



# Share repurchases on the Tokyo Stock Exchange Trading Network

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## ABSTRACT

Tokyo Stock Exchange Trading Network (ToSTNeT) is a unique market in Japan in which firms can repurchase their shares during off-auction hours at a fixed price within a very short timeframe. In this study, we uncover a drawback in ToSTNeT which appears to have been exploited by managers of the repurchasing firms to favour certain sellers who have close economic ties with the firms. Further investigations reveal that it is impractical for retail investors to sell their shares on ToSTNeT. Our study proposes recommendations of regulatory and policy changes for the Tokyo Stock Exchange that may help tighten the loophole in ToSTNeT and safeguard the integrity of share repurchases in Japan.

## 1. Introduction

On-market share repurchases are conducted in either the open market or the Tokyo Stock Exchange Trading Network (ToSTNeT) market in Japan. While open market share repurchases (OMR) in Japan operates in much the same way as other countries, ToSTNeT share repurchases (TNR) is unique to Japan. The Tokyo Stock Exchange (TSE) established ToSTNeT in 1998 to handle large orders that would otherwise be difficult to execute on the open market. In 2008, the TSE re-established ToSTNeT to enable firms to repurchase shares during off-auction hours over a very short period of time. Specifically, the buying firm announces the TNR program around 4:30 pm after the afternoon trading session ends at 3:00 pm, and executes the program during off-auction hours at 8:45 am on the next day before the market reopens at 9:00 am. The repurchase price of TNR is always fixed at the closing price of the previous day.

When firms announce the initiation of share repurchase programs, they have a choice to disclose or not to disclose the repurchase method they are going to use, i.e., OMR or TNR. Disclosed-OMR and Disclosed-TNR occur when firms announce the repurchase limit as well as the intention to repurchase the shares on the open market and the ToSTNeT market, respectively. On the other hand, Undisclosed-OMR and Undisclosed-TNR occur when firms initially announce *only* the repurchase limit without disclosing the repurchase method. In the case of Undisclosed-OMR, firms are not required to and generally do not announce the use of OMR subsequently as it is the default repurchase method in Japan. However, in the case of Undisclosed-TNR, firms are required to announce the use of TNR

when they decide to repurchase shares on the ToSTNeT market at a later time (i.e., the information to use TNR as the repurchase method is withheld from the public until a later time). Therefore, while Undisclosed-TNR has a two-stage announcement (i.e., the initial and subsequent announcements), the other three methods have only the initial announcement. It is of our belief that the two-stage announcement of Undisclosed-TNR might have compromised the integrity of share repurchases conducted on the ToSTNeT market, which the TSE might not have foreseen when it instigated ToSTNeT. To illustrate with example, consider the share repurchase case between Japan Corporate Housing Service Co. Ltd (JCHS) and its largest shareholder JAFCO in September 2012.

On September 11, 2012 at 12:00 pm, JCHS announced that it would repurchase up to one million shares, without disclosing whether it would repurchase the shares on the open market or the ToSTNeT market. Within three hours of this announcement, JCHS's share price shot up by 27.5% from ¥284 to the afternoon closing price of ¥362. At 5:00 pm, JCHS announced that it decided to repurchase the shares on the ToSTNeT market at the afternoon closing price of ¥362 at 8:45 am on the next day. Following this announcement, JCHS's share price plummeted by 13.3% overnight to the opening price of ¥314 at 9:00 am on September 12. At 11:30 am, JCHS announced that it had repurchased 695,200 shares on the ToSTNeT market and ended the repurchase program. JCHS's share price closed at ¥315 at 3:00 pm, up one yen from the opening price.<sup>1</sup> At 4:15 pm, JAFCO (a venture capital company and the largest shareholder of JCHS at the time) announced that it had sold its entire holding of 690,000 shares to JCHS on the ToSTNeT market at

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<sup>1</sup> The share price of JCHS drifted downward further to ¥295 on the next day, on September 13, and remained in the higher 290-yen range throughout September.

the preceding day's closing price of ¥362.<sup>2</sup> See Appendix for the graphical visualisation of this case.

We highlight several irregularities in JCHS's share repurchase program. First, the transaction that occurred between JAFCO and JCHS in 2012 cannot be seen as at arm's length because the seller JAFCO has had a close business relationship with JCHS. Second, as JCHS did not disclose its decision to repurchase the shares on the ToSTNeT market until a few hours after the close of the market, the sharp increase in JCHS's afternoon closing share price was likely driven by the market assuming that JCHS would repurchase the shares in an open market. This increase in the afternoon closing share price in turn allowed JAFCO to sell its shares to JCHS for a significant gain. Upon further investigation, we find that JCHS's manner in repurchasing the shares is not a random occurrence and that there are more similar cases like JCHS.

We identify 284 Disclosed-OMR, 1,633 Undisclosed-OMR, 580 Disclosed-TNR, and 85 Undisclosed-TNR cases in the period 2008-2012. Overall, our empirical evidence yields several findings. First, our preliminary analysis shows that the market reaction to Disclosed-TNR (0.87%) is significantly lower than the other three repurchase methods – Disclosed-OMR (4.47%), Undisclosed-OMR (3.80%), and Undisclosed-TNR (3.59%). Second, we find that the market adversely reacts to Undisclosed-TNR firms when they subsequently announce their decision to repurchase the shares on the ToSTNeT market (−1.21%). Hence, the initial evidence of a higher market reaction to Undisclosed-TNR compared to Disclosed-TNR appears to be an overreaction, which reverses when the market realises that the firms decided to repurchase the shares on the ToSTNeT market. Meanwhile, the sellers were able to sell their holdings at the inflated price before the price reversal occurs. Third, our regression analysis indicates that the overreaction to Undisclosed-TNR is likely driven by the market's assumption that the firms would repurchase the shares on the open market rather than on the ToSTNeT market. Fourth, we establish from the General Alteration Reports that the sellers are the major shareholders and have close business ties with the buying firms, such as the shareholders having a seat on the board. Lastly, we find that it is practically impossible for individuals and other external shareholders to make a sales offer after the firms have made the announcement on the decision to repurchase the shares on the ToSTNeT market.

Recent evidence also indicates that the practice of Undisclosed-TNR has been ongoing after 2012 (the end of the sample period for this study). Consider Sankyo Co. Ltd (SANKYO), a 'Pachinko' or gambling machine manufacturer in Japan, for example. On February 3, 2015 at 3:00 pm, SANKYO announced that its Board of Directors has resolved to repurchase up to six million shares (or 6.41% of the total number of shares issued), without specifying the repurchase method to be used. Following this announcement, SANKYO's share price increased from ¥4,165 to ¥4,645 (an increase of 11.5%). The next day at 4:00 pm, SANKYO announced the use of TNR to repurchase the shares at the closing price of ¥4,645. SANKYO's share price then dropped from ¥4,645 to ¥4,380 (a decrease of 6.1%) after SANKYO disclosed the repurchase method. On February 5, 2015 at 10:00am, the repurchase result was announced. Incidentally, the seller of the shares to SANKYO was an individual by the name of Hideyuki Busujima who is the CEO of SANKYO and the eldest son of SANKYO's founder, Kunio Busujima.

In March 2015, the TSE made a sweeping overhaul of corporate governance in Japan with the implementation of the Corporate Governance Code (the Code). The overarching purpose of the Code is to help Japanese companies attain sustainable growth and increase their value over the mid to long-term (TSE 2018). The Code aims to make companies

<sup>2</sup> Under the Financial Instruments and Exchange Act, large shareholders (i.e., shareholders with a percentage ownership greater than 5%) are not required to provide an Alteration Report with the Financial Services Agency (FSA) if the trade is less than 1% of the outstanding shares. Because the remaining 5,200 shares in the JCHS's repurchase program merely account for 0.116% of the outstanding shares, the seller of the remaining shares is unknown.

more transparent and accountable to shareholders by putting in place measures that are designed to strengthen corporate governance, such as requiring a minimum of two external directors on the board and securing effective equal treatment of shareholders (TSE 2018, p. 2). While the implementation of the Code marked one of the TSE's most significant milestones to protect the rights of shareholders, recent evidence suggests that the implementation has done little by way of curtailing the practice of Undisclosed-TNR for personal gains for the opportunistic sellers. We have come upon at least three cases of companies using Undisclosed-TNR after the implementation of the Code in 2015, namely, Suzuken Co. Ltd (May 2017), Okamoto Co. Ltd (December 2017), and DCM Holdings Co. Ltd (December 2018), indicating that the TSE is still unaware of the loophole in Undisclosed-TNR.

Our study contributes to the literature in several ways. First, very little is known about the unique repurchase market ToSTNeT to date, even though its use has become increasingly popular in recent times. It is therefore important and useful to examine and gain insights in this market along with its economic implications. Second, our study adds to the growing international evidence supporting the managerial-opportunism theory of Fried (2001, 2005), an alternative possibility to the signalling and free cash flow theories for why firms undertake share repurchases. Third, our findings have significant regulatory implications for the TSE. Our study identified a loophole in the protocol for executing Undisclosed-TNR that the TSE might not have foreseen when it re-established ToSTNeT in 2008. There is also anecdotal evidence suggesting that the TSE might still not be aware of the loophole, given that the practice of Undisclosed-TNR has not been curtailed after the implementation of the Code in 2015. A consequence of Undisclosed-TNR is that firms could deliberately announce the share repurchase limit only and disclose the use of ToSTNeT a few days later, thereby boosting the repurchase price. This creates an opportunity for certain shareholders with close economic ties with the buying firms to sell their shares at the inflated price.<sup>3</sup>

We propose two recommendations to the TSE to tighten the loophole in Undisclosed-TNR. First, the decision on the repurchase method rests in part upon the firm's consideration of several constantly changing economic factors. The uncertainty around these economic factors could significantly impede the firm's decision on whether it would use OMR, TNR, or both. Therefore, at the time the repurchase limit is announced, it is possible that the firm could just be genuinely unable to determine the most appropriate method to use. However, as our empirical work shows, there are some large shareholders including managers who might have benefited from this loophole at the expense of other shareholders by intentionally withholding the information about the use of TNR to inflate the repurchase price. Given the difficulty in monitoring a manager's intention and regulating this practice, we recommend that the TSE requires the repurchasing firm to disclose the repurchase method in good faith or to the best its knowledge at the time the firm announces the repurchase limit. Second, our investigations reveal that it is practically

<sup>3</sup> A similar evidence for management choice of repurchase method to favour one group of shareholders over another group is documented by Brown and Norman (2010) and Au Yong et al. (2014). The Australian taxation treatment of off-market share repurchases as opposed to on-market share repurchases is structured in a way where shareholders with a lower marginal tax rate (typically institutional investors such as superannuation funds) benefit from participating in the repurchase to the detriment of shareholders with a higher marginal tax rate (typically retail investors) (Brown and Eftim, 2005; Brown and Davis, 2012). Taking advantage of this unique taxation setting, Australian firms often engage in off-market buybacks whose repurchase price is set below the market price so that only certain institutional shareholders benefit from participating in the repurchase program. In a similar vein, Rau and Vermaelen (2002) and Brown et al. (2015) provide evidence that the firm's choice of payout method, i.e., dividends or repurchases, is also affected in a way that favours important shareholders such as pension funds in the UK and Australia, respectively.

impossible for retail investors to sell their shares on ToSTNeT due to system deficiencies in brokerage firms. However, if all shareholders are able to participate in Undisclosed-TNR, share repurchases would be executed on a pro-rata basis among the targeted single large shareholder and retail shareholders. Therefore, we recommend that the TSE requires brokerage firms to accept sell orders from retail investors.

