An Empirical Analysis of Private Investment in Public Equity with Majority Control

By

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Abstract

This study examines private investment in public equity (PIPE) with a majority stake post-placement. This research investigates why certain firms and acquiring funds are attracted to PIPE rather than tender offer (TOB), and whether or how the economic consequences might differ. This study tests alternative, but not mutually exclusive, explanations by investigating determinants of the buyout choice, stock market reaction, managerial turnover, and operating performance of the target firms. The results suggest that PIPE is used by poor-performing firms, supporting the last-resort hypothesis. However, unsupportive of the managerial-entrenchment hypothesis, PIPE targets are neither more likely to entrench their management nor to underperform their TOB peers in the post-buyout years. Finally, private equity acquirers take less time to exit from their investment in PIPE targets, which are also more likely to stay publicly listed post-buyout, supporting the flexible-exit hypothesis.

Keywords

Private investment in public equity; tender offer; private equity funds; buyouts.

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1. Introduction

While there is an enormous amount of research on private placement of new equity, the results are somewhat mixed. Earlier studies report positive market reaction to private placements in contrast to the public sale of equity, which is associated with a negative market reaction. Possible explanations for the positive market reaction include the effect of ownership concentration and monitoring (Wruck, 1989), the certification effect (Hertzel and Smith, 1993; Krishnamurthy et al., 2005), or the synergy effect (Barclay et al., 2007; Otsubo, 2017). In contrast, some studies present evidence in support of managerial-entrenchment hypothesis, suggesting that private placement investors are passive in interfering with the target's management (Barclay et al., 2007; Wu, 2001). Krishnamurthy et al. (2005) argue that the purchase discounts in private placements may be attributable to compensating the buyer for the target's long-term underperformance. Moreover, other studies indicate that private placement can be used by management to deter takeover (Chen et al., 2016; Dann and DeAngelo, 1988; DeAngelo, 1988), supporting the takeover-defense hypothesis.

One common aspect of the existing studies on private placement of new equity is that they examine *minority* equity investments. For example, the mean post-placement shareholding of the buyer is only 11% for samples in Wu (2004), and 37% in Wruck (1989). With only a minority stake, the acquiring investors may be passive since they lack the capability and incentive in monitoring the target firms. Surprising, few studies investigate the effect of private placement with a *majority* control post-placement. It is unclear whether the private placement investors, when end up with a majority stake, still take a hands-off stance or become more engaged in the target firm, and what the effect is of the private placement on the target's long-term performance. This study aims to address these questions by examining one type of private placement of equity that is similar to private investment in public equity (PIPE) in the United States, where Section 4(2) of the *Securities Act* on *Regulation D* allows public companies to issue stocks

privately to a group of accredited investors without requiring public registration prior to the transaction. The empirical study compares PIPE by private equity (PE) investors[1] against investments by PE investors using public tender offer (TOB). In many countries, the securities laws require acquirers to make a public offer to all of the target firm's shareholders if they intend to acquire more than a certain stake off-market. In countries where mandatory bid rules apply, such as the United Kingdom and Japan, acquirers seeking majority control are required to make an offer to all shareholders without setting a cap on the shares to be purchased. Therefore, TOB and PIPE can be the two main means for PE investor who attempts to acquire a *majority* stake of the target firm,

Equity investments using PIPE are different from those using TOB in several aspects. Under a PIPE scheme, the target receives new capital injection from the acquirers; while in the case of TOB, the tendering shareholders (not the target firm) receive cash or stock payment from the acquirer. In addition, under PIPE, the target can closely negotiate with the acquirer regarding the terms of the buyout, while this may not be the case with TOB. PIPE buyouts result in a post-buyout ownership with a controlling shareholder and dispersed minority shareholders, while TOB targets are usually taken private after the buyout. Nevertheless, in both PIPE and TOB buyouts, the approval of shareholders is needed. In TOB, the shareholders directly express approval by tendering their shares. PIPE buyouts involve issuing shares in a magnitude that leads to a shift of control, so the decision needs to be approved by the shareholders, as stipulated by the corporate law in many countries.

This study tests alternative, but not mutually exclusive, explanations regarding the motivations and consequences of PIPE vs. TOB in the context of PE buyouts. By investigating determinants of the buyout choice, stock market reaction, managerial turnover, and operating performance of the target firms, the findings are as follows. First, the last-resort hypothesis can explain PIPE buyouts—PIPE is more frequently used by poor-performing firms than their industrial peers, while TOB targets are not underperformers. However, unsupportive of the managerial-entrenchment hypothesis, PIPE targets are neither more likely to entrench their management nor to underperform their TOB peers in the post-buyout years. Finally, PE acquirers take less time to exit from their investment in PIPE targets, which are also more likely to stay publicly listed post-

buyout, supporting the flexible-exit hypothesis. The results are obtained after accounting for the potential endogeneity of the choice of the PIPE buyout mode. In short, PIPE serves as an alternative flexible strategy, in addition to TOB, for the PE fund's buyout investment.

This study investigates the buyouts of publicly listed Japanese companies by PE funds. In Japan, the mandatory bid rule applies when holding more than *two-thirds* of a target's shares post-acquisition. That is, the acquirers are required to make a public offer to all remaining shareholders, without setting a cap on the shares to be purchased. By contrast, there is no such mandatory bid rule in the United States. The mandatory bid makes it more likely for the acquirers to gain full control of the targets, which will have to be taken private. In fact, the buyouts by PE funds are going-private transactions. The exit strategies include selling to a corporate buyer or another PE fund, or a public offering. As such, the PIPE targets can be made more distinct from TOB targets in terms of the flexibility of staying publicly listed, which provides an alternative exit of selling the shares in the market. Such contrasting differences provide a suitable setting to test the flexible-exit hypothesis. In addition, a public firm's management is entitled to more resources and prestige (than a private one). PIPE buyouts in Japan allows for testing the possibility of managerial entrenchment in the choice of PIPE by the target's management.

This study adds new evidence in the private placement literature by focusing on cases with majority control, which is rarely studied in the existing studies. The private placement investors may be passive in interfering with the target's management (Barclay et al., 2007; Wu, 2001) when they hold only a minority stake post-placement. This present study shows that with a greater stake, the private placement investors can become more engaged in disciplining the target firms. In addition, this study is also related to private equity literature by investigating private equity buyouts. The empirical results are consistent with prior research suggesting that buyouts by PE firms create value (Lehn and Poulsen, 1989; Kaplan, 1989a; 1989b; Muscarella and Vetsuypens, 1990; Travlos and Cornett, 1993; Yeh, 2012). This is also observed by this current study (e.g., positive abnormal returns), regardless of the means of acquisitions (PIPE or TOB).

Section 2 provides an overview of the PE buyouts in Japan. Section 3 discusses the hypotheses. Section 5 describes the sample and data, while Section 5 presents the

results of the empirical tests performed in this study. Section 5 provides the summary and conclusions.

