firms are obtained from "eol."<sup>7,8</sup> Stock return data come from the financial database provided by Financial Data Solution, a database vender.

The sample is constructed from delisted firms on the Tokyo Stock Exchange (TSE), JASDAQ, MOTHERS and regional stock exchanges and narrowed down based on specific exclusions outlined herein. The total number of delisted firms from (TSE is 665, whereas the total number of delisted firms from JASDAQ, MOTHERS, and the regional stock exchanges is 494. Of these firms, we remove voluntary delisting due to mergers and acquisitions, cases of conversion into subsidiaries, cases with uncertain causes of delisting as well as financial services firms. The final sample consists of 136 firms.

Table 1 shows the sample distribution by exchanges and calendar years of delisting. The Tokyo Stock Exchange has the most cases with 69 delistings, followed by JASDAQ with 35; Osaka Stock Exchange with 16; MOTHERS with 12; Sapporo Stock Exchange

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<sup>7</sup> The eol is a comprehensive corporate information database primarily for Japanese companies, which is provided by PRONEXUS, a database vender.

<sup>8</sup> As the ownership data is available annually, the change in share ownership is verified up to the year-end before the delisting. Due to this data limitation, the change in share ownership closer to the delisting day cannot be measured.

with 6; and Nagoya Stock Exchange with 6. Involuntary delistings are concentrated in 2008 and 2009 due to the global financial crisis and in 2002 due to the collapse of the dot-com bubble.<sup>9</sup>

**Table 1: Sample Distribution of Involuntarily Delisted Firms by Exchange and Delisting Year**

This table shows the distribution of involuntarily delisted firms by exchange and year in the Japanese market from January 2002 to December 2012.

Exchange	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Tokyo Stock Exchange	19	6	4	2	0	2	12	14	3	3	4	69
JASDAQ	2	0	0	1	1	2	11	6	6	2	4	35
MOTHERS	0	0	0	2	0	1	1	4	1	2	1	12
Osaka Stock Exchange	0	1	1	1	1	2	3	6	0	1	0	16
Sapporo Stock Exchange	1	0	0	0	0	0	0	1	0	1	3	6
Nagoya Stock Exchange	0	0	0	0	0	0	1	2	0	1	2	6
Total	22	7	5	6	2	7	28	33	10	10	14	144

We looked into the ultimate fate of the delisted firms, as a delisting decision in the Japanese market is likely to be an acknowledgement of an eventual bankruptcy, receivership, or start of liquidation. We have found that about half of the sample firms (67 of 136 in our sample) applied for corporate reorganization. The verdict of the corporate reorganization process was 100% capital reduction (meaning a complete loss of investment for all shareholders) in more than 70% of the firms (48 of 67 firms in our sample). Therefore, we expect that when reorganization is the reason for delisting, the loss of firm value will be particularly severe. In view of this, we expect that there is a strong incentive for inside shareholders to reduce loss by reducing their equity exposure in the case of reorganization.

## V. Empirical Results

### 1. Information Effect of Involuntary Delisting

First, results of the information effect of an involuntary delisting announcement in the Japanese market are presented in Table 2. After a delisting decision is announced in the Japanese market trading continues until actual delisting occurs. The average time between delisting disclosure and the actual delisting is about one month, with variance across firms.

Panel A shows the holding period abnormal returns (BHAR) during eight trading days before and after the announcement of involuntary delisting for the TSE subgroup and for

<sup>9</sup> While the distribution of delisted firms by industry is not shown in the table, the manufacturing sector has the largest number of delisted firms with 43 and the real estate and construction sectors follow with 27 and 22 firms, respectively.

the subgroup of JASDAQ and others. The average two-day BHAR(0,+1) is negative 79.10% for the TSE subgroup and negative 63.31% for the subgroup of JASDAQ and others, indicating that involuntary delisting causes a massive loss for investors holding shares in Japan. The median BHAR(0,+1) is negative 90.22% for the TSE subgroup and negative 67.49% for the subgroup of JASDAQ and others.<sup>10</sup> The decline in BHAR in Japanese firms is generally much larger than that reported among U.S. firms in part due to the difference in post-delisting liquidity between the markets in the two countries. Unlike the U.S. market, where delisted stocks continue to be traded in the over-the-counter market, trading virtually stops in the Japanese market. The magnitude of the decrease in the stock price is comparable to that of the Korean market, where the liquidity of delisted stocks is also virtually non-existent. Park et al. (2014) report a price drop of 70-80% due to involuntary delisting in the Korean market. However, the much larger value destruction seen in Japanese markets than in the U.S. markets may also be due to differences in legal environments between the two countries and to the lower success rate of reorganization in Japan.