This paper proceeds as follows: Section 2 provides a discussion of the institutional and regulatory background and it reviews the related literature. In Section 3, we discuss the sampling approach and provide the descriptive statistics of the sample used in our analyses. Section 4 presents the market reaction analysis of the various repurchase methods, while Section 5 provides an analysis of the Alteration Reports. Some practicality issues and additional analysis of ToSTNeT are presented and discussed in Section 6. Section 7 concludes the study and discusses the regulatory implications of Undisclosed-TNR along with our recommendations for the TSE that may help safeguard the integrity of ToSTNeT repurchases.

## 2. Institutional and regulatory background and related literature

### 2.1. Share repurchases in Japan

Corporate payout policy in Japan has a long-standing history of being inflexible. Prior to 1994, Japanese firms' primary payout was dividend payments and share repurchases were prohibited (Hachiya and Teng, 2011; Hoda and Uno, 2011; Teng and Hachiya, 2011; Ota et al., 2019). Since share repurchases were allowed in 1994, there has been a growing interest for firms to choose share repurchases as a means of corporate payout in Japan.<sup>4</sup> The Company Act (the Act) in Japan governs share repurchase practices for public firms. Specifically, the Act outlines four options for share repurchases (Egashira, 2011):

- (1) On-market trading (Article 165, Para. 1);
- (2) Off-market self-tender offer (Article 165, Para. 1);
- (3) An offer to transfer to all shareholders (Article 158, Para. 1); and
- (4) Transactions with specific shareholders (Articles 160 – 164).<sup>5</sup>

The majority of listed firms in Japan use the first two options to repurchase shares. Prior work shows that the economic consequences associated with on-market trading (option 1) are different from those associated with off-market tender offer (option 2) (see Vermaelen, 1981; Comment and Jarrell, 1991; Vermaelen, 2005). In this study, we focus on the share repurchases from on-market trading (option 1).

On-market trading can occur during auction and off-auction hours. The auction hours are in the morning session (9:00-11:30 am) and the afternoon session (12:30-3:00 pm). On-market trading of share repurchases during auction hours is conducted in an open market (OMR), while on-market trading of share repurchases during off-auction hours is conducted on the ToSTNeT market (TNR). The specific requirements for TNR are described as follows:

- (1) The repurchase price is fixed at the closing price of the preceding day;
- (2) The specific repurchase content is announced through TSE's Timely Disclosure Network (TDnet) after the close of the preceding day (normally around 4:30 pm); and
- (3) The repurchase program is executed immediately prior to the reopening of the next day at 8:45 am.

### 2.2. Implementation schedules of the repurchase methods

Fig. 1(a) presents the implementation schedule of Disclosed-OMR and Undisclosed-OMR. Specifically, the firm makes an announcement of the repurchase limit on day  $s-1$  at 3:30 pm following the close of the afternoon trading session at 3:00 pm.<sup>6</sup> While the firm could disclose the repurchase method (Disclosed-OMR), it is more likely that the firm chooses not to disclose such information (Undisclosed-OMR). Note that there is no requirement for the buying firm to disclose the repurchase method as long as it is OMR. Therefore, there is no following announcement of the repurchase method for Undisclosed-OMR. The investors will learn the use of OMR only after the firm files a Share Buyback Report shortly after the end of each month, which is required by the Financial Instruments and Exchange Act (FIEA). On average, the firm takes around 60 days to announce the results of the OMR and the completion of the repurchase program.

Fig. 1(b) presents the implementation schedule of Disclosed-TNR. Under this repurchase method, the firm announces the use of ToSTNeT as well as the repurchase limit on day  $s-1$  at 4:30 pm following the close of the afternoon trading session at 3:00 pm. At 8:45 am on day  $s$ , the firm executes the repurchase program with ToSTNeT at the closing price of day  $s-1$  before the morning session begins at 9:00 am. The results of TNR and the completion of the repurchase program are disclosed at 11:00 am on day  $s$ . A similarity between Disclosed-TNR and OMR is that the firm makes only a single announcement of the repurchase program on day  $s-1$ .

Fig. 1(c) presents the implementation schedule of Undisclosed-TNR. For this repurchase method, the firm makes a first announcement of the repurchase limit only on day  $s-1$  at 3:30 pm following the close of the afternoon trading session at 3:00 pm. After around three days, the firm makes a second announcement to disclose the use of ToSTNeT to repurchase the shares. This second announcement occurs on day  $t-1$  at 4:30 pm following the close of the afternoon trading session at 3:00 pm. After the disclosure of the use of ToSTNeT, the implementation schedule of Undisclosed-TNR operates in the same way as that of Disclosed-TNR, except that the repurchase price is the closing price of day  $t-1$  (not day  $s-1$ ). A key difference between Undisclosed-TNR and the other repurchase methods is that Undisclosed-TNR has two announcements (the first announcement of the repurchase limit only and the second announcement of the use of ToSTNeT to repurchase the shares).

### 2.3. Related literature

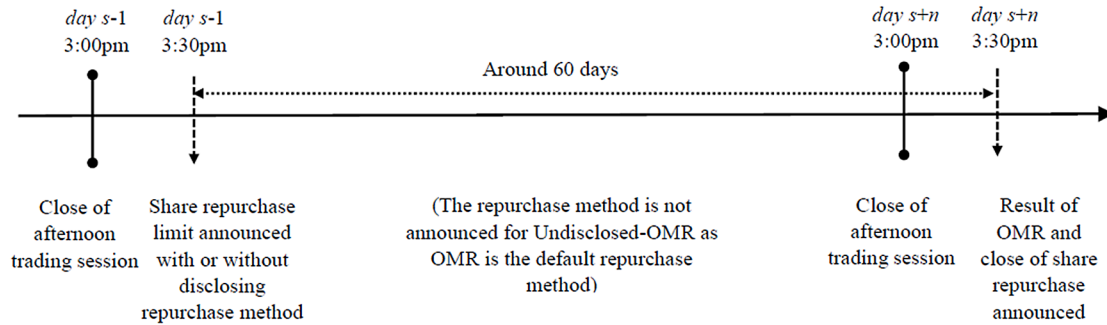
Prior studies have tested various theories for why firms undertake share repurchases. Among the most common theories include the signalling theory, the free cash flow theory, the optimal capital structure theory, the option-funding theory, the takeover deterrence theory, and the mimicking theory. The signalling theory proposes that share repurchases are undertaken because managers perceive that the firm is undervalued, and a repurchase allows them to credibly "signal" to investors about the perceived undervaluation (e.g., Vermaelen, 1981; Grullon and Ikenberry, 2000). The free cash flow theory, on the other hand, proposes that firms repurchase shares to alleviate the agency problem arising from holding excess funds (e.g., Jensen, 1986; Grullon

<sup>4</sup> See Hoda and Uno (2011) and Tong and Bremer (2016) for the detailed description of Japanese share repurchase regulation changes.

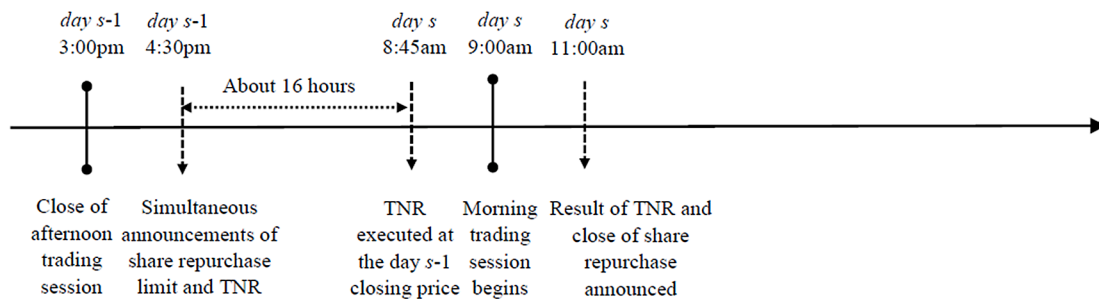
<sup>5</sup> Note that with regard to option (4), the Act puts in place strict measures on repurchases from specific shareholders in Japan. In order for a company to repurchase shares from a specific shareholder, a special resolution must be obtained at the general shareholder meeting, whereby two thirds or more votes cast by shareholders (excluding the specific shareholder) are in favour of the repurchase (Articles 160 and 309, Para. 2). Further, the repurchase price from the specific shareholder is required to be the market price or lower to prevent other shareholders from requesting to be added as the specific shareholder (Article 161). As an exception, these restrictions do not apply to the specific shareholder who is a subsidiary of the repurchasing company (Article 163).

<sup>6</sup> The announcement of OMR could occur during the trading session, while the announcement of TNR always happens after the market closes at 3:00 pm. This is because the TNR announcement has to include the fixed repurchase price that is the closing share price of the buying firm at 3:00 pm.

(a) Disclosed-OMR and Undisclosed-OMR (one event day)



(b) Disclosed-TNR (one event day)



(c) Undisclosed-TNR (two event days)

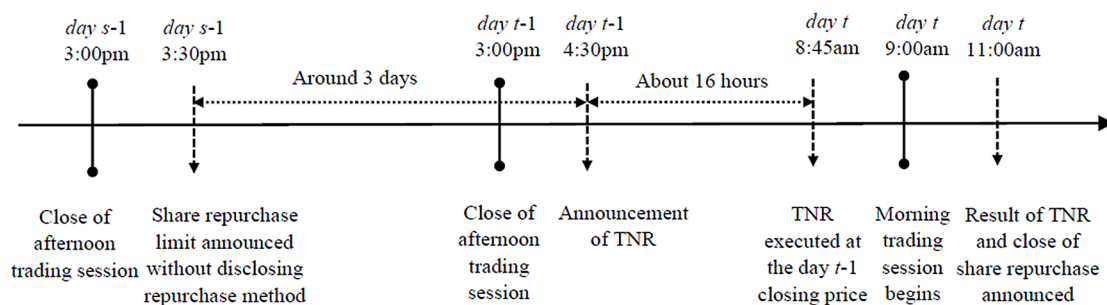


Fig. 1. Implementation schedules of the four repurchase methods

Notes: Fig. 1(a) shows an example of Disclosed-OMR and Undisclosed-OMR implementation schedule, while Figs. 1(b) and (c) illustrate examples of Disclosed-TNR and Undisclosed-TNR implementation schedules, respectively.

and Michaely, 2004).<sup>7</sup> Prior studies in the US and Japan have provided evidence that generally supports the signalling and free cash flow theories (Ikenberry et al., 1995; Chan et al., 2004; Hatakeda and Isagawa, 2004; Makita, 2005; Vermaelen, 2005; Peyer and Vermaelen, 2009; Yamaguchi, 2009; Teng and Hachiya, 2011; Babenko et al., 2012; Ota and Kawase, 2016). For example, Teng and Hachiya (2011) investigate the market reactions to deregulation of share repurchases for Japan in 2001 and find that Japanese firms undertake share repurchases to signal undervaluation.

While there are many different theories that explain the motivations behind share repurchases, the most widely discussed theory has been the signalling theory. The signalling theory assumes that firms undertake share repurchases for non-opportunistic reasons that ultimately benefit all shareholders. Nevertheless, Kracher and Johnson (1997) and Fried (2001, 2005) argue that this assumption has theoretical limitations and is inconsistent with empirical data. In particular, Fried puts forward an alternative explanation for share repurchases – the managerial-opportunism theory. Under this theory, managers who hold their own firms' shares are assumed to undertake share repurchases for the purpose of maximising their own wealth, even at the expense of other shareholders. Further, the managerial-opportunism theory predicts the conditions for undertaking share repurchases. First, when shares are underpriced, managers announce and conduct OMR in order to transfer value to themselves and other remaining shareholders from selling shareholders. The second condition for undertaking share repurchases occurs when managers use OMR announcements to boost share prices so to maximise their own wealth by selling their holdings in their firms at a higher price.

Several studies have provided empirical evidence that lends support for the managerial-opportunism theory of share repurchases. First, Babenko et al. (2012) report that insiders of repurchasing firms buy significantly more shares one and two years prior to the repurchase announcement than insiders of non-repurchasing firms matched based on industry, market capitalisation, and BMR. They also document that larger insider purchases prior to the repurchase announcements are associated with higher program completion rates and larger post-announcement long-term returns.

