RIETI Discussion Paper Series 18-E-074

Stock Repurchases and Corporate Control: Evidence from Japan

Julian FRANKS
London Business School

Colin MAYER
Saïd Business School, University of Oxford

MIYAJIMA Hideaki
RIETI

OGAWA Ryo
Waseda University

The Research Institute of Economy, Trade and Industry
https://www.rieti.go.jp/en/

RIETI Discussion Paper Series 18-E-074
October 2018

Stock Repurchases and Corporate Control: Evidence from Japan*

Julian FRANKS
London Business School

Colin MAYER
Saïd Business School, University of Oxford

MIYAJIMA Hideaki
Graduate School of Commerce, Waseda University

OGAWA Ryo
Graduate School of Commerce, Waseda University

Abstract

This paper provides a comprehensive study of stock repurchases in Japan over the period 2001 to 2014. It establishes the extent to which repurchases are used as an important control vehicle for preserving insider ownership. For example, blocks of shares when offered for sale are frequently repurchased and sometimes resold to other insiders. They are usually executed by quasi-private transactions and constitute about 45% of all repurchases. In contrast, repurchases from outsiders are usually executed by open-market transactions. Repurchases have a significant impact on the pattern of ownership in Japan: if they had not occurred, outsider ownership would have increased by 24% compared with an actual increase of 3%. Share prices respond in a markedly different way depending upon the motive for repurchase: sales of repurchased shares to insiders have significantly lower excess returns than sales made for other motives such as financial or capital structure reasons. This paper adds to the recent US literature on how self-interested management have used repurchases to improve the value of their vesting rights and executive compensation.

Keywords: Stock repurchases, Quasi-private transactions, Insider control, Foreign ownership
JEL classification: G32, G35, K22

*This study is conducted as a part of the Project "Frontiers of Analysis on Corporate Governance" undertaken at Research Institute of Economy, Trade and Industry (RIETI). We would like to thank Yuko Kobayashi and Shogo Hashimoto for excellent research assistance on this project. We also thank Melsa Ararat, Peter Goldman, Vikas Mehrotra, Randall Morck, Masato Shimizu, Katsushi Suzuki, Yishay Yafeh, Shinichi Yuhara, and seminar participants at Waseda University, Hitotsubashi University, RIETI, the 2017 Frontiers In Finance Conference in Banff, the 2017 ICGN annual conference in Kuala Lumpur, and the 2018 AsianFA annual meeting in Tokyo for their helpful suggestions and comments. In constructing the dataset for this research, we were supported by a Ministry of Education, Culture, Sports, Science and Technology (MEXT) research grant, KAKENHI (I5H01958) and a Japan Society for the Promotion of Science (JSPS) research grant, "Topic-Setting Program to Advance Cutting-Edge Humanities and Social Sciences Research: Global Initiatives." We were also supported by JSPS Core-to-Core Program, A. Advanced Research Networks. Colin Mayer is grateful for support from the Ford Foundation Programme on Purposeful Ownership at the Saïd Business School, Oxford, the British Academy Programme on the Future of the Corporation, and the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 645763.

1. Introduction

Stock repurchases are typically associated with the resolution of information and agency problems.[1] However, they may also increase, rather than resolve, agency problems, and may be undertaken to boost share prices so as to benefit executive compensation plans at the expense of value enhancing corporate employment, investment and R&D (Lazonick, 2014; Almeida, Fos and Kronlund, 2016; Edmans, Fang and Huang, 2018). They may also be motivated by the private interests of insiders so as to sustain the value of equity pledged as collateral on loans, as in Taiwan (Chan, Chen, Hu and Liu, 2018), or to protect the control position of insiders, as observed in Korea (Joh and Ko, 2007).

Japan offers a particularly interesting case study because the methods of share repurchases reveal different motives of management. Those motives include preserving or increasing control by insiders and creating strategic partnerships as well as distributing cash to shareholders. The first, increasing insider control, is particularly important in Japan because of the unwinding of cross-shareholdings that took place in the 1990s and, the increase in foreign institutional ownership which has often proven antagonistic to entrenched management (Miyajima and Ogawa, 2016).[2]

The introduction of unrestricted stock repurchases in Japan dates back to 2001. Since then numerous companies have repurchased their stock, frequently exceeding 10 percent of their shares outstanding. In the 2,335 companies that make up the premium section of the Tokyo Stock Exchange (TSE), more than one half engaged in stock repurchases over a fourteen-year period starting in 2001. Slightly more than 700 firms, or about 30 percent of the total, repurchased more than 5 percent cumulatively of their shares outstanding and about 100 firms acquired more than 20 percent. Confining the sample to companies in the Nikkei 500 Index, the proportion of firms that repurchased more than 5 percent rises from about 30 to 38.6 percent.[3]

---

[1] For example, undervaluation of shares (Vermaelen, 1981; Comment and Jarrell, 1991), excess cash relative to investment opportunities (Easterbrook, 1984; Jensen, 1986) and reversion to target leverage ratios (Bagwell and Shoven, 1988; Hovakimian, Opler and Titman, 2001).

[2] There are a few papers that examine the stock repurchase as a takeover defense (Billet and Xue, 2007), and its effect on institutional ownership or blockholding (Golbe and Nymanm, 2013). However, none of them have addressed the control effects of stock repurchases.

[3] In the US, repurchases of equities and preferred shares, as a proportion of market capitalization,

In the US, repurchases are frequently used to distribute excess cash to shareholders and to create financial slack for M&A transactions (Dittmar, 2000; Brav, Graham, Harvey and Michaely, 2005; Skinner, 2008). For example, Hsieh and Wang (2009) describe stock repurchases as "the dominant form of corporate payout." However, stock repurchases are also used to raise share prices in order to improve executive compensation (see Edmans et al., 2018), and deter takeovers (Stulz, 1988; Bagwell, 1991). This paper is in the spirit of these papers, recording how stock repurchases are motivated by management to preserve control by insiders.[4]

Franks, Mayer and Miyajima (2014) and Miyajima and Ogawa (2016) document the substantial decline of insider ownership of Japanese companies in the final decades of the twentieth century. They attribute this trend in part to the unwinding of corporate cross-holdings, largely as a result of financial pressures on Japanese companies during "the lost decade." This paper records how repurchases of shares in Japan after their legalization in 2001 were frequently used to preserve insider control, particularly when faced with the unwinding of cross-holdings and increasing foreign ownership that instigated both shareholder activism and hostile takeovers.[5]

Two examples illustrate how repurchases have been used for control reasons: Ezaki Glico Co., a leading confectionery firm, repurchased 10 percent of its shares, all of which were bought from Steel Partners, the very aggressive US activist fund. The shares were ultimately sold to small investors via Nomura Securities Co. This allowed the transfer of shares from an aggressive outside blockholder to small passive outside shareholders. In a second case Nintendo Co. repurchased a large block of shares, totaling about 7 percent, from the heirs of the founder who wished to sell part of their holdings. Nintendo used these shares to create a cross-holdings with a strategic partner, DeNA Co. This transaction in effect swapped a family insider for a strategic partner. These cases

---

were between 0.12% and 2.13% annually, over the period 1972 to 2000 (Grullon and Michaely, 2002).

[4] Billett and Xue (2007) report that share repurchases increase with the probability of takeover but Lin, Stephens and Wu (2014) record that share repurchases raise the likelihood of firms being takeover targets in the US.

[5] For increasing activism in Japan and its outcome, see Hamao and Matos (2018), Buchanan, Chai and Deakin (2012), and Becht, Franks, Grant and Wagner (2017).

demonstrate how the act of repurchasing shares cannot be considered in isolation from the selling shareholders and the way in which the repurchased shares are subsequently used.

There are four ways in which repurchases can be undertaken in Japan. First, they can be organized through an auction (open-market transaction) in which the issuing firm pre-announces the maximum number of shares they are willing to repurchase and the period over which the repurchase will occur, thereby giving a firm flexibility in terms of the amount and timing of open-market purchases. In contrast to the US, where auctions account for almost 90% of repurchases, in Japan they are used in just 35% of cases.[6]

Second, repurchases of blocks of shares may take the form of a market transaction but without an auction: the buyer pre-announces that it will purchase a fixed number of shares on a pre-determined day to be transacted at the previous day's closing price. The repurchase date may be as little as 16 hours after the repurchase announcement, thereby giving few opportunities for investors to participate, other than those selected by the company. These rules were set by the TSE in a procedure known as ToSTNeT-2/3 (Tokyo Stock Exchange Trading Network System).[7] This is used specifically to target repurchases at blockholders, frequently insiders, who are selling out, and where management wishes to ensure the shares are bought by friendly third-party investors. Such repurchases for control purposes constitute 45 percent of all repurchases.

In theory, block purchases made under ToSTNeT-2/3 are anonymous; however, a blockholder may notify the repurchasing firm in advance of its wish to sell a block of shares. In response, the issuing firm may announce a purchase of a fixed number of shares at the previous day's closing price; where there is an excess demand for shares they are repurchased on a pro rata basis. By giving short notice of the repurchase, as little as 16 hours, the management minimizes demand from unwelcome outsiders.

The third method is a tender offer, where the issuing firm offers to buy their own

---

[6] Based on Pyer and Vermaelen (2005) and Banyi, Dyl and Kahle (2008).

[7] ToSTNeT-2 was introduced in 1998 and ToSTNeT-3 was introduced in 2008. There are two differences between the two sets of rules: (i) under ToSTNeT-2 repurchases were made on a first come first served basis and in ToSTNeT-3 on pro rata basis, (ii) ToSTNeT-3 was confined to the issuer of the shares whereas ToSTNeT-2 was open to all buyers and sellers of blocks.

stocks and pre-announces a target number of shares to be repurchased at a fixed price, during a given repurchase period. This method constitutes 13% of the total. The tender offer is used for repurchases from both outsiders and insiders. In some cases, the offered price is substantially discounted below market price. This is different from the US and other countries where tender offers are normally associated with significant premia (Payer and Vermaelen, 2005).

The fourth method is a privately negotiated purchase of shares held by families, companies and other shareholders at a pre-determined price. It accounts for 7% of total transactions, which is similar to the fraction of repurchases in the US. On each occasion that this method is used, it requires the approval of a general shareholders meeting. In contrast, providing approval has been given for a particular amount of repurchases, they may be made by any of the first three methods, including ToSTNeT.

The repurchased shares may be cancelled (thereby prohibiting their future use) or placed in treasury where they may be issued at the company's discretion without shareholder approval. Targeted share sales from treasury stock can be used as a form of takeover defense and as a protection against interventions by activist shareholders. Using a small sample of 60 companies with accumulated repurchases of more than 10 percent of share capital, we analyse: (i) the method of repurchase (open-market versus block purchases from "insiders"), (ii) whether the repurchased shares are cancelled or retained as treasury stock, and (iii) the form in which they are resold to the market or placed with particular purchasers. Approximately 30 percent of accumulated repurchases in the sample reported in this paper were cancelled; another 40 percent were subsequently sold through public and private placements; and the remaining 30 percent were retained as treasury stock.

Our principal hypothesis is that a large proportion of repurchases in Japan are used to preserve or increase insider ownership of companies and protect the company against unwelcome changes of control. We have four sets of results. First, we investigate the determinants of stock repurchases. We find in regressions, that higher levels of ownership held by foreign shareholders are related to higher levels of subsequent stock repurchases. We record that repurchases increase following a decline in insider

shareholdings, especially bank shareholdings. Even more strikingly, when a firm repurchases from insiders who wish to cash out, repurchases are often made through quasi-private transactions so as to avoid those shares being placed with outside shareholders. This is consistent with the evidence that outside (foreign) investors are perceived as a potential threat to management and insider control.

Second, we investigate the cancellation and disposal of treasury stock. We find that shares repurchased from insiders were less likely to be cancelled. Furthermore, a significant proportion of treasury stock was sold to insiders through private placements. This contrasts with the typical practice in the US of treasury stock being mainly disposed of through a public offering.

Third, we analyze the stock market reaction to stock repurchases. The complete cycle of repurchasing, holding and disposal of treasury stock represents a form of "round tripping" in which shares are purchased from and eventually resold to shareholders. In the absence of taxes, transaction costs, asymmetric information and agency problems, this would not be expected to have an effect on firm valuation. We estimate cumulative abnormal returns (CARs) for the window around the announcement of stock repurchases using the sample of 60 firms. The mean CARs for the announcement of repurchase is 1.9 percent (median 1.5 percent). We estimate the CARs for companies that cancel their repurchased shares within one year, and compare them with those that retain the shares as treasury stock: over the announcement window, the median CARs are 2.1 percent for repurchases with cancellations and 1.3 percent for repurchases without cancellations.

We then compare the CARs for repurchases made by auction and ToSTNeT. The result is that the median CARs are 2.0 percent for repurchases through an auction and 0.8 percent for repurchases through ToSTNeT, suggesting that the market imposes a discount when management retains discretion over the resulting change in ownership. We also find that median CARs of private placements motivated by strategic alliances are positive at 0.8 percent, whereas those involving a transfer to insiders (banks and a business partner) are lower and negative (-0.8 percent).

The total round tripping announcement effects of market purchases followed by private placements to insiders is 1.2 (i.e. 2.0 minus 0.8) percent, and private purchases

and subsequent sales to insiders is zero (i.e. 0.8 minus 0.8) percent, compared with 2.1 percent for repurchases that are cancelled. Round tripping that either intensifies or preserves insider control is therefore valued less than pure repurchases, consistent with the proposition that the market penalizes stock repurchases that are perceived as being motivated by control changes.

In the US, privately negotiated share repurchases are observed to have very different characteristics from open-market purchases. Dann and De Angelo (1983), Bradley and Wakeman (1983), Klein and Rosenfeld (1988), Denis (1990) and Mikkelson and Ruback (1991), all report significant negative share price reactions in private repurchases in contrast to the positive returns of open-market purchases, even though companies pay significant premia to repurchase their own stock. The explanation provided for this is that private repurchases are greenmail and managers are willing to pay the premia to protect their private benefits of control. Consistent with this, Peyer and Vermaelen (2005) find that when greenmail motivated repurchases are excluded then positive premia are no longer observed.