Stock price continues to fall after a delisting announcement. The average and median BHAR(+2, +8) are negative 21.33% and negative 7.64%, respectively, for the TSE subgroup; negative 28.62% and negative 29.12%, respectively, for the subgroup of JASDAQ and others. Furthermore, the average and median BHAR(-8, -1), which shows the stock price movement immediately preceding a delisting announcement, are negative 7.09% and negative 2.95%, respectively, for the TSE subgroup and negative 11.12% and -8.54%, respectively, for the subgroup of JASDAQ and others.

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<sup>10</sup> Here, we use BHAR rather than CAR since BHAR captures the actual investment performance better than CAR when the returns are large negative numbers. For example, if the stock price falls from 100 to 50, then to 20 the following day, the CAR is -110%, which is potentially misleading since it suggests that the loss exceeds the initial investment. In contrast, BHAR is -80%, which reflects more accurately the actual loss relative to the initial investment.

**Table 2: Univariate Tests of Differences in Buy-and-Hold Abnormal Returns**

This table shows the buy-and-hold abnormal returns (BHARs) surrounding the announcement of involuntary delisting and reports on tests of their differences between various groups. BHAR ( $t_1, t_2$ ) is the buy-and-hold abnormal return between day  $t_1$  and  $t_2$ . \*, \*\* and \*\*\* correspond to the level of significance at 10%, 5% and 1%, respectively.

Panel A. By exchanges									
	Tokyo Stock Exchange				JASDAQ and Others				Mean Difference
	Mean	(t-value)	Median	(z-value)	Mean	(t-value)	Median	(z-value)	
BHAR(-8, -1)	-7.09*	(-1.92)	-2.95**	(-2.17)	-11.12***	(-3.72)	-8.54***	(-4.15)	4.03
BHAR(0, +1)	-79.10***	(-24.77)	-90.22***	(-6.92)	-63.31***	(-19.28)	-67.49***	(-7.33)	-15.79***
BHAR(+2, +8)	-21.33***	(-3.58)	-7.64***	(-3.74)	-28.62***	(-5.11)	-29.12***	(-5.89)	7.29

  

Panel B. By introduction of Phoenix market									
	Before Phoenix market				After Phoenix market				Mean Difference
	Mean	(t-value)	Median	(z-value)	Mean	(t-value)	Median	(z-value)	
BHAR(-8, -1)	-2.02	(-0.69)	-3.70	(-1.54)	-13.41***	(-3.16)	-8.23 ***	(-4.47)	11.39***
BHAR(0, +1)	-79.55***	(-20.20)	-92.58***	(-6.12)	-65.62***	(-17.38)	-69.66 ***	(-8.01)	-13.93***
BHAR(+2, +8)	-29.02***	(-4.12)	-29.31***	(-5.87)	-18.60***	(-3.06)	-9.57***	(-3.63)	-10.42

  

Panel C. By bank ownership									
	bank ownership $\geq$ 5%				bank ownership $<$ 5%				Mean Difference
	Mean	(t-value)	Median	(z-value)	Mean	(t-value)	Median	(z-value)	
BHAR(-8, -1)	-3.90	(-1.03)	-2.75	(-1.29)	-10.93***	(-3.84)	-6.96***	(-4.49)	7.03
BHAR(0, +1)	-86.71***	(-22.04)	-94.51***	(-4.99)	-65.62***	(-24.20)	-70.68***	(-8.76)	-21.09***
BHAR(+2, +8)	-13.03***	(-2.72)	-1.41**	(-2.28)	-29.08***	(-5.69)	-29.36***	(-6.43)	16.05**

  

Panel D. By application for corporate reorganization									
	Yes				No				Mean Difference
	Mean	(t-value)	Median	(z-value)	Mean	(t-value)	Median	(z-value)	
BHAR(-8, -1)	-9.74***	(-2.73)	-5.87***	(-3.46)	-8.71***	(-2.81)	-6.95***	(-3.05)	-1.03
BHAR(0, +1)	-79.28***	(-29.96)	-87.73***	(-7.09)	-62.45***	(-16.89)	-66.33***	(-7.16)	-16.82***
BHAR(+2, +8)	-30.77***	(-6.42)	-28.61***	(-5.21)	-19.76***	(-3.03)	-21.03***	(-4.56)	-11.01

Panel B shows the holding period abnormal returns during eight trading days before and after the announcement of involuntary delisting for the pre-Phoenix sample (the sample before the introduction of the Phoenix market) and for the post-Phoenix sample (the sample after the introduction of the Phoenix market). The post-Phoenix sample shows less firm value reduction than the pre-Phoenix sample on both the first two days of announcement (0, 1) and the following six days (2, 8). This result suggests that perhaps the increase in liquidity of delisted firms in the Japanese markets moderates the loss in firm value. However, a multivariate analysis would be required to ascertain whether this result is caused by the introduction of the Phoenix market or other influential variables. In Section 2 we discussed the bank-insider's possible role on the wealth effect of delisting. Panel C compares the wealth effects of delisting firms with large bank

