

Insider Trading Problems Related to Japanese Seasoned Equity Offerings[†]

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Abstract

Insider trading problems relating to Japanese seasoned equity offerings (SEO) have attracted the attention of many investors. The purpose of this paper is to examine SEO insider problem and to provide suggestions to solve the problem. We have several findings. First, all four of the SEO insider firms experienced negative abnormal stock returns and high trading volume just two weeks before SEO announcement. Second, firms with murky dealings traded at approximately 9% lower prices than did firms without such dealings. Third, firms with murky dealings experienced increased short selling both immediately before and immediately after SEO announcement. Finally, murky dealings markedly reduced the probability of stabilization being conducted.

JEL classification: G21; G24

Keywords: Seasoned Equity Offerings, Insider Trading, Issue Costs, Murky Dealings

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1. Introduction

Insider trading problems relating to Japanese seasoned equity offerings (SEO) have attracted the attention of many investors in Japan. SEO insider activity is where underwriters leak SEO information to their clients (investors) who subsequently sell the stock or take a short position before formal SEO announcement. Such activity earns money at the expense of other existing investors. Although the involvement of several investment houses and investors was clarified through the Financial Services Agency's investigation, many believe that the problem is simply the tip of an iceberg (*Nikkei*, 22 March 2012). Such problems not only discourage the healthy financing of Japanese firms but also cause potential investors, both domestic and overseas, to hesitate entering the Japanese market. To overcome such a situation, the SEO insider problem must be reappraised from various perspectives.

The purpose of this paper is to examine SEO insider problem and provide suggestions to solve the problem. Our major findings are as follows. First, we find negative abnormal stock returns and abnormal trading volume two weeks before SEO announcement for all four SEO insider firms.¹ In addition, in 11% of the SEO firms (28 of 255), we find similar murky dealings as with the SEO insider firms. This result implies that issuers who received an administrative disposition were just the tip of an iceberg, and there is a distinct possibility that the SEO insider problem is firmly entrenched in the securities industry.

Second, we examine the relationship between losses at an issuing firm and murky dealings. We find that firms with murky dealings traded at approximately 9% lower prices than did firms without such dealings. This result implies that for issuers with murky dealings, these dealings brought about losses in the tens or hundreds of billions of yen.

Third, we find that issuers with murky dealings experienced increased short selling. Short interest was high from two weeks before SEO announcement to two weeks after. This result implies that insider investors' short positions were repaid with the discounted new shares². In recent years, fewer investors have subscribed to new stocks, and underwriting risks and sales costs have increased (Maeda [2012]). However, if short selling increases because of the leak of information by an underwriter, applications for new shares will increase for securities lending payments. As a result, information leaks by underwriters may be effective in reducing underwriting risk.

Finally, we examine the relationship between the stabilization and murky dealings. We find that

¹ An SEO insider firm is defined as an issuer that received an administrative disposition.

² Gerard and Nanda [1993] argue that manipulative short sales arise when securities lending payments for new shares are easy to execute.

murky dealings markedly reduce the probability of stabilization being conducted. This finding implies that underwriters' stabilization risk is reduced through murky dealings.

Many jurists advocate the strengthening of punitive clauses for insider information disclosure. However, considering the systematic participation of underwriting firms, the SEO insider problem will not be solved by only strengthening penalties. Our findings indicate that the leaking of SEO information has the effect of reducing underwriting risks (i.e., unsold shares and stabilization). Such an effect may increase an underwriter's conflict of interest.

Our results demonstrate the necessity for reform of the Japanese SEO system. First, we suggest that the period from price calculation to issuance should be shortened. In the present system, stabilization transaction risk arises for the one week after the offering price has been decided and the before the securities are issued. In the US, because the issue date is the day after price calculation day, this risk does not arise. Underwriters can cope with underwriting risks through issue discounts. However, in Japan, issue discounts do not fully reflect stabilization risk, and murky dealings markedly reduce it. This structure and ordinary course of business may have helped cause the organization-based insider problem.