Second, Bonaimé and Ryngaert (2013) examine, on a quarterly basis, the relationship between the share trading of corporate insiders and share repurchases. They show that in the quarter when firms repurchase their own shares, 32.1% of corporate insiders sell their shares in the company, while the percentage of corporate insiders that buy shares is merely 13.0%. They also show that the abnormal returns in a repurchasing quarter in which insiders sold (bought) their companies' shares and those in the 3-year period following the quarter are -1.31% (-4.14%) and 1.23% (16.9%), respectively. Third, Chen et al. (2014) find that when insiders sell (buy) their own firms' shares within the first year following the announcement of share repurchase, the operating and financial market performance of the firms deteriorate (improve) progressively year on year for the next three years (2-4 years after the announcement). These findings suggest that insider selling made subsequent to the share repurchase announcement is followed by a decrease in the share price, which is inconsistent with the undervaluation motive for share repurchases.

Lastly, unlike the aforementioned studies that examine OMR, Lee et al. (1992) look at tender offers and find evidence that suggests managerial opportunism. They show that in the 6 months that precede fixed price tender offer announcements, managers increase their buying and reduce their selling of their own firms' shares. In contrast, they do not detect unusual trading by managers prior to "Dutch auction" offers (a process where the repurchase price is determined by the shareholder

bids). Moreover, although Lee et al. (1992) do not observe any abnormal stock trading by managers following the announcement of a tender offer, Pettit et al. (1996) and Louis et al. (2010) find evidence of abnormal selling of shares from insiders in the 3-month period following a tender offer (this trend is more pronounced in a fixed-price tender offer than in a Dutch auction).

Overall, the findings in these studies provide strong evidence that some corporate insiders take advantage of their firm's share repurchase program to benefit themselves by selecting the timing to trade in the company shares. The evidence also suggests that the prevailing theories such as the signalling theory only partially explain why firms undertake share repurchases when they are viewed in conjunction with opportunistic trading by insiders.<sup>8</sup>

### 3. Sampling and descriptive statistics

#### 3.1. Sampling

We source the fiscal and share price data from Nikkei Financial QUEST. The data relating to share repurchases are obtained from TDnet using the following sample selection criteria:

- (1) The resolution on matters relating to share repurchases is made between January 1, 2008 and December 31, 2012;
- (2) Firms that repurchase their own shares must be listed on the first, second, or Mothers (market for high-growth and emerging stocks) sections of the TSE; and
- (3) Share repurchases for special reasons (Article 155, Para. 1, Items 1, 2 and 4-13) and from specific shareholders (Articles 160-164) and repurchases of unlisted preferred shares are removed.

The above criteria yield a sample of 2,846 share repurchases. We choose the start and end dates of our sample period for the following reasons. First, while companies were allowed to use re-established ToSTNeT from January 15, 2008, we commence the sample period on January 1, 2008 because it corresponds to the data for OMRs required to conduct the market reaction analysis for our study.<sup>9</sup> Second, our sample period ends on December 31, 2012 because the empirical analyses of this study are subject to data constraint. Nevertheless, such data constraint is unlikely to compromise the generalisability and relevance of our empirical findings given that we have identified at least four companies engaging in the practice of Undisclosed-TNR after 2012 – Sankyo Co. Ltd in 2015, Suzuken Co. Ltd and Okamoto Co. Ltd in 2017, and DCM Holdings Co. Ltd in 2018.<sup>10</sup> These examples suggest that the practice of Undisclosed-TNR is still ongoing beyond our sample period.

In order to conduct more robust tests of the stock market reactions on share repurchases, we remove the following share repurchases:

- (1) Share repurchases via off-market self-tender offers (29 observations);
- (2) Share repurchases from General Shareholders Meeting (GSM) resolutions based on Article 156, Para. 1 of the Act (20 observations);
- (3) Share repurchases using both OMR and ToSTNeT (191 observations); and
- (4) Other cases (24 observations).

<sup>8</sup> Note that the conclusions reached from the managerial-opportunism theory seem to be at odds with those from the signalling and free cash flow theories. Our study finds the managerial-opportunism theory is more applicable to why firms use Undisclosed-TNR.

<sup>9</sup> The first observations for Disclosed-TNR and Undisclosed-TNR are documented on January 16 and January 25, 2008, respectively.

<sup>10</sup> The occurrences of these cases coincide with the implementation of the Code by the TSE in Japan, indicating that the TSE may still not be aware of the loophole in Undisclosed-TNR. The occurrences also coincide with the stock market recovery under "Abenomics".

<sup>7</sup> For detailed explanations of other theories related to the motives for share repurchase (i.e., the optimal capital structure theory, the option-funding theory, the takeover deterrence theory, and the mimicking theory), see Grullon and Ikenberry (2000), Dittmar (2000), Kahle (2002), Allen and Michaely (2003), Chan et al. (2004), Billett and Xue (2007), Massa et al. (2007), Bonaimé et al. (2014), and Lei and Zhang (2016).

**Table 1**  
Sample selection.

On-/Off- market	Acquisition resolution meeting	Repurchase methods	<i>N</i>	%
On-market	Board of directors meeting <sup>1</sup>	<b>Disclosed-OMR</b>	<b>284</b>	<b>10.0</b>
		<b>Undisclosed-OMR</b>	<b>1,633</b>	<b>57.4</b>
		<b>Disclosed-TNR</b>	<b>580</b>	<b>20.4</b>
		<b>Undisclosed-TNR</b>	<b>85</b>	<b>3.0</b>
		Mixed repurchase	191	6.7
		Other	24	0.8
		OMR	16	0.6
Off-market	Shareholders meeting <sup>2</sup>	ToSTNeT	4	0.1
		Board of directors	27	0.9
		Shareholders meeting	2	0.1
<b>Total</b>			<b>2,846</b>	<b>100.0</b>

Note: The sample for our study (in bold) comprises 284 cases of Disclosed-OMR (10.0%), 1,633 cases of Undisclosed-OMR (57.4%), 580 cases of Disclosed-TNR (20.4%), and 85 cases of Undisclosed-TNR (3.0%) from on-market repurchase by board of directors resolutions. <sup>1</sup> This meeting is convened in accordance with Article 165, Para. 2 or Article 459, Para. 1 of the Act. <sup>2</sup> This meeting is convened in accordance with Article 156, Para. 1 of the Act.

**Table 2**  
Sample characteristics.

Panel A: Fiscal year									
	(a) Disclosed-OMR		(b) Undisclosed-OMR		(c) Disclosed-TNR		(d) Undisclosed-TNR		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
2008	108	38.0	779	47.7	125	21.6	32	37.6	
2009	32	11.3	225	13.8	97	16.7	7	8.2	
2010	42	14.8	221	13.5	125	21.6	15	17.6	
2011	45	15.8	224	13.7	118	20.3	13	15.3	
2012	57	20.1	184	11.3	115	19.8	18	21.2	
<b>Total</b>	<b>284</b>	<b>100.0</b>	<b>1,633</b>	<b>100.0</b>	<b>580</b>	<b>100.0</b>	<b>85</b>	<b>100.0</b>	
Panel B: Market type									
	(a) Disclosed-OMR		(b) Undisclosed-OMR		(c) Disclosed-TNR		(d) Undisclosed-TNR		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
TSE 1 <sup>st</sup>	241	84.9	1,271	77.8	394	67.9	68	80.0	
TSE 2 <sup>nd</sup>	24	8.5	225	13.8	149	25.7	15	17.6	
Mothers	19	6.7	137	8.4	37	6.4	2	2.4	
<b>Total</b>	<b>284</b>	<b>100.0</b>	<b>1,633</b>	<b>100.0</b>	<b>580</b>	<b>100.0</b>	<b>85</b>	<b>100.0</b>	
Panel C: Number of times									
	(a) Disclosed-OMR		(b) Undisclosed-OMR		(c) Disclosed-TNR		(d) Undisclosed-TNR		
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
1	97	59.5	349	47.9	277	69.8	54	78.3	
2	32	19.6	170	23.4	86	21.7	14	20.3	
3	22	13.5	98	13.5	15	3.8	1	1.4	
4	9	5.5	48	6.6	12	3.0	0	0.0	
≥ 5	3	1.8	63	8.7	7	1.8	0	0.0	
<b>Total</b>	<b>163</b>	<b>100.0</b>	<b>728</b>	<b>100.0</b>	<b>397</b>	<b>100.0</b>	<b>69</b>	<b>100.0</b>	

Notes: (a) 284 cases of Disclosed-OMR (10.0%), (b) 1,633 cases of Undisclosed-OMR (57.4%), (c) 580 cases of Disclosed-TNR (20.4%), and (d) 85 cases of Undisclosed-TNR (3.0%) from Table 1 are separated into the following categories in Table 2: Panel A is fiscal year, Panel B is market type, and Panel C is the number of times that companies have used the repurchase methods. Stocks listed on the TSE are separated into the 1st section for large companies, the 2nd Section for medium-sized companies, and the Mothers section for high-growth start-up companies. As of October 31, 2010, there are 1,675 1st section companies, 437 2nd section companies, and 182 Mothers companies.

Share repurchases via self-tender offers are removed from the sample as they involve off-market trading and the repurchase method drastically differs from on-market trading. Share repurchases from GSM resolutions are omitted from the sample because there are usually multiple announcements involved regarding the acquisition of own shares, which could make it difficult to examine stock market reactions. Share repurchases that use both OMR and ToSTNeT are excluded due to the difficulties in analysing and interpreting the results. Other exclusions include those where the completion of the share repurchase is not announced.

### 3.2. Descriptive statistics

Table 1 describes the sample used for the analyses of this study. We collect 2,846 share repurchases in the sample period 2008 – 2012. Our

sample period commences from 2008 because repurchasing shares using the current form of ToSTNeT is only allowed from January 15, 2008. Of the total 2,846 repurchases in the sample, 284 (10.0%), 1,633 (57.4%), 580 (20.4%), and 85 (3.0%) are Disclosed-OMR, Undisclosed-OMR, Disclosed-TNR, and Undisclosed-TNR, respectively. The results show that Undisclosed-OMR is the most common method for repurchasing shares in Japan.

Table 2 summarises the sample characteristics associated with Disclosed-OMR, Undisclosed-OMR, Disclosed-TNR, and Undisclosed-TNR. Panel A shows that the largest proportions of Disclosed-OMR, Undisclosed-OMR, and Undisclosed-TNR occur in 2008 (38.0%, 47.7%, and 37.6%, respectively), while the largest proportion of Disclosed-TNR happens in both 2008 and 2010 (21.6%). Panel B shows that, regardless of the repurchase methods employed, 70 – 80% of share repurchases are conducted by large firms (i.e., firms listed on the first section of the TSE).