shareholding to those with low bank shareholding. We find that high bank ownership firms (bank ownership of 5% or more) show a smaller reduction in firm value (BHAR(-8, -1) of negative 3.90%) than low bank ownership firms (bank ownership less than 5%; BHAR(-8, -1) of negative 10.93%). On the other hand, high bank ownership firms show a much greater reduction in firm value (BHAR(0,+1) of -86.71%) than low bank ownership firms (BHAR(0,+1) of -65.62%). This finding is consistent with the interpretation that for firms with high bank ownership during the time leading up to a delisting announcement the market reasons that the likelihood of bankruptcy is very low; but, once the delisting of the firm is announced, the negative impact of delisting announcement on the market is much higher than for low bank ownership firms. However, after the news has been reported reversal occurs. The BHAR(+2, +8) is negative 13.03% for high bank ownership firms and negative 29.08% for the low bank ownership firms.

Panel D compares the information effect of involuntary delisting for firms that applied for corporate reorganization with those that did not. We noted earlier that as high as 70% of the firms that applied for corporate reorganization underwent 100% capital reduction. Consistent with this observation the average BHAR(0, +1) of the corporate reorganization subsample is negative 79.28%, a much larger reduction in firm value than the average BHAR(0, +1) of the non-corporate reorganization subsample, negative 62.45%.

While not shown as a table, we also investigate the long-term trend of stock prices prior to delisting. The delisted firms show a price decline long before the delisting decision is announced. The one-year holding period return prior to delisting is about negative 60%, indicating that stocks that show a significant decrease in value become delisted. Furthermore, the one-year holding period return that includes the effect of a delisting disclosure is as high as negative 90%, indicating that investors holding delisted shares lose nearly all of their investment. The average and median BHAR(-250, +2) are negative 92.50% and negative 97.43%, respectively, for the TSE and negative 89.86% and 94.84%, respectively, for the subgroup of JASDAQ and others showing that investors holding shares of delisted firms lose almost all of their initial investment due to involuntary delisting.

## **2. Changes in Share Ownership Prior to Involuntary Delisting**

We consider the change in ownership stake of inside shareholders and outside investors surrounding this massively wealth dissipating event. Unfortunately, daily trading data by investor type are not available for the Japanese market. Therefore, we trace the change in the ownership composition on the basis of the ownership distribution data as of T-1, T-2 and T-3 (the year-end of each fiscal year), as found in the annual reports. We define insiders as the shareholders who own at least 5% of the firm's stock. The bank-insider is simply the bank that owns 5% or more of the firm's

stock. We define inside and outside institutional investors other than banks using the ownership threshold of 5%.

Table 3 shows the mean and the median share ownerships of the sample firms at T-1, T-2 and T-3. The mean percentage ownership of inside shareholders decreases from 53.73% at T-3 to 51.95% at T-2 to 50.30% at T-1. We further divide inside shareholders into controlling individuals, institutions including banks, other firms and foreigners. We observe a decreasing trend in share ownership over time among controlling individuals and institutions, but not among inside shareholders that are either other firms or foreigners.

We separate bank-insiders from institutions-insiders to examine whether banks act differently than other institutions. In Table 3, share ownerships are shown in parenthesis. We find that the banks adjust their share ownership less than other institutions, which is consistent with the reputational concern of banks-insiders, which plays a central role in Japanese corporate governance structure.

**Table 3: Share Ownership During 3 Years Prior to Involuntary Delisting**

This table shows the share ownership composition of involuntarily delisted firms at the end of three years (T-3), two years (T-2) and one year (T-1) prior to the delisting fiscal year T. Inside shareholders are classified into controlling individuals, institutions including banks, banks only, other firms and foreigners while outside investors are classified into retail individual investors, institutions, other firms and foreigners. The share ownership of inside shareholders and outside investors add to 100% as shown in the last row of the table. We show the share ownership of banks in round parenthesis. The share ownership data of the delisted firms are collected from eol, a comprehensive corporate information database for Japanese companies. The unit of share ownership is percent.

Shareholder Composition	T-3		T-2		T-1	
	Mean	Median	Mean	Median	Mean	Median
<b>Inside Shareholders (A)</b>	53.73	54.11	51.95	53.10	50.30	50.99
Controlling Individuals	18.38	9.45	17.61	9.97	15.73	9.37
Institutions incl. Banks	8.66	6.03	7.77	5.01	6.23	4.05
Banks only	(3.05)	(0.00)	(2.69)	(0.00)	(2.57)	(0.30)
Other Firms	22.28	16.64	21.78	15.49	22.90	17.36
Foreigners	4.40	0.00	4.80	0.00	5.43	0.00
<b>Outside Investors (B)</b>	46.27	45.89	48.05	46.91	49.70	49.01
Retail Individual Investors	35.08	34.04	37.15	35.01	40.96	39.62
Institutions	4.53	2.86	4.41	3.13	3.34	2.05
Other Firms	4.27	2.85	3.84	2.37	3.38	2.25
Foreigners	2.38	0.83	2.64	0.87	2.00	0.77
<b>Total (A+B)</b>	100		100		100	