2. Some institutional background of private equity buyouts in Japan

The PE market is a collection of funds that have raised capital from various institutional investors and where funds are invested in equity position of companies. PE funds have been an active player in the takeover market. When they acquire full ownership of a public company, these are going-private transactions. PE funds may tie up the investment capital for an extended period, usually a couple of years. They seek to exit from an investment through a sale to other parties, such as corporate buyers or other PE funds. Another exit strategy is a public offering, in which the PE firm sponsors a public offering in the stock it owns. PE buyouts provide a suitable setting for investigation because PE firms are accredited investors allowed to engage in PIPEs without the need for public registration prior to the transaction.

PE funds were not active in the Japanese market until the beginning of the twenty-first century, after a protracted period of economic stagnation that provided opportunities for PE acquirers. Initially, foreign PE firms took the lead in the market for corporate control in Japan. Subsequently, Japanese local PE firms followed suit, some set up by Japanese entrepreneurs with work experiences in foreign investment banks, while others by Japanese investment banks or general trading firms. Merger and acquisition (M&A) transactions undertaken by investment funds have been rising rapidly since early 2000s, declining only in 2008 due to the global financial crisis, but afterwards rebounding again. According to RECOF, an M&A consulting firm in Japan, the total number and value of M&As undertaken by investment funds in 2003 were 149 cases and 771 billion yen, respectively and rose to 598 cases and 3,234 billion yen, respectively, in 2017. In terms of deal value, there is a 400% growth over the past 15 years.

A potential acquirer can attempt to obtain a block of the target's shares from the general shareholders via a public tender offer bid (TOB), directly from an existing block shareholder, or a mix of both. In Japan, acquirers are required to make a public offer to all shareholders when seeking to buy more than *a third* of the target's shares through an

off-market purchase. If the bidder were to hold more than *two-thirds* of a target's shares, it would be required to make an offer to all remaining shareholders, without setting a cap on the shares to be purchased. This rule is similar to what is referred to as mandatory bid rules in the United Kingdom (Puchniak and Nakahigashi, 2016)[2]. These rules have an implication for PE buyouts. First, if PE funds seek majority control of the target's existing shares, TOB has to be used (possibly in combination with a block trade). Second, when the mandatory rule applies, the acquirer is required to accept all the shares tendered, making it more likely to take the target private. In Japan, the listing requirement stipulates that no more than 70% of the firm's shares are to be held by a single shareholder.

In addition, PE acquirers can underwrite the new shares issued by the target in a private placement, an arrangement called PIPE in the United States. Section 4(2) of the Securities Act on Regulation D allows public companies in the United States to issue stocks privately to a group of accredited investors without the need for public registration prior to the transaction (Accredited investors, as stipulated by the Securities Act, include banks, brokers or dealers, insurance firms, pension funds, registered investment companies, or business development companies). Under a PIPE scheme, a target firm's board can issue new shares to the PE investor, which ends up holding a controlling majority stake after the placement. There exist cases wherein a (potentially) majority shareholder emerges by underwriting the target firm's warrants or its securities with warrants attached. In such cases, not all majority shareholders are interested in taking over the target firm. Some will just take the profit quickly (usually in a few months) by selling the shares after they exercised the warrants; thus, this type of acquisitions are not included in the analysis of this study.

Japan's corporate law stipulates that the decision to issue new shares at a price considered lower than a reasonable level has to be approved by more than two-thirds of the attending shareholders in a shareholders' meeting. In PIPE buyouts, the issuing price is largely discounted as compared with the target's recent stock price; thus, the buyouts need to be approved by the shareholders. In this sense, PIPE buyouts are similar to TOB in that the shareholders indicate their approval by tendering their shares.

3. Hypotheses Development

While there is an enormous amount of research on takeovers, research on takeover using PIPE is scarce. Existing literature on PIPE, or more broadly, private placement of new equity, deals primarily with minority equity investments. For example, the mean post-placement shareholding of the buyer is only 11% for samples in Wu (2004), and 37% in Wruck (1989). However, we still can draw on these research findings for relevant explanations concerning PIPE in the case of *majority control*, which is the focus of this current study. This section reviews the literature related to private placement of new equity, including PIPE, to develop hypotheses as to why PIPE, rather than TOB, is used in some PE buyout deals, as well as the predictions of consequences post-buyout. These hypotheses provide alternative, but not mutually, exclusive explanations.

Last-resort hypothesis

The last-resort hypothesis posits that PIPE firms are in poor financial condition or with informational asymmetry and thus, have difficulty in accessing public equity financing (Chaplinsky and Haushalter, 2006; Dai, 2007). Brophy et al. (2009) investigate transactions of PIPE and find that the issuers tend to be small, young, and poorly performing companies. The sample firms undergoing traditional PIPE report a negative return on asset (of approximately -60%). Their results also suggest that hedge funds act as investors of last resort for firms with the fewest financing options. Chen et al. (2010) investigate why firms in need of capital injection choose PIPE against seasoned equity offering (of minority equity) and find that PIPE firms display greater information asymmetry and inferior performance prior to the transaction. Extending this reasoning to the case of buyouts, it can be inferred that target firms that are financially struggling choose PIPE to receive new capital from the PE buyers. Furthermore, it is plausible that the more poorly the target firms are performing before the buyout, the larger the size of new shares will be placed and acquired by the PE funds. By contrast, in the case of TOBs, the target firms do not receive payment from the acquirers. *Therefore, this hypothesis posits that PIPE target firms are more likely to be in financial difficulty before the transaction than TOB firms are. In addition, there may be a negative relationship between firm performance and the size of placement for PIPE target firms.*

Takeover-defense hypothesis

DeAngelo (1988) indicates that private placement is one of several devices used by managers to dissuade bidders. Since poorly performing firms may solicit hostile takeover bids, their management may prefer to partner with a friendly buyer so as to circumvent a hostile buyer. This is because the incumbent management is more likely to be replaced by the hostile acquirer. Dann and DeAngelo (1988) investigate 594 private placements of minority equity and find that private placement reduces the likelihood of being taken over post-placement. Chen et al. (2016) also present evidence supporting the *takeover-defense hypothesis*—that PIPE serves as an effective white-squire defense without shareholder approval when the offering size is lower than 20% (or unless the shares are sold at a price lower than the greater of the stock's book or market value).

In the case of a majority buyout, the PIPE target's management may look to PE acquirers as a "white knight" that can be more management-friendly. Dann and DeAngelo (1988) report that some private placements result in majority shareholding (averaged at 63%) by the underwriter, but these controlling acquirers are not active in the firm affairs and seldom change the top management. Given these results, it is plausible that the entrenched management of a PIPE target has incentive to find and negotiate with a friendly acquirer via PIPE. By contrast, this is less likely when being taken over by a bidder using public TOB since the bidder can bypass the target's board and appeal directly to the target's shareholders. The *takeover-defense hypothesis* posits that the PIPE target's management is less likely to experience turnover post-buyout, compared with TOB targets.