**Table 3**  
Descriptive statistics for the four repurchase methods.

	(a) Disclosed-OMR		(b) Undisclosed-OMR		(c) Disclosed-TNR		(d) Undisclosed-TNR	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Planned acquisition days	65.96	55.00	72.07	53.00	1.00	1.00	29.36	21.00
Actual acquisition days	47.90	34.00	56.10	38.00	1.00	1.00	6.48	3.00
Planned acquisition size (%)	2.57	2.01	2.24	1.66	3.00	1.60	2.74	1.36
Planned acquisition value (billion yen)	5.07	1.00	3.11	0.50	1.60	0.26	1.70	0.60
Completion rate (%)	83.29	94.13	74.57	91.06	93.01	98.60	94.20	100.00
Top 10 ownership (%)	48.26	46.86	48.00	46.70	46.72	44.65	46.75	43.89
Director ownership (%)	8.43	2.19	6.99	1.56	7.73	1.52	4.37	0.73
Domestic fund ownership (%)	2.87	2.18	2.04	0.93	2.17	0.40	2.43	1.50
Domestic bank ownership (%)	18.64	17.26	19.17	17.45	21.34	20.29	21.77	20.01
Domestic industrial corp. ownership (%)	21.72	20.15	25.90	24.31	22.13	19.15	27.08	23.39
Foreign ownership (%)	16.81	11.02	8.92	6.23	12.97	9.68	14.71	12.95
N	284		1,633		580		85	

*Notes:* Planned acquisition days is the number of days between the start and the close of the planned repurchase program announced on day  $s$ ; Actual acquisition days is the actual number of days between the share repurchase limit announcement and the close of the repurchase program; planned acquisition size is the number of shares to be repurchased divided by the total number of shares outstanding (excluding existing treasury shares); planned acquisition value is the total value of the planned share repurchase expressed in billions of yen; completion rate is the actual number of shares acquired divided by the number of shares planned to be acquired; top 10 ownership is percentage ownership of the top 10 largest shareholders; director ownership is percentage ownership of directors; domestic fund ownership is percentage ownership of domestic investment funds; domestic bank ownership is percentage ownership of domestic banks and other financial institutions; domestic industrial corp. ownership is percentage ownership of domestic industrial corporations; and foreign ownership is percentage ownership of foreign investors. The numbers of observation are 284, 1,633, 580, and 85 for Disclosed-OMR, Undisclosed-OMR, Disclosed-TNR, and Undisclosed-TNR, respectively.

Finally, Panel C shows that the majority of firms conduct each repurchase method only once during the five-year sample period 2008 – 2012.

Table 3 presents descriptive statistics for the four repurchase methods. The mean (median) planned number of days between the start and the end of the repurchase program (planned acquisition days) are 65.96 (55), 72.07 (53), 1.00 (1), and 29.36 (21) for Disclosed-OMR, Undisclosed-OMR, Disclosed-TNR, and Undisclosed-TNR, respectively.<sup>11</sup> However, the mean (median) actual number of days between the initial repurchase announcement and the end of the program (actual acquisition days) for Disclosed-OMR, Undisclosed-OMR, Disclosed-TNR, and Undisclosed-TNR are 47.90 (34), 56.10 (38), 1.00 (1), and 6.48 (3), respectively. We believe that the large discrepancy between the average planned acquisition days and average acquisition days for Undisclosed-TNR (21 vs. 3 median days) relative to the other repurchase methods could be due to the Undisclosed-TNR firms' attempt to mislead the market into thinking that OMR would be used instead of TNR.

The average planned acquisition size as a percentage of total shares outstanding is comparable across all the repurchase methods (around 2 – 3%). In terms of the planned acquisition value, around ¥5 billion and ¥3 billion in shares are to be acquired through Disclosed-OMR and Undisclosed-OMR, respectively, while the planned acquisition value is comparable between Disclosed-TNR and Undisclosed-TNR (around ¥1.6 – 1.7 billion). The mean and median completion rates are almost 100% for both Disclosed-TNR and Undisclosed-TNR, suggesting firms that use ToSTNeT to repurchase the shares complete the program as planned in most cases. The ownership composition and percentages of the repurchasing firms are comparable across all the repurchase methods. Almost 50% of the shareholding in the repurchasing firms are owned by the top 10 largest shareholders. Overall, we do not observe large variations in the ownership composition across firms using different repurchase methods.

#### 4. Stock market reaction analysis

##### 4.1. Univariate analysis of the market reactions to the different repurchase methods

We measure stock market reactions to the different repurchase methods by calculating the abnormal returns (AR) using the standard market model.

<sup>11</sup> Note that the Act (Article 156, Para. 1) stipulates that the period during which the shares can be acquired cannot exceed one year.

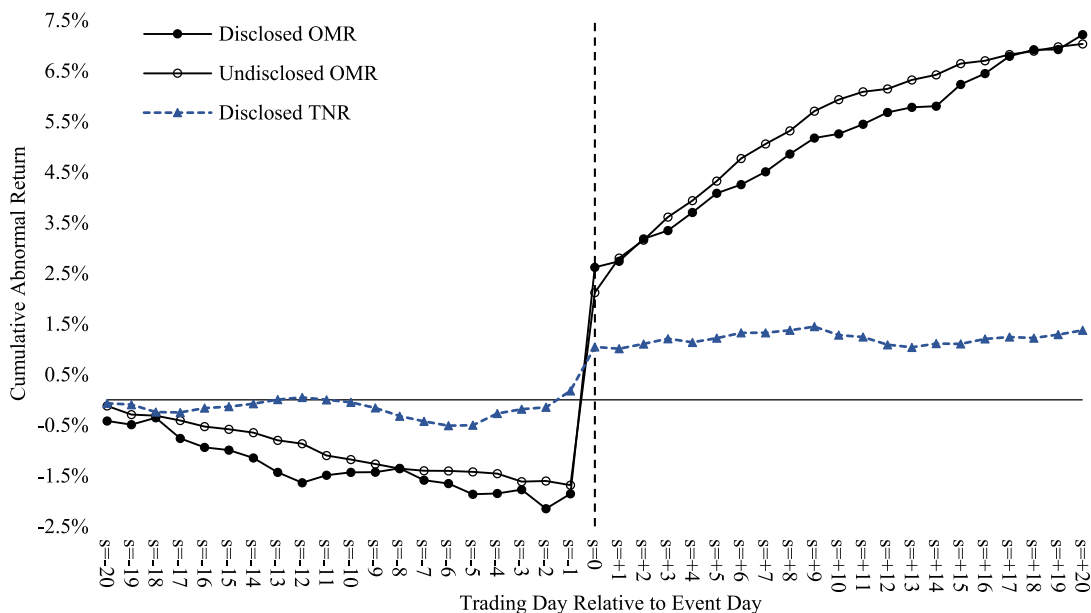
Figs. 1(a) and (b) identify one event day for Disclosed-OMR and Undisclosed-OMR, and Disclosed-TNR, respectively (day  $s$ ). The event day for Undisclosed-OMR is the announcement of the repurchase limit, whereas the event day for Disclosed-OMR and Disclosed-TNR is the concurrent announcement of the repurchase limit and the use of open market and ToSTNeT, respectively. For Undisclosed-TNR shown in Fig. 1(c), there are two event days: (i) the announcement of the repurchase limit (day  $s$ ) and (ii) the disclosure on the use of ToSTNeT (day  $t$ ).<sup>12</sup>

We estimate the standard market model over a 200-day period for all the repurchase methods ( $-220 \leq s \leq -21$ ). Different market indexes are used according to the different sections of the TSE on which the firms are listed. The market indexes and the corresponding sections are TOPIX for the first section of the TSE, the Second Section Stock Price Index for the second section of the TSE, and the Mothers Index for the Mothers section of the TSE.

For the repurchase methods except Undisclosed-TNR, we identify two event periods: (i) the 20-day period before the initial announcement of the repurchase program ( $-20 \leq s \leq -1$ ), and (ii) the 21-day period on and after the initial announcement of the repurchase program ( $0 \leq s \leq +20$ ). As there is a second announcement for Undisclosed-TNR on day  $t$ , we identify three event periods: (i) the 20-day period before the initial announcement of the repurchase limit ( $-20 \leq s \leq -1$ ), (ii) the period on and after the initial announcement of the repurchase limit and before the second announcement of the use of ToSTNeT ( $s = 0 \dots t = -1$ ), and (iii) the 21-day period on and after the second announcement of the use of ToSTNeT ( $0 \leq t \leq +20$ ).

<sup>12</sup> With regard to Disclosed-OMR, Undisclosed-OMR, and the first announcement of Undisclosed-TNR, the announcement of the share repurchase limit (i.e., day  $s-1$ ) could occur during trading hours or after the close of the afternoon session at 3:00 pm. Therefore, if firms announce the share repurchase limit before 3:00 pm on day  $s-1$ , we assume the event day to be day  $s-1$ . If the announcement occurs after 3:00 pm on day  $s-1$ , we use the following day  $s$  as the event day. As for Disclosed-TNR, the simultaneous announcement of the repurchase limit and the use of ToSTNeT always happens around 4:30 pm on day  $s-1$  after the close of the afternoon session at 3:00 pm. This is because the repurchase price, which is the closing price on day  $s-1$ , has to be specified in the disclosed document. Therefore, the event day of Disclosed-TNR is always the next day  $s$ . Firms using Undisclosed-TNR also make the second announcement on the use of ToSTNeT around 4:30 pm on day  $t-1$  following the close of the afternoon trading session at 3:00 pm, at which time the repurchase price is determined. The second event day is, therefore, identified to be day  $t$  for Undisclosed-TNR.

(a) Disclosed-OMR, Undisclosed-OMR, and Disclosed-TNR (one event day)



(b) Undisclosed-TNR (two event days)

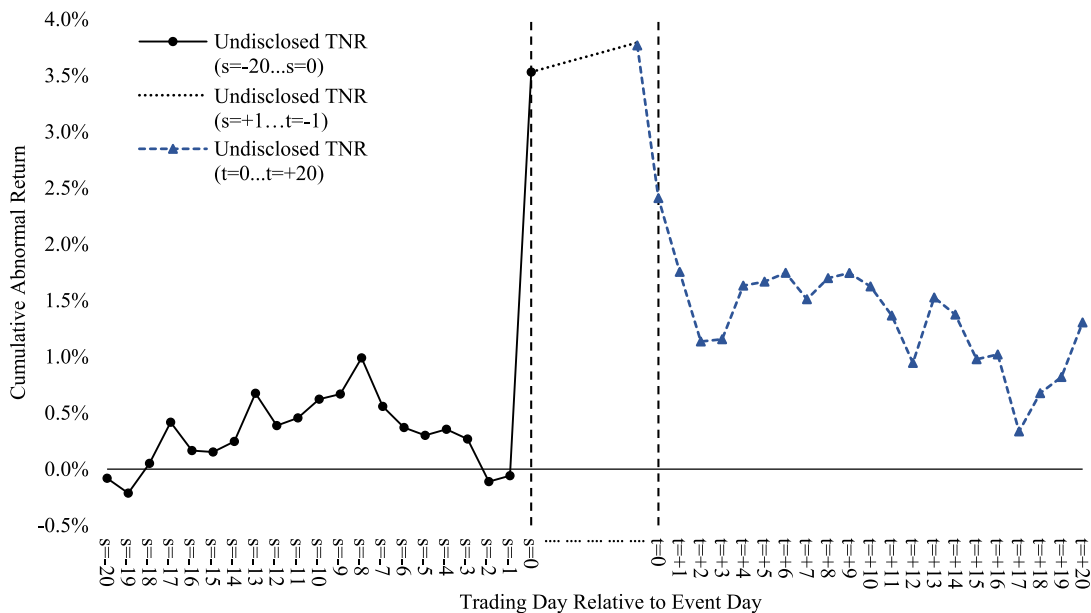


Fig. 2. Cumulative abnormal returns of the four repurchase methods

Notes: Fig. 2(a) shows the CAR around the announcement of the share repurchase program ( $s = 0$ ) for Disclosed-OMR, Undisclosed-OMR, and Disclosed-TNR, while Fig. 2(b) illustrates the CAR around the announcements of the share repurchase limit ( $s = 0$ ) and the decision to repurchase shares on the ToSTNeT market ( $t = 0$ ). There are three event periods for Undisclosed-TNR: (i) the 21-day period of  $-20 \leq s \leq 0$ , (ii) the period of  $s = +1 \dots t = -1$ , and (iii) the 21-day period of  $0 \leq t \leq +20$ . Period (ii) covers the timeframe from the day following the announcement of the share repurchase limit to the day the decision to use ToSTNeT is announced. As this differs depending on the observation, the average value of the CAR is shown as (ii).