While the ownership stakes of inside shareholders decrease leading up to delisting, the ownership stakes of outside investors increase. However, when dividing outside investors into retail individual investors, institutions, other firms and foreigners, only retail individual investors exhibit an increasing trend in ownership. Conversely, the rest of outside investors, including institutional investors, show a decreasing trend in ownership. Note that ownership stakes of institutional investors and foreign investors in the sample firms tend to be low contrary to the stylized fact that institutions and foreign investors play a dominant role in the Japanese stock market. This phenomena is likely due to the fact that most of the delisted firms are relatively small firms neglected by institutions and foreign investors.

Table 4 shows the changes in the share ownership composition during the three years prior to involuntary delisting, and reports whether these changes are statistically significant. The mean ownership stake of inside shareholders decreases by 3.42% in the two years between T-3 and T-1, and this decrease is significant at the 1% level. The median percentage change in the ownership of inside shareholders is 2.16%, which is also significant at the 1% level. The change in the ownership of inside shareholders is primarily due to the decrease in the ownership of controlling individuals and institutions, including banks. The mean change in the share ownership of controlling individuals between T-3 and T-1 is negative 2.64%, which is significant at the 1% level. The mean change in share ownership of institutions between T-3 and T-1 is negative 2.43%, which is significant at the 1% level.

We isolate banks from other institutions to see the changes in the share ownership of banks separately. We find that bank-insiders also reduce their share ownership of delisted firms. The mean changes in share ownership between T-3 and T-2 and between T-3 and T-1 are negative 0.37% and negative 0.48%, respectively, both of which are significant at the 1% level. It is worth noting that the reduction of share ownership is very modest suggesting the reputational concern of the bank-insiders. The median changes in share ownership are smaller than the mean values, implying that the distribution of share ownership changes is somewhat skewed to the left.

**Table 4: Test of Changes in Share Ownership During 3 Years Prior to Involuntary Delisting**

This table shows the changes in the share ownership during three years prior to involuntary delisting. Tests of differences are based on the t-test for the mean difference and the Wilcoxon signed-rank test for the median difference. Numbers in round brackets are t-values and z-values. \*, \*\* and \*\*\* correspond to the level of significance at 10%, 5% and 1%, respectively.

Shareholder composition	t-test			Wilcoxon signed-rank test		
	T-3 vs.T-1	T-2 vs.T-1	T-3 vs.T-2	T-3 vs.T-1	T-2 vs.T-1	T-3 vs.T-2
InsideShareholders	-3.42*** (-2.62)	-1.65 (-1.58)	-1.77** (-2.09)	-2.16*** (-3.16)	-0.84*** (-2.77)	-1.14*** (-2.95)
Controlling Individuals	-2.64** (-2.32)	-1.88* (-1.95)	-0.77 (-1.04)	0.00 (-1.09)	0.00 (-1.28)	0.00 (-0.62)
Institutions incl. Banks	-2.43*** (-5.47)	-1.53*** (-4.27)	-0.90** (-2.08)	-1.14*** (-5.21)	-0.35*** (-4.21)	-0.04*** (-2.67)
Banks only	-0.48** (-2.35)	-0.12 (-0.87)	-0.37*** (-2.74)	0.00*** (-2.63)	0.00 (-1.01)	0.00*** (-3.31)
Other Firms	0.62 (0.41)	1.13 (0.93)	-0.50 (-0.54)	-0.01 (-0.73)	0.00 (-0.52)	-0.04* (-1.76)
Foreigners	1.03 (1.25)	0.64 (1.06)	0.39 (0.63)	0.00 (-0.99)	0.00 (-0.34)	0.00 (-1.32)
Outside Investors	3.42*** (2.62)	1.65 (1.57)	1.77** (2.08)	2.16*** (-3.17)	0.84*** (-2.77)	1.14*** (-2.96)
Retail Individual Investors	5.87*** (4.52)	3.81*** (3.59)	2.07*** (2.60)	3.78*** (-4.88)	2.71*** (4.66)	1.45*** (-3.24)
Institutions	-1.19*** (-4.89)	-1.07*** (-5.40)	-0.12 (-0.65)	-0.68*** (-4.97)	-0.62*** (-5.60)	-0.05 (-0.35)
Other Firms	-0.89*** (-2.89)	-0.46* (-1.71)	-0.43** (-2.13)	-0.53*** (-4.34)	-0.34*** (-3.60)	-0.23*** (-2.93)
Foreigners	-0.38 (-1.38)	-0.64*** (-2.75)	0.26 (-1.18)	-0.01 (-1.41)	-0.08*** (-3.09)	0.01 (-0.33)

While the ownership stake of inside shareholders decreases in the three years prior to delisting, the mean and median ownership stakes of outside investors rise by 3.42% and 2.16%, respectively. These increases in ownership stakes are significant at the 1% level. Moreover, we find that the increase in shareholder ownership by outside investors is due principally to the increase in share ownership of individual investors. The mean and the median increase in share ownership of retail individual investors between T-3 and T-1 are 5.87% and 3.78%, respectively, which are both significant at the 1% level. In contrast, the share ownerships of institutions and other firms decrease by 1.19% and 0.89%, respectively, which are significant at the 1% level.