Private repurchases in the US therefore bear some similarities to the takeover defenses of Japanese repurchases. However, there are marked differences. While tender offers in the US are associated with open-market rather than private repurchases, in Japan they are equivalent to quasi-private ToSTNeT repurchases rather than open-market purchases and are made at a discount rather than a premium. The reason is that they are not used to fend off greenmail but to preserve a friendly block of shares (which in the absence of the repurchase would have had to be sold in the market at a discount) and reissue the block to another insider at a later date.

Finally, we examine the effect of stock repurchase on patterns of ownership. We examine how ownership of our sample of firms changed over the entire time period from 2001 to 2014. We find that there was a decline in the level of outsider ownership in the highest quartile of outside-owned firms (as measured in the year 2000) and an increase in the lowest quartile firms. More strikingly, high levels of repurchases were associated with particularly sharp declines in outsider ownership for firms in the highest quartile of outsider ownership. In contrast, there is little increase in outsider ownership for firms that

are in the lowest quartile.

Our estimates are likely to be understatements of the extent to which repurchases affected changes in the pattern of ownership because if repurchases had not occurred then outsider ownership would have increased more than was actually observed. Take the case of a block purchased from an insider cashing-out, which without the repurchase would have been sold to outsiders, but instead was placed with another insider, for example a strategic partner. In that case insider ownership is unchanged but would have declined without the repurchase. Using the counterfactual, we measure how much outsider ownership would have increased if stock repurchases had not occurred. In that case, we report that outsider ownership of the sample would have increased by 24% on average compared with an actual increase of 3%.

This paper represents the most comprehensive analysis to date of the control impact of repurchases and the way in which the three stages of the purchase of shares, their holding in treasury stock or cancellation, and their subsequent resale in the market or to private purchasers influence patterns of ownership. It documents the extent to which cumulatively the evidence from the three stages, their share price impact, and the overall effects on ownership changes point to the importance of control as the motivation for repurchases in Japan. Like the more recent US literature on remuneration, we believe that repurchase decisions by management may be motivated by a wish to preserve or increase their private benefits.

This paper is organized as follows. Section 2 provides a description of stock repurchases in Japan. Section 3 describes case studies of companies that used stock repurchase as a control device. Section 4 reports the estimation results for the determinants of stock repurchases and different repurchase methods. Section 5 reports results for whether the repurchased shares are cancelled, held as treasury stock or resold. Section 6 summarizes the results of the stock market reactions to each of the three stages: repurchases, cancellations and disposals. Section 7 examines the impact of stock repurchases, their cancellation or holding as treasury stock and subsequent resale on changes in corporate ownership. Section 8 concludes the article.

2. Data description

2.1. Stock repurchases in Japan

Stock repurchases are a recent phenomenon in Japan. According to the new Company Law of 1899, Japanese companies were forbidden from engaging in stock repurchases. Only in 1994 were Japanese firms permitted to repurchase their shares as a result of revisions to company law and related tax laws (Hatakeda and Isagawa, 2004). However, the amended law only allowed firms to repurchase shares for the provision of stock options, or for the purposes of a merger. Also, the repurchased shares had to be cancelled rather than retained as treasury stock.

In 2001 an amendment to the company law for the first time allowed firms to use repurchased shares without any restrictions. One motive for this amendment was that cross-shareholdings of banks and firms were rapidly unwinding, leading to a perceived undervaluation of shares. By allowing firms to make stock repurchases freely, the government hoped to mitigate the undervaluation.[8] The change in law had a significant effect on the level of stock repurchases, as shown in Figure 1, where annual repurchases jumped from 0.1-0.2% before the amendment to the law to 0.5% in 2001 and in excess of 1% in some years thereafter.

== Figure 1 about here ==

2.2. Declining insider ownership

Prior and subsequent to when stock repurchases were permitted in 2001, the ownership structure of Japanese firms experienced drastic changes. Figure 2 shows the long-term time series of insider and outsider holdings based on data from the *Shareownership Survey*, which covers all Japanese domestic stock exchanges. Following Franks et al. (2014), we define insiders as the aggregate of banks (excluding trust accounts of trust

[8] In order to mitigate the market impact of banks' sales of stocks, parallel with the liberalization of stock repurchases, the government established the Banks' Shareholdings Purchase Corporation (price keeping organization) in 2002, which together with Bank of Japan, began to purchase stocks directly from banks. A condition of its purchases was that firms had to have a minimum BBB bond rating, see Miyajima and Kuroki (2007).

banks), insurance companies, other financial institutions and corporations.[9] In general, such shareholders maintain long-term business ties with companies they invest in, and it is assumed they receive both private benefits of control as well as financial returns on their share stakes.[10] Outsiders refer to the aggregate of foreign investors, individuals, mutual funds and pension trusts who only earn financial returns. Figure 2 shows the ratios of holdings by insiders and outsiders based on aggregated stock market values of their holdings.

The insider-dominated ownership structure, which had shown remarkable stability until the mid-1990s, changed radically after the 1997 banking crisis. Banks sold their holding stocks to write off non-performing loans and the government enacted a law restricting bank shareholdings. The proportion of shares held by banks, which formed the core of the cross-holdings structure, declined sharply from 15.6% of total market capitalization in 1992 to 4.6% in 2006, suggesting that sales by banks were one of the main drivers of the dramatic ownership changes.[11] Insurance companies also reduced their shareholding due to declines in their solvency ratios.

In parallel with the declining shareholding of insiders, ownership by institutional investors, and in particular foreign investors, sharply increased. The share of the stock market held by foreign investors increased from 6.3% in 1992 to 27.8% in 2006, with the largest increase occurring in 1999 and 2003-6. Subsequently, the share held by foreign shareholders was stable from 2008 to 2012, at between 26.3% and 28.0%. After "Abenomics" was launched at the end of 2013, the share of foreign shareholders increased again, and now exceeds 30%.

The increasing outsider ownership has been accompanied by a rise in shareholder activism in Japan. The number of activist funds with a stake of more than

---

[9] The definition of insider ownership by TSE does not include family ownership and managerial/employee ownership; instead they are categorized as individuals and included as outsiders. As a result, insider (outsider) ownership in Figure 2 is below (above) our estimates in following analysis. We estimate individual insiders as 2.2% in 2007 based on the TSE listed firms in the first section.

[10] While insider ownership overlaps with cross-shareholding and stable-shareholding, it is a broader concept. Franks et al. (2014) analyzes the evolution and international characteristics of ownership structure in Japan from this perspective.

[11] For reasons for the rapid decline of bank shareholdings, see Miyajima and Kuroki (2007).

five percent increased from 32 cases in 1999 to 189 in 2007 (Hamao and Matos, 2018). Some funds such as Steel Partners and TCI (The Children's Investment Fund Management) made shareholder proposals, and demanded important changes in payout policy and restructuring. Responding to this activism, 408 Japanese firms introduced takeover defenses in 2008. However, after the financial crisis of 2008, activist funds withdrew from the Japanese market, partly because of the stock market collapse, and the poor response of firms to the demands of the activists (see Becht et al., 2017).

== Figure 2 about here ==

2.3. Description of data on Japanese stock repurchases

In Panel A of Table 1, we describe our data on repurchases for 2,335 Japanese firms for the period 2001 to 2014. Stock repurchases are calculated as a proportion of the shares outstanding for each company. The size of cumulative repurchases over the fourteen-year period averages almost 5% (median 6%). However, 47.5% of the sample of companies did not engage in any stock repurchases so there is significant skewness in the distribution of repurchases. For example, companies at the 75th percentile accumulated repurchases of 11.2% of shares outstanding, whereas 101 companies had aggregate stock repurchases exceeding 20%.

If repurchases are confined to the Nikkei 500 Index, the proportion of companies repurchasing their shares rose from 52.5% to 68.4%, and 21% of companies repurchased more than 10% of their shares cumulatively.

== Table 1 about here ==

Panel A of Table 2 shows that the size of annual stock repurchases is 0.5% on average, implying that the average firm repurchased 7% of their issued shares from 2002 to 2014. However, there is considerable variation across companies in the amounts repurchased. The firms in the 90th percentile in the TSE listed firms repurchased on average 1.9% every year. There is also a significant difference before and after the

financial crisis. During 2002-8, firms repurchased 0.65% annually, compared with 0.40% after the financial crisis.

Panel B shows that the percentage of cancelled stocks was 0.16%, or roughly 30% of repurchased shares were cancelled over the period. The distribution of firms that cancelled repurchased shares is highly skewed with only the top decile of companies cancelling any treasury stock at all. The size of cancellations is relatively small pre-financial crisis period, at 0.14%, rising to 0.19% post-financial crisis, suggesting that approximately 20% (0.14/0.65) of repurchased share were cancelled in the pre-financial crisis period, while more than 50% (0.19/0.40) were cancelled post-crisis. It is possible that the higher rate of shareholder activism in the pre-crisis period encouraged firms to retain more repurchased shares as treasury stock in order to fend off hostile changes of control through potential sales to insiders. The reduction in shareholder activism post-crisis reduced the need for treasury stock.

Panel C shows the share of treasury stock over the entire time series. Since the repurchased shares were not cancelled immediately, the share of treasure stock increased from 0.5% in 2001 to 3.7% in 2014 as a proportion of total shares outstanding. For firms in the 90th percentile, it increased from 1.5% in 2001 to 9.7% in 2014. A large increase is observed in 2002 (0.84%) and 2003 (0.45%), when the dissolution of cross-holdings among Japanese companies was at its peak. Another peak is observed in 2008, with the global financial crisis, motivated perhaps by a desire to stabilize company share prices. The evidence is also consistent with stock repurchases being a response to declining insider ownership.

== Table 2 about here ==

2.4. Randomly chosen 60 firms

To understand the nature of stock repurchases, we examine the program of stock repurchases, which includes the choice of methods for repurchase, and the decision to cancel or retain as treasury stock. For the 2,335 listed companies described previously, we identified a sub-sample of 356 firms with more than 10% of cumulative stock

repurchases over the fourteen-year period. From this sample, we randomly chose 30 firms to analyze in detail. Since we are also interested in the methods of disposal of repurchased shares, we identified a further 30 firms which met the additional criterion that cumulative disposals of repurchased shares were more than 3% of shares outstanding.

== Table 3 about here ==

Panel A of Table 3 records the cumulative percentage of repurchased share during 2001-2014. The mean and median cumulative stock repurchase rates are 21.0% and 17.8%, respectively. Of those, 6.3% on average were cancelled over the sample period, which is roughly 30% of all repurchases. The level of cancellations is lower than in the US.

Panel B shows how these repurchase were made by: (i) open-market purchases of shares using an auction, (ii) off-auction repurchases using ToSTNeT where the price is fixed at the closing price of the previous day's trading and the buyer(s) is usually known to the company in advance, (iii) tender offers where the price is fixed through a tender by the buyer, (iv) privately negotiated transactions, and, (v) mixed forms, where a combination of (i) to (iv) is observed.

There are particular characteristics in the way stock repurchases are made in Japan. First, unlike in the US, the auction is not the main way repurchases are undertaken.[12] It is true that the frequency of repurchases by way of an auction is high, at 51% and somewhat higher at 63% if we include mixed transactions. However, the volume of repurchase in auctions is much smaller than other channels; by market value it accounts for only 34%.

Second, ToSTNeT is the main form of repurchases by value. It is an off-auction method, where the buyer pre-announces that it will purchase a fixed number of shares on a pre-determined day to be transacted at the previous day's closing price (under rules set

[12] In the US, the auction accounts for 89.4% of entire repurchase transaction, while the tender offer and private transaction accounts for 3.6% and 4.8% respectively. The remaining 2.1% is Dutch auctions (Banyi et al., 2008).

by TSE, known as ToSTNeT-2/3). While in theory repurchases using ToSTNeT are anonymous, there were only 16 hours that elapsed between the announcement and the transaction. As a result, investors and other blockholders had very little time to participate in the transaction.

In terms of the frequency of transactions the share of ToSTNeT is less than 30%. However, the repurchase volume as a proportion of shares outstanding is much larger on average than auctions -3.42% compared to 1.54% (not shown). In order to capture the impact, we aggregated the percentage shares through ToSTNeT divided by total shares repurchased, referred to as "the size." Similarly, we aggregate the market value of ToSTNeT repurchases divided aggregate market values of transactions, referred to as "the value." The size (column 4) and the value (column 6) of stock repurchased by ToSTNeT was 36.4% and 35.1%, respectively. Decomposing mixed transactions into auctions and ToSTNeT, the latter accounts for about 45.6 (36.4+9.2) percent of all stock repurchases by size, and 49.6 (35.1+14.5) percent by value. Furthermore, private negotiation, which is mainly repurchases from subsidiaries of repurchasing firms (23 cases out of 25 private negotiation), accounts for 7.1% by size. Thus, more than half of repurchased shares of Japanese firms are bought from insiders through ToSTNeT or private transactions.

Third, different from the US, tender offers in Japan are not limited to repurchases from outsiders, but also from insiders (a parent firm and families), and in the latter case they are often accompanied by substantial discounts. We identify 13 cases with a discount out of a total of 19 tender offers.[13]

In Panel C, we describe what the treasury stock is used for: stock options or warrants, sales in secondary markets (seasoned offerings), mergers and acquisitions, private placement, and ESOPs. The number of firms that made disposals was 50 firms out of 60, and the total number of disposals was 268. Although stock options and warrants are the most common, the value of each disposal is small, and only amounts to 0.6% of

[13] Out of 13 tender offers purchased at a discount, 11 are from insiders (a parent firm or families). For instance, Natori Co. made three tender offers at a discount from the asset management companies of founding families between 2012 and 2014. In Japan, most tender offer repurchases are from insiders and therefore made at a discount. This is in marked contrast to the US where tender offers are purchased from outsiders at significant premia (Payer and Vermaelen, 2005).

shares outstanding for each disposal. Unlike the US, public offerings and M&A payments using repurchased shares are relatively rare, while private placements are frequent, with more than half of disposals associated with private placements and ESOPs.