Second, we suggest considering the regulation of short selling and allocations to investors. In principle, underwriters have the right to determine allocations, and issuing firms cannot specify all investors who are to be allocated shares. If an underwriter tacitly guarantees an allocation to specific investors before price calculation, investors will manipulatively sell short, and the loss for an issuing firm may become large. Japan should improve the transparency of the allocation process.

Finally, issuing firms should carefully observe stock returns before SEO announcement. Although murky dealings have occurred frequently before SEO announcements, issuers do not postpone the offer. Underwriters consider not only an issuing firm's profit but also an investor's profits. Issuing firms need to have the ability to recognize murky dealings. However, many Japanese firms have little knowledge of securities markets, and have a strong tendency to trust the timing of securities issuance to their underwriters. It must be recognized that this dependent relationship raises financing costs for an issuing firm.

The remainder of this paper proceeds as follows. Section 2 identifies murky dealings before SEO announcement. Section 3 examines the relationship between an issuing firm's losses and murky dealings. Section 4 investigates whether issuers with murky dealings experience increased short selling. Section 5 analyzes the relationship between the stabilization and murky dealings. Section 6 presents the conclusion and the study's implications.

2. Murky dealings before SEO announcement

A firm can only release usual periodic information before SEO announcement (gun jumping). If only such information is released, abnormal dealings will not arise³. However, if an underwriter leaks insider information to an investor, abnormal dealings will occur.

2.1. Data

This paper analyzes the SEO insider problem from January 2000 to August 2011. The announcement dates and short interest are determined using the NIKKEI NEEDS Financial QUEST database. Stock returns and trading volume are specified using Financial Data Solutions' NPM. Stabilization is specified using information released to the Osaka Securities Exchange and Rakuten Securities.

We began with an initial sample of 839 offerings. However, conditions we applied caused us to remove some from the sample. First, firms that were not listed within 301 pre-announcement days were removed. Second, firms that had other events (e.g., release of financial statements, earnings forecasts, or other corporate events) during the two weeks before announcement were removed. Finally, firms were removed when there was a newspaper article regarding 'rumor' of an SEO before announcement. The final sample consists of 225 offerings.

2.2 Insider trading before SEO announcement

There are six SEO insider firms (Sumitomo Mitsui Financial Group, Mizuho Financial Group, INPEX, Nippon Sheet Glass, Tokyo Electric Power, and Sotetsu Holdings)⁴, and we can observe stock returns and turnover ratio for each. However, Sumitomo Mitsui Financial Group and Mizuho Financial Group were eliminated from the sample because they held other events or there were rumors in the two weeks before announcement.

³ Some studies note that stock prices rise before announcement. This result is explained by the timing hypothesis (Baker and Wurgler [2002], Hertz and Li [2010]), the growth option theory (Carlson et al. [2006]), and the windows of opportunity theory (Choe et al. [1993], Bayless and Chaplinsky [1996]).

⁴ The Financial Services Agency imposed administrative disposition on investment houses that released insider information. SMBC Nikko Securities released SEO information regarding Sumitomo Mitsui Financial Group and Sotetsu Holdings. Nomura Securities released SEO information regarding Mizuho Financial Group, INPEX, and Tokyo Electric Power. In addition, the Financial Services Agency imposed an administrative disposition on one holder of insider information. Chuo Mitsui Asset Trust and Banking acquired insider information regarding INPEX, and Japan Advisory acquired insider information regarding Nippon Sheet Glass.

Table 1 shows daily, weekly, and monthly stock returns and turnover ratio for the SEO insider firms. Stock returns averaged -7.44% in the one month before announcement. The greatest decline in this period was for the two weeks before announcement, with an average of -9.57%. Next, we use cumulative abnormal return (CAR) to eliminate the influence of the market or firm. CAR is calculated using a Fama-French three factor model⁵. A 121-day event window is employed, comprised of 60 pre-event days, the event day, and 60 post-event days. There is also an estimation window for 240 days prior to the event window. CAR averages -6.91% for the two weeks before announcement.