In short, as involuntary delisting approaches, only retail individual investors increase

their stakes in delisted firms, whereas inside shareholders and outside institutional investors reduce their ownership stakes. These results are consistent with a wealth transfer from retail individual investors to firm insiders and outside institutional investors. However, inside shareholders, who collectively hold about 50% of equity, reduce their ownership stakes in the firm only modestly.

### **3. Relation between Abnormal Returns and Changes in Share Ownership**

In the previous sections we reported that involuntary delisting leads to a massive stock price decline, inside shareholders decrease their ownership stakes, and retail individual investors increase their ownership stakes. However, since these inferences are based on the means and medians of abnormal returns and changes in ownership stakes, a direct relationship between the changes in ownership stakes and abnormal returns cannot be asserted. Therefore, in this section we use cross-sectional regression models for abnormal returns in an attempt to show the magnitude of the relationship between abnormal returns due to delisting and changes in ownership stakes in the sample firms.

The dependent variables of the cross-sectional regression models are BHAR(-250, -61), the buy-and-hold abnormal return from  $t=-250$  to  $t=-61$ , BHAR(-60, -1), the buy-and-hold abnormal return from  $t=-60$  to  $t=-1$ , and BHAR(0, +1), the buy-and-hold abnormal return from  $t=0$  to  $t=1$ . BHAR(0, +1) is a measure of the announcement effect of involuntary delisting. The independent variables include: changes in the share ownership of inside shareholders ( $\Delta IN\_SHDR$ ), changes in the share ownership of outside retail individual investors ( $\Delta OUT\_INDV$ ), changes in the share ownership of outside institutional investors ( $\Delta OUT\_INST$ ) and other control variables. We control for the effect of firm size using the natural logarithm of capitalization at the end of T-3 (SIZE) and the effect of financial leverage using the debt ratio at the end of T-3 (LEV). We also control for the effect of profitability deterioration on the holding period return using the change in ROA from the end of T-3 to the end of T-1 ( $\Delta ROA$ ), and we control for the effect of turnover on the holding period return using the trading volume turnover from T-3 to T-1 (Turnover).

In order to examine the effect of bank ownership, we also include Bank\_dumy, which takes the value of 1 if banks own more than 5% of the shares and 0 otherwise.<sup>11</sup> Moreover, in order to investigate the effect of the introduction of the Phoenix market and of a reorganization application on the information effect of delisting, we include Phoenix\_dumy, which takes the value of 1 for the post-Phoenix period and 0 for the pre-Phoenix period and Reorganization\_dumy, which takes the value of 1 if the firm applied for reorganization and 0 otherwise. The model estimation results are shown in Table 5.

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<sup>11</sup> We use the dummy variable since the bank ownership is zero percent for 68 firms, which is about 50% of the sample. We set the threshold of 5% for the bank to be considered as an insider since banks would need at least 5% of ownership to be able to influence the firm.

**Table 5: Determinants of BHAR Prior to Involuntary Delisting**

This table shows the determinants of BHAR(-250, -61), BHAR(-60, -1) and BHAR(0, +1) prior to involuntary delisting based on the following cross-sectional regression:

$$BHAR(-250, -61) \text{ or } BHAR(-60, -1) \text{ or } BHAR(0, +1) = C + \beta_1(\Delta IN\_SHDR \text{ or } \Delta OUT\_INDV \text{ or } \Delta OUT\_INST) + \beta_2 SIZE + \beta_3 \Delta ROA + \beta_4 LEV + \beta_5 Turnover + \beta_6 Bank\_dummy + \beta_7 Phoenix\_dummy + \beta_8 Reorganization\_dummy + \varepsilon$$

where, BHAR(-250, -61), BHAR(-60, -1) and BHAR(0, +1) are the buy-and-hold abnormal returns from t=-250 to t=-61, from t=-60 to t=-1 and from t=0 to +1, respectively;  $\Delta IN\_SHDR$ ,  $\Delta OUT\_INDV$ , and  $\Delta OUT\_INST$  are changes in shareholding of inside shareholders, outside retail individual investors and outside institutional investors from T-3 to T-1, respectively; SIZE and LEV are the natural logarithm of market capitalization and the debt ratio at the end of T-3, respectively;  $\Delta ROA$  is the change in ROA from T-3 to T-1; and Turnover is the trading volume turnover from T-3 to T-1; Bank\_dummy takes the value of 1 if banks own more than 5% of the stock and 0 otherwise; Phoenix\_dummy takes the value of 1 for the post-Phoenix period and 0 for the pre-Phoenix period; Reorganization\_dummy takes the value of 1 if the firm applied for reorganization and 0 otherwise. Numbers in round brackets are the t-statistics. \*, \*\* and \*\*\* correspond to the level of significance at 10%, 5% and 1%, respectively.