Fig. 2 shows the average cumulative abnormal returns (CAR) over the event periods for the four repurchase methods. Fig. 2(a) shows that the market reactions between Disclosed-OMR and Undisclosed-OMR are indistinguishable. Consistent with the undervaluation hypothesis, we observe decreasing average CAR for both Disclosed-OMR and Undisclosed-OMR over the period  $-20 \leq s \leq -1$ . Interestingly, we

observe a noticeable upward drift after the announcement of the repurchase program, which is not observed in the US market (Vermaelen, 1981; Comment and Jarrell, 1991). With regard to Disclosed-TNR, we observe little variation in the average CAR in the periods before and after the announcement of the repurchase program, although there is a small increase in the average CAR on the day of the



**Table 4**  
Short-term market reactions of the four repurchase methods.

Panel A: Market reaction									
	(a) Disclosed-OMR		(b) Undisclosed-OMR		(c) Disclosed-TNR		(d) Undisclosed-TNR		
Various AR and CAR	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic	Mean	t-statistic	
AR(s = -2)	-0.38%	-2.47**	0.01%	0.18	0.04%	0.42	-0.38%	-1.66	
AR(s = -1)	0.29%	1.89*	-0.08%	-1.05	0.32%	3.05***	0.05%	0.30	
AR(s = 0)	4.47%	13.44***	3.80%	28.86***	0.87%	6.36***	3.59%	5.61***	
AR(s = +1)	0.12%	0.66	0.68%	7.14***	-0.04%	-0.32	n.a.	n.a.	
AR(s = +2)	0.44%	2.46**	0.35%	4.64***	0.09%	0.87	n.a.	n.a.	
CAR(s = -2, s = +2)	4.95%	9.90***	4.77%	22.13***	1.29%	4.83***	n.a.	n.a.	
CAR(s = 0, t = -1)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.85%	3.56***	
CAR(s = +1, t = -1)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.26%	0.40	
AR(t = 0)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-1.21%	-2.86***	
AR(t = +1)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-0.58%	-2.00**	
AR(t = +2)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-0.55%	-2.93***	
CAR(s = -2, t = +2)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.19%	1.21	
N	284		1,633		580		85		

Panel B: Difference in market reaction				
	Difference (s = 0)	t-statistic	z-statistic	
(a) Disclosed-OMR — (b) Undisclosed-OMR	0.67%	1.87*	1.93*	
(a) Disclosed-OMR — (c) Disclosed-TNR	3.60%	10.01***	11.88***	
(a) Disclosed-OMR — (d) Undisclosed-TNR	0.88%	1.22	1.59	
(b) Undisclosed-OMR — (c) Disclosed-TNR	2.93%	15.44***	15.47***	
(b) Undisclosed-OMR — (d) Undisclosed-TNR	0.21%	0.32	0.68	
(c) Disclosed-TNR — (d) Undisclosed-TNR	-2.72%	-4.15***	-6.22***	

Notes: Table 4 Panel A shows the abnormal returns (AR) and the cumulative abnormal returns (CAR) around the announcement of the repurchase program (day  $s = 0$ ) for four share repurchase methods, namely, (a) Disclosed-OMR, (b) Undisclosed-OMR, (c) Disclosed-TNR, and (d) Undisclosed-TNR. With respect to Undisclosed-TNR, it also shows AR and CAR around the announcement of the use of ToSTNeT (day  $t = 0$ ). AR are calculated using the standard market model. The estimation period is over a 200-day period,  $-220 \leq s \leq -21$ , and different market indexes are used according to the market on which the firm is listed, i.e., the TOPIX for the first section of the TSE, the Second Section Stock Price Index for the second section of the TSE, and the Mothers Index for the Mothers section of the TSE. Panel B of this table tests the differences in market reactions to the announcement of the repurchase limit (day  $s = 0$ ) across four repurchase methods using the two-sample  $t$ -test with unequal variances ( $t$ -statistic) and the Wilcoxon rank-sum test ( $z$ -statistic). See Fig. 1 for the definitions of day  $s$  and day  $t$ . \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

announcement. The movements in the average CAR of Disclosed-TNR do not appear to be consistent with the undervaluation hypothesis. For Undisclosed-TNR as shown in Fig. 2(b), the average CAR increases sharply on the announcement of the repurchase limit (day  $s = 0$ ) and remains largely unchanged until day  $t = -1$ . However, after the firm announces the use of ToSTNeT (day  $t = 0$ ), the average CAR decreases until day  $t = +2$  and fluctuates in the later period.

Table 4 reports the short-term market reactions and the differences in market reactions associated with the four repurchase methods. Panel A shows that AR on day  $s = 0$  for Disclosed-OMR, Undisclosed-OMR, and Undisclosed-TNR are similar (around 3 – 4%) and are much higher than that for Disclosed-TNR (0.87%). One possible explanation for this small market reaction to Disclosed-TNR is that undervaluation might not be a motive to repurchase shares for firms that engage in Disclosed-TNR, which is evident in the flat average CAR before the share repurchase announcement. The AR for Undisclosed-TNR is significantly negative on day  $t = 0$  (the disclosure of the use of ToSTNeT) ( $AR = -1.21\%$ ,  $t$ -stat. =  $-2.86$ ), suggesting a market overreaction to Undisclosed-TNR on day  $s = 0$ .

Panel A also exhibits the CAR over several window periods. The CAR estimated over the window day  $s = -2$  to  $s = +2$  for Disclosed-OMR, Undisclosed-OMR, and Disclosed-TNR are all significantly positive (4.95%, 4.77%, and 1.29%, respectively). For Undisclosed-TNR, the CAR is significantly positive only over the window day  $s = 0$  to day  $t = -1$  ( $CAR = 3.85\%$ ,  $t$ -stat. = 3.56). The insignificant result for Undisclosed-TNR over the window day  $s = -2$  to day  $t = +2$  ( $CAR = 1.19\%$ ,  $t$ -stat. = 1.21) indicates that Undisclosed-TNR does not create value for other shareholders and it only favours the sellers, suggesting Undisclosed-TNR could be used for opportunistic reasons. Panel B shows no significant mean differences in market reactions on day  $s$  between Disclosed-OMR and Undisclosed-TNR (0.88%,  $t$ -stat. = 1.22) and between Undisclosed-OMR and Undisclosed-TNR (0.21%,  $t$ -stat. = 0.32), consistent with the market not being able to

differentiate Undisclosed-TNR from the respective OMR.<sup>13</sup>

#### 4.2. Multivariate analysis of the market reactions to the different repurchase methods

The significant market reactions to the announcements of share repurchase programs on day  $s = 0$  found in Table 4 could depend on other factors unrelated to the repurchase methods. We estimate the following model to examine this possibility.

$$\begin{aligned}
 AR_{ijt} = & \alpha_0 + \alpha_1 UndiscOMR_{ijt} + \alpha_2 DiscTNR_{ijt} \\
 & + \alpha_3 UndiscTNR_{ijt} + \alpha_4 PlanSize_{ijt} \\
 & + \alpha_5 PlanDays_{ijt} + \alpha_6 LagReturn_{ijt} \\
 & + \alpha_7 LNMVE_{ijt} + \alpha_8 BMR_{ijt} + \alpha_9 Cash_{ijt} \\
 & + \alpha_{10} CF_{ijt} + \alpha_{11} Leverage_{ijt} + \alpha_{12} SDReturn_{ijt} \\
 & + \alpha_{13} SDCF_{ijt} + \alpha_{14} SmallMKT_i + \alpha_{15} Top100Own_{iy} \\
 & + \alpha_{16} DirectorOwn_{iy} + \alpha_{17} DomesFundOwn_{iy} \\
 & + \alpha_{18} DomesBankOwn_{iy} + \alpha_{19} DomesCorpOwn_{iy} \\
 & + \alpha_{20} ForeignOwn_{iy} + \beta IndustryDummies_i \\
 & + \gamma YearDummies_s + \epsilon_{ijt},
 \end{aligned} \tag{1}$$

where:  $AR$  is the abnormal return on the day the share repurchase limit is announced;  $UndiscOMR$  is 1 for Undisclosed-OMR, otherwise 0;

<sup>13</sup> To prevent concurrent announcements from confounding our results, we also analyse a subsample of share repurchases in which no other announcements are made on the day of the repurchase announcement. Overall, the untabulated results show that the market reactions to the repurchase methods are not confounded by other firm-specific announcements, such as earnings announcements and company guidance. Specifically,  $AR$  at day  $s = 0$  (i.e., the announcement of the repurchase program) are 4.37% and 3.97% for Disclosed-OMR and Undisclosed-OMR, respectively, and 0.80% and 4.11% for Disclosed-TNR and Undisclosed-TNR, respectively. These results are similar to those reported in Table 4.

*DiscTNR* is 1 for Disclosed-TNR, otherwise 0; *UndiscTNR* is 1 for Undisclosed-TNR, otherwise 0; *PlanSize* is the number of shares to be repurchased divided by the total number of shares outstanding (excluding treasury shares); *PlanDays* is the planned repurchase period expressed in trading days; *LagReturn* equals *CAR* from 20 days to one day before the announcement of the repurchase program; *LN MVE* is the natural logarithm of a firm's market value of equity at the end of the month prior to the repurchase announcement; *BMR* is the book-to-market ratio at the end of the most recent quarter prior to the repurchase announcement; *Cash* equals cash and short-term investments divided by the market capitalisation at the end of the most recent quarter prior to the repurchase announcement; *CF* is trailing 12 months operating cash flow of the most recent second or fourth quarter prior to the repurchase announcement divided by market capitalisation; *Leverage* equals total liabilities divided by total assets at the end of the most recent quarter prior to the repurchase announcement;

*SDReturn* is standard deviation of share returns for the 200-day period from 210 days to 11 days prior to the repurchase announcement; *SDCF* is standard deviation of semi-annual operating cash flows over the three years divided by the market capitalisation at the end of the most recent quarter prior to the repurchase announcement; *SmallMKT* is 1 for firms listed on the second section of the TSE or Mothers, otherwise 0; *Top10Own* is percentage ownership of the top 10 largest shareholders at the end of the most recent fourth quarter prior to the repurchase announcement; *DirectorOwn* is percentage ownership of directors at the end of the most recent fourth quarter prior to the repurchase announcement; *DomesFundOwn* is percentage ownership of domestic investment funds at the end of the most recent fourth quarter prior to the repurchase announcement; *DomesBankOwn* is percentage ownership of domestic banks and other financial institutions at the end of the most recent fourth quarter prior to the repurchase announcement; *DomesCorpOwn* is percentage ownership of domestic industrial

**Table 5**  
Comparison of market reactions across the four repurchase methods.

Variables	Full sample			No concurrent announcements	
	Coefficient	<i>t</i> -statistic		Coefficient	<i>t</i> -statistic
Constant ( <i>DiscOMR</i> )	0.1387	3.98***		0.0190	1.24
<i>UndiscOMR</i>	-0.0046	-1.07		-0.0018	-0.47
<i>DiscTNR</i>	-0.0444	-8.78***		-0.0417	-11.45***
<i>UndiscTNR</i>	-0.0138	-1.61		-0.0026	-0.98
<i>PlanSize</i>	0.5102	16.26***		0.4247	16.19***
<i>PlanDays</i>	-0.0001	-2.41**		-0.0001	-1.78*
<i>LagReturn</i>	-0.0238	-2.28**		-0.0332	-3.28***
<i>LN MVE</i>	0.0019	1.67*		0.0017	0.90
<i>BMR</i>	-0.0030	-1.58		-0.0045	-2.61***
<i>Cash</i>	0.0057	2.07**		0.0048	1.34
<i>CF</i>	0.0078	2.36**		-0.0027	-0.51
<i>Leverage</i>	-0.0019	-0.27		-0.0096	-1.11
<i>SDReturn</i>	1.1720	6.79***		1.1669	7.88***
<i>SDCF</i>	-0.0072	-0.61		0.0116	0.97
<i>SmallMKT</i>	-0.0062	-1.93*		-0.0049	-1.69*
<i>Top10Own</i>	0.0118	1.07		-0.0023	-0.22
<i>DirectorOwn</i>	-0.0238	-1.81*		0.0040	0.16
<i>DomesFundOwn</i>	-0.0646	-2.56**		-0.0855	-1.89*
<i>DomesBankOwn</i>	-0.0150	-1.66*		-0.0144	-0.70
<i>DomesCorpOwn</i>	-0.0061	-0.46		0.0015	0.15
<i>ForeignOwn</i>	0.0017	0.11		0.0220	1.27
<i>Industry Dummies</i>	Included			Included	
<i>Year Dummies</i>	Included			Included	
<i>F</i> -test	Difference	<i>F</i> -statistic		Difference	<i>F</i> -statistic
$\alpha_3 - \alpha_2 = 0$	0.0306	15.80***		0.0391	112.35***
$\alpha_3 - \alpha_1 = 0$	-0.0092	2.61		-0.0008	0.03
$\alpha_2 - \alpha_1 = 0$	-0.0398	122.04***		-0.0399	274.26***
Adj. $R^2$	0.228			0.336	
<i>N</i>	2,491			1,373	