In summary, the method of stock repurchases and how they are used, including cancellations or sales to shareholders. Firms that made immediate cancellations of more than 50% of repurchased stock accounted for only 12 cases out of 60 firms, while there were 20 firms that mainly made public offerings and M&A payments (defined as more than 50% of disposed shares). Most firms undertook different forms of stock repurchases from the US often using quasi-private transactions, i.e. purchasing from insiders, and retaining them as treasury stock for long periods, or disposing of them by private placement for preserving insider ownership.

The next section records five cases that illustrate how stock repurchases were undertaken, their purpose and the parties involved.

3. Illustrative case studies of companies using stock repurchases as a control device

We describe five cases of companies making large scale repurchases. The first, Toyota, illustrates how repurchases were used to stem growing outsider by foreign owners. The second case, Ezaki Glico involves repurchases from an activist US fund. In the third, FANUC, repurchases were motivated by sales by friendly corporate shareholder. The fourth, Suzuki, repurchases shares from another corporation and resold them to business partners. Finally, Nintendo repurchased shares from the founding family which were then resold to a strategic partner through a private placement.

3.1. Toyota: A company with rapidly increasing foreign ownership

Toyota Motor Co. experienced large changes in ownership moving from an insider to an outsider-dominated company during the last 20 years. In 1997, the major shareholders of Toyota were banks and insurance companies, with "insider" ownership totaling at least 53.2%,[14] while foreign ownership was only 8.8%. By 2006, foreign ownership had

[14] Insider ownership is estimated by adding the percentage share held by banks, insurance firms, other corporations, family, managerial ownership and ESOPs for the largest 30 shareholders list.

increased to 27.2%, together with 8.8% held by domestic institutional investors, while insider ownership almost halved to 29.1%. During this transformation, Toyota began a program of stock repurchases starting in 2000, with most of the repurchased shares retained as treasury stock.

Since then, Toyota has made accumulated repurchases totaling 15.9% (of which 9.2% was purchased through ToSTNeT and 6.2% through auctions) and by 2007 it held more than 10 percent of its shares as treasury stock, making it the largest shareholder in the company (although the company cannot vote these shares). Cancellations of treasury stock totaled 5.4%, and 1.8% of treasury stock was used on four occasions to buy minority interests in listed subsidiaries. However, treasury stock has never fallen much below 7 percent of shares outstanding. Toyota justified the scale of its repurchases to "create … financial flexibility." But, analysts regarded the real motivation as being to retain managerial discretion in the event of an unfriendly intervention by an outside investor.

Toyota is a typical example of a company that negotiated repurchases from insiders (probably banks), as well as open-market purchases from outsiders. Ten similar cases are to be found in our sample of 60 firms.

3.2. Ezaki Glico: A company that was subject to an activist engagement

Ezaki Glico Co. is a leading confectionery firm, and in 2009 it repurchased an 11% stake through ToSTNeT from Steel Partners, an aggressive US activist fund. From 2006, Steel Partners built a substantial stake in Glico, reaching 15% in 2008, and put forward shareholder proposals to increase dividends and stock repurchases, whilst advocating the appointment of independent outside directors. In response to engagement failures both at Glico and at J-Power and the financial crisis following the Lehman crisis, Steel Partners withdrew from the Japanese market. As a result, through repurchases Glico accumulated a stake of 21.6% in treasury stock, while at the same time foreign shareholdings decreased from 18.2% in 2008 to 3.8% by 2009. This is entirely explained by the purchase of the stake owned by Steel Partners. Glico retained the stake until 2014 when they disposed of 11.9% to Nomura Securities Co. who then resold it to small investors. These transactions allowed the transfer of shares from an aggressive outsider shareholder to small dispersed

outside shareholders.

Glico is a typical case of negotiated repurchases from block outsiders. Three similar cases are observed in our sample.

3.3. FANUC: A company where there was a repurchase from a parent firm

FANUC Co. is a company whose stock repurchases were motivated by control concerns following a block sale by FUJITSU Co. FANAC was established in 1972 as a carve out of a machine division of FUJITSU (a telecommunication firms) and was listed on the stock exchange as a separate company in 1976. It performed very well during the 2000s, and accumulated very large cash balances by 2014 (see Esty and Kanno, 2016). At the same time FANUC's institutional shareholders were mainly foreign investors, increasing from 29.7% in 2001, to 64.5% in 2014.

In 2002, FUJITSU sold a large part of their stake totaling 35.6% in FANUC. FANUC repurchased 18% of that stake in several tranches, through tender offers and ToSTNeT, at an approximately 6.6% discount.[15] In 2010, FUJITSU sold the remaining 5% of its holding to FANUC through ToSTNeT. As a result, FANUC's treasury stock increased from 6.4% to 18% in 2010, and was the largest shareholding in the company. Other large shareholders in 2010 were all domestic and foreign custodians such as Master Trust of Japan, Japan Trust Bank, and State Street. FANUC still retains treasury stock in 2014 of 18.3% of its shares.

FANUC is a typical case of a repurchase from insider blockholders. There were 7 similar cases in our sample.

3.4. Suzuki: A company with strategic alliance partners

Suzuki Co. made substantial stock repurchases as a response to a block sale by some large shareholders. Suzuki made five stock repurchases totaling 22.6% and resold the stock (through intermediaries) to individual corporate shareholders. The largest repurchase took place in March 2006, when Suzuki purchased a stake of 17.0% from GM who sold its

[15] We estimated this by comparing the TOB price with one month average share price before TOB.

entire stake of 20% through ToSTNeT; GM's sale was triggered by its own financial distress. Suzuki immediately resold the shares through private placement to its business partners including leading iron and steel firms, JFE, Nippon Steel and three banks including Mizuho Bank. The rest of the stock was kept in treasury, reaching 19.9% in 2009. When Suzuki concluded a comprehensive business partnership with Volkswagen in 2011, it sold most of its treasury stock to Volkswagen through private placement.

Suzuki is a typical case of a negotiated repurchase from insider blockholders and its resale to insiders. Similar cases were observed in 5 companies in our sample.

3.5. Nintendo: A company that repurchased stock from its founding owner

Nintendo Co. is the world's biggest maker of video-game machines. They made five stock repurchases together amounting to 16.4% of their common stock. The company repurchased a block of shares from the founding family and the shares were resold to a strategic partner through a private placement. On February 4, 2014 Nintendo completed a 114 billion yen ($1.1 billion) stock repurchase from members of the founding Yamauchi family, constituting 7.4 percent of its outstanding stock through ToSTNeT. The sellers were heirs to former Chief Executive Officer Hiroshi Yamauchi, who owned about 10 percent of the company's shares before his death in September.[16]

On 17 March 2015 Nintendo distributed 1,759,400 shares of its treasury common stock at 12,497 yen per share through a private placement to an internet company DeNA raising 22 billion yen. The sales price was made at a 10% discount to the market price in line with Japan Securities Business Association requirement that listed firms can issue new shares at a maximum 10% price discount. Nintendo used this 22 billion yen to purchase 10 percent of DeNA's common stock on 2 April 2015, declaring it necessary for both firms to form alliances with each other through cross-shareholdings, to retain a stable and trusted relationship. Similar cases to Nintendo accounted for 5 cases in our sample.

[16] Other than this transaction, 3.4% was repurchased through ToSTNeT, remaining 5.6% was repurchased by the auction.

4. Stock repurchases

In this section, we use regression analysis to investigate what motivates companies to make stock repurchases and through what method they are made.

4.1. Determinants of stock repurchases

Case studies in the previous section provided some evidence of stock repurchases of Japanese firms being undertaken to protect them from unwelcome control changes, often arising from the sale of shares by insiders who wished to cash out after the founder died, or because cross-shareholdings were being unwound in response to the banking crisis and the lost decade. In this section, we provide more robust evidence of this relationship.

First, we analyze the stock repurchase data from all the listed firms in the first section of the TSE. We use regression analysis to test the hypothesis that a firm that has a higher proportion of institutional, particularly foreign, ownership and lower insider ownership was more likely to engage in stock repurchases. The estimation model is as follows:

$$REP_{it} = \alpha + \beta_1 CF_{it} + \beta_2 CH_{it-1} + \beta_3 MB_{it-1} + \beta_4 RET_{it-1} + \beta_5 LEV_{it-1} + \beta_6 DIV_{it} + \beta_7 SIZE_{it-1} + \beta_8 FOR_{it-1} + \beta_9 DINS_{it} + \eta_i + \theta_t + \varepsilon_{it} \quad (1)$$

where the dependent variable, *REP*, is defined as the market value of repurchased shares divided by the beginning-of-the-year market capitalization.[17] There are four independent variables: (i) proxies for financial slack such as *CF* (cash flow/assets), and *CH* (cash holdings/assets), which are expected to be positively related to repurchases; (ii) proxies for firm valuation, *MB* (market-to-book ratio) and *RET* (stock returns), both of which are expected to be inversely related to repurchases, because low valuations and firms with low stock returns are more likely to engage in stock repurchases; (iii) proxies for target leverage, *LEV* (debt/assets), which is expected to be negatively related to repurchases,

[17] When we use the number of repurchased shares instead of the market value of repurchased shares, subsequent results are not changed significantly.

since companies with higher leverage are less likely to use their cash reserves for stock repurchases; and (iv) dividend payouts, *DIV*, where a negative coefficient would suggest that stock repurchases are substitutes for dividends. We also include other control variables including *SIZE* (the log of assets), industry and year fixed effects.

Ownership variables include the level of foreign ownership, *FOR*, in the year prior to repurchase so as to establish whether foreign ownership affects stock repurchases. *DINS* is s the absolute value of the change in the percentage of shares held by corporate insiders (scaled by shares outstanding minus treasury stock at the beginning of the year) when negative, and zero otherwise. We define insider shareholdings as the sum of shareholdings by banks, insurance companies, other corporations, families, and managerial and employee ownership. We would expect the level of foreign holdings and declines in insider holdings to be positively related to stock repurchases.

We use a Tobit model as more than half of the sample did not make repurchases during the period being examined. The results are summarized in Table 4. Most of the coefficients show the predicted sign (column 1). Firms that have more cash are more likely to engage in repurchases, and the coefficient is significant at the one percent level. Firms with high leverage are less likely to engage in repurchases, and the coefficient is also significant. As in the US, repurchases are not a substitute, but a complement to dividends.

== Table 4 about here ==

More important for our main hypothesis, firms with a higher level of foreign ownership are likely to repurchase more of their shares (column 2). A one standard deviation (11.6%) higher level of foreign ownership is associated with a 0.29% increase in repurchases, *REP*. There are two possible interpretations of this result, first, that foreign investors force firms to repurchase for financial reasons, i.e. free cash flow reasons, and, second, that higher levels of foreign ownership are perceived by firms to be a threat to management control, prompting repurchases to reduce the proportion of outsider ownership and increase the proportion of insider shareholders.

Our second independent variable distinguishes between the two explanations by decomposing the decrease in insider ownership into three categories, i.e. decreases in bank shareholdings (column 3), business corporations (column 4) and families (column 5). We find that all coefficients are positive and statistically significant, particularly the ones for banks and corporations. These results point to the association of repurchases with the unwinding of cross-holdings between banks and corporations.

In sum, repurchases in TSE listed firms appear consistent with the association of repurchases with ownership concerns, not just free cash flow.

4.2. Choice of methods of repurchasing stock

Although the estimation procedure of the previous section uses the annual repurchases of all TSE listed firms, the data do not include the seller of the stake of the repurchased stock. To investigate this relationship, we focus on repurchases using the sample of 60 firms described above, and test the hypothesis that firms which repurchase shares from insiders do so by quasi-private transactions. The control story would suggest that if insiders wish to cash out, in the absence of a stock repurchase the insiders' stake would fall into outsiders' hands, thereby reducing the degree of control exercised by management and other insiders. The estimation model is as follows:

$$\begin{aligned} QPT_{it} = \alpha &+ \beta_1 CF_{it} + \beta_2 CH_{it-1} + \beta_3 MB_{it-1} + \beta_4 RET_{it-1} + \beta_5 LEV_{it-1} + \beta_6 DIV_{it} \\ &+ \beta_7 SIZE_{it-1} + \beta_8 VOL_{it-1} + \beta_9 TURN_{it-1} + \beta_{10} FOR_{it-1} \\ &+ \beta_{11} DINS_{it} + \eta_i + \theta_t + \varepsilon_{it} \end{aligned} \quad (2)$$

where the dependent variable, *QPT*, is defined as the sum of the market value of repurchased shares through quasi-private transactions divided by the sum of the market value of all repurchased shares. We define quasi-private transactions as stock repurchased using ToSTNeT, tender offers with a discount, and privately negotiated transactions. As mentioned in section 2.2, more than half of stock repurchases in Japan are implemented through quasi-private transactions.

In the regressions of different forms of repurchases in equation (2), we include

as independent variables proxies for financial slack, *CF* and *CH*, and proxies for firm valuation, *MB* and *RET*. Proxies for financial slack and firm valuation are expected to be positively related to the dependent variable because firms that repurchase for financial reasons are predicted to do so through open-market transaction, often using auctions. We also include other control variables including *LEV*, *DIV*, *SIZE*, the proxy for risk, *VOL* (volatility of stock returns), and the proxy for liquidity, *TURN* (stock turnover ratio).

Furthermore, we include the level of foreign ownership, *FOR*, which is expected to be negatively related to repurchases made through private transactions. The rationale is that high levels of foreign shareholders may obstruct the firm repurchasing through quasi-private channels because they recognize that these are undertaken for control purposes. Also, a decrease in shares held by corporate insiders, *DINS*, is expected to be positively related to quasi-private transactions, because if insiders cash out in the market, their shares will potentially fall into the hands of outsiders, for example foreign or activist shareholders.