Managerial-entrenchment hypothesis

Another explanation for PIPE, closely related to the takeover-defense hypothesis, is the *managerial-entrenchment hypothesis*. Although the hypothesis of monitoring and certification is commonly accepted as a result of earlier studies on private placement (of minority equity), Barclay et al. (2007) argue in favor of the managerial-entrenchment hypothesis, showing that some private placement underwriters are passive in interfering with the target's management. Wu (2004) indicates that investors in private placements do not engage in more monitoring than those in public offerings, and also that the

discounts in private placements where managers participate are higher than in those where managers do not participate, suggesting the possibility of the private placement being used as a managerial self-dealing device. Krishnamurthy et al. (2005) argue that the purchase discounts in private placements may be attributable to compensating the buyer for the target's long-term underperformance.

In acquisitions with a majority stake in the targets, PE acquirers usually attempt to enhance the target's firm value by applying structural changes to the target's business operations and top management. The elimination of managerial entrenchment is allegedly an important source of value creation. Chen et al. (2014) investigate minority-block-equity investments by PE investors and report that compared with non-PE acquires, PE acquirers are more active in monitoring the invested firms and more likely to put representatives on the firm's board, with the representation adversely associated with the invested firm's stock performance. However, this finding is based on samples of block trade investments, which excludes cases of private placements. Indeed, Barclay et al (2007) find that compared with minority-block-trade investors, private placement investors are passive in monitoring the invested firms. Moreover, Chen et al. (2016) indicate that when (minority-stake) PIPE firms face increased takeover pressure (prior to PIPE), they place more shares with higher discounts, pay higher dividends, give more board seats to investors, and include managers as investors, with the firm performing poorly post-offering. Extending this line of reasoning to acquisitions of a majority stake, it is possible that PIPE targets may receive less interference from their PE acquirers than their TOB counterparts do (the latter of which is more similar to block trade acquisitions). In other words, the choice of PIPE might be motivated by the entrenched management of the target firms. This suggests that PIPE exacerbates management's agency problems. *Therefore, it can be hypothesized that PIPE-target firms are more likely to underperform their TOB-target peers post-buyout.*

Flexible-exit hypothesis

The cost-minimization hypothesis states that the issuing firms display preference for the less costly financing method. For example, Dunbar (1995) examines IPO firms that chose to use warrants as additional underwriter compensation, supporting the view that the issuing firms choose the scheme that minimizes offering costs. Similarly, Ng and

Smith (1996) also find lower underwriting costs for seasoned equity offering (SEO) firms that chose to use warrants as additional underwriter compensation. Chen et al. (2010) examine the firm's choice between an SEO and a PIPE and find that PIPE is used by firms that may not have access to more traditional alternatives (e.g., poorly performing firms), or by those firms with access to the public market but have specific cost considerations.

In the case of PE buyouts, PIPE has some advantages over TOB in terms of cost and time savings. PIPE is a time-efficient mechanism to raise equity capital in the United States, where public companies can issue stocks privately to a group of accredited investors without the need for public registration prior to the transaction. From the standpoint of PE acquirers, the costs associated with a tender offer, such as legal filing fees, as well as publicity and publication costs, make the tender offer a more expensive alternative than a negotiated deal. The tender offer may develop into a bidding contest with other rival bidders, significantly increasing the cost of using a tender offer. By contrast, acquirers using PIPE can circumvent such costs by closely negotiating with the target's management. Furthermore, PIPE acquirers can purchase a stake of the target firm only to the extent necessary for control, while acquirers in a tender offer are obligated to purchase all target shares tendered, as mandated when no cap is set on the number of shares to be tendered.

Furthermore, the relative flexibility in the shareholding of the target firm provides PIPE acquirers with more alternative exit strategies, which can be valuable for the PE acquirers. PE funds usually tie up their investors' capital for an extended period, ranging from a few years to ten years. Therefore, PE acquirers are under pressure to exit from their investment in the target firm within this period. PIPE can create an equity position in the target firm that keeps the firm listed in the stock exchange, as long as a certain percentage of the target firm's ownership is not concentrated in the hands of the PE acquirer, pursuant to the listing requirement of the stock exchange. Such liquidity in the target firm's shares increases the ease with which PE can exit from the investment. Yeh (2012) reports that 80% of PE acquirers exit by selling their stake to other entities (or target firms), while only 20% sell in the stock market or sponsor an IPO. Selling the stake of a publicly listed target in the stock market is less costly and time-consuming than sponsoring an IPO or selling the stake of a privately held target to another buyer. As such,

PIPE provides the PE acquirer with more flexibility in their exit strategies than TOB (with target firms in the latter usually taken private). While the choice of PIPE vs. TOB as the means of takeover is a decision based on trade-offs of the relative benefits and costs, the flexibility in exit alternatives can be an important consideration for PE funds, who are under pressure to exit from their investment firm within a few years. Anecdotal examples indicate that this is one of the primary reasons for using PIPE buyouts. *Therefore, the flexible-exit hypothesis posits that PE acquirers are more likely to keep PIPE targets listed in the stock market, and that it takes less time to exit from their investment in PIPE targets.*

4. **Sample and data**

This study tests whether the above hypotheses can explain PE buyouts using PIPE vs. TOB by investigating PE funds' takeover of publicly listed firms in Japan. This study focuses on the target firms due to lack of data on the privately held acquiring funds. Information regarding takeovers of publicly listed Japanese companies comes from the *Nihon Keizai Shimbun* (Japan Economic Newspaper). The sample firms exclude non-financial target companies and only contain cases wherein the acquirer controls more than a majority of the target's shares post-buyout. The latter criterion ensures a shift of control from the target to the acquiring fund. The majority of buyout deals are implemented by TOB or PIPE. In addition to these two methods, there are a handful of cases in which the acquiring funds use stock exchange and debt-equity-swap arrangements, which are not included in the present study due to the small number of cases. Other information regarding the deals, such as purchase price and the number of shares to be acquired (and were actually acquired), comes from press reports and the companies' annual reports. Financial data on the target firms come from the Nikkei's financial database, as well as the companies' annual reports. In total, 102 buyouts during the period from 2001 to 2016 fit the above criteria. Table 1 reports the descriptive statistics of the deals and the sample firms.

Panel A reports the target firm's characteristics as of the financial year end before being bought out. The target firms' ownership was relatively concentrated, with the top

10 shareholders holding more than a majority of the shares (58% on average). Overall, foreigners and directors held only small stakes, with the median around 1% to 2% of total outstanding shares, while financial shareholders (such as banks) owned a higher stake, with a median of 5%. In terms of pre-buyout performance, the targets were unprofitable (in terms of ROA) and experienced negative sales growth, with quick ratio at a mean of 1.5 (a level close to the minimum that is considered safely liquid), and a median of 0.7, suggesting that more than a majority of the target firms had liquidity problems. Meanwhile, the total debt ratio, at an average of around 65%, was not alarmingly high. On average, Tobin's q at close to 1.2, manifested lackluster prospects of the target firms.

Panel B summarizes the deal characteristics. Forty-five percent of the deals involved PIPE, while the remaining used TOB. Thirty-one percent of the deals involved foreign acquiring funds, 13% bank-affiliated funds, and the remaining, independent funds. These PE funds included *Carlyle*, *Fortress Investment Group*, *TPG Capital*, and *Nomura Principal Finance*. Prior to the buyout, the acquiring funds held only an average of 3% of the shares in the target firms, while the intended post-buyout shareholding was 81%. The acquirers paid an average of 11% premium relative to the target's closing price 30 days before the announcement.