The turnover ratio is daily volume divided by shares outstanding. An abnormal turnover ratio is calculated using the method of Ajinkya and Jain [1989]. This method employs a model in which the explained variable is the firm's turnover ratio and the explaining variable is the market turnover ratio. The event window and estimation window are the same as for the CAR calculation.

Because the turnover ratio is related to a floating stock level, it is difficult to compare the ratios among firms. Therefore, we must compare ratios within the same firm. The turnover ratio for one month before announcement is two times higher than for the two- to three-month period before announcement. The same tendency is observed using the abnormal turnover ratio.

2.3 Firms with murky dealings

In a situation where insider information is not disseminated, the stock price and turnover ratio will not change. This paper specifies a firm with abnormal dealings as an SEO insider firm. Eighty-nine firms (35.0%) show a decrease in their CAR from two days to two weeks before announcement (significance level under 5%). Eighty-two firms (32.2%) show a rise in their abnormal turnover ratios over the same period (significance level under 5%)⁶. For 28 firms, these abnormal dealings (the CAR and abnormal turnover ratio) arise simultaneously, and, in this paper, these firms are therefore defined as firms with murky dealings^{7,8}.

⁵ The z-statistic is computed using the mean squared error of the CAR calculation. This method differs from the cross-section method, in which the distribution of an abnormal return between samples may not be reflected.

⁶ It is less to the volume at the fall than the rise in stock price (Karpoff [1987]). Therefore, an insider trading firm may be included in the analysis using the abnormal turnover ratio.

⁷ SEO insider firms are all included as firms with murky dealings.

⁸ The Tokyo Stock Exchange released the names of 20 firms suspected of SEO insider trading. It selected the ratio of volume on announcement day to average volume for the one month before announcement day as its standard (*Nikkei*, 5 July 2012). However, in another report, the Tokyo Stock Exchange indicated that SEO insider trading arises before announcement (*Nikkei*, 1 December 2010). Therefore, we believe that its selection method is not suitable.

In Japan, pre-hearings for SEOs were forbidden in January 2007. A report indicates that SEO pre-hearings overseas serve as hotbeds for SEO insider problems (*Nikkei*, 30 May 2012). However, our results show 13 firms with murky dealings before 2006, suggesting that the SEO insider problem may have been firmly entrenched in the securities industry for many years.

Table 2 shows the features of firms with murky dealings. Their market capitalization averages approximately 298 billion yen, which is greater than the capitalization of other firms by an average of approximately 150 billion yen. RelOffSize is the number of offered shares divided by shares outstanding. MSE is the mean squared error of the CAR calculation. BTM is the book-to-market ratio. These variables do not show any differences between the firms with murky dealings and other firms.

3. Financing cost for a firm with murky dealings

If insider trading only anticipates a decline in stock price at time of announcement, there will be no difference in CAR between a firm with murky dealings and other firms⁹. Conversely, if market transparency is reduced by insider trading, adverse selection costs may increase. Gerard and Nanda [1993] indicate that manipulative trading results in increased information asymmetry among investors, and the adverse selection problem thus worsens. If insider trading worsens the adverse selection problem for a firm with murky dealings, it not only anticipates the decline in stock prices at announcement but also raises issuance cost¹⁰.

Table 3 shows abnormal stock price returns for the 21 pre-announcement days to price calculation day. AD is the beginning trade date after announcement. CAR from the 21st to the 12th pre-announcement day does not fall. CAR of firms with murky dealings is -2.25% from the 11th to 7th pre-announcement day, -5.83% from the 6th to 2nd pre-announcement day, and -4.61% on announcement day. Then, CAR is -1.63% from the second post-announcement day to price calculation day. Firms with murky dealings have low stock price returns of approximately 8.5% from the 11th pre-announcement day to price calculation day compared with other firms. Alti and Sulaeman [2012] show that CAR is 0.62% on announcement day and that it is -1.81% from the

⁹ If the decline in the stock price anticipated by SEO insider trading causes temporary price pressure, the stock price should immediately return after announcement day. Therefore, there would be no difference between stock price on the price calculation day.