Regression results are summarized in Table 5. The coefficients of *LEV* and *VOL* are significant, suggesting that firms with higher leverage (lower volatility) are likely to repurchase through private transactions (column 1). The coefficients of *CF*, *MB* and *RET* are less significant, suggesting that the choice of the repurchase methods is little influenced by financial factors.

== Table 5 about here ==

As for ownership variables that relate to our main hypothesis, firms which show a decrease in insider ownership are more likely to engage in repurchases through private transactions (column 2). This result supports our hypothesis that firms make repurchases through private transactions when insiders wish to cash out. Decomposing the decrease in insider ownership for banks, business corporations, and families (column 3), the coefficient of all three variables is significantly positive. The coefficient for the decrease in bank shareholdings is the largest and is highly significant. When bank shareholdings decrease by 1.34% (one standard deviation of *DBANK*), the proportion of repurchases

through quasi-private transactions increases by 25%, accounting for nearly half of the mean of *QPT*. The magnitude is economically significant, supporting the view that the unwinding of cross-holdings is associated with stock repurchases through private transactions. In other words, stock repurchases through quasi-private transaction appear to be often motivated by a desire to maintain insider control.

5. The application of repurchased stock

5.1. Determinants of cancellation

Existing literature often focuses on the decision to make a stock repurchase.[18] In this section we examine the purpose to which the repurchased shares are put. Table 3 reports that about 30% of repurchased shares were cancelled in the same year as the repurchase was made, with the rest being retained as treasury stock. We consider what determines a firm's choice of cancellation or retention as treasury stock.

Treasury stock may be issued at the company's discretion, for example it can be used as a form of takeover defense and as a protection against interventions by activist shareholders by selling the treasury stock to a friendly third-party. One hypothesis is that firms wish to keep repurchased shares as treasury stock for control purposes. In particular, shares repurchased from insiders through ToSTNeT, and other quasi-private channels are less likely to be cancelled because the company may want to replace one set of insiders with another. To test the hypothesis, we estimate the following model:

$$CAN_{it} = \alpha + \beta_1 CF_{it} + \beta_2 CH_{it-1} + \beta_3 MB_{it-1} + \beta_4 RET_{it-1} + \beta_5 LEV_{it-1} + \beta_6 DIV_{it} + \beta_7 SIZE_{it-1} + \beta_8 TSR_{it-1} + \beta_9 QPT_{it} + \eta_i + \theta_t + \varepsilon_{it} \quad (3)$$

where the dependent variable *CAN* is the proportion of repurchases that are cancelled. The independent variables are the same as in equation (1): cash flow (*CF*), cash holdings

[18] One exception is Golbe and Nyman (2013) that examines how repurchases affect the ownership structure of a company, especially the level of concentration. They find that stock repurchases tend to make outside ownership less concentrated.

(*CH*), market-to-book ratio (*MB*), stock returns (*RET*), leverage ratio (*LEV*), dividend payout ratio (*DIV*), firm size (*SIZE*). We also include the level of treasury stock (*TSR*: number of treasury stock divided by shares outstanding) as a control variable.

The most important variable in this model is *QPT*, which is defined as the sum of the market value of repurchased shares through quasi-private transactions (ToSTNeT, tender offers with a discount and private negotiated transactions) divided by the sum of the market value of all repurchased shares. We would expect that the coefficient on the proportion purchased through quasi-private transactions, *QPT*, to be negative indicating that shares privately purchased are less likely to be cancelled and more likely to be retained as treasury stock.

The results are reported in Table 6. The sign of the coefficients on *TSR* (treasury stock ratio) is positive and significant as expected (column 1), implying that once a certain level of treasury stock that is required to protect against unexpected interventions by activist shareholders is satisfied, a firm is more likely to cancel their repurchased shares.[19]

== Table 6 about here ==

The coefficient on *QPT* is not significant (column 2). However, when we separately include each repurchased method (open-market, ToSTNeT, tender offer, and private negotiation, defined as the market value of repurchased shares through each method divided by the sum of the market value of repurchased shares) then the coefficient of *ToSTNeT* is negative and significant at the 5% level (column 3). A one standard deviation (3.4%) change in ToSTNeT is associated with 6.4% decrease of *CAN*, which accounts for one fifth of the mean of cancellation ratio. This means that stock repurchases through ToSTNeT are not usually cancelled. Since most stock repurchases through ToSTNeT are bought from insiders, this is consistent with our hypothesis that firms seek to retain shares repurchased from insiders as treasury stock so as to use them in the future for what we predict are control purposes.

[19] For example, Benesse Holdings, Inc. states that "We cancel a part of treasury stocks exceeding 5% of share outstanding every year."

5.2. Disposal of treasury stock

In Table 7, we consider how the company uses its treasury stock in particular transactions. As explained in Panel C of Table 3, treasury stock can be used for stock options or employment ownership schemes, for share sales in the market (through a secondary equity offering or a private placement), or as the medium of exchange in an acquisition. In the US, treasury stock is mainly used for financial reasons, to adjust leverage, sales in the secondary market and for M&A payments.

There are two notable characteristics of disposals of treasury stock among Japanese firm. First, use of treasury stock for financial reasons in public offerings and M&A payments is not commonplace in Japan. It is true that treasury stock is used for stock options, but its size is very small (median is 0.07%). Sales in the secondary market are also not common, accounting for only 15 out of 107 disposals. Use of treasury stock for M&A payments occurred in 38 cases. Acquired firms are mostly listed or non-listed subsidiaries of acquiring firms and have more concentrated ownership structure than the acquiring firms.[20] As a result, treasury stock does not lead to an increase in dispersion of ownership, as reported by Golbe and Nyman (2013).

Second, there are many cases where firms dispose of their treasury stock through private placements. These account for nearly half of disposals (54 cases out of 107 disposals, excluding the less important cases of stock options or warrants). This is consistent with the view that treasury stocks are used for control purposes. For example, along with Nintendo mentioned above, Toei Co., a film and television program production firm, undertook three stock repurchases from subsidiaries (13%, 9%, and 10%, respectively) in 2006 and 2007. Toei disposed of all of these repurchased shares to more

[20] Among 21 cases with more than 1% of stock disposal through M&A, 14 (17) cases are acquisitions where the toeholds exceed 50 (30) %. An illustrative case is TBS Holdings Inc. (parent firm), which acquired BS-TBS Inc. (its subsidiary firm) in 2014 by using their treasury stocks of 6.5% of shares outstanding. TBS Holdings, which held 51.9% of shares in BS-TBS as the largest shareholder before the deal, swapped its treasury stocks for the rest of minority shareholders, with the second to tenth largest shareholders of BS-TBS accounting for 44.4%, all held by business corporations. Moreover, the treasury stock of TBS Holdings included repurchased shares from a hostile acquirer (Rakuten, Inc.) through a private negotiation in 2011. In other words, this M&A transaction involves the transfer of shares from an unfriendly outsider shareholder to insider shareholders.

than 13 business partners (including BANDAI NAMCO Entertainment Inc., Nippon Television Network Co., Fuji Television Network, Inc., and Sumitomo Mitsui Banking Co.) in the form of private placements; those placements were made within one month of each repurchase.

In order to test the control motivated hypothesis for stock repurchases, we estimate the following multinomial logit model:

$$DIS_{ijt} = \alpha + \beta_1 SIZE_{it-1} + \beta_2 CF_{it} + \beta_3 LEV_{it-1} + \beta_4 MB_{it-1} + \beta_5 RET_{it-1} + \beta_6 TSR_{it-1} + \beta_7 CAN_{it} + \beta_8 FOR_{it-1} + \beta_9 WAY_{it-1} + \eta_i + \theta_t + \varepsilon_{it} \quad (4)$$

where *DIS* is the dependent variable which takes the value of one (public) if the treasury stock is used for a public offering (sales in the secondary market) or M&A payments, and two (private) if it is used for a private placement or ESOP. The base case is that the firm does not issue any shares. Definitions of the independent variables are the same as in equation (1), except that we add *CAN*, the cancellation ratio. Our main variable of interest is *WAY*, which is the proportion of repurchased shares through quasi-private transactions accumulated over three years prior to the year of issuance. Our prediction is that where repurchases are made through quasi-private transactions, e.g. ToSTNeT, the treasury stock will be resold through private issues, which is consistent with the hypothesis that firms purchase from insiders then resell to other insiders or retain the stock in the treasury account.

Estimation results in Table 7 show that the share of quasi-private transactions (column 1) and ToSTNeT (column 3) is negatively correlated to public issues, and positively correlated (but not statistically significant) with private issues (column 2 and 4). This result suggests that a firm that made stock repurchase through quasi-private transaction is less likely to use its treasury stock for disposal to outside investors and more likely to resell to insiders or to retain the stock as treasury stock.

== Table 7 about here ==

6. Share price reactions to stock repurchase program

So far we have documented that the choice of stock repurchases, the cancellation, and disposal of treasury stock among Japanese firms are motivated in part by control considerations. In this section, we use an event study methodology to examine how the market reacts to stock repurchases when they are motivated by control changes compared with those motivated by a distribution of excess cash to shareholders, i.e. non-control changes.

To understand the impact of stock repurchase, it is important to consider the whole program of repurchases. A company announces a program of repurchases, in what we refer to as phase I. We estimate excess returns around this announcement date. These returns should capture the market's expectation of how the funds will be used, that is for control enhancing reasons or as a distribution of excess cash to shareholders. Subsequent to the announcement, the stock will be cancelled, retained as treasury stock or resold. We call this phase II. There may be additional excess returns during the phase II as the motives for the company become clearer. The length of the announcement windows is 5 days, -1 to +3, where day 0 is the announcement. We conjecture that for the group of companies which we have classified as motivated by control changes, the repurchase program will have smaller or negative excess returns than those companies classified as motivated by returning excess cash to shareholders, where we might expect the latter to produce positive excess returns.

For phases I and II, we estimate cumulative abnormal returns for announcements of stock repurchases using the sample of 60 firms. Panel A reports the market response to the announcement. The mean CARs for the announcement of repurchase is 1.9 (median 1.5) percent.[21] We also estimate the CARs for companies that follow (within a year) the repurchase announcement with a cancellation announcement, and the combined announcement effects are 3.0 percent compared with 1.6 percent for those companies that did not cancel.

[21] The 1.9% in Japan is lower than the 3.54% in the US (Ikenbery, Lakonishok and Vermaelen, 1995) and EU (Andriosopolus and Lasfer, 2015).

== Table 8 about here ==

In Panel B, we report announcement CARs for different repurchase methods. CARs for open-market transactions are 2.3 (median 2.1) percent, compared with 1.5 (median 0.8) percent for ToSTNeT. Dividing the sample period into pre- and post-financial crisis in 2008, the CARs for the post financial crisis, 2009-2014, are much larger than those pre-financial crisis, 3.8 percent compared with 1.5 percent, respectively (not shown). The difference is as we might have expected: ToSTNeT transactions are control motivated and open-market transactions are shareholder motivated.[22] Below we shall show that some of the ToSTNeT transactions are strategic and value enhancing.

Table 9 reports regression results for the CARs shown in Panel B of Table 8, with various controls. CARs are regressed on dummy variables for different repurchase methods and the control variables include size of repurchases measured as a percentage of market capitalization at the beginning of the year. The coefficient of ToSTNeT ranges from -0.012 to -0.017, both are statistically significant. On the other hand, the coefficient of repurchase with cancellation is positive, 0.012. Furthermore, the coefficients for tender offers and private negotiation are also negative, -0.036 and -0.028 respectively, and are statistically significant. The tender offer results contrast with those in the US and other countries, and are consistent with tender offer in Japan being used to purchase shares from insiders at a discount.

The results in Tables 8 and 9 are consistent with the hypothesis that the market reaction to stock repurchases is motivated in part by control considerations i.e. repurchases without cancellation or using repurchases from quasi-private transactions e.g. ToSTNeT, is less than that in stock repurchases without such consideration.

== Table 9 about here ==

[22] We also estimated CARs in the pre-announcement period from day -20 to -2. The results show that the mean CARs for open-market is significantly negative (-1.5%), while ToSTNeT is not different from zero (0.3%). This is consistent with a view that open-market transactions are motivated by undervaluation, but ToSTNeT transactions are not.

In Table 10, we report announcement CARs for different methods of disposals of stock repurchases. The mean CARs for public offerings are -7.6 percent (median -7.0%). These negative coefficients are slightly lower than the average CARs for new seasoned equity offerings made by all listed Japanese companies on the TSE.[23] This suggests that positive wealth effects of announcements of stock repurchase programs were largely offset by announcements of accompanying sales in secondary markets. For example, Foster Electric Co. made stock repurchases in four different time periods mostly through the auction method, accounting for 17.8 percent of its shares outstanding. Total announcement CARs for these repurchases were 27.2%. However, subsequently they also made stock sales twice in the secondary market, amounting to 14.7 percent of shares outstanding and the combined announcement CARs of the two sales of shares were estimated at -14.9%. Thus, more than half of the initial wealth effects of repurchases was offset by the announcement effects of the public offerings.

In contrast, CARs for sales made by private placement are positive although not statistically significant. This result is interesting because we might expect that CARs for private placement would be negative due to insiders preserving private benefits of control. One interpretation is that private placements are used not only for enhancing insider control but also for strategic alliances creating firm value. For example, the market reacted positively to the strategic alliance created by disposals of treasury stock by Nintendo when taking a stake in DeNA. The announcement CARs is 25.7% for Nintendo and 39.4% for DeNA, respectively. On the other hand, in the case of Toei mentioned in section 5.2, which was involved in a private placement of repurchased shares with the purpose of maintaining insider control, the cumulative CARs for the three disposals was negative at -6.2%. There are therefore significant differences in the market response where the objective is to maintain insider control (and private benefits) and those motivated by strategic alliances.