Table 1

In Panel C, a follow-up investigation also finds that 36% of the targets stayed public after the buyout (until exit, or as of the end of 2016, the end of the investigation period). However, 7% of the targets went bankrupt in the subsequent years, indicating high risk of the PE business. Meanwhile, as of 2016 (the cut-off time for the investigation), in 65% of the deals the acquirers had managed to exit from the buyout investment (e.g., by selling their shares or/and no longer being the controlling shareholder). For these exited deals, it took an average of 43 months before the acquiring funds exited (defined as the time when the acquiring funds sell their stakes in the target to another entity or when they no longer emerge as the target's largest shareholder).

Panel C also reveals post-buyout changes in the target's board composition and operating performance. Within two years after the buyout announcement, only 54% of the new board members were carryovers from the target's pre-buyout board, and 78% (74%) of the targets had appointed the new top management from the target's pre-buyout

directors (top management). Approximately half of the targets had a new board dominated by pre-buyout directors. As such, while takeovers are usually associated with executive turnovers, it is not unusual to see cases wherein the incumbents are left in place, and across-the-board reshuffle is less common in Japan. Some of the target's former board members are allowed to stay, probably because their expertise or experiences are necessary, for instance, for the PE acquirers to network with the various stakeholders of the target firm. Nevertheless, from the sample, PE acquirers were well-represented in the new board. In terms of post-buyout performance, the target firms still reported operating losses, but the negative ROA mean had shrunk post-buyout, from -.09% in the first year to -.03% in the second year. Caution in interpreting the results is necessary because the ratios are raw data, subject to economic or industry factors, and the number of observations is small due to unavailability of data for some targets that were taken private post-buyout.

5. Empirical Tests and Results

This section describes the empirical tests performed to evaluate the hypotheses on the motivations and consequences of PIPE vs. TOB buyouts.

5.1. Buyout-mode choices

How are PIPE target firms different from TOB targets before being taken over by the funds? To test the last-resort hypothesis, multinomial regressions are employed to determine whether and how the choice of buyout modes (PIPE or TOB) are influenced by the firm's pre-buyout characteristics, using the sample target firms and all other publicly listed firms in the same industry for the same period. Table 2 presents the results of multinomial logistic regressions, with non-target firms used as the base group in the regressions.

Insert Table 2

Column 1 shows that, relative to non-target firms, TOB and PIPE targets are similar in that they are smaller in size and more indebted before the takeover. However, while PIPE targets are associated with lower ROA than their non-target peers, the coefficient for TOB targets is insignificant and positive. Meanwhile, TOB firms have

lower Tobin's q before the buyout, while PIPE targets are only insignificantly lower than the non-target peers. Furthermore, TOB targets have higher foreign shareholding, but PIPE targets are not significantly different from their non-target peers. The results are qualitatively similar when using multinomial probit regression, as shown in column 2. Industry-fixed effects are added in column 3, but the patterns of difference remain similar, with the exception that TOB targets are now not significantly more indebted from their non-target peers, but more profitable at a significant level.

TOB targets are characterized by higher ROA, lower Tobin's q, and greater foreign shareholding than their industry's non-target peers. It can be inferred that PE funds resort to public tender offers for such undervalued targets because their disgruntled shareholders, particularly foreign ones, are supposedly more willing to tender their shares at a premium. By contrast, PIPE targets are relatively underperforming—more indebted and less profitable than their non-target peers and thus, more in need of capital injection to relieve their financial constraints. Their underperformance and indebtedness make it difficult to access other external financing sources. This is consistent with the last-resort hypothesis, which states that PIPE acts as a last-resort financing means for such firms.

5.2. Comparison between PIPE and TOB targets

To present a clear picture of the differences between PIPE and TOB targets, Table 3 reports their descriptive statistics as of the financial year end before buyout. From Panel A, it can be seen that PIPE targets, compared with TOB targets, are smaller in size by assets (23 billion yen vs. 36 billion yen), have fewer shares held by foreign shareholders (3.2% vs. 10.9%), exhibit poor return on assets (-7.8% vs. 5.0%), and have negative growth rates (-8.3% vs. 4.2%) and higher debt-to-asset ratios (80.6% vs. 51.7%), with the differences at statistically significant levels. Meanwhile, TOB targets have lower Tobin's q, averaging at around 1.06 compared with 1.41 for PIPE targets. The profiles are generally consistent with multinomial regression results—TOB targets are fundamentally in good financial shape but have undervalued stock prices, while PIPE targets are underperformers with financial constraints.

Insert Table 3

Panel B of Table 3 shows a comparison of the deal characteristics. Thirty-eight percent of TOB targets were purchased by foreign funds compared with 24% for PIPE targets; however, the difference is not statistically significant. There is also no difference in the proportion of targets with regard to bank-affiliated funds. Before the buyout, the acquiring funds held a similar stake (2%~3% on average) in the target, but their post-buyout stake was, on average, significantly greater in the TOB targets (82.6%) than for PIPE targets (64.7%). In 85.7% of TOB targets, the acquirers planned to hold a stake larger than 70% (the delisting threshold), while this was the case for only 28.3% of PIPE targets. The price for PIPE targets was offered at a 7.3% discount relative to the pre-announcement 30-day average price. The purchase discount results are similar to previous studies that investigated minority share acquisitions (e.g. Wruck, 1989; Hoda, 2011; Otsubo, 2017). Meanwhile, TOB targets received an average of 25.2% (25.7% median) premium. The results of tender offer premiums are also consistent with recent studies on leveraged-buyout targets such as Guo et al. (2011), who report a median premium of 29%. Not surprisingly, the average buyout amount was larger for TOB targets (19.9 billion yen) since the targets had larger asset bases and more shares were purchased at a premium price.

Panel C in Table 3 reports post-buyout performance of the targets, as well as the change in board composition. More than a majority of PIPE targets stayed public post-buyout, while only 18% of TOB targets stayed public, with the difference statistically significant. There is no significant difference in the proportion of bankruptcies or exited deals, although TOB targets had fewer bankruptcy cases (3.7%) than PIPE targets (11.4%), which may be related to the fact that PIPE targets were poorly performing pre-buyout. However, at a significant level, it took much longer for the acquiring funds to exit from TOB targets (a median of 46 months) than PIPE targets (27 months).

As for board composition, PIPE targets experienced a larger reshuffle within two years following the completion of takeover—only 46% of the new board members were carryovers from the target's pre-buyout board (vs. 61% for TOB targets); 70% of the targets appointed the new top management from the target's pre-buyout directors (vs. 85% for TOB targets), and 63% of the targets appointed the new top management from the target's top management pre-buyout (vs. 82% for TOB targets), with the difference

statistically significant. About 44% of PIPE targets had a new board dominated by the pre-buyout directors, compared with 54% for TOB targets, but the difference is not significant by this measure. The greater board turnover for PIPE targets may be explained by their pre-buyout underperformance, with a larger number of former directors leaving the board to take responsibility.