¹⁰ Myers and Majluf [1984] indicate that there is a negative relationship between the adverse selection problem and announcement effect. Gerard and Nanda [1993] indicate that the adverse selection problem is reflected in the discount rate of the offer price.

second post-announcement day to price calculation day in the US. This result indicates that Japanese SEOs have a larger decline in stock price around announcement day compared with the US.

Figure 1 shows the transition of CAR. Stock prices of firms with murky dealings and SEO insider firms decline by approximately 10% beginning 20 days before announcement day, and decline by approximately 20% from the 20th pre-announcement day to price calculation day. These results show that the abnormal dealings do not anticipate the fall of the stock price at announcement.

The results from Table 1 and Figure 1 may influence the features of firms or SEOs. Therefore, we conducted a regression analysis. The explained variable is CAR from two weeks before announcement day to price calculation day. The explaining variables are murky dealings, MSE, $\ln(\text{Capitalization})$, RelOffSize, Lending, BTM, and TSE. The most important variable is murky dealings, which is a dummy variable that assumes a value of 1 if the firm exhibits abnormal trading as an insider firm from two weeks to two days before announcement and zero otherwise. If abnormal dealings only anticipate the fall of the stock price on announcement day, there is no difference in CAR. However, if such dealings worsen the adverse selection problem, a negative CAR is expected.

The other explaining variables are used as control variables. MSE is the mean squared error of the CAR calculation. $\ln(\text{Capitalization})$ is a natural logarithmic value of market capitalization. These variables are proxy variables for the adverse selection problem, and it is expected that the sign for MSE will be negative and that the sign for $\ln(\text{Capitalization})$ will be positive. RelOffSize is the number of offered shares divided by shares outstanding. If the demand curve of an SEO firm is downward sloping, it is expected that the sign of RelOffSize will be negative. Lending is a dummy variable that assumes a value of 1 if it is possible to lend the securities and zero otherwise. It is expected that the sign for lending will be negative. BTM is the book-to-market ratio, and it is expected that the sign for BTM will be positive.

Table 4 shows the results of the regression analysis. The coefficient for Murky dealings is -8.51 in Model 1 and -8.72 in Model 3. These results show that the stock price of a firm with murky dealings is approximately 9% lower than the price for other firms¹¹. Therefore, insider trading does not anticipate the fall of the stock price on announcement day, and it raises issuance cost for the SEO firm. For example, INPEX and Tokyo Electric Power may have lost approximately 50 billion yen of their proceeds through insider trading.

¹¹ When the explained variable is the CAR from one day before to one day after announcement or the CAR from announcement day to price calculation day, the coefficient for a firm with murky dealings is not affected. This result means that the stock price decline before announcement brought about the price decline on price calculation day.

4. Short selling at the SEO

Losses for firms with murky dealings may be related to manipulative short selling. In the case of Sotetsu Holdings, short selling increased rapidly before announcement day, and the lending securities were temporarily lost (*Nikkei*, 1 December 2010).¹²

The offer price for new stock is discounted by approximately 3% from market price in Japan. If a securities firm has promised assignment of a new stock to holders of inside information, the firm can allot the discounted stock to payment for the lending securities. This result means that an arbitrage transaction exists from excluding the lending cost of short selling. In such a situation, it is expected that a firm with murky dealings will have extensive short interest from before announcement day to issuance day of the new shares and that short interest will decline after that point. Conversely, if the firm with murky dealings only targets decline of the stock price on announcement day, it is expected that short interest will fall after announcement.

We use weekly securities lending data to investigate short interest around announcement day. The sample is 168 firms, and there were 22 firms with murky dealings. Abnormal short interest is the value of short interest minus average short interest. Short interest equals the amount of shares sold short divided by shares outstanding. Average short interest equals the average value of short interest from one to six months before announcement day.