In order to investigate the differential impact on share prices of control

[23] According to Kato, Singh and Suzuki (2017) which investigates wealth effects of SEOs from 1998 to 2011 in Japan, the mean of CARs for SOEs is -2.5% on average.

considerations and strategic alliances, we divided the sample into those cases explicitly motivated by control and those where control was not explicitly evident from company announcements. We defined our control sample where: (i) treasury stock was sold to banks, (ii) where the stock was sold to more than four institutions simultaneously, and (iii) where a firm explicitly declared a control motivation. The control category included 14 cases. The remaining 26 cases were classified as strategic alliances or for strengthening corporate relationships. The mean of CARs for the control cases was -0.8% compared with 3.5% for the cases classified as strategic alliances or strengthening other corporate relationships. We conclude that the market evaluates private placements less favorably where the motivation is control and positively values private placements where the motivation is more likely to be strategic alliances.

7. Impact on ownership structure

This section examines the impact of stock repurchases on the ownership structure of firms. There are three potential effects of stock repurchase on the pattern of ownership: (i) The direct effect of reducing outsider ownership by repurchasing stock from outsiders for example through open-market purchases or insider ownership through ToSTNeT; (ii) The cancellation of shares or augmentation of treasury stock; and (iii) The sale of treasury stock to insiders through private placement or to outsiders through secondary market issues.

We would expect to observe the largest increase in insider ownership where outsider shares are purchased through open-market transactions and then resold to insiders through private placements. We would expect the smaller increase where insider shares are purchased through ToSTNeT and resold to outsiders through market issues. Where the purchases are cancelled then the effects will lie between these bounds.

Figure 3 shows how ownership of our sample of firms changed over the entire time period from 2001 to 2014 for firms in the highest quartile of outsider ownership in the financial year of 2000 and the lowest quartile. It shows that there was a decline in the level of outsider ownership in the highest quartile firms and an increase in the lowest quartile firms. More strikingly the figure contrasts the change in ownership for companies

that were active in repurchases with cumulative repurchases greater than 10% of outstanding stock with those that were less active with cumulative repurchases of less than 10%.

== Figure 3 about here ==

It shows that high levels of repurchases are associated with particularly sharp declines in outsider ownership in firms in the highest quartile of outsider ownership in 2000. In contrast there is little difference in the increase in outsider ownership of firms with active and less active repurchases that are in the lowest quartile of outsider ownership in 2000. So changes in ownership associated with repurchases intensified insider ownership in outsider dominated firms.

These figures understate the extent to which repurchases affected patterns of ownership because if they had not occurred then, in the cases where repurchases came from insiders who would otherwise have sold their shares on the market, then outsider ownership would have increased much more than was actually observed. We therefore need to establish the counterfactual, how much would outsider ownership have increased if stock repurchases from insiders had not occurred. The case of Toyota illustrates this. Insider ownership of Toyota was 38.9% in (the financial year) 2000, while outsider ownership was 26.4% implying a difference of 12.5%. During the 14 years from 2000 to 2014, Toyota repurchased 9.6% from insiders (mainly banks). If Toyota had not made any stock repurchases, other things being equal, insider ownership of Toyota would have decreased to 29.3% (i.e. 38.9-9.6), while outsider ownership would have increased to 36.0% (i.e. 26.4+9.6), a difference of 6.7%. In the absence of ToSTNeT stock repurchases the difference between insider and outsider ownership would therefore have been 5.8% (i.e. 12.5-6.7) less than was actually observed. This illustrates how ToSTNeT stock repurchases prevented insider ownership from decreasing more than what was actually observed. It is against this counterfactual of what would have happened if stock repurchases from insiders had not occurred that we should evaluate actual changes. That is what Figure 4 does.

Figure 4 shows in the lower red line that outsider ownership in our sample of firms increased by just 3% from 56% to 59% over the 14 years from 2000. In the absence of stock repurchases, outsider ownership of the sample would have increased from 56% to 80%, an increase of 24%. Stock repurchases therefore potentially contributed significantly to the continued presence of insider ownership in Japan.

Figure 5 goes on to demonstrate how most of the counterfactual increase in outsider ownership was achieved through repurchases from insiders. It shows in the upper blue dashed line that in the absence of quasi-private transactions (purchases from insiders), outsider ownership would have increased from 56% to 72%. In contrast, in the absence of open-market purchases, outsider ownership would have increased from just 56% to 66%. So two-thirds of the increase in outsider ownership that would have occurred was avoided through purchases from insiders.

== Figure 4 and 5 about here ==

Table 11 reports a regression summarizing the impact of repurchases on changes in ownership over the fourteen-years period. It shows that the yearly change of insider ownership is negatively related to repurchases. It then disaggregates repurchases into open-market transactions and ToSTNeT and shows that open-market operations had a larger impact on reductions in outsider ownership and increases in insider ownership. Moreover, ToSTNeT transactions are negatively correlated with differences in insider ownership and therefore used less where there are increases in insider ownership.[24]

== Table 11 about here ==

8. Conclusion

This paper has documented a striking feature of stock repurchases. In the US and

[24] Using actual data on ownership, this does not of course reflect the counterfactual increase in outsider ownership and decrease in insider ownership that would have occurred in the absence of ToSTNeT repurchases, as discussed above.

elsewhere stock repurchases are associated with the return of free cash flow to shareholders or the attainment of target levels of leverage. They are mainly made through open-market transactions and create significant share price increases that benefit management through stock options as well as shareholders.

In contrast this paper has documented a very different function of stock repurchases in Japan. They have emerged in the 21st century as a response to the liberalization of financial markets and the emergence of outsider foreign institutional ownership. In addition to the financial policy motivations that dominate US stock repurchases, Japanese ones have also been heavily influenced by their effect on corporate control and the allocation of control between outsider and insider interests. In essence, the paper documents the role of stock repurchases in preserving a parallel system of controlling domestic cross-shareholdings alongside global institutional shareholdings, as bank ownership of corporations has withered.

We find that about 30 percent of listed companies in Japan repurchase a significant amount of shares, many of them using the shares for control purposes. Those purposes take different forms including the quasi-private purchase (ToSTNeT) of stakes held by families, banks and parent firms that wish to cash out without diluting insider control, the creation of a pool of treasury stock as a share pool that can be issued to preserve insider control, the creation of cross-holdings with strategic investors, and the allocation of shares to employees and management. Through those various channels, stock repurchases contributed to coordinating patterns of ownership.

The paper represents the most comprehensive analysis of the control effects of repurchases undertaken to date. It looks at the three stages in terms of the repurchases themselves, the use of treasury stock, cancellations and the disposal of treasury stock in market and private issues. It examines the share price reactions to these three stages as well as the determinants of the changes and it looks at their subsequent effect on changes in ownership.

The results reported in this paper demonstrate remarkable consistency in supporting the control motivation of stock repurchases. The determinants of stock repurchases, the significance of foreign ownership, the importance of sales of shares by

insiders in motivating repurchases, whether repurchased shares are held in treasury stock or cancelled, the importance of private placements in disposals of treasury stock, and the relation between private placements and the prior accumulation of treasury stock from private transactions are all consistent with a control explanation. So too are the share price reaction of stock repurchases motivated by financial as against control considerations, the impact of cancellations on share price reactions, the share price reactions to the disposal of shares and whether they are used for strategic alliance or control reasons. In addition, the change in ownership associated with stock repurchases, the difference in changes between high and low outside ownership firms, and the difference of the impact of open-market and private purchases on outside ownership all point to the importance of stock repurchases in the evolving patterns of control of Japanese firms.

References

Almeida, H., V. Fos, and M. Kronlund, 2016. The real effects of share repurchases, *Journal of Financial Economics* 119:168-185.

Andriosopoulos, D., and M. Lasfer, 2015. The market valuation of share repurchases in Europe, *Journal of Banking & Finance* 55:327-339.

Bagwell, L. S., 1991. Share repurchase and takeover deterrence, *RAND Journal of Economics* 22:72-88.

Bagwell, L. S., and J. B. Shoven, 1988. Share repurchases and acquisitions: An analysis of which firms participate, in A. J. Auerbach (ed.), *Corporate takeovers: Causes and consequences*, Chicago: University of Chicago Press, 191-220.

Banyi, M. L., E. A. Dyl, and K. M. Kahle, 2008. Errors in estimating share repurchases, *Journal of Corporate Finance* 14:460-474.

Becht, M., J. Franks, J. Grant, and H. F. Wagner, 2017. Returns to hedge fund activism: An international study, *Review of Financial Studies* 30:2933-2971.

Billett, M. T., and H. Xu, 2007. The takeover deterrent effect of open market share repurchases, *Journal of Finance* 62:1827-1850.

Bradley, M., and L. M. Wakeman, 1983. The wealth effects of targeted share repurchases, *Journal of Financial Economics* 11:301-328.

Brav, A., J. R. Graham, C. R. Harvey, and R. Michaely, 2005. Payout policy in the 21st century, *Journal of Financial Economics* 77:483-527.

Buchanan, J., D. Chai, and S. Deakin, 2012. *Hedge fund activism in Japan: The limits of shareholder primacy*, Cambridge: Cambridge University Press.

Chan, K., H. Chen, S. Hu, and Y. Liu, 2018. Share pledges and margin call pressure, *Journal of Corporate Finance* 52:96-117.

Comment, R., and G. A. Jarrell, 1991. The relative signalling power of Dutch-auction and fixed-price self-tender offers and open-market share repurchases, *Journal of Finance* 46:1243-1271.

Dann, L. Y., and H. DeAngelo, 1983. Standstill agreements, privately negotiated stock repurchases, and the market for corporate control, *Journal of Financial Economics*

11:275-300.

Denis, D. J., 1990. Defensive changes in corporate payout policy: Share repurchases and special dividends, *Journal of Finance* 45:1433-1456.

Dittmar, A. K., 2000. Why do firms repurchase stock? *Journal of Business* 73:331-355.

Easterbrook, F., 1984. Two agency-cost explanations of dividends, *American Economic Review* 74:650-59.

Edmans, A., V. W. Fang, and A. H. Huang, 2018. The long-term consequences of short-term incentives, ECGI Finance Working Paper No. 527/2017.

Esty, B., and A. Kanno, 2016. FANUC corporation: Reassessing the firm's governance and financial policies, Harvard Business School Case Study No. 216-042.

Franks, J., C. Mayer, and H. Miyajima, 2014. The ownership of Japanese corporations in the 20th century, *Review of Financial Studies* 27:2580-2625.

Golbe, D. L., and I. Nymanm, 2013. How do share repurchases affect ownership concentration? *Journal of Corporate Finance* 20:22-40.

Grullon, G., and R. Michaely, 2002. Dividends, share repurchases, and the substitution hypothesis, *Journal of Finance* 57:1649-1684.

Hamao, Y., and P. Matos, 2018. U.S.-style investor activism in Japan: The first ten years? *Journal of the Japanese and International Economies* 48:29-54.

Hatakeda, T., and N. Isagawa, 2004. Stock price behavior surrounding stock repurchase announcements: Evidence from Japan, *Pacific-Basin Finance Journal* 12:271-290.

Hovakimian, A., T. Opler, and S. Titman, 2001. The debt-equity choice, *Journal of Financial and Quantitative Analysis* 36:1-24.

Hsieh, J., and Q. Wang, 2009. Stock repurchases: Theory and evidence, part 1, in H. K. Baker (ed.), *Dividends and dividend policy*, New Jersey: John Wiley and Sons, Inc., 241-260.

Ikenberry, D., J. Lakonishok, and T. Vermaelen, 1995. Market underreaction to open market share repurchases, *Journal of Financial Economics* 39:181-208.

Jensen, M. C., 1986. Agency costs of free cash flow, *American Economic Review* 76:323-329.

Joh, S. W., and Y. K. Ko, 2007. Ownership structure and share repurchases in an emerging

market: Incentive alignment or entrenchment? Working paper.

J.P. Morgan, 2014, 2014 Distribution Policy: Challenging conventional wisdom about dividends and buybacks.

Kato, H. K., A. K. Singh, and K. Suzuki, 2017. Divergence of opinion, short-sales constraints and stock returns: Evidence from Japanese seasoned equity offerings, Working paper.

Klein, A., and J. Rosenfeld, 1988. The impact of targeted share repurchases on the wealth of non-participating shareholders, *Journal of Financial Research* 11:89-97.

Lazonick, W., 2014. Profits without prosperity: Stock buybacks manipulate the market and leave most Americans worse off, *Harvard Business Review* 92:46-55.

Lin, J. C., C. P. Stephens, and Y. Wu, 2014. Limited attention, share repurchases, and takeover risk, *Journal of Banking & Finance*, 42:283-301.

Mikkelson, W., and R. Ruback, 1991. Targeted repurchases and common stock returns, *RAND Journal of Economics* 22:544-561.

Miyajima, H. and F. Kuroki, 2007. The unwinding of cross-shareholding in Japan: Causes, effects, and implications, in M. Aoki, G. Jackson, and H. Miyajima (eds.), *Corporate governance in Japan: Institutional change and organizational diversity*, Oxford: Oxford University Press, 79-124.

Miyajima, H., and R. Ogawa, 2016. Convergence or emerging diversity? Understanding the impact of foreign investors on corporate governance in Japan, RIETI Discussion Paper Series 16-E-053.

Peyer, U. and T. Vermaelen, 2005. The many facets of privately negotiated stock repurchases, *Journal of Financial Economics* 75:361-395.

Skinner, D. J., 2008. The evolving relation between earnings, dividends, and stock repurchases, *Journal of Financial Economics* 87:582-609.

Stulz, R. M., 1988. Managerial control of voting rights: Financing policies and the market for corporate control, *Journal of Financial Economics* 20:25-54.

Vermaelen, T., 1981. Common stock repurchases and market signaling: An empirical study," *Journal of Financial Economics* 9:139-183.