Lastly, while PIPE targets underperformed TOB targets in terms of profitability (ROA) before the buyout, the gap was insignificant two years following the buyout completion year. In particular, there were signs of improvement for PIPE targets post-buyout, while there was no clear change for TOB targets. However, it must be noted that since many TOB targets were taken private post-buyout, the number of observations for post-buyout ROA is much lower.

Furthermore, probit regressions are performed to investigate the differences between PIPE and TOB targets as of the year before the buyout. The dependent variable is a dummy variable for PIPE targets and the explanatory variables include the target firms' characteristics. Table 4 presents the estimated results based on robust standard errors. The multivariate results are consistent with the results reported in Table 3 in that PIPE targets are positively associated with the target's Tobin's q, debt ratio, and financial shareholding, but inversely related to ROA and the percentages of shares to be acquired. It is possible that PIPE targets are associated with higher financial ownership, whose stake can be helpful for the target to pass resolutions in shareholder meetings. In corporate Japan, banks are management's important allies in shareholder meetings (Yeh, 2014). Alternatively, it is also possible that financial shareholding is correlated with the debt ratio (Aoki et al., 1990). In summary, PIPE targets perform poorly and are more indebted and thus, more likely to resort to private placements for capital injection to relieve their financial constraints.

Insert Table 4

The last-resort hypothesis also predicts that the more poorly performing the PIPE firms are before buyout, the larger the size of placement will be. In Table 5, using a sample of only PIPE targets, column (1) shows the results when the size of placement is regressed on the target's pre-buyout performance, as well as other control variables. The size of

placement is calculated as the difference between the post- and pre-buyout shareholdings of the PE acquirer. For PIPE firms, the size of placement is larger when the target is less profitable (ROA) and has lower liquidity (quick ratio) before buyout (at a significant level), supporting the last-resort hypothesis. In addition, the placement size is also larger when PIPE firms have lower debt ratio and higher Tobin's q, which can be considered conducive to receiving financing from the PE funds. The placement size by PE funds is smaller when PIPE targets have greater financial (such as banks) shareholding, which may be considered as a potential financing source. By contrast, when the same regression is estimated on the sample of TOB targets, as reported in column (2), these performance variables are no longer significant. The lack of significance in the buyouts using TOB is also consistent with the hypothesis since target firms do not receive payment from PE acquirers. In summary, these results support the last-resort hypothesis, consistent with the results reported in the preceding analyses.

Insert Table 5

5.3. Market reaction to the buyout announcement

To test the managerial-entrenchment hypothesis, this subsection examines whether and how the market reacts differently to the buyout announcement using PIPE versus TOB. Abnormal returns are estimated by the standard risk-adjusted market model, using the firm's stock returns and TOPIX-based market returns from 300 to 31 days prior to the first press report date as the estimation period[3]. Table 6 summarizes the cumulated abnormal returns (CAR) associated with the announcement for the target firms. In panel (1), the results show that on average, the targets earn a three-day CAR of 13% around the announcement date, and the effect is the strongest on the announcement day (9.4%). Overall, buyouts by funds receive auspicious market reactions. Panel (2) calculates the CAR for PIPE targets, which earn a lower average CAR of 7.3%, but still significantly positive. Panel (3) reports the CAR for TOB targets, which earn an average of 20%. The differences in CAR between PIPE and TOB targets, as illustrated in Panel (4), are statistically significant.

The average three-day CAR of 13% in this current study is comparable to the 16.1% CAR for Japanese targets acquired by investment funds via tender offers as

reported by Yeh (2012). Meanwhile, this study's average CAR of 7.3% for PIPE targets is also comparable to the average CAR of 7.7% reported by Hoda (2011) in his investigation of Japanese private-placement issuers, with the buyer intending to obtain a stake exceeding 40% post-placement. Although not directly comparable, the PIPE targets' CAR of this current study is larger than those of previous studies that investigate private placements with a far lower minority stake post-placement. For instance, Wruck (1989) reports 1.89%, Hoda (2011) 4.58%, and Hertzel et al. (2002) 2.4%. Compared with acquirers having only a minority stake post-placement, the acquirers in this study are perceived to be capable of creating greater value due to their higher stake and monitoring capability.

Insert Table 6

In general, the market reacts favorably to both TOB and PIPE targets, with the former earning higher CAR. However, the lower market reaction to PIPE targets may be related to the PIPE targets being poor performers before the buyout. In subsequent analyses, multivariate regressions are performed to account for the pre-buyout performances and the potential endogeneity of the choice of buyout modes. Regressions of announcement-associated three-day CAR are run on a set of explanatory variables, including the target performance before the buyout, as well as deal characteristics such as the acquirer's pre-buyout stake and the purchase premium. Since the endogeneity problem may exist with regard to the choice of buyout mode, the same regressions are performed using the two-stage least squares (2SLS) method. The choice of PIPE is treated as endogenous, instrumented by the ratio of the number of PE buyouts using PIPE to the total number of PE buyouts as of the preceding year, since peer firms' acquisition activities can influence other firms. Song and Walkling (2000) argue that acquisition attempts within an industry send general shock waves that cause firms' specific reassessment of acquisition probability for the rivals of the target firms. They show that an acquisition attempt for a target increases the probability that its rivals become targets of other firms. Another instrument used is the variance of the stock returns from 300 to 31 days prior to the first press report date as the estimation period. This instrument can serve as proxy to the issuing firm's information asymmetry. Chaplinsky & Haushalter

(2006) report that firms with greater information asymmetry are more likely to use PIPE for financing.

Columns (1) and (2) in Table 7 report the results estimated by ordinary least squares (OLS) regression. The estimated results are based on robust standard errors. In both OLS regressions, the dummy variable for PIPE shows a significantly negative coefficient, which is consistent with the univariate study reported in Table 6. In column (2), the variable for "the stake to be acquired" is replaced by the acquirer's post-buyout stake, and the results remain similar. Other significant factors include debt ratio and quick ratio. Columns (3) and (4) report the second-stage estimation results of the 2SLS method. Tests of endogeneity suggest the possibility of endogeneity. The overidentifying restrictions tests do not reject the null hypothesis that the instruments are valid.[4] In columns (3) and (4), the PIPE dummy variable is no longer significant, and the sign is positive (against the negative sign reported in OLS results). This time, the variables that are significant include buyout premium, the acquirer's post-buyout stake (or shares being bought), and the target's quick ratio, suggesting that the market reacts more favorably to those targets that are expected to receive higher premium, with a more concentrated ownership post-buyout and higher liquidity. In summary, when accounting for these factors and the endogeneity of buyout modes, the market does not react differently to whether the buyout is implemented by TOB or PIPE. Both types of PE buyouts receive favorable market reaction upon the announcement. In this sense, the results are not supportive of the managerial-entrenchment hypothesis for the PIPE targets.