Figure 2 illustrates abnormal short interest. The announcement week includes the weekend when the SEO is announced. A statistically significant difference is found between firms with murky dealings and other firms for two weeks before and after announcement. The largest difference is at one week after announcement at 1.02% (significance level under 1%). In a Japanese SEO, there are approximately two weeks from announcement day to issuance day. Therefore, this result suggests that short selling does not anticipate the fall of the stock price on announcement day but that short selling generates profits by allotting new shares to payment for securities lending.

5. Stabilization

The results show that abnormal dealings have inflicted large losses on SEO firms. But what kind

¹² An investment house prepares stock for payment for securities lending and reveals SEO information (*Nikkei*, 10 December 2010).

of influence have the abnormal dealings had on SEO underwriters? The underwriter takes on the risk of an SEO firm's stock price decline. When the stock price is less than the offer price on a new stock's application day, the stock remains unsold, and the underwriter must continue holding the stock. Moreover, when the stock price falls on the days before issuance day, the underwriters sell off comparatively high-priced stock to investors. When stock prices fall during these periods, it is expected that the underwriters will buy the stock themselves to prevent its decline (stabilization)¹³.

As described previously, short selling increases rapidly before announcement day, and stock price declines when the SEO is associated with a firm with murky dealings. When a stock that is traded on the securities lending market temporarily runs short, investors with negative information cannot trade on an SEO firm. In this case, stabilization is conducted by a firm with murky dealings.

The data was acquired from 118 possible firms. The number of firms with murky dealings is 16, leaving 102 other firms in the sample. Four firms with murky dealings conducted stabilization (25%), as did 44 of the firms with non-murky dealings (45.1%). The results of a probit analysis show that a firm with murky dealings reduces the stabilization.¹⁴

6. Conclusion and discussion

It is well known that the stock price in an SEO announcement declines on average. If a specific investor knows beforehand that an SEO will be announced, that investor can profit through a sale or short selling of the stock. If the SEO insider only anticipates the stock price decline at announcement, the offer price will not be affected. However, if the insider trading depresses the stock price more than necessary and the offer price is reduced, the SEO firm will suffer a large loss.

From January 2000 to August 2011, we found that 11% of SEO firms in Japan had murky dealings. This result shows that the previously identified SEO insider trading problem is just the tip of an iceberg and that these bad practices have existed in the securities industry for many years. To investigate the losses of SEO firms, we used CAR from two weeks before announcement day to price calculation day. We found that the offer price for firms with murky dealings is lower by approximately 9% compared with other firms. This result means that murky dealings do not anticipate the stock price decline at announcement and that they reduce proceeds for the SEO firm.

¹³ Stabilization in this period is accepted by the Financial Instruments and Exchange Act.

¹⁴ The explained variable is the stabilization dummy. Explaining variables include firm with murky dealings, discount rate, period from price calculation day to issuance day, lending, TSE, and CAR from price calculation day to issuance day. The possibility that stabilization will be conducted at firms with murky dealings is low. Moreover, a discount rate does not influence stabilization.

Moreover, we find that murky dealings could also be conducted simultaneously with short selling. Furthermore, we find that murky dealings reduce underwriters' risk.

This paper shows that the reason for an underwriter leaking information is to reduce underwriting risk. However, an underwriter's information leak may reduce the proceeds of an SEO, and the underwriting fee may therefore decrease.¹⁵ These important issues should be considered as part of the SEO insider trading problem.

¹⁵ This argument is noted by the referee.