Figure 1

Stock repurchases as a percentage of market capitalization for Japan and the US

The figure compares stock repurchases in Japanese and US firms as a percentage of market capitalization for the period 1994-2014. The sample consists of Nikkei 500 for Japan and S&P 500 firms for the US. Data are obtained from Astra Manager and *Commercial Law Review* for Nikkei 500, and Capital IQ and J.P. Morgan (2014) for S&P 500.

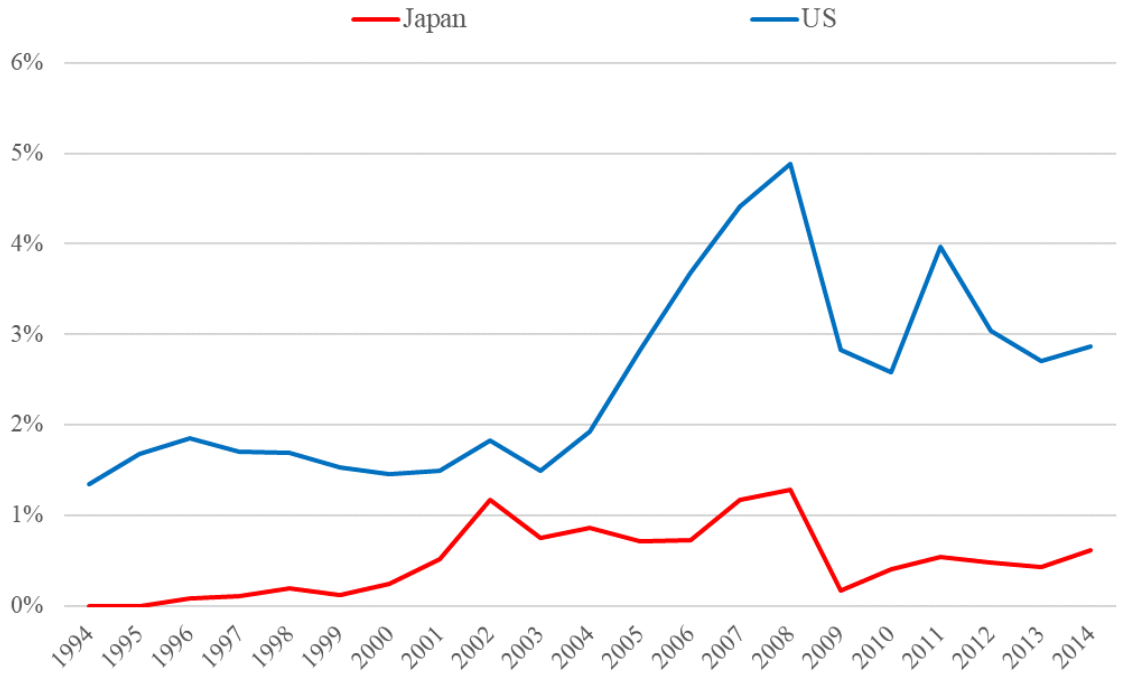

Figure 2

Long-term trend of ownership structure in Japan

The figure shows insider and outsider ownership ratios based on the *Shareownership Survey* reported by the Tokyo Stock Exchange. The insider ratio is the aggregated ratio of shares held by banks (excluding trust accounts of trust banks), insurance companies, other financial institutions, and corporations. The outsider ratio is the aggregated ratio of shares held by mutual funds, pension trusts, foreign investors, and individuals. The ownership ratio is aggregated on a market capitalization basis.

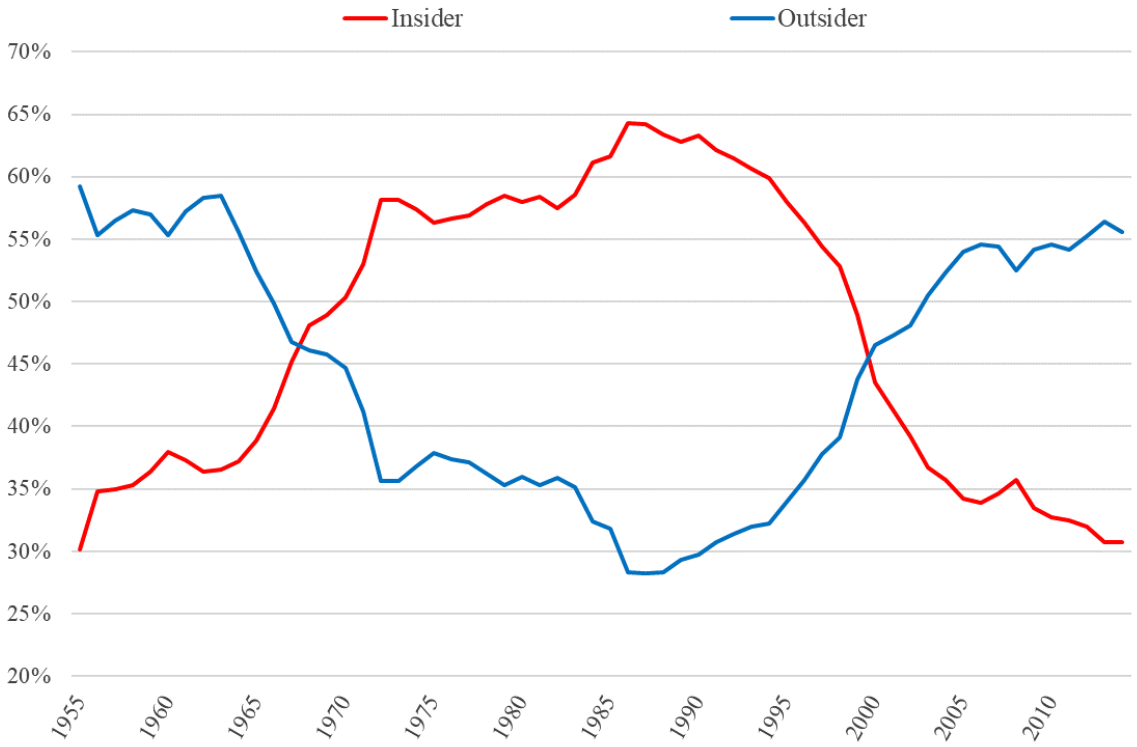

Figure 3
Ownership trend of active and less active firms
The figure shows how ownership of sample of firms (2,335 non-financial Japanese firms listed on the TSE 1st section) changed over the entire time period from 2001 to 2014 for firms in the highest and lowest quartile of outsider ownership in the financial year end of 2000. The ratio of outsider ownership is the aggregated ratio of foreign investors, individuals, mutual funds, and pension trusts. "Active" means that firms were active in repurchases with cumulative repurchases greater than 10% of outstanding stock over the period and "Less active" is with cumulative repurchases of less than 10%.

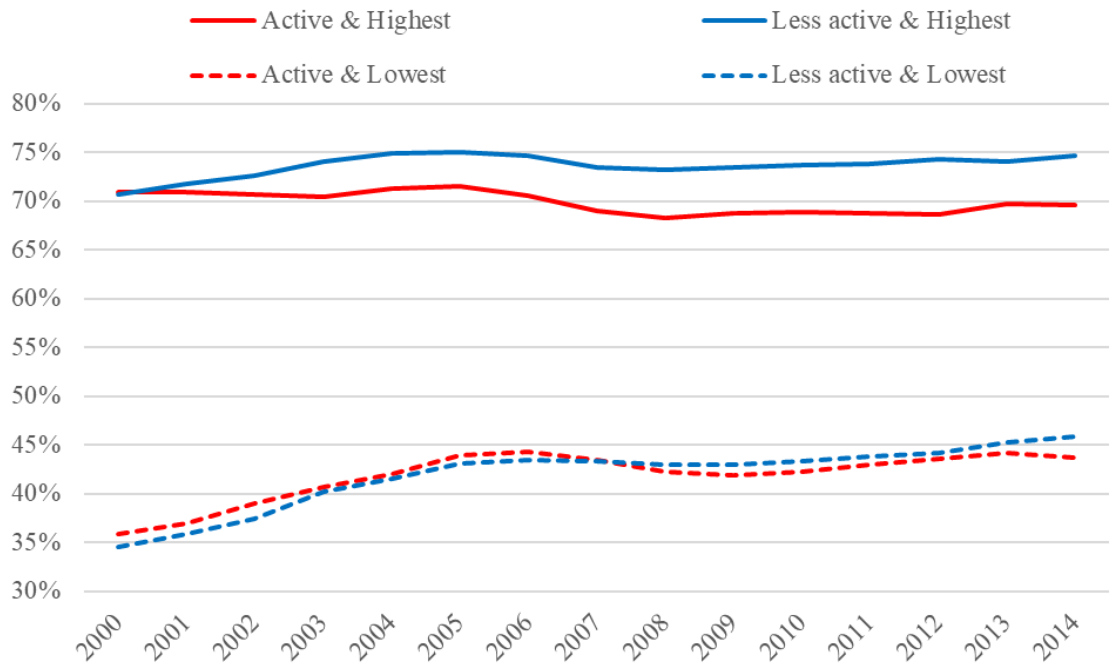

Figure 4

Comparison between real and counterfactual change I

This figure shows the counterfactual result, i.e. how much would outsider ownership have increased if stock repurchases from insiders had not occurred. This is based on the randomly selected 60 firms, which are chosen through following procedures: (i) the complete list of 2,335 listed companies reported Table 1, we identified a sub-sample of 356 firms with more than 10% of cumulative stock repurchases from 2001 to 2014, (ii) from this sample, we randomly chose 60 firms, (iii) 30 firms out of 60 firms met the criteria that cumulative disposal ratio is more than 3%. The lower red line is the real outsider ownership in our sample of firms. The upper blue line is the counterfactual outsider ownership.

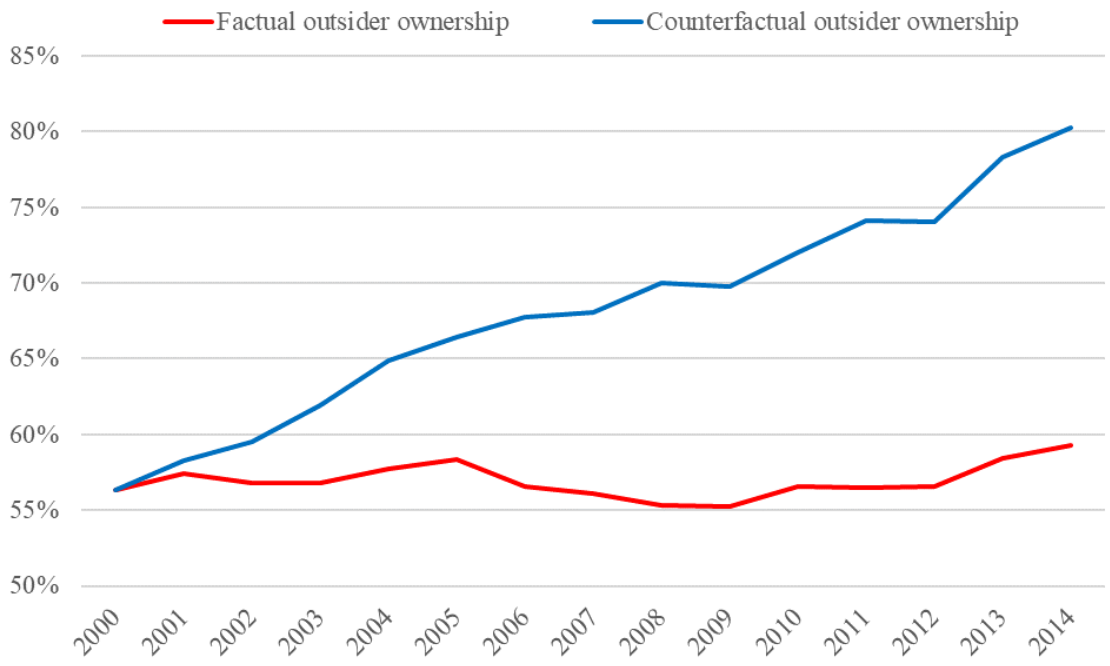

Figure 5
Comparison between real and counterfactual change II
This figure shows how a majority of avoidance of this counterfactual increase in outsider ownership was achieved through repurchases from insiders, based on our 60 randomly chosen firms. The upper blue dashed line shows the counterfactual results that in the absence of quasi-private transactions (QPTs), how much outsider ownership would have increased. Quasi-private transactions are defined as stock repurchases using ToSTNeT, tender offer with a discount, and private negotiation. In contrast, blue dotted line shows that in the absence of open-market transactions (OMTs), how much outsider ownership would have increased.

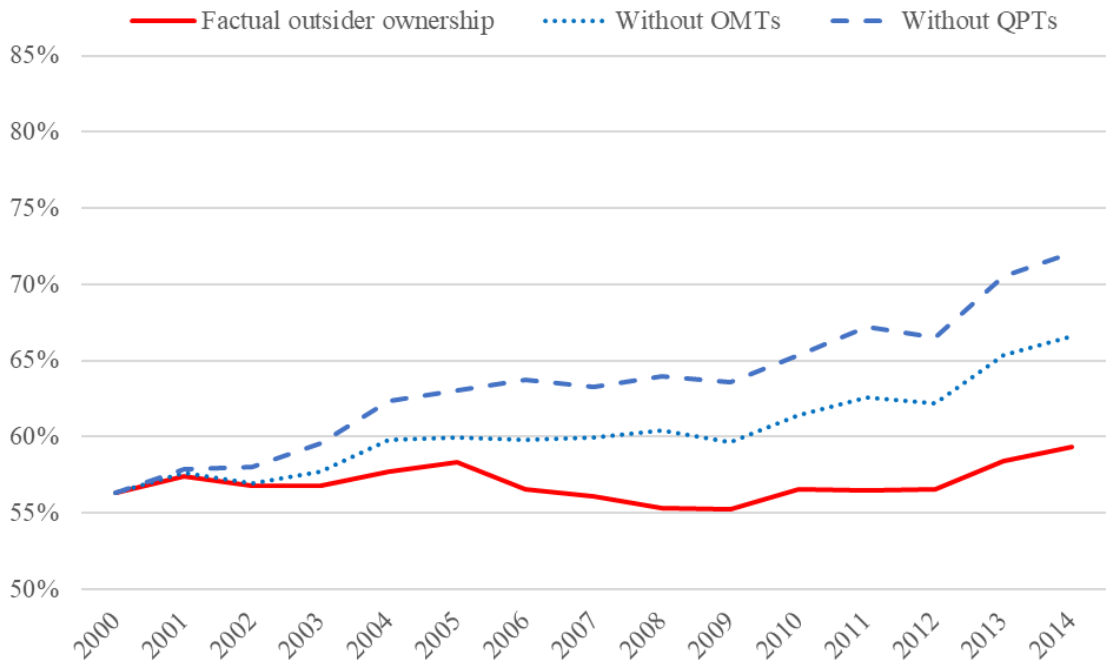

Table 1
Cumulative stock repurchases for the period 2001 to 2014

Panel A shows the cumulative stock repurchases for 2,335 non-financial Japanese firms listed on the TSE 1st section for the period 2001 to 2014. Stock repurchases are calculated as a proportion of the shares outstanding of each company. Panel B shows cumulative stock repurchases for those companies in the Nikkei 500.