**Notes:** This table shows the results from estimating the regression Equation (1). *AR* is the abnormal return on the day the share repurchase limit is announced; *UndiscOMR* is 1 for Undisclosed-OMR, otherwise 0; *DiscTNR* is 1 for Disclosed-TNR, otherwise 0; *UndiscTNR* is 1 for Undisclosed-TNR, otherwise 0; *PlanSize* is the number of shares to be repurchased divided by the total number of shares outstanding (excluding treasury shares); *PlanDays* is the planned repurchase period expressed in trading days; *LagReturn* equals *CAR* from 20 days to one day before the announcement of the repurchase program; *LN MVE* is the natural logarithm of a firm's market value of equity at the end of the month prior to the repurchase announcement; *BMR* is the book-to-market ratio at the end of the most recent quarter prior to the repurchase announcement; *Cash* equals cash and short-term investments divided by the market capitalisation at the end of the most recent quarter prior to the repurchase announcement; *CF* is trailing 12 months operating cash flow of the most recent second or fourth quarter prior to the repurchase announcement divided by market capitalisation; *Leverage* equals total liabilities divided by total assets at the end of the most recent quarter prior to the repurchase announcement; *SDReturn* is standard deviation of share returns for the 200-day period from 210 days to 11 days prior to the repurchase announcement; *SDCF* is standard deviation of semi-annual operating cash flows over the three years divided by the market capitalisation at the end of the most recent quarter prior to the repurchase announcement; *SmallMKT* is 1 for firms listed on the second section of the TSE or Mothers, otherwise 0; *Top10Own* is percentage ownership of the top 10 largest shareholders at the end of the most recent fourth quarter prior to the repurchase announcement; *DirectorOwn* is percentage ownership of directors at the end of the most recent fourth quarter prior to the repurchase announcement; *DomesFundOwn* is percentage ownership of domestic investment funds at the end of the most recent fourth quarter prior to the repurchase announcement; *DomesBankOwn* is percentage ownership of domestic banks and other financial institutions at the end of the most recent fourth quarter prior to the repurchase announcement; *DomesCorpOwn* is percentage ownership of domestic industrial corporations at the end of the most recent fourth quarter prior to the repurchase announcement; *ForeignOwn* is percentage ownership of foreign investors at the end of the most recent fourth quarter prior to the repurchase announcement; *Industry Dummies* are a set of industry dummy variables based on Nikkei classifications; and *Year Dummies* are a set of fiscal year dummy variables. The results using a full sample of share repurchases and share repurchases with no concurrent announcements are shown in the table. Concurrent announcements include earnings announcements, managerial guidance, and other firm-specific material information. Outliers at or beyond the 1st and 99th percentiles of the distributions of all continuous variables have been winsorised. The test statistics of the coefficient estimates are estimated using the two-way cluster method based on firm and year (Petersen, 2009). \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

corporations at the end of the most recent fourth quarter prior to the repurchase announcement; *ForeignOwn* is percentage ownership of foreign investors at the end of the most recent fourth quarter prior to the repurchase announcement; *Industry Dummies* are a set of industry dummy variables based on Nikkei classifications; *Year Dummies* are a set of fiscal year dummy variables; and Subscripts  $i, j$  are firm, fiscal year, and order in multiple share repurchases in the same fiscal year, respectively.

All continuous variables are winsorised at the 1st and 99th percentiles to mitigate the influence of outliers.<sup>14</sup> Eq. (1) is estimated using a pooled ordinary least squares regression with two-way cluster robust standard errors by firm and year (Petersen, 2009). We estimate Eq. (1) using a full sample and a subsample in which we remove concurrent announcements (e.g., earnings announcement, management guidance, other firm-specific material information).

Given that the constant captures Disclosed-OMR (i.e., the base case scenario), *UndiscOMR*, *DiscTNR*, and *UndiscTNR* capture the incremental effects in the market reactions of Undisclosed-OMR, Disclosed-TNR, and Undisclosed-TNR from Disclosed-OMR, respectively.

We include the planned repurchase size (*PlanSize*) and the planned repurchase period (*PlanDays*) in the model as control variables because prior studies find that larger repurchase size and shorter repurchase period are expected to have a stronger impact on the supply and demand of shares (Ota and Kawase, 2016; Ota et al., 2019).<sup>15</sup> We expect a positive sign on *PlanSize* and a negative coefficient on *PlanDays*. Consistent with prior studies, *LagReturn*, *LNMVE*, and *BMR* are included in the model to capture the extent of undervaluation for a firm. Specifically, lower market returns prior to a repurchase announcement, a smaller market capitalisation, and the higher book-to-market ratio are indicative of firm undervaluation (Vermaelen, 1981; Comment and Jarrell, 1991; Chan et al., 2004; Hatakeda and Isagawa, 2004; Ota and Kawase, 2016; Ota et al., 2019). According to the signalling hypothesis, the market reaction to a share repurchase is expected to be greater when the extent of the undervaluation is larger before an announcement. Therefore, we expect a negative sign on coefficients of *LagReturn* and *LNMVE* and a positive coefficient on *BMR*. The free cash flow hypothesis, on the other hand, argues that share repurchases are used to alleviate the agency problem associated with holding excess funds (Stephens and Weisbach, 1998; Grullon and Michaely, 2004; Makita, 2005; Bonaimé, 2012). Hence, we include *Cash* and *CF* in the model, both of which are expected to have a positive coefficient. *Leverage* relates to the optimal structure hypothesis, which predicts that firms repurchase shares to increase its financial leverage until their capital structures are optimised (Dittmar, 2000; Lie, 2002; Bonaimé et al., 2014; Lei and Zhang, 2016). Consistent with the flexibility hypothesis, we include *SDReturn* and *SDCF* to control for the discretion that firms have with respect to the actual amount of shares being repurchased (Ikenberry and Vermaelen, 1996; Bargeron et al., 2011; Bonaimé, 2012; Bonaimé et al., 2014; Bonaimé et al., 2016). We include *SmallMKT* to capture the differences of the first section with the second and Mothers sections of the TSE. *Top10Own*, *DirectorOwn*, *DomesFundOwn*, *DomesBankOwn*, *DomesCorpOwn*, and *ForeignOwn* are included in the model to control for the effects of various ownership structures on the choice of the repurchase methods (Tong and Bremer, 2016). Lastly, we include *Industry Dummies* and *Year Dummies* to control for variations in AR across industries and years.

The results for the full sample and the subsample without concurrent

announcements are reported in the second and the third columns of Table 5, respectively. The analysis shows that the market reactions to Undisclosed-OMR (*UndiscOMR*) and Undisclosed-TNR (*UndiscTNR*) are not significantly different from Disclosed-OMR (*Constant*). When firms use Disclosed-TNR (*DiscTNR*), the market reaction is significantly lower than Disclosed-OMR by -4.44% for the full sample and -4.17% for the subsample. The results of *F*-tests also confirm that the magnitude of the market reaction to Undisclosed-TNR is significantly larger than Disclosed-TNR (*F*-statistics are 15.80 for the full sample and 112.35 for the subsample), and is comparable to Undisclosed-OMR (*F*-statistics are 2.61 for the full sample and 0.03 for the subsample). The signs of the estimated coefficients on the control variables are largely consistent with our expectations.

These findings suggest that even after controlling for other factors unrelated to the repurchase methods, the market does not differentiate between Undisclosed-TNR and OMR when firms announce the share repurchase limit on day  $s$ . This is somewhat expected given that there are 1,633 cases of Undisclosed-OMR and only 85 cases of Undisclosed-TNR. In other words, when a firm announces the initiation of share repurchase program without disclosing the repurchase method, it uses OMR in more than 95% of the cases. Therefore, it is not surprising that the market mistakenly assumes that the repurchasing firms will buy back the shares on an open market rather than on the ToSTNeT market. However, when firms concurrently announce the repurchase limit and the use of ToSTNeT, which are the case for Disclosed-TNR, the magnitude of the market reaction is about 4% smaller than without the disclosure of the use of ToSTNeT.

## 5. Alteration report analysis

### 5.1. Large shareholding reporting system

In this section, we analyse the alteration reports released on the “Large Shareholding Reporting System” to investigate the sellers behind Undisclosed-TNR. According to the FIEA, shareholders with a holding of 5% or more in a listed firm are defined as large shareholders and are required to provide a “Large Shareholding Report”. This report includes, a breakdown of acquisition funds, the purpose of the holdings and the proportion of shareholding (Article 27-23, Para. 1 of the FIEA). If the percentage ownership changes by more than 1%, or if there are other significant changes, then an “Alteration Report” is required (Article 27-25, Para. 1 of the FIEA). Institutional investors such as banks, securities, insurance and investment companies whose daily businesses are trading shares can submit special reports, which require less information (Article 27-26, Para. 1 and 2 of the FIEA).

There are four different types of reports under the Large Shareholding Reporting System: (1) General Large Shareholding Report; (2) General Alteration Report; (3) Special Large Shareholding Report; and (4) Special Alteration Report. For instance, if a major shareholder with a percentage ownership of more than 5% sells 1% or more of the shares using ToSTNeT, this shareholder is required to provide an Alteration Report. The General Alteration Report contains details of the acquisition or disposal situations over the last 60-day period. From this report, we can observe how many shares and when the shares are acquired or sold using ToSTNeT. By contrast, the Special Alteration Report only documents the changes since the previous report and does not provide the details of transactions.

### 5.2. The relationship between firms using Undisclosed-TNR and the sellers

The General Alteration Reports are available for 21 of the 85 Undisclosed-TNR cases. Table 6 provides details of these reports categorised based on the three types of sellers: individuals, industrial corporations, and investment funds.

“Monopoly rate of seller” in the last column shows the number of shares sold by the seller divided by the total number of shares repurchased by the firm. We observe that 10 out of the 21 cases have a monopoly rate of seller of 100% (the average is 94.71%). That is, in about half of the

<sup>14</sup> The use of winsorisation on all continuous variables at the 5th and 95th percentiles do not materially change the main results.

<sup>15</sup> *PlanSize* is a commonly used variable in both the US and Japan, whereas *PlanDays* is relevant only for share repurchases in Japan. This is because there is no regulation in the US that requires firms to complete the share repurchase program within a certain period of time, while a share repurchase program in Japan must be completed within one year, and the timeframe for repurchasing shares always forms part of the announcement (Article 156, Para. 1 of the Act).