Insert Table 7

5.4. Post-buyout changes in the board

Do the target's managers choose PIPE as a means of protecting their positions? The univariate comparison in Table 3 has indicated that PIPE targets are more likely to reshuffle their board than their TOB peers post-buyout. The univariate results are not consistent with the anti-takeover and/or managerial-entrenchment hypothesis since the PIPE targets underwent a more wide-ranging board reshuffle post-buyout, probably because they were performing worse than their TOB peers before buyout. This subsection further performs multivariate regressions of the change in board composition on the buyout choice variable, controlling for other relevant variables such as the target's

performance before buyout. Three variables pertaining to the reshuffle of the board are used as the dependent variable. Table 8 reports the results using OLS estimation, since the 2SLS method using the same instrumental variables, as in Table 7, does not reject the exogeneity test.

Insert Table 8

In all regressions, the coefficients of the PIPE dummy variable are all significantly negative, indicating a lower proportion of new board members carrying over from the target's pre-buyout board, or less likelihood of the new board's top management being appointed from the pre-buyout directors or top management. The results show that PIPE targets are more likely to remove former board members or the top management after controlling for their pre-buyout performance, as shown in all three columns in Table 8. Similar to the univariate results, the motive behind PIPE seems not to be driven by managerial entrenchment or anti-takeover. In addition, although not reported here, the results estimated by the 2SLS regressions remain similar.

5.5. Post-buyout changes in the operating performance

To test the managerial-entrenchment hypothesis, comparisons are made between PIPE and TOB targets to determine if there is a difference in the effect of buyout on the operating performance. To account for endogeneity, a target's ROA is adjusted by subtracting the ROA of a matching non-buyout firm. The matching firm is determined by the propensity score matching (PSM) method, with the propensity scores computed using the multivariate logit regression results estimated in Table 2. For each PIPE (TOB) target firm, a matching non-buyout firm is selected from the same industry with the nearest likelihood of being a PIPE (TOB) target (i.e., propensity scores) for the same financial year preceding the target's buyout[5]. Table 9 reports the results of the difference-in-difference regressions, with the adjusted ROA used as the dependent variable. Columns (2) and (3) also control for the target's pre-buyout size, the types of acquiring fund, and the industry effects.

When looking at the change from pre-buyout to post-buyout years, the results indicate a somewhat improving direction. In column (1), the constant's coefficient, indicating the pre-buyout adjusted ROA for TOB targets, is -.004, but the dummy variable

for first-year post-buyout has a coefficient of -.006 and the second-year post-buyout, -.001. By the same token, the adjusted ROA for PIPE targets pre-buyout is estimated to be -.032 (= -0.004 minus -0.028), but for the first-year post-buyout, it is .014 (= -0.006 plus 0.02), and for the second-year post-buyout, -.018 (= -0.001 minus -0.017). Columns 2 and 3 show similar trends. Although the changes from pre-buyout to post-buyout years indicate an improvement, they fall short of statistical significance (unreported in the table). Furthermore, the interaction terms of the PIPE and post-buyout-year dummy variables indicate whether PIPE and TOB targets have different patterns (or magnitude) with respect to the changes in the adjusted ROA from pre-buyout to post-buyout years. The coefficients for the interaction terms are all insignificant. In particular, the interaction term containing the second-year dummy variable is negative in all three columns, but not statistically significant. In column (4), where the sample includes only PIPE targets, the results are similar. The adjusted ROA pre-buyout is -.553; first-year post-buyout, .009; and second-year post-buyout, -.024.

Insert Table 9

Due to data limitations, the results are based only on the adjusted ROA for one year before and two years following the buyout completion. As far as the two-year post-buyout period is concerned, results indicate that PIPE targets do not deteriorate as compared with pre-buyout performance. There is no significant difference in the effect on the post-buyout operating performance between PIPE and TOB targets. The results reported in this subsection also do not support the managerial-entrenchment hypothesis. However, caution is required since a good portion of TOB targets drop out of the sample in the post-buyout years due to unavailability of data after being taken private.

5.6. Length of time to exit

The flexible-exit hypothesis predicts that PIPE targets are less likely to be taken private by the PE acquirers, who can then exit from the investment with more flexibility. Probit regressions are estimated to test if PIPE targets are more likely to remain public after the buyout. In addition, a survival analysis is used to estimate the effects of buyout choices, PIPE versus TOB, on the length of time to exit.

Table 10 reports the results on the likelihood of targets staying public post-buyout. The dependent variable is a dummy variable for the targets remaining public after buyout. Explanatory variables include the buyout choice and the target's characteristics. In column 2, the industry-fixed effects are added. Since Wald tests of exogeneity do not detect endogeneity of the PIPE choice, instrumental-variable methods are not employed for both columns. Both columns show that PIPE targets are more likely to remain public after the buyout, at a statistically significant level. The decision to stay public is also adversely related to the post-buyout shareholding of the acquirer. Foreign PE acquirers are more likely to take the target private. Targets with lower liquidity, in terms of quick ratio, are also more likely to stay public.

Table 10

Table 11 reports the results of the survival analysis on the effect of buyout choices on the length time to exit. The dependent variable is the length of time (number of months) it takes to exit since takeover. Those targets that have not yet been exited by PE funds by the end of 2016 (the end of investigation period), are treated as right-censoring cases. The Cox proportional hazards regression is used for estimation since it does not require assumptions about the distribution of time to exit. Explanatory variables include a PIPE dummy, the acquiring fund's affiliations, and characteristics of target firms. In column (1), the sample contains exited and non-exited targets (the latter treated as right-censoring sample), but excludes bankrupt targets. Column (2) includes only exited targets. Reported in the table are coefficients for the explanatory variables, which can be exponentiated to indicate the ratio of the hazards (i.e., of the acquirer exiting from the investment) for a one-unit change in the corresponding explanatory variable. Both regressions report similar results. From column (1), it can be inferred that acquirers of PIPE targets increase the hazard ratio (i.e., the chance of exit) by exp (0.882) = 2.42 times greater than those of TOB targets, significant at the 5% level. In column (2), the hazard ratio is exp (1.67) = 5.31, significant at the 1% level. In other words, it takes *less* time for the acquirers of PIPE targets to exit from the investments. In addition, the length of time to exit is longer when the targets were performing more poorly before the buyout, probably because it takes more time to turn them around. In column (2), the time to exit is positively associated with the target's Tobin's q pre-buyout, suggesting that it takes less time to

enhance value for undervalued targets before the acquirers can sell the stakes for a profit. It also takes less time to exit from investments in higher-leveraged targets (pre-buyout), probably because the equity investment is relatively smaller and easier to dispose of. Column (3) shows results when the estimation is repeated by using OLS regression, with the logarithm of the number of months before exit as the dependent variable, based on robust standard errors. The results are similar with those of column (2).

Table 11

In summary, the results in Tables 10 and 11 support the hypothesis that PE acquirers are more likely to keep PIPE targets public after the takeover, and are faster in exiting from the investment.

6. Summary

This study sheds light on PIPE with a *majority* stake post-placement by examining takeovers of publicly listed Japanese firms by PE funds during the period from 2001 to 2016. The mandatory bid rule in Japan makes the PIPE and TOB targets more distinct from each other, conducive to an investigation of the motives and consequences of the buyout mode.