Panel A: Firms listed on TSE 1st section

No. of firms		2,335	100.0%
No. of firms that have NOT share repurchase		1,108	47.5%
that MADE share repurchase		1,227	52.5%
that shows the aggregates share repurchase	with more than 5%	701	30.0%
	with more than 10%	356	15.2%
	with more than 15%	195	8.4%
	with more than 20%	101	4.3%
Mean		4.59	
Median		5.99	
25 percentile		2.77	
75 percentile		11.20	

Panel B: Firms in the Nikkei 500

No. of firms		583	100.0%
No. of firms that have NOT share repurchase		184	31.6%
that MADE share repurchase		399	68.4%
that shows the aggregates share repurchase	with more than 5%	225	38.6%
	with more than 10%	124	21.3%
	with more than 15%	69	11.8%
	with more than 20%	34	5.8%
Mean		8.51	
Median		6.00	
25 percentile		2.55	
75 percentile		11.57	

Table 2

Annual time series of stock repurchases, cancellations, and treasury stock in Japan

This table shows the annual time series of stock repurchases, cancellations, and treasury stock in Japan. The sample consists of all non-financial firms listed on the TSE 1st section. The percentage of stock repurchases is defined as the no. of repurchased shares divided by the no. of outstanding stocks at the beginning of the year. The percentage of cancellation of stocks is defined as the no. of cancelled stocks divided by the no. of outstanding stocks at the beginning of the year. The percentage of treasury stock is defined as the no. of treasury stocks divided by the no. of outstanding stocks at the end of the year.

Panel A: Percentage of stock repurchases

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2002-14	2002-08	2009-14
Obs.	-	1,065	1,091	1,121	1,171	1,197	1,215	1,210	1,188	1,176	1,174	1,172	1,171	1,226	15,177	8,070	7,107
Mean	-	0.81	0.70	0.47	0.46	0.46	0.66	0.98	0.31	0.41	0.39	0.38	0.37	0.56	0.53	0.65	0.40
Std. dev.	-	1.74	1.68	1.84	1.80	1.40	1.76	2.28	1.43	1.84	1.38	1.19	1.58	2.17	1.74	1.81	1.64
Median	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90th percentile	-	2.80	2.39	1.38	1.31	1.57	2.24	3.24	0.51	1.28	1.24	1.28	0.57	1.71	1.85	2.20	1.15

Panel B: Percentage of cancellation of stocks

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2002-14	2002-08	2009-14
Obs.	-	1,065	1,091	1,121	1,171	1,197	1,215	1,210	1,188	1,174	1,172	1,172	1,176	1,225	15,177	8,070	7,107
Mean	-	0.12	0.11	0.10	0.14	0.10	0.15	0.25	0.16	0.14	0.15	0.19	0.21	0.30	0.16	0.14	0.19
Std. dev.	-	0.69	0.73	0.68	1.02	0.87	0.98	1.21	1.08	0.97	0.94	1.12	1.34	1.58	1.05	0.91	1.20
Median	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90th percentile	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Panel C: Percentage of treasury stocks

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2002-14	2002-08	2009-14
Obs.	1,103	1,121	1,140	1,199	1,220	1,243	1,238	1,224	1,199	1,194	1,197	1,204	1,249	1,280	15,708	8,385	7,323
Mean	0.52	1.36	1.81	1.98	2.01	2.12	2.45	3.11	3.20	3.37	3.52	3.59	3.55	3.67	2.76	2.13	3.49
Std. dev.	1.64	2.66	3.13	3.25	3.35	3.30	3.51	4.06	4.12	4.31	4.43	4.41	4.59	4.79	3.98	3.39	4.45
Median	0.01	0.20	0.37	0.41	0.46	0.54	0.83	1.45	1.55	1.71	1.84	2.00	1.77	1.78	0.99	0.53	1.78
90th percentile	1.51	3.99	5.42	5.92	5.63	6.11	7.02	8.40	8.84	8.98	9.26	9.28	9.34	9.71	7.87	6.20	9.25

Table 3
Descriptive analysis of 60 firms

This table shows the analysis detailed individual transactions (repurchases, cancellations, and disposals) for randomly chosen 60 firms. 60 firms are chosen through following procedures; (1) the complete list of 2,335 listed companies reported Table 1, we identified a sub-sample of 356 firms with more than 10% of cumulative stock repurchases from 2001 to 2014, (2) from this sample, we randomly chose 60 firms, (3) 30 firms out of 60 firms met the criteria that cumulative disposal ratio is more than 3%. Panel A shows the cumulative repurchases, cancellations, and disposal as % shares outstanding, Panel B shows the composition of repurchase methods, Panel C shows different forms of disposal of treasury stock.

Panel A: Cumulative repurchases, cancellations, and disposals

	(1)		(2)		(3)		(4)	
	Cumulative repurchases during FY2001-14		Cumulative cancellations during FY2001-14		Cumulative disposals during FY2001-14		Treasury shares as % of shares outst.	
	# of repurchases	as % of shares outst.	# of cancellations	as % of shares outst.	# of cancellations	as % of shares outst.	in FY2001	in FY2014
Mean	8.32	20.98	1.75	6.31	4.50	9.07	0.69	6.31
Median	8.00	17.76	1.00	2.40	4.00	7.78	0.01	5.13
Std. dev.	5.17	10.60	2.45	9.44	3.47	8.58	1.69	5.51
25 percentile	4.00	13.49	0.00	0.00	2.00	2.03	0.00	1.83
75 percentile	12.00	24.27	2.25	8.70	6.00	12.25	0.33	9.61
Max	22.00	58.73	10.00	47.50	15.00	46.66	9.49	20.00

Panel B: Composition of repurchase methods (aggregated share changes of repurchased whole)

	Frequency		% shares		¥ value (billion)	
Total	473	100.0%	1259.3	100.0%	9,954.5	100.0%
Open-market	241	51.0%	371.7	29.5%	3,510.3	35.3%
ToSTNeT	134	28.3%	458.0	36.4%	3,494.4	35.1%
Tender offer	15	3.2%	147.7	11.7%	342.2	3.4%
Privately negotiated	25	5.3%	90.0	7.1%	282.1	2.8%
Mixed	58	12.3%	191.9	15.2%	2,325.4	23.4%
Open-market	58	-	61.6	4.9%	837.3	8.4%
ToSTNeT	56	-	116.0	9.2%	1,440.0	14.5%
Tender offer	4	-	14.3	1.1%	48.1	0.5%
Privately negotiated	0	-	0.0	0.0%	0.0	0.0%

Panel C: Forms of disposals

	Obs.	Mean	Median	Std. dev.	25 percentile	75 percentile
Total	268	2.02	0.32	3.42	0.04	2.64
Stock option or warrant exercise	161	0.60	0.07	1.73	0.01	0.32
Seasoned equity offering	15	8.90	8.50	4.12	6.42	11.16
Merger & aquitision	38	2.89	1.60	3.18	0.13	4.85
Private placement	42	4.26	2.89	4.15	1.16	5.65
Employee stock ownership plan	12	1.70	1.52	1.20	0.62	2.61

Table 4

Determinants of stock repurchases for the sample of all TSE firms

This table reports the results of Tobit regressions for the determinants of stock repurchases. The dependent variable is the market value of repurchased shares divided by market capitalization at the beginning of the year. *CF* is defined as earnings before interest, taxes, depreciation and amortization (EBITDA) scaled by beginning-of-the-year total assets. *CH* is defined as beginning-of-the-year cash and short-term investments scaled by beginning-of-the-year total assets. *MB* is defined as the beginning-of-the-year market value of equity scaled by the beginning-of-the-year book value of equity. *RET* is the annual stock return during the previous year. *LEV* is defined as beginning-of-the-year total debt scaled by beginning-of-the-year total assets. *DIV* is defined as cash dividends scaled by EBITDA and is set to 0 if EBITDA is negative. *SIZE* is natural logarithm of beginning-of-the-year total assets. *FOR* is the ownership share held by foreign institutional investors at the beginning of the year. *DINS* is a variable which is the absolute value of the change in the percentage of shares held by corporate insiders (scaled by shares outstanding minus treasury stock at the beginning of the year) only when it is negative, and zero otherwise. Insiders are defined as sum of banks, insurance firms, other corporations, families, managerial and employee ownership. All independent variables are winsorized at the top and bottom 1 percentile. The sample consists of non-financial firms whose fiscal year end are March and listed on the TSE 1st section from 2002 to 2014. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	1	2	3	4	5	6
	Market value of repurchased shares / Market cap.	Market value of repurchased shares / Market cap.	Market value of repurchased shares / Market cap.	Market value of repurchased shares / Market cap.	Market value of repurchased shares / Market cap.	Market value of repurchased shares / Market cap.
CF	0.063 ***	0.066 ***	0.071 ***	0.070 ***	0.068 ***	0.068 ***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
CH	0.033 ***	0.027 ***	0.029 ***	0.029 ***	0.027 ***	0.026 ***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
MB	-0.756 ***	-0.572 ***	-0.546 ***	-0.603 ***	-0.563 ***	-0.574 ***
	(0.108)	(0.097)	(0.098)	(0.099)	(0.099)	(0.098)
RET	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
LEV	-0.041 ***	-0.046 ***	-0.046 ***	-0.045 ***	-0.046 ***	-0.046 ***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
DIV	0.072 ***	0.075 ***	0.075 ***	0.075 ***	0.074 ***	0.075 ***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
SIZE	0.510 ***	0.334 ***	0.320 ***	0.346 ***	0.366 ***	0.348 ***
	(0.058)	(0.077)	(0.078)	(0.077)	(0.078)	(0.076)
FOR		0.029 ***	0.026 ***	0.029 ***	0.026 ***	0.031 ***
		(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
DINS		0.304 ***				
		(0.028)				
DBANK			0.444 ***			0.357 ***
			(0.053)			(0.054)
DBUS				0.488 ***		0.461 ***
				(0.050)		(0.051)
DFAM					0.252 ***	0.188 ***
					(0.050)	(0.050)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.050	0.060	0.052	0.060	0.051	0.062
Observations	15,082	14,915	14,915	14,915	14,915	14,915

Table 5
Determinants of repurchase methods for the sample of 60 firms

This table reports the results of Tobit regressions for the determinants of repurchase methods. The dependent variable is the market value of repurchased shares through quasi-private transactions divided by the market value of repurchased shares. Quasi-private transactions are defined as stock repurchases using ToSTNeT, tender offer with a discount, and private negotiation. *CF* is defined as earnings before interest, taxes, depreciation and amortization (EBITDA) scaled by beginning-of-the-year total assets. *CH* is defined as beginning-of-the-year cash and short-term investments scaled by beginning-of-the-year total assets. *MB* is defined as the beginning-of-the-year market value of equity scaled by the beginning-of-the-year book value of equity. *RET* is the annual stock return during the previous year. *SIZE* is natural logarithm of beginning-of-the-year total assets. *VOL* is volatility of daily stock return during the previous year. *TURN* is stock turnover ratio during the previous year. *FOR* is the ownership share held by foreign institutional investors at the beginning of the year. *DINS* is the difference in the no. of shares held by corporate insiders scaled by the beginning-of-the-year shares outstanding minus treasury stock, which takes absolute value if the difference is negative and zero otherwise. Insiders are defined as sum of banks, insurance firms, other corporations, families, managerial and employee ownership. All independent variables are winsorized at the top and bottom 1 percentile. The sample consists of randomly chosen 60 firms from 2002 to 2014. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	1	2	3
	Market value of repurchased shares through QPTs / Market value of repurchased shares	Market value of repurchased shares through QPTs / Market value of repurchased shares	Market value of repurchased shares through QPTs / Market value of repurchased shares
CF	-5.872	-4.758	-4.885
	(3.836)	(3.740)	(3.689)
CH	3.143 *	3.502 **	3.206 *
	(1.808)	(1.767)	(1.728)
MB	-23.179	-16.645	-12.779
	(29.478)	(28.465)	(27.275)
RET	-0.053	-0.136	-0.123
	(0.414)	(0.399)	(0.379)
LEV	4.188 ***	4.055 ***	4.054 **
	(1.613)	(1.548)	(1.564)
DIV	-4.004 **	-3.458 *	-3.474 **
	(1.909)	(1.820)	(1.740)
SIZE	-22.774 **	-12.081	-12.563
	(10.739)	(13.844)	(13.953)
VOL	-4.222 **	-4.333 ***	-3.737 **
	(1.679)	(1.666)	(1.671)
TURN	0.105	0.121	0.085
	(0.126)	(0.131)	(0.129)
FOR		-1.754	-1.461
		(1.917)	(1.884)
DINS		13.317 ***	
		(3.103)	
DBANK			18.565 ***
			(6.718)
DBUS			13.708 ***
			(4.393)
DFAM			13.672 ***
			(4.625)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Pseudo R^2	0.081	0.101	0.103
Observations	337	337	337