**Table 6**  
General Alteration Reports on Undisclosed-TNR.

No.	Buyer		Undisclosed-TNR			Share price fluctuations					Seller		
	Repurchasing firms	Day <i>t</i>	No. of shares to be repurchased	% of shares outstanding	No. of shares repurchased	Planned acquisition days	Days from <i>s</i> to <i>t</i>	Day <i>s</i> -1 closing price ¥	Day <i>t</i> -1 closing price ¥	Day <i>t</i> closing price ¥	Seller name	No. of shares sold	Monopoly rate %
1	DCM Holdings	20101004	2,500,000	1.62	2,500,000	20	1	397	423	402	<b>&lt;Individuals&gt;</b>		
2	DCM Holdings	20120703	3,000,000	2.06	3,000,000	21	1	565	593	557	J. Kagami	2,585,800	100.00
3	Stella Chemifa	20121031	200,000	1.64	200,000	22	2	1,429	1,578	1,500	J. Fukuda	151,800	75.90
4	PIOLAX	20110823	200,000	1.53	160,000	17	11	1,802	1,735	1,684	C. Kato	160,000	100.00
5	Cleanup	20090513	1,200,000	2.50	1,200,000	31	2	430	497	480	Takayasu (K. Inoue)	1,170,700	97.56
6	Iida Home Max	20100106	600,000	1.98	600,000	19	13	1,551	1,591	1,567	K. Mori	584,800	97.47
7	Takasago Thermochemical	20120215	1,250,000	1.61	1,150,000	28	1	633	623	623	<b>&lt;Industrial Corporations&gt;</b>		
8	Showa Sangyo	20090311	2,000,000	1.12	2,000,000	10	1	269	281	277	Panasonic	1,150,000	100.00
9	Sogo Clinical HD	20121225	11,258	10.81	10,775	24	1	72,900	77,700	75,400	Sojitz, Sojitz Foods	2,000,000	100.00
10	Eiken Chemical	20090203	2,200,000	10.92	2,000,000	20	2	644	672	655	CAC	10,775	100.00
11	Tensho Electric Industries	20110520	1,110,000	6.53	1,110,000	12	4	92	99	105	Hitachi High-Technologies	2,000,000	100.00
12	Asia Air Survey	20090410	1,900,000	12.52	1,900,000	14	3	191	315	254	Mitsui & Co	1,110,000	100.00
13	Agro-Kanesho	20080219	500,000	7.47	500,000	22	4	771	750	750	Location View	1,900,000	100.00
14	Maezawa Industries	20080723	2,200,000	10.71	2,200,000	23	1	220	242	267	<b>&lt;Investment Funds&gt;</b>		
15	King Jim	20080403	3,575,400	11.53	3,446,200	6	2	795	895	850	SFP et al.	406,000	81.20
16	Shofu	20080325	1,600,000	10.08	1,600,000	10	2	1,380	1,500	1,480	SFP et al.	1,684,700	76.58
17	Ezaki Glico	20081217	14,000,000	10.97	14,000,000	8	1	1,042	1,035	956	SFP et al.	3,446,200	100.00
18	U-Shin	20100120	1,349,000	4.22	1,349,000	26	1	536	593	557	SFP et al.	1,390,300	86.89
19	Nissen Holdings	20081029	10,000,000	16.45	10,000,000	5	1	400	388	377	Steel Partners, Liberty Square	13,252,000	94.66
20	Nissen Holdings	20121211	2,873,000	4.53	2,787,100	3	5	318	329	328	RHJ International SA	1,349,000	100.00
21	JCHS	20120912	1,000,000	22.47	695,200	7	1	282	362	315	Sparx Asset Management	9,505,000	95.05
											THN, THN Cayman	2,736,540	98.19
											JAFCO	690,000	99.25

Notes: This table provides an overview of the 21 Undisclosed-TNR transactions where the sellers could be identified from General Alteration Reports. We categorise the sellers as individuals, industrial corporations, or investment funds. Day *s* is the actual day on which only the share repurchase limit is announced and Day *t* is the actual day on which the shares are repurchased with ToSTNeT (during the pre-opening of the market at previous day's closing price). For brevity J. Kagami is Junichiro Kagami, J. Fukuda is Junko Fukuda, C. Kato is Chieko Kato, K. Inoue is Kyoichi Inoue, K. Mori is Kazuhiko Mori, and SFP et al. is SFP, GAS Cayman, and Lyxor Japan.

**Table 7**  
Relationships between Undisclosed-TNR firms and sellers.

Repurchasing firms	Seller name	Seller's shareholder ranking change	Seller-buyer connection					Remarks
			Business connection/partnership	Capital tie-up	Seller and buyer owns a joint venture	Seller is a board member	Affiliated firm of seller	
	<b>&lt;Individuals&gt;</b>							
1 DCM Holdings	J. Kagami	1 → 1				✓		J. Kagami is executive adviser and co-founder of DCM
2 DCM Holdings	J. Kagami	2 → 6				✓		J. Kagami is executive adviser and co-founder of DCM
3 Stella Chemifa	J. Fukada	1 → 1				✓		J. Fukada is chairman and president of Stella Chemifa
4 PIOLAX	C. Kato	7 → 9						C. Kato is a close relative of the chairman Kazuhiko Kato
5 Cleanup	Takayasu (K. Inoue)	2 → 2				✓		Takayasu is the asset management company of president K. Inoue
6 Iida Home Max	K. Mori	1 → 1				✓		K. Mori is executive chairman of Iida Home Max
	<b>&lt;Industrial Corporations&gt;</b>							
7 Takasago Thermochemical	Panasonic	10 → n.a.	✓	✓				
8 Showa Sangyo	Sojitz, Sojitz Foods	2 → 2	✓		✓			
9 Sogo Clinical HD	CAC	1 → 4	✓	✓		✓	✓	External director H. Takahashi has additional post as CAC operating officer
10 Eiken Chemical	Hitachi High-Technologies	1 → n.a.	✓					
11 Tensho Electric Industries	Mitsui & Co	2 → 2	✓		✓	✓	✓	Multiple directors from Mitsui & Co
12 Asia Air Survey	Location View	2 → n.a.		✓		✓	✓	One director has a post at both Asia Air View and Location View. Extraordinary loss of 234 million yen loan to Location View
	<b>&lt;Investment Funds&gt;</b>							
13 Agro-Kanesho	SFP et al.	3 → 7						
14 Maezawa Industries	SFP et al.	1 → n.a.						
15 King Jim	SFP et al.	1 → n.a.						
16 Shofu	SFP et al.	1 → n.a.						GAS Cayman, Lyxor Japan acquired 3,800 shares on day $t - 1$
17 Ezaki Glico	Steel Partners, Liberty Square	1 → n.a.						There was news on hostile takeover by Steel Partners (Greenmailer)
18 U-Shin	RHJ International SA	1 → n.a.				✓	✓	Multiple directors from RHJ International SA
19 Nissen Holdings	Sparx Asset Management	2 → n.a.						
20 Nissen Holdings	THN, THN Cayman	2 → 2						THN is a fund established by Advantage Partners
21 JCHS	JAFCO	1 → n.a.		✓				

*Notes:* This table shows the relationship between the Undisclosed-TNR firms and the sellers for the 21 Undisclosed-TNR cases from Table 6. The information is sourced from General Alteration Reports and annual and quarterly securities reports. Seller's shareholder ranking change shows the change in major shareholder ranking before and after the repurchase. For brevity J. Kagami is Junichiro Kagami, J. Fukada is Junko Fukuda, C. Kato is Chieko Kato, K. Inoue is Kyoichi Inoue, K. Mori is Kazuhiko Mori, H. Takahashi is Hisashi Takahashi, and SFP et al. is SFP, GAS Cayman, and Lyxor Japan.

Undisclosed-TNR cases, the shares are sold by a single major shareholder or a single group of joint shareholders. We also observe that some sellers are recurrent sellers (e.g., Junichiro Kagami).<sup>16</sup>

Table 6 also shows the share price fluctuations related to the individual Undisclosed-TNR cases. “Planned acquisition days” in the seventh column is defined as the number of days over which the repurchase program is planned to be completed. “No. of days from  $s$  to  $t$ ” in the eighth column is defined as the number of days from the first announcement of the repurchase limit to the day the second announcement of the decision to repurchase shares on the ToSTNeT market is made. “Day  $s-1$  closing price” and “Day  $t-1$  closing price” in the ninth and the tenth columns are defined as the closing prices on the days prior to the respective announcements, while “Day  $t$  closing price” in the eleventh column is the closing price on the day when TNR is executed. As discussed previously, the repurchase price for TNR is the closing price of the previous day (Day  $t-1$  closing price).

When we compare “Day  $s-1$  closing price” and “Day  $t-1$  closing price”, we observe the share price increases in 16 out of the 21 cases. Comparing “Day  $t-1$  closing price” with “Day  $t$  closing price”, we observe the share price decreases in 17 out of the 21 cases. In addition, while “Planned acquisition days” are on average 16.57 days, the actual number of days between  $day s$  and  $day t$  is on average only 2.86 days.

Table 7 provides further details on the relationship between the sellers and the firms of the 21 cases of Undisclosed-TNR. For this analysis, we use information from annual and quarterly securities reports over and above the information given in the General Alteration Reports. First, the table shows that the individual sellers also serve as directors of the firms conducting an Undisclosed-TNR in 5 out of the 6 cases. With respect to PIOLAX, which is the only firm of which the seller is not a director, the seller Chieko Kato and PIOLAX’s chairman appear in the same General Alteration Report as joint shareholders. Therefore, we can argue that Chieko Kato could also be seen as a de facto director for PIOLAX.

Second, where the seller is an industrial corporation, the seller seems to have a close business relationship (in the form of business or investment partnerships, including capital tie-up and joint venture) with the firms using Undisclosed-TNR. Moreover, in 3 out of the 6 cases, the executives of the firms using Undisclosed-TNR also hold a post or have worked at the firm selling the shares on the ToSTNeT market. There are two cases where the firms using Undisclosed-TNR are affiliated firms of the industrial corporation sellers.

Third, where the seller is an investment fund, we find little evidence of a close relationship between the sellers and the repurchasing firms. However, in 4 out of the 9 cases, the same three joint shareholders (SFP, GAS Cayman, and Lyxor Japan) are the sellers in the transactions. SFP (Symphony Financial Partners), the largest shareholder of the three, is a well-known hedge fund that often makes headlines as an activist who makes frequent shareholder proposals at GMSs. Although we have no evidence to substantiate the argument, it is conceivable that SFP and the other two joint shareholders, GAS Cayman and Lyxor Japan, might have applied pressure on the repurchasing firms to announce the share repurchase limit only, without disclosing how the firms will repurchase the shares, which then allowed the seller to sell the shares at the inflated price on the ToSTNeT market a few days later (similar to ‘greenmailing’). Further, SFP, GAS Cayman, and Lyxor Japan acquired 3,800 shares of Shofu, which is a small-cap thinly traded firm, in an open market on the same day before Shofu announced the decision to repurchase the shares on the ToSTNeT market. The entire trading volume of Shofu on the day was 6,000 shares. Therefore, the acquisition of 3,800 shares by SFP, GAS Cayman, and Lyxor Japan would have had

substantial impact on the closing (repurchase) price of Shofu. SFP, GAS Cayman, and Lyxor Japan then sold almost all their holdings through TNR on the following day.

Finally, the “Seller’s shareholder ranking change” in the fourth column of Table 7 shows the change in the major shareholder ranking before and after Undisclosed-TNR. In the case of joint holdings, the change in the ranking of the seller with the most shares sold is recorded. The seller was the largest and the second largest shareholder of the Undisclosed-TNR firm in 11 and 7 of the 21 Undisclosed-TNR cases, respectively. With respect to the cases where individual investors sell their shares into the repurchase programs, they remain on the large shareholder register after the sale. By contrast, most industrial corporations and investment funds are no longer major shareholders after the share repurchase (indicated by “n.a.”). Based on this observation, it appears that individuals usually sell only a portion of their holdings, whereas corporations and investment funds sell most or all of their holdings.

Overall, the results from Tables 6 and 7 suggest the existence of a close relationship between the firms conducting an Undisclosed-TNR and the sellers in the majority of cases. The results also indicate that the party who ultimately benefit from Undisclosed-TNR is the seller in most cases.