Independent Variables	Dependent Variable								
	BHAR(-250, -61)			BHAR(-60, -1)			BHAR(0, 1)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
$\Delta IN\_SHDR$	1.069*** (4.82)			-0.036 (-0.15)			0.181 (1.26)		
$\Delta OUT\_INDV$		-0.978*** (-4.37)			0.012 (0.05)			-0.107 (-0.74)	
$\Delta OUT\_INST$			0.602 (0.46)			0.678 (0.52)			-0.535 (-0.68)
SIZE	-5.207** (-2.07)	-4.868* (-1.90)	-5.789** (-2.12)	-2.772 (-1.01)	-2.762 (-1.01)	-2.664 (-0.97)	-4.017** (-2.47)	-4.020** (-2.45)	-4.196** (-2.57)
$\Delta ROA$	0.051 (1.70)	0.039 (1.30)	0.034 (1.01)	0.023 (0.70)	0.023 (0.72)	0.018 (0.54)	0.025 (1.31)	0.023 (1.21)	0.027 (1.35)
LEV	-0.138 (-1.79)	-0.109 (-1.40)	-0.105 (-1.20)	-0.076 (-0.90)	-0.077 (-0.92)	-0.064 (-0.73)	-0.046 (-0.92)	-0.041 (-0.82)	-0.052 (-0.99)
Turnover	0.035 (0.11)	0.099 (0.29)	0.155 (0.43)	-0.403 (-1.12)	-0.406 (-1.13)	-0.412 (-1.15)	-0.277 (-1.30)	-0.263 (-1.23)	-0.252 (-1.18)
Bank_dummy	-7.035 (-0.76)	-4.864 (-0.51)	0.135 (0.01)	21.504** (2.13)	21.335** (2.12)	21.840** (2.17)	-16.503*** (-2.75)	-15.868*** (-2.64)	-15.816*** (-2.64)
Phoenix_dummy	1.029 (0.15)	0.229 (0.03)	-0.299 (-0.04)	3.997 (0.52)	4.032 (0.53)	3.842 (0.50)	6.405 (1.22)	6.831 (1.30)	7.231 (1.38)
Reorganization_dummy	-25.552*** (-3.15)	-24.514*** (-2.98)	-20.236** (-2.32)	-11.506 (-1.30)	-11.631 (-1.32)	-11.605 (-1.32)	-9.102** (-2.00)	-9.258** (-2.03)	-9.144** (-1.99)
C	41.284 (1.65)	36.665 (1.45)	34.998 (1.29)	2.041 (0.07)	2.213 (0.08)	1.190 (0.04)	-25.222 (-1.57)	-26.048 (-1.61)	-25.317 (-1.56)
Adj. R-squared	0.184	0.161	0.037	0.078	0.078	0.080	0.222	0.215	0.215
P-value	(0.00)	(0.00)	(0.12)	(0.02)	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)

First, we examine the model of the holding period return from t=-250 to t=-61, BHAR(-250, -61). The effect of  $\Delta IN\_SHDR$  is positive and significant and the effect of  $\Delta OUT\_INDV$  is negative and significant, suggesting that firms within side shareholders

decreasing their ownership stakes and retail individual investors increasing their ownership stakes show a larger fall in stock price. However, the coefficient of  $\Delta\text{OUT\_INST}$  is not statistically significant, suggesting that changes in the ownership stakes of outside institutional investors do not affect the holding period return prior to delisting.

Although not shown in the table, the effect of the change in the share ownership of other outside investors, such as foreigners and other firms, on the holding period return is not statistically significant. Among the control variables, the effect of SIZE is negative and significant, albeit weakly, suggesting that larger firms experience a larger stock price decline prior to involuntary delisting. The coefficient of Reorganization\_dummy is negative and statistically significant, indicating that firms that applied for reorganization faced significant financial distress even before the delisting announcement. Bank\_dummysnor Phoenix\_dummy have influence on the abnormal return.