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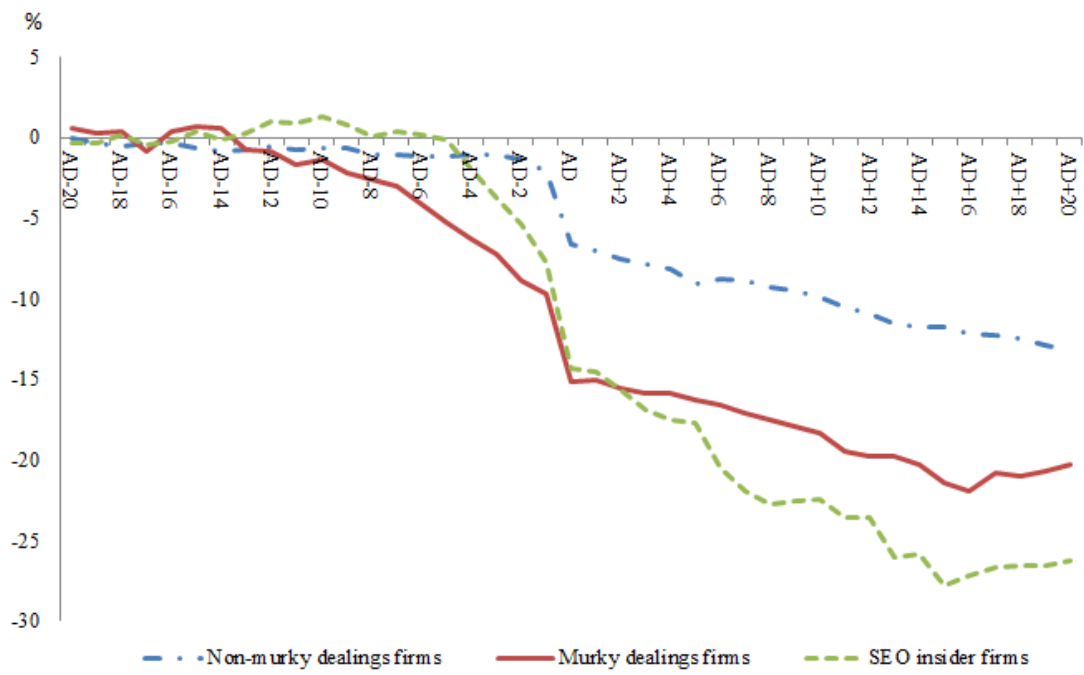