## 6. Practicality issue of ToSTNeT repurchase

Given that the repurchase price for Undisclosed-TNR is the closing share price before the announcement of the use of ToSTNeT, and that the investors would know that this price would likely fall on the next day, rational investors should have placed their sell orders to the firms at the time of the announcement. However, rather than finding multiple investors placing sell orders for the Undisclosed-TNR, we find that the seller is often a single investor. This begs the question of whether it is realistically practical for other investors to sell shares to the firms using Undisclosed-TNR.

We survey 12 brokers all together (five largest securities companies in Japan, and seven major online brokerage firms) on whether they offer trading through ToSTNeT. On January 10, 2014, the Nihon Keizai Shimbun, the leading business daily in Japan, reported that the seven major online brokerage firms had accounted for 84% of the trading volume from individual investors in Japan in 2013. Responses from the brokers were obtained via email or phone in March 2015.

Table 8 shows the results of our survey. We find that none of the seven online brokerage firms handles sales orders from clients involving ToSTNeT. Among the five largest securities companies, Daiwa Securities does not handle such orders at all, and submitting orders online is not possible for the remaining four securities companies. Sales orders can only be submitted via the phone during normal business hours on the day prior to the repurchase. However, the closing time of the four major securities companies is between 5:00 – 5:30 pm, while the use of ToSTNeT is announced between 4:00 – 6:00 pm. Therefore, while investors could receive the announcement before the business closes, they would not have much time to act on this news. Further, selling shares by phone normally incurs a transaction cost of about 1% of sales amount, which is significantly more expensive than trading online that usually charges less than one twentieth of the cost.

It is also noteworthy that most of the brokers whom we corresponded with had limited understanding of ToSTNeT in general and had no previous experience of executing sales orders on ToSTNeT.

## 7. Discussion and concluding remarks

Tokyo Stock Exchange Trading Network is a unique market in Japan in which firms can repurchase their shares during off-auction hours at a fixed price within a very short timeframe. In this paper, we investigate the implications of share repurchases conducted on the ToSTNeT market. There are two types of ToSTNeT share repurchases (TNR): (1) Disclosed-TNR (whereby the repurchase limit and the decision to repurchase shares on the ToSTNeT market is concurrently announced

<sup>16</sup> After the transaction, Junichiro Kagami experienced a drop in shareholder ranking from 2nd to 6th place. He continued selling his holdings in DCM despite the drop and was delisted from the 10 largest shareholder register as disclosed in the 2016 Securities Report.

**Table 8**  
Survey results of securities firms and brokers offering services on ToSTNeT.

Brokers	Internet	Call centre or main branch phone
<b>&lt;5 largest securities firms&gt;</b>		
Nomura Securities	n.a.	Possible via phone, orders must be received the latest by 5:10 pm the day prior to TNR. Possible outside of business hours if there is an assigned branch representative. The transaction fee is ¥29,247 for a sales amount of ¥3 million (0.975%).
Daiwa Securities	n.a.	n.a.
SMBC Nikko Securities	n.a.	Possible via phone, orders must be received the latest by 5:30 pm the day prior to TNR. Possible outside of business hours if there is an assigned branch representative. The transaction fee is ¥30,780 for a sales amount of ¥3 million (1.026 %).
Mizuho Securities	n.a.	Not possible via phone. Possible outside of business hours if there is an assigned branch representative. The transaction fee is ¥28,620 for a sales amount of ¥3 million (0.954%).
Mitsubishi UFJ Morgan Stanley Securities	n.a.	Possible via phone, orders must be received the latest by 5 pm the day prior to TNR. Possible outside of business hours if there is an assigned branch representative. The transaction fee is ¥29,052 for a sales amount of ¥3 million (0.968%).
<b>&lt;7 major online brokers&gt;</b>		
SBI Securities	n.a.	n.a.
Rakuten Securities	n.a.	n.a.
Matsui Securities	n.a.	n.a.
kabu.com	n.a.	n.a.
Monex	n.a.	n.a.
GMO CLICK Securities	n.a.	n.a.
Okasan Online Securities	n.a.	n.a.

*Notes:* This table shows results from surveying the five largest securities companies and seven major online brokerage firms in Japan on whether they offer trading on ToSTNeT. The survey was conducted in March 2015 by sending questionnaires via e-mails and interviewing the brokers on the phone. Where the service is not available, it is denoted by "n.a."

after the close of the afternoon session at 3:00 pm), and (2) Undisclosed-TNR (whereby only the repurchase limit is announced first and the disclosure of the decision to repurchase shares on the ToSTNeT market is made at a later time).

Our sample consists of 284, 1,633, 580, and 85 cases of Disclosed-OMR, Undisclosed-OMR, Disclosed-TNR, and Undisclosed-TNR, respectively, for the period 2008 – 2012. The analysis yields several findings. First, the market reaction to Disclosed-TNR (0.87%) is significantly lower than the other repurchase methods – Disclosed-OMR (4.47%), Undisclosed-OMR (3.80%), and Undisclosed-TNR (3.59%). Second, the market adversely reacts to Undisclosed-TNR firms when they subsequently announce their decision to repurchase the shares on the ToSTNeT market (–1.21%). The initial evidence of a higher market reaction to Undisclosed-TNR compared to Disclosed-TNR implies an overreaction. Meanwhile, the sellers could sell their holdings at the inflated price before the price reversal occurs, as the repurchase price is set at the closing price before the second announcement. Third, our regression analysis indicates that the overreaction to the first announcement of Undisclosed-TNR is likely driven by the market's assumption that the firms would repurchase the shares on an open market rather than on the ToSTNeT market. Fourth, the General Alteration Reports show that almost half of the Undisclosed-TNR cases are sales by single major shareholders, and that these sellers typically have close business relationships with the buying firms, such as the seller having a seat on the board. Finally, we find that it is practically impossible for other external shareholders to participate in Undisclosed-TNR due to the time constraints and other deficiencies that are inherent in brokerage firms.

Overall, the findings in this study suggest that the two-stage announcement of Undisclosed-TNR leads to an inflated repurchase price, which benefits certain shareholders with close economic ties at the expense of other shareholders consistent with the managerial-opportunism theory. Interestingly, our study reaches a conclusion different to prior studies on why Japanese firms choose to repurchase shares. Prior studies show that Japanese firms repurchase shares to signal a perceived undervaluation (the signalling theory) or to alleviate the agency problem arising from holding excess funds (the free cash flow theory). However, our study suggests that some Japanese firms repurchase shares in order to maximise the wealth of the insiders (including managers) at the expense of other shareholders (the

managerial-opportunism theory). Based on our evidence, we believe that the different conclusions are likely due to our focus on the use of Undisclosed-TNR and its loophole that is being exploited.

Recent evidence suggests that the practice of Undisclosed-TNR for opportunistic reasons extend beyond our sample period 2008-2012. Sankyo Co. Ltd, Suzuken Co. Ltd, Okamoto Co. Ltd, and DCM Holdings Co. Ltd are just some of the recent examples of companies that had used Undisclosed-TNR between the period 2015-2018. In March 2015, the TSE implemented the Corporate Governance Code to strengthen measures that protect shareholders in related-party transactions. However, the recent examples suggest that the Code has done little by way of curtailing the unfair practices with Undisclosed-TNR, indicating that the TSE is yet unaware of the loophole in Undisclosed-TNR.

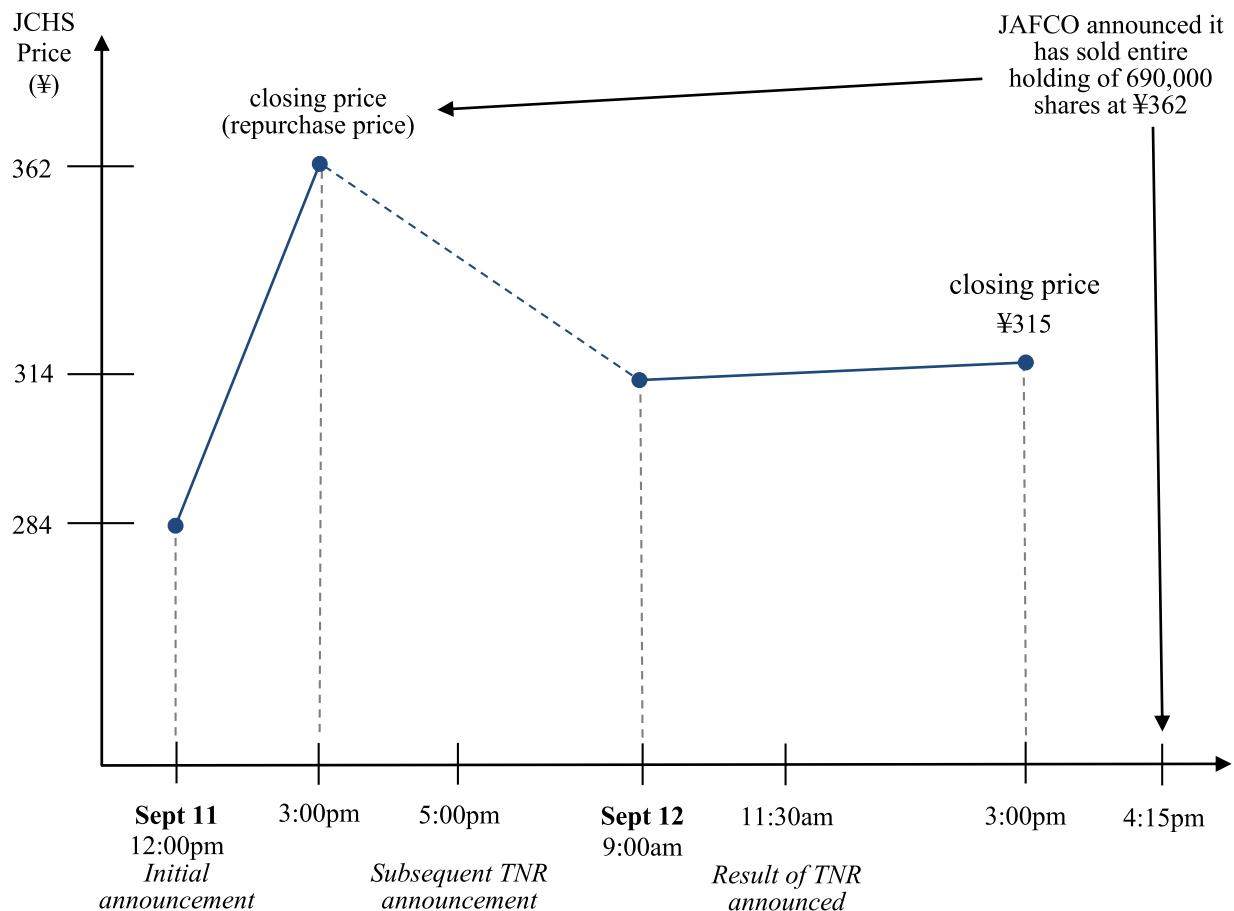
While our empirical investigations have uncovered some managers taking advantage of the drawback in Undisclosed-TNR, it is possible that the firm could just be genuinely unable to decide on the repurchase method. This is because such decision relies on the consideration of several constantly changing economic factors, the uncertainty around which could significantly impede the firm's decision on whether it would use OMR, TNR, or both. Given the difficulty in monitoring a manager's intention and regulating this practice, we recommend that the TSE requires the repurchasing firm to disclose the repurchase method in good faith or to the best its knowledge at the time the firm announces the repurchase limit. Further, we recommend that the TSE takes steps to require brokerage firms to accept and facilitate sell orders from all shareholders including retail investors. We believe that by allowing all shareholders to participate in Undisclosed-TNR, share repurchases would be executed on a pro-rata basis among multiple shareholders, which may dilute the gain a single large shareholder can make from selling shares.

#### Declaration of Competing Interest

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## Appendix

## Share repurchase between JCHS and JAFCO in September 2012



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