Next, we consider the effect of the changes in ownership on the holding period return from  $t=-60$  to  $t=-1$  ( $\text{BHAR}(-60, -1)$ ). We find that  $\Delta\text{IN\_SHDR}$  and  $\Delta\text{OUT\_INDV}$  are not significant for  $\text{BHAR}(-60, -1)$  in contrast to their significant effect on  $\text{BHAR}(-250, -61)$ . One interpretation is that there is a close relationship between the change in share ownership and the specific abnormal return window, that is, contemporary relationship is stronger than lagged relationship. Interestingly, Bank\_dummy, which is not significant for  $\text{BHAR}(-250, -60)$ , is highly significant and positive for  $(-60, -1)$ . This result is consistent with the interpretation given for Panel C of Table 2. As a delisting announcement approaches, the possibility of a firm default increases. Therefore, for the period immediately prior to the announcement, for example, the  $(-60, -1)$  abnormal return window, the presence of a bank as an inside shareholder sends a positive signal that the firm is unlikely to default as the bank-insider will try to support the troubled firm. As a result, the Bank\_dummy has a large positive wealth effect right up to the delisting announcement.

Next, we turn to the model of a two-day abnormal return of the delisting announcement,  $\text{BHAR}(0, +1)$ . We discover that none of the coefficients of  $\Delta\text{IN\_SHDR}$ ,  $\Delta\text{OUT\_INDV}$  and  $\Delta\text{OUT\_INST}$  are significant, suggesting that the delisting announcement effect is not influenced by the changes in the ownership stakes of inside shareholders, retail individual investors or outside institutional investors. Among the control variables, we find that the coefficient of SIZE is negative and statistically significant, indicating that the announcement effect of a delisting announcement is larger among larger firms. However, the Bank\_dummy, which is highly significant and positive for  $(-60, -1)$ , is highly significant and negative for  $(0, 1)$ . This result is consistent with the interpretation given for Panel C of Table 2. While the bank presence as a large inside shareholder is a positive signal that the firm would be unlikely to default, the negative impact of delisting announcement on the market would be much higher for high bank ownership firms once the delisting of the firm is announced.

Furthermore, the coefficient of *Reorganization\_dummy* is negative and statistically significant, showing that the information effect on the firms that applied for reorganization is even more negative than for those that did not apply for reorganization. This result appears to reflect the fact that more than 70% of the firms that applied for corporate reorganization ended up with 100% capital reduction. The *Phoenix\_dummy* is not statistically significant, which is inconsistent with the univariate result in Table 2. When we control for other relevant factors we come to the conclusion that the introduction of the Phoenix market has not moderated the reduction in firm value by improving the liquidity of delisted stocks. This is consistent with the observation that the trading of delisted stocks in the Phoenix market is limited.

## **VI. Summary and Conclusions**

This paper analyzes the wealth effect of involuntary delisting in the Japanese stock market. More importantly, we investigate whether inside shareholders take advantage of inside information on delisting likelihood at the expense of outside investors by examining the changes in the ownership structure of delisted firms. Using the sample of delisted firms in Japan between 2002 and 2012, we find several interesting results.

First, the information effect of an involuntary delisting decision is approximately negative 70% of market capitalization, suggesting that delisting is a highly disruptive event in Japan. The fall in valuation due to delisting is far more pronounced in Japan than in the U.S. This difference in the market response between the two countries is likely due to the fact that there is limited post-delisting liquidity of delisted stocks in Japan, whereas there is some liquidity after delisting in the U.S. The difference in firm value destruction between Japan and the U.S. may also be due to differences in legal environments between the two countries, such as the low success rate of reorganization in Japan compared to the U.S. Furthermore, we examine the effect of the introduction of the Phoenix market where delisted stocks can be traded.

Second, delisted firms show a price decline long before the delisting decision is announced. The one-year holding period return prior to delisting is about negative 60%, indicating that stocks that show a significant decrease in value become delisted. Furthermore, the one-year holding period return that includes the effect of a delisting disclosure is as high as negative 90%, indicating that investors holding delisted shares lose nearly all of their investment.

Third, insider opportunism seems limited overall. While inside shareholders reduce their shareholdings and retail individual investors increase their shareholdings prior to involuntary delisting, the ownership reduction is limited and insiders continue to hold about 50% of the equity of the firm. Banks as inside shareholders basically maintain their equity exposure to the firm while inside shareholders as a whole reduce their ownership by 2-3%points.

Fourth, we find in the cross-sectional regression analyses of abnormal returns of delisted firms the greater the reduction in the shareholding of inside shareholders and the greater the increase in the shareholding of retail individual investors, the larger the one-year decrease in the stock price prior to delisting. These results suggest that firms with inside shareholders actively reducing their ownership stakes show a larger decrease in stock price.

Finally, we find that the decrease in share price leading up to a delisting announcement is much less for delisted firms with a bank-insider than without. The decrease in the share price on a delisting announcement is far greater for delisted firms with a bank-insider than without, suggesting that the bank as an inside shareholder is perceived to be the backstop of the ailing firm.