Figure 1 Cumulative Abnormal Return

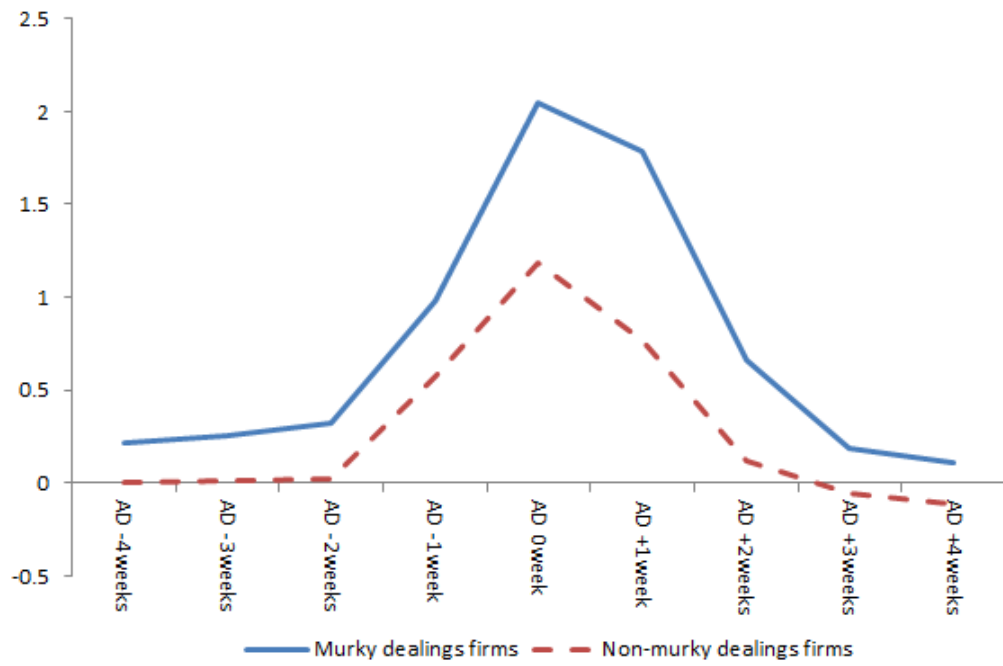


Figure 2 Abnormal Short Interest

Table 1 Abnormal Return and Abnormal Turnover of Insider Trading Firms

		Daily	Weekly				Monthly			
		AD	AD[-2 days to -2weeks]	AD[-1 to -2 weeks]	AD[-2 to -3 weeks]	AD[-3 to -4 week]	AD[-2 days to -2 months]	AD[-1 to -2 months]	AD[-2 to -3 months]	
Raw return	INPEX	1.49	-5.74	-7.09	-4.86	5.00	-12.68	-18.57	-10.24	
	Nippon Sheet Glass	-0.50	-13.24	-2.13	10.57	-1.82	-6.61	-7.19	-2.93	
	Tokyo Electric Power	-7.76	-1.96	-3.49	-1.18	0.85	-5.78	3.18	-1.41	
	Sotetsu Holdings	-3.90	-5.38	0.73	-0.26	0.24	-4.67	2.21	0.72	
	Mean of four firms	-2.67	-6.58	-2.99	1.07	1.07	-7.44	-5.09	-3.46	
Abnormal return	INPEX	mean	-1.27	-5.13 **	-2.68	-3.06	0.65	-10.22 **	-7.07 **	-3.11 *
		Z-stat	-0.80	-3.27	-1.71	-1.95	0.41	-6.51	-4.51	-1.98
	Nippon Sheet Glass	mean	0.90	-12.00 **	4.05	9.77 **	-1.53	0.28	-2.18	-2.70
		Z-stat	0.42	-5.67	1.91	4.61	-0.72	0.13	-1.03	-1.28
	Tokyo Electric Power	mean	-7.89 **	-1.98 *	-4.31 **	-1.22	0.58	-6.93 **	4.15 **	-1.72 *
		Z-stat	-9.03	-2.29	-4.97	-1.41	0.67	-8.00	4.78	-1.99
	Sotetsu Holdings	mean	-3.32 **	-5.77 **	0.16	-0.21	-0.01	-5.84 **	3.05 **	0.41
		Z-stat	-5.38	-9.43	0.26	-0.35	-0.02	-9.54	4.98	0.67
	Mean of four firms	-2.89	-6.22	-0.69	1.32	-0.08	-5.68	-0.51	-1.78	
	Turnover ratio	INPEX	2.67	0.56	0.42	0.34	0.46	0.45	0.50	0.24
Nippon Sheet Glass		10.24	3.20	1.45	2.21	0.65	1.88	1.01	1.08	
Tokyo Electric Power		2.38	0.37	0.34	0.24	0.22	0.30	0.18	0.17	
Sotetsu Holdings		0.51	0.19	0.06	0.05	0.05	0.09	0.04	0.04	
Abnormal turnover ratio		INPEX	mean	2.44 **	0.33 *	0.15	0.09	0.19	0.15	-0.20
	Z-stat		18.21	2.47	1.15	0.67	1.39	1.42	1.12	-1.51
	Nippon Sheet Glass	mean	9.23 **	2.21 **	0.40	1.17	-0.38	0.85	-0.07	-0.06
		Z-stat	13.26	3.18	0.57	1.69	-0.55	1.22	-0.10	-0.08
	Tokyo Electric Power	mean	2.18 **	0.17 *	0.15 *	0.05	0.03	0.10	-0.01	-0.02
		Z-stat	31.30	2.49	2.10	0.74	0.47	1.45	-0.21	-0.30
	Sotetsu Holdings	mean	0.44 **	0.12 **	0.00	-0.01	-0.01	0.02	-0.02	-0.02
		Z-stat	10.03	2.78	-0.05	-0.34	-0.27	0.53	-0.52	-0.56

* p<0.05, ** p<0.01

Table 2 Summary Statistics

Capitalization is a value of market capitalization. RelOffSize is the number of offered shares divided by shares outstanding. Lending is a dummy variable that assumes a value of 1 if it is possible to lend the securities and zero otherwise. MSE is the mean squared error of the CAR calculation. BTM is the book-to-market ratio. TSE is a dummy variable that assumes a value of 1 if the firm has listed Tokyo Stock Exchange and zero otherwise.