The results support the last-resort hypothesis that PIPE acts as a last-resort financing means to relieve the target firms' financial constraints. It is found that PIPE is more likely to be used when targets were performing poorly before the buyout—more indebted and less profitable than their TOB peers and thus, in need of capital injection, but have difficulty accessing other external financing sources. These results are consistent with previous studies such as Brophy et al. (2009). Using PIPE, the PE acquirers also have the advantage of being able to exit from the investment with greater flexibility. PIPE targets are more likely than TOB targets to stay publicly listed post-buyout, making it more flexible for the PE acquirers to exit, which can be valuable for PE funds since they are under pressure to exit in a pre-specified period. It is less costly and less time-consuming to dispose of the publicly listed target's stake than sponsoring an initial public offering or selling a privately held target's shares. Indeed, it is found that it takes less time for the PE acquirers to exit from PIPE targets than from TOB targets.

While recent previous studies on private placements in minority stake acquisitions suggest managerial entrenchment on the target's management, the results of this current study on *majority*-control acquisitions find no such evidence. In private placements of new equity where the underwriters ended up with a minority stake, management may have used private placement as a managerial self-dealing device or even as an anti-takeover mechanism. Moreover, PE investors are also more passive in monitoring their private placement (minority) investment targets (than those in the minority block acquisitions). By contrast, in cases where the underwriters hold a controlling stake in the targets, the monitoring intensity and incentives of the underwriters are much stronger. The managers of PIPE targets are no more entrenched than those of TOB targets—both are subject to similar magnitudes of board turnover post-takeover.

Although both TOB and PIPE targets earn significantly positive announcement-associated CAR, suggesting value-enhancing effects of PE acquisitions, PIPE targets are associated with lower (but positive) CAR than TOB targets. Moreover, PIPE targets also display a less favorable post-buyout change in their operating performance, compared with TOB targets. However, this may be related to the PIPE firms being poorer performers before buyout than TOB targets. In addition, the choice to use PIPE may be endogenously correlated with unobservable characteristics of the targets. After controlling for pre-buyout performance, as well as potential endogeneity, the change in PIPE targets' post-buyout operating profitability is not significantly different from that of TOB targets. The results, in general, do not suggest that the managers of PIPE targets are driven by entrenchment motives, a different result from previous studies on private placements in *minority* stake acquisitions.

In summary, PE funds are able to enhance value and discipline the management of the target firms, regardless of whether the targets are acquired by using TOB or PIPE. PIPE is used when the targets are financially struggling firms, with difficulty in accessing other external financing sources. In the case of a majority-control buyout, equipped with great monitoring capability and incentive, PE acquirers can play an active and disciplinary role, which may not be the case when they only obtain a minority stake in the PIPE firms. While the PIPE targets are relatively poorer firms before the buyout, PE acquirers have more flexible exit alternatives by keeping the targets listed post-buyout.

Two final notes are in place. First, this study only examines traditional PIPE, excluding structured PIPE. In structured PIPE, securities issued are convertibles with a fixed conversion price, which can be adjusted downward if there is an adverse change in either market conditions or the fundamentals of the issuing firm. Structured PIPEs can be problematic in terms of legal issues such as potential market manipulation and insider trading. Second, since TOB targets are usually taken private post-buyout, the analysis of post-buyout operating performance is based on a smaller sample of firms. Therefore, caution may be necessary when interpreting this part of the results.

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[1] Jensen (1989) argues that private equity firms, by applying financial, governance, and operational engineering to their portfolio firms, can improve firm operations and create value. Research has found that buyouts by PE firms create value (Lehn and Poulsen, 1989; Kaplan, 1989a; 1989b; Muscarella and Vetsuypens, 1990; Travlos and Cornett, 1993; Yeh, 2012).

[2] By contrast, there is no such mandatory bid rule in the United States. The rationale is that there is no need for such since the target company's board can use defensive measures to negotiate on behalf of the shareholders (Puchniak and Nakahigashi, 2016).

[3] The test statistics follow Campbell et al. (1997).

[4] The instruments are also not weak, judged by the F-statistics for the joint significance of the instruments in the first-stage regression, which are modestly larger than 10, a rule of thumb suggested by Staiger and Stock (1997).

[5] An important criterion of the PSM method is that the differences between the targets and their matching firms should be small (Dehejia and Wahba, 2002). I also conducted t-tests to compare their differences (in the independent variables used in Table 2) as of the year before buyout. There are no statistically significant differences.

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Table 1. Characteristics of private equity buyouts and target firms. Target firms are publicly listed Japanese firms acquired by private equity firms during 2001 through 2015. Sample only include those deals in which the fund held more than the majority of the target's shares post-buyout. Buyout price premium based on pre-buyout price is calculated as the offer price divided by the closing price as of 30 days before the press announcement day, minus one. Premium based on post-buyout price is calculated relative to the closing price of announcement day, minus one. Tobin's q is the ratio of market firm size (the sum of market capitalization of common stocks and book value of debt) of the book value of assets. An exited deal is defined when the acquiring funds sell their stakes in the target another entity or when they no longer emerge as the target's largest shareholder, as of the cut-off time point for the investigation period. Changes in board composition are investigated for two years following the completion of buyout.

Panel A: target firm characteristics before buyout	No.	Mean	Median
Asset (million Yen)	102	30357	14526
Top 10 shareholding	102	0.588	0.598
Foreign shareholding	102	.074	.017
Financial shareholding	102	.078	.052
Director shareholding	102	.086	.010
ROA (operating income)	102	−.008	.020
Quick ratio	102	1.515	.689
Sales growth	101	−.013	−.029
Tobin's q	102	1.218	1.042
Debt/asset	102	.647	.617
Panel B: deal characteristics	No.	Mean	Median
% of deals using TOB	102	.55	−
% of deals using PIPE	102	.45	−
% of deals with bank-affiliated fund	102	.127	−
% of deals with foreign fund	102	.314	−
Shares held by acquirer prior to buyout	102	.028	.000
% Shares intended to be held by acquirer	102	.805	.964
% Shares held post buyout by acquirer	102	.745	.735
Buyout amount (billion Yen)	101	14.55	4.22
Premium based on pre-buyout price	100	.109	.139
Panel C: post-buyout changes	No.	Mean	Median
% of targets staying public post-buyout	102	.362	−
% of targets going bankrupt post-buyout	98	.071	−
% of deals exited by PE acquirer	98	.653	−
No. of months before exit	70	42.8	37.5
% former directors in the new board post-buyout	102	.54	−
% targets whose director appointed as new top	102	.78	−
% targets whose top appointed as new top	102	.74	−
% targets whose directors remaining post-buyout > 50%	102	.49	−
ROA for the 1st year following buyout completion	50	−.092	.008
ROA for the 2nd year following buyout completion	54	−.030	.031

Table 2. Multinomial regressions of choice of buyout modes on the target's pre-buyout characteristics. The regressions are estimated using the buyout target firms together with their same-industry publicly listed firms as of the same corresponding year, with non-target firms used as the base group in the regressions. Column (1) is estimated by multinomial logistic regression, while column (2) and (3) multinomial probit regression. Results for TOB group and PIPE group are reported respectively.