In conclusion, involuntary delisting precipitates a collapse of prices in delisted stocks in Japan. This dramatic market response appears to be due primarily to the market condition in Japan, where the trading of delisted stocks is very limited. Inside shareholders reduce their share ownership, but the adjustment is relatively modest. Interestingly, banks reduce their share ownership very little, if at all. Possible explanations are that they may fear sending a negative signal to the market or they have a much greater concern for reputational capital. While 5-6% of share ownership increase by retail individual investors around involuntary delisting represents a sizable wealth transfer, the insiders could be far more aggressive in selling their shares to retail investors. We conclude that the extent of opportunism on the part of insiders in the context of involuntary delisting is constrained in Japan. The unique corporate governance in Japan and the bank-centered corporate governance of related firms may have contributed to this stay-put behavior. Ultimately this behavior limits the wealth expropriation of outside shareholders surrounding a delisting announcement.

## **Reference**

- Angel, J. J., J. H. Harris, V. Panchapagesan, and I. M. Werner, 2004, "Off but not gone: A study of NASDAQ delisting", Working Paper, Washington University.
- Ashiq, A., K. Sandy, and L. Oliver, 2008, "Institutional stake holdings and better-informed traders at earnings announcements", *Journal of Accounting and Economics* 46, pp. 47-61.
- Barber, B. M., Y. T. Lee, Y. J. Liu, and T. Odean, 2009, "Just how much do individual investors lose by trading?", *Review of Financial Studies* 22, pp. 609-632.
- Battalio, R. H. and R. R. Mendenhall, 2005, "Earnings expectations, investor trade size, and anomalous returns around earnings announcements", *Journal of Financial Economics* 77, pp. 289-319.
- Charitou, A., C. Louca, and N. Vafeas, 2007, "Boards, ownership structure, and involuntary delisting from the New York Stock Exchange", *Journal of Accounting and Public Policy* 26, pp. 249-262.

- Fama, E. and M. Jensen, 1983, "Separation of ownership and control", *Journal of Law and Economics* 26, pp. 327-349.
- Harris, J., V. Panchapaegesan and I.M. Werner, 2008, "Off but not gone: A study of Nasdaq delistings", Working Paper, SSRN.
- Hoshi, T., A. Kashyap, and D.Scharfstein, 1990, "The role of banks in reducing the costs of financial distress in Japan", *Journal of Financial Economics* 27, 67–88.
- Imai, M., 2007, "The Emergence of Market Monitoring in Japanese Banks: Evidence from the Subordinated Debt Market," *Journal of Banking and Finance* 31, 1441-1460.
- Kang, J.K. and A. Shivdasani, 1995, "Firm performance, corporate governance, and top executive turnover in Japan", *Journal of Financial Economics* 38, 29–58.
- Kang, J.K. and A. Shivdasani, 1997, "Corporate restructuring during performance declines in Japan", *Journal of Financial Economics* 46, 29–65.
- Kaplan, S.N., B.A. Minton, 1994, "Appointments of outsiders to Japanese boards: Determinants and implications for managers", *Journal of Financial Economics* 36, 225–258.
- Kaplan, S.N., 1994, "Top executive rewards and firm performance: A comparison of Japan and the United States", *Journal of Political Economy* 102, 510–546.
- Lakonishok, J. and I. Lee, 2001, "Are insider trades informative?", *Review of Financial Studies* 14, pp. 79-111.
- Macey, J., M. O'Hara, and D. Pompilo, 2008, "Down and out in the stock market: The law and economics of the delisting process", *Journal of Law and Economics* 51, pp. 683-713.
- Morck, R., M. Nakamura, and A. Shivdasani, 2000. Banks, ownership structure, and firm value in Japan, *Journal of Business* 73, 539–567.
- Odean, T., 1998, "Are investors reluctant to realize their losses?", *Journal of Finance* 53, pp. 1775-1798.
- Odean, T., 1999, "Do investors trade too much?", *American Economic Review* 89, pp. 1279-1298.
- Park, J., P. Lee, and Y.W. Park, 2014, "Information effect of involuntary delisting and informed trading", *Pacific-Basin Finance Journal* 30, pp. 251-269.
- Sakawa H., M.Ubukata, and N. Watanabel, 2014, "Market liquidity and bank-dominated corporate governance: Evidence from Japan" *International Review of Economics and Finance* 31, pp.1–11.
- Sanger, G. C. and J. D. Peterson, 1990, "An empirical analysis of common stock delisting", *Journal of Financial and Quantitative Analysis* 25, pp. 261-272.
- Shumway, T., 1997, "The delisting bias in CRSP data", *Journal of Finance* 52, pp 327-340.
- Weinstein, D.E. and Y. Yafeh, 1998, "On the costs of a bank-centered financial system: Evidence from the changing main bank relations in Japan," *Journal of Finance* 53, pp. 635–672.
- Wruck, K.H., 1990, "Financial distress, reorganization, and organizational efficiency", *Journal of Financial Economics* 27, pp. 419-444.