		Entire sample (N=255)	Murky dealings firms (N=28)	Non-murky dealings firms (N=227)
Capitalizaion (billion yen)	Mean	165	298	149
	Median	32	55	31
	SD	645	663	643
RelOffSize	Mean	0.15	0.17	0.15
	Median	0.12	0.14	0.12
	SD	0.14	0.11	0.14
Lending	Mean	0.51	0.64	0.50
	Median	1.00	1.00	0.00
	SD	0.50	0.49	0.50
MSE	Mean	2.76	2.50	2.79
	Median	2.55	2.69	2.55
	SD	1.22	1.14	1.23
BTM	Mean	0.65	0.58	0.66
	Median	0.56	0.42	0.56
	SD	0.48	0.46	0.48
TSE	Mean	0.50	0.64	0.48
	Median	0.00	1.00	0.00
	SD	0.50	0.49	0.50

Table 3 Cumulative Abnormal Return

	Entire sample	Murky dealings firms (A)	Non-murky dealings firms (B)	(A) - (B)	t-statistics
CAR[AD -21 to -17days]	-0.51	-1.07	-0.44	-0.63	-0.53
CAR[AD -16 to -12days]	-0.18	0.05	-0.21	0.26	0.19
CAR[AD -11 to -7days]	-0.70 **	-2.25 **	-0.51	-1.74	-1.24
CAR[AD -6 to -2days]	-0.94 **	-5.83 **	-0.34	-5.49	-4.03 **
CAR[AD -1day]	-0.75 **	-0.81 **	-0.74 **	-0.08	-0.14
CAR[AD]	-4.61 **	-5.44 **	-4.51 **	-0.93	-0.91
CAR[AD +1day]	-0.36 **	0.15	-0.42 **	0.56	0.91
CAR[AD +2 to price calculation day]	-1.63 **	-2.77 **	-1.49 **	-1.28	-0.14
CAR[AD -11 to price calculation day]	-3.27 **	-10.85 **	-2.33 **	-8.51	-4.32 **
N	255	28	227		

AD is the beginning trade date after announcement.

Table 4 Ordinary Least Squares of Announcement Return

The explained variable is CAR from two weeks before announcement day to price calculation day. The explaining variables are Murky dealings, MSE, ln(Capitalization), RelOffSize, Lending, BTM, and TSE. Murky dealings is a dummy variable that assumes a value of 1 if the firm exhibits abnormal trading as an insider firm from two weeks to two days before announcement and zero otherwise. MSE is the mean squared error of the CAR calculation. ln(Capitalization) is a natural logarithmic value of market capitalization. RelOffSize is the number of offered shares divided by shares outstanding. Lending is a dummy variable that assumes a value of 1 if it is possible to lend the securities and zero otherwise. BTM is the book-to-market ratio. TSE is a dummy variable that assumes a value of 1 if the firm has listed Tokyo Stock Exchange and zero otherwise.

	Model 1	Model 2	Model 3
Murky dealings	-8.51 ** (-3.21)		-8.72 ** (-3.33)
MSE		-1.73 * (-2.28)	-1.86 ** (-2.57)
ln(Capitalization)		0.35 (0.69)	0.51 (1.09)
RelOffSize		0.89 (0.18)	2.19 (0.38)
Lending		-1.10 (-0.65)	-1.00 (-0.58)
BTM		0.46 (0.30)	-0.17 (-0.11)
TSE		-3.96 * (-2.27)	-3.71 * (-2.20)
Constant	-2.33 ** (-3.79)	-4.93 (-0.40)	-7.59 (-0.66)
Observations	255	255	255
Adjusted R-squared	0.07	0.05	0.12

Robust t-statistics in parentheses

* p<0.05, ** p<0.01