Table 6
Determinants of cancellations for the sample of 60 firms

This table reports the results of OLS regressions for the determinants of cancellation of shares. The dependent variable is the no. of shares cancelled divided by the no. of shares repurchased during the year. *CF* is defined as earnings before interest, taxes, depreciation and amortization (EBITDA) scaled by beginning-of-the-year total assets. *CH* is defined as beginning-of-the-year cash and short-term investments scaled by beginning-of-the-year total assets. *MB* is defined as the beginning-of-the-year market value of equity scaled by the beginning-of-the-year book value of equity. *RET* is the annual stock return during the previous year. *LEV* is defined as beginning-of-the-year total debt scaled by beginning-of-the-year total assets. *DIV* is defined as cash dividends scaled by EBITDA and is set to 0 if EBITDA is negative. *SIZE* is natural logarithm of beginning-of-the-year total assets. *TSR* is defined as the beginning-of-the-year no. of treasury stock scaled by the beginning-of-the-year shares outstanding. *QPT* is the market value of repurchased shares through quasi-private transactions divided by the market value of repurchased shares. Quasi-private transactions are defined as stock repurchases using ToSTNeT, tender offer with a discount, and privately negotiated transaction. All independent variables are winsorized at the top and bottom 1 percentile. The sample consists of randomly chosen 60 firms from 2002 to 2014. Standard errors robust to heteroskedasticity and firm-level clustering are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	1	2	3
	No. of cancelled shares / No. of repurchased shares	No. of cancelled shares / No. of repurchased shares	No. of cancelled shares / No. of repurchased shares
CF	2.783 **	2.783 **	2.889 **
	(1.228)	(1.234)	(1.297)
CH	-1.554 ***	-1.499 ***	-1.426 ***
	(0.366)	(0.364)	(0.374)
MB	-2.595	-3.505	-4.570
	(7.662)	(7.506)	(7.713)
RET	0.254 *	0.261 *	0.275 *
	(0.150)	(0.150)	(0.151)
LEV	-0.373	-0.331	-0.276
	(0.352)	(0.351)	(0.356)
DIV	0.854 *	0.804 *	0.735
	(0.451)	(0.441)	(0.461)
SIZE	2.276	1.953	1.737
	(2.786)	(2.870)	(2.899)
TSR	2.471 **	2.372 **	2.206 *
	(1.074)	(1.064)	(1.120)
QPT		-0.624	
		(0.442)	
Open-market			-0.290
			(2.163)
ToSTNeT			-1.452 **
			(0.607)
Tender offer			0.456
			(0.702)
Privately negotiated			-0.231
			(0.693)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Pseudo R^2	0.104	0.103	0.098
Observations	336	336	336

Table 7
Estimation results of reissuing treasury stocks

This table shows results of multinomial logit regressions that examine the relationship between types of reissuing treasury stocks and methods of repurchases, where the base case is non-reissuing firm. Types of reissuing treasury stocks are categorized as public issues (SEOs and M&As) and private issues (private placements and ESOPs). *SIZE* is natural logarithm of beginning-of-the-year total assets. *CF* is defined as earnings before interest, taxes, depreciation and amortization (EBITDA) scaled by beginning-of-the-year total assets. *LEV* is defined as beginning-of-the-year total debt scaled by beginning-of-the-year total assets. *MB* is defined as the beginning-of-the-year market value of equity scaled by the beginning-of-the-year book value of equity. *RET* is the annual stock return during the previous year. *TSR* is defined as the beginning-of-the-year no. of treasury stock scaled by the beginning-of-the- year shares outstanding. *QPT* is defined as the sum of the market value of repurchases purchased through quasi-private transactions in past three years divided by the sum of the market value of repurchases in past three years. Quasi-private transactions are defined as stock repurchases using ToSTNeT, tender offer with a discount, and privately negotiated transaction. *CAN* is defined as the no. of shares cancelled divided by the no. of shares repurchased during the year. *FOR* is the ownership share held by foreign institutional investors at the beginning of the year. The sample is firms which have repurchased at least once in the past three years. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	1		2	
Reference: No issue	Public issue	Private issue	Public issue	Private issue
SIZE	0.135	-0.637 ***	0.129	-0.679 ***
	(0.194)	(0.236)	(0.198)	(0.243)
CF	0.041	-0.207 **	0.042	-0.198 **
	(0.099)	(0.085)	(0.094)	(0.092)
LEV	0.014	0.034	0.035	0.028
	(0.026)	(0.022)	(0.027)	(0.023)
MB	-1.944 **	1.391 **	-1.802 **	1.351 **
	(0.832)	(0.586)	(0.761)	(0.588)
RET	0.005	-0.013	0.006	-0.013
	(0.004)	(0.011)	(0.004)	(0.011)
TRE	0.108 ***	0.101 *	0.103 **	0.095 *
	(0.041)	(0.054)	(0.042)	(0.057)
CAN	-0.072	0.356	-0.078	0.391
	(0.185)	(0.219)	(0.173)	(0.273)
FOR	0.043 *	0.081 ***	0.047 *	0.083 ***
	(0.026)	(0.030)	(0.028)	(0.031)
QPT	-0.010 **	0.009		
	(0.005)	(0.007)		
ToSTNeT			-0.013 **	0.010
			(0.006)	(0.008)
Tender offer			0.011	-0.001
			(0.007)	(0.012)
Privately negotiated			-0.003	0.014
			(0.014)	(0.014)
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
Pseudo R^2	0.290		0.302	
Observations	502		502	

Table 8
Market reactions to repurchases and cancellations

This tables summarize CARs (cumulative abnormal returns) for announcements of stock repurchases and cancellations, using the sample of 60 firms. 60 firms are chosen through following procedures; (i) the complete list of 2,335 listed companies reported Table 1, we identified a sub-sample of 356 firms with more than 10% of cumulative stock repurchases from 2001 to 2014, (ii) from this sample, we randomly chose 60 firms, (iii) 30 firms out of 60 firms met the criteria that cumulative disposal ratio is more than 3%. Panel A shows the CARs for repurchases and Panel B shows the CARs for repurchases by methods.

Panel A: CARs for repurchases with or without cancellation

	(A)	(B)	(C)	(D)	(B) - (C)
	Repurchases	Repurchases with cancellation	Repurchases without cancellation	Cancellations	Difference
Mean	1.94%	2.95%	1.61%	1.09%	1.34% **
Median	1.47%	2.10%	1.27%	0.64%	0.82% **
Std. dev.	5.81%	5.10%	6.00%	4.80%	-
25 percentile	-0.99%	-0.40%	-1.48%	-1.48%	-
75 percentile	4.49%	4.86%	4.35%	3.89%	-
Obs.	460	115	345	84	-

Panel B: CARs for repurchases by methods

	(A)	(B)	(C)	(D)	(E)	(A) - (B)
	Open-market	ToSTNeT	Tender offer	Privately negotiated	Mixed	Difference
Mean	2.27%	1.47%	0.66%	-0.23%	2.96%	0.80%
Median	2.05%	0.84%	0.66%	-0.16%	2.19%	1.21% **
Std. dev.	6.29%	5.05%	6.17%	4.03%	5.69%	-
25 percentile	-0.91%	-0.90%	-2.79%	-3.08%	-0.39%	-
75 percentile	5.27%	3.68%	3.55%	1.38%	6.91%	-
Obs.	235	130	15	24	56	-

Table 9

Estimation results of CARs for repurchases

This tables shows estimation results where the CARs regressed on dummy variables of different repurchase methods, repurchase size, and other controls. Repurchase size is defined as the market value of repurchased shares divided by market capitalization. With cancellation is a dummy variable which takes one if a firm cancel repurchased shares within a year and zero otherwise. Column (2) and (4) include year and industry dummies. Standard errors robust to heteroskedasticity and firm-level clustering are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
	(-1, +3)	(-1, +3)	(-1, +3)	(-1, +3)
Repurchase size	0.002 *	0.003 **	0.002 *	0.003 **
	(0.001)	(0.001)	(0.001)	(0.001)
ToSTNeT	-0.012 *	-0.012 **	-0.017 **	-0.016 **
	(0.006)	(0.006)	(0.006)	(0.006)
Tender offer	-0.036 **	-0.031 **	-0.036 **	-0.029 **
	(0.016)	(0.013)	(0.015)	(0.012)
Privately negotiated	-0.028 **	-0.031 ***	-0.027 **	-0.029 ***
	(0.012)	(0.010)	(0.011)	(0.010)
Mixed	-0.000	0.005	-0.007	-0.002
	(0.010)	(0.011)	(0.010)	(0.010)
With cancellation	0.012 *	0.007	0.012 *	0.006
	(0.007)	(0.008)	(0.006)	(0.007)
CF			0.003 ***	0.004 ***
			(0.001)	(0.001)
CH			0.000	0.000
			(0.000)	(0.000)
MB			-0.019 ***	-0.027 ***
			(0.005)	(0.006)
RET			-0.000 **	-0.000
			(0.000)	(0.000)
LEV			0.000	0.001 **
			(0.000)	(0.000)
DIV			0.001 *	0.001 **
			(0.000)	(0.000)
SIZE			-0.002	-0.001
			(0.002)	(0.002)
Year fixed effects	No	Yes	No	Yes
Industry fixed effects	No	Yes	No	Yes
Adjusted R^2	0.029	0.098	0.076	0.142
Observations	460	460	454	454

Table 10
Market reactions to disposals

This tables summarize CARs (cumulative abnormal returns) for announcements of disposals using the sample of 60 firms. Panel A shows the CARs for different methods of disposals and Panel B compares the CARs for private placements motivated by maintaining insider control and those motivated by strategic alliances. We defined private placements motivated by maintaining insider control as: (i) treasury stock was sold to banks, (ii) where the stock was sold to more than four institutions simultaneously, and (iii) where a firm explicitly declared a control motivation. On the other hand, we defined private placements motivated by strategic alliances as (i) where a firm explicitly declared a strategic alliance, (ii) where the sale was made to at most two company.

Panel A: CARs for disposals

	(A)	(B)	(C)	(D)	(E)
	Disposals	Seasoned equity offering	Merger & aquitision	Private placement	Employee stock ownership plan
Mean	-0.66%	-7.62%	0.29%	0.56%	0.57%
Median	-0.77%	-7.03%	-0.08%	0.59%	0.62%
Std. dev.	4.77%	3.99%	3.95%	4.11%	2.82%
25 percentile	-3.51%	-10.96%	-2.35%	-1.97%	-1.87%
75 percentile	2.06%	-4.01%	2.93%	2.05%	2.16%
Obs.	102	14	36	40	12

Panel B: Control motivated vs. strategic alliance

	(A)	(B)
	Control motivated	Strategic alliance
Mean	-0.76%	3.70%
Median	-0.80%	0.80%
Std. dev.	2.74%	9.67%
Obs.	14	26

Table 11
Impact of stock repurchases on outsider and insider ownership

This table reports the results of first-difference regressions for the change in ownership structure. The dependent variables are the difference in outsider ownership for column 1 and column 2, and the difference in insider ownership for column 3 and column 4. Outsider ownership is shares held by foreign institutional investors. Insider ownership is shares held by insiders: banks, insurance companies, business corporations, ESOPs, directors, and family members. The denominators of ownership variables are shares outstanding minus the number of treasury stocks. Total repurchase is defined as the number of repurchased shares scaled by beginning-of-the-year shares outstanding. *SIZE* is natural logarithm of total assets. *AGE* is natural logarithm of years from initial public offering. *CF* is defined as earnings before interest, taxes, depreciation and amortization (EBITDA) scaled by beginning-of-the-year total assets. *MB* is the market value of equity scaled by the book value of equity. *LEV* is defined as total debt scaled by total assets. *CAPEX* is defined as capital expenditures scaled by beginning-of-the-year total assets. *R&D* is defined as research and development expenditures scaled by beginning-of-the-year total assets. *RET* is the annual stock return during the year. *VOL* is the standard deviation of daily stock return during the year. All independent variables are winsorized at the top and bottom 1 percentile. Standard errors robust to heteroskedasticity and firm-level clustering are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	1	2	3	4
	Difference in outsider ownership	Difference in outsider ownership	Difference in insider ownership	Difference in insider ownership
Total repurchase	-0.041		-0.228 *	
	(0.089)		(0.118)	
Open-market		-0.242 ***		0.187 *
		(0.083)		(0.101)
ToSTNeT		-0.004		-0.177 *
		(0.072)		(0.095)
Tender offer		0.026		-0.392
		(0.257)		(0.337)
Privately negotiated		-0.177 *		-0.272 **
		(0.104)		(0.108)
ΔSIZE	2.643	2.909 *	-1.490	-1.783
	(1.729)	(1.693)	(2.033)	(1.973)
ΔAGE	-1.993	-2.023	-1.488	-1.694
	(2.085)	(2.130)	(1.713)	(1.640)
ΔCF	-0.039	-0.035	-0.009	-0.016
	(0.059)	(0.061)	(0.053)	(0.052)
ΔMB	1.669 **	1.553 ***	-0.826	-0.720
	(0.637)	(0.558)	(0.537)	(0.494)
ΔLEV	-0.087	-0.101 **	0.046	0.060
	(0.061)	(0.050)	(0.076)	(0.065)
ΔCAPEX	0.010	0.014	-0.059	-0.068
	(0.037)	(0.036)	(0.072)	(0.071)
ΔR&D	0.210	0.220	-0.225	-0.195
	(0.317)	(0.289)	(0.362)	(0.317)
ΔRET	0.002	0.002	0.003	0.003
	(0.004)	(0.004)	(0.004)	(0.004)
ΔVOL	-0.039	-0.040	0.023	0.023
	(0.028)	(0.028)	(0.032)	(0.031)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	No	No
Adjusted R^2	0.195	0.200	0.065	0.082
# of observations	716	716	719	719