	(1) Multinomial Logit				(2) Multinomial Probit				(3) Multinomial Probit			
	TOB group		*PIPE group*		*TOB group*		*PIPE group*		*TOB group*		*PIPE group*	
	Coef.	*P*	*Coef.*	*P*	*Coef.*	*P*	*Coef.*	*P*	*Coef.*	*P*	*Coef.*	*P*
Constant	6.375	.001	1.970	.595	3.375	.006	1.791	.321	7.264	.000	4.726	.037
Target's debt ratio	2.163	.010	3.616	.006	1.243	.005	2.176	.000	.771	.127	1.833	.000
Target's Ln(asset)	−.506	.000	−.351	.043	−.304	.000	−.260	.001	−.432	.000	−.348	.000
Target's ROA	1.486	.284	−4.864	.064	.785	.338	−2.732	.025	1.575	.063	−2.528	.037
Target's quick ratio	−.007	.955	.071	.127	−.006	.924	.040	.126	−.017	.792	.032	.221
Target's Ln(Tobin's q)	−.816	.003	−.270	.663	−.460	.005	−.061	.825	−.313	.087	.052	.838
Director shareholding	−2.024	.136	−1.260	.385	−1.167	.091	−.764	.292	−.717	.295	−.518	.476
Foreign shareholding	4.714	.000	−3.660	.326	2.686	.000	−.700	.645	2.765	.000	−.883	.556
Industry fixed effects	No		No		No		No		Yes		Yes	
Observations	4447				4,447					4,447		
Wald chi-squared	70.30	.000			82.09	.000						

Table 3. Comparison of deals involving tender offers and deals otherwise. Target firms are publicly listed Japanese firms acquired by private equity firms during 2001 through 2015. Sample only include those deals in which the fund held more than the majority of the target's shares post-buyout. Buyout price premium based on pre-buyout price is calculated as the offer price divided by the closing price as of 30 days before the press announcement day, minus one. Premium based on post-buyout price is calculated relative to the closing price of announcement day, minus one. Tobin's q is the ratio of market firm size (the sum of market capitalization of common stocks and book value of debt) of the book value of assets. Percentage of deals exited by the acquirer indicates the percentage of target firms whose shares were sold by the acquiring fund sometime after the buyout. Differences in means (medians) between the two groups are based on t-test (Wilcoxon rank-sum test).

	PIPE targets			TOB targets		Diff. in mean	Diff. in median
	No.	Mean	Median	No.	Mean	Median	p-value	p-value
Panel A: target firm characteristics before buyout								
Asset (billion Yen)	46	23.25	10.90	56	36.20	22.39	.160	.006
Foreign shareholding	46	.032	.004	56	.109	.040	.001	.001
Director shareholding	46	.090	.015	56	.083	.007	.802	.647
ROA (operating income)	46	−.078	−.037	56	.050	.046	.000	.000
Quick ratio	46	1.388	.595	56	1.620	.776	.602	.135
Sales growth	45	−.083	−.106	56	.042	.025	.143	.001
Tobin's q	46	1.405	1.079	56	1.063	.988	.032	.024
Debt/asset	46	.806	.810	56	.517	.526	.000	.000
Panel B: deal characteristics								
% of deals with foreign fund	46	.239	−	56	.375	−	.139	−
% of deals with bank-affiliated fund	46	.130	−	56	.125	−	.936	−
% Shares held by acquirer pre buyout	46	.023	.000	56	.032	.000	.617	.462
% Shares intended to be held by acquirer	46	.651	.621	56	.936	1.000	.000	.000
% Shares held post buyout by acquirer	46	.647	.614	56	.826	.881	.000	0.000
% of deals for >70% stake post buyout by the acquirer	46	.283	−	56	.857	−	.000	−
Buyout amount (billion Yen)	46	8.24	2.00	55	19.86	8.20	.076	.000
Premium based on pre-buyout price	44	−.073	−.162	56	.252	.257	.028	.000
Panel C: post-buyout changes								
% of targets staying public post-buyout	46	.587	−	56	.179	−	.000	−
% of targets going bankrupt post-buyout	44	.114	−	54	.037	−	.168	−
% of deals exited by PE acquirer	44	.659	−	54	.648	−	.911	−
No. of months till exit	29	37.6	27	35	47.3	46	.158	.077
% former directors in the new board post-buyout	46	.462	.464	56	.609	.563	.016	.024
% targets whose director appointed as new top	46	.696	−	56	.853	−	.056	−
% targets whose top appointed as new top	46	.630	−	56	.821	−	.030	−
% targets whose directors remaining post-buyout > 50%	46	.435	−	56	.536	−	.315	−
ROA for the 1st year following buyout completion	37	−.033	.000	13	.019	.026	.223	.211
ROA for the 2nd year following buyout completion	39	−.054	.028	15	.034	.055	.218	.183

Table 4. Probit regressions of the choices of buyout modes. Sample include target firms taken over by private equity firms during 2001 through 2015. Dependent variable is a dummy for private placement targets rather than tender offer targets. Explanatory variables on firm characteristics are based on the financial year-end preceding buyout announcement. Tobin's q is the ratio of market firm size (the sum of market capitalization of common stocks and book value of debt) of the book value of assets.

	(1)		(2)	
	Coef.	*P-value*	*Coef.*	*P-value*
Constant	1.986	.638	1.617	.702
% shares to be held	−5.546	.000		
Dummy for shares to be held >70%			−1.227	.002
Dummy for foreign fund	.104	.809	−.290	.447
Dummy for bank-affiliated fund	−.465	.340	−.314	.453
Target' debt ratio	1.852	.044	2.099	.014
Target' asset (logarithm)	−.003	.986	−.158	.404
Target' Tobin's Q (logarithm)	.348	.367	.683	.060
Target' ROA	−7.566	.031	−6.346	.018
Target's quick ratio	.079	.333	.050	.516
Target' financial shareholding	7.626	.000	7.297	.000
Target' director shareholding	1.054	.393	.436	.740
Observations	102		102	
Ward chi-squared	52.86		50.82	
P-value for chi-squared	.000		.000	
Pseudo R-squared	.58		0.46	

Table 5. The relationship between placement size and the target firm's pre-buyout performance. Column (1) uses PIPE target firms and column (2) TOB target firms. The dependent variable is the difference between the PE acquirer's post-buyout shareholding percentage vs. pre-buyout shareholding. Explanatory variables include the target firm's performance and characteristics as of the financial year-end preceding buyout announcement. Tobin's q is the ratio of market firm size (the sum of market capitalization of common stocks and book value of debt) of the book value of assets. The coefficients are estimated by ordinary least squares method, based on robust standard errors.

	(1) Sample of PIPE targets		(2) Sample of TOB targets	
	Coef.	*P-value*	*Coef.*	*P-value*
Constant	−0.427	0.473	−0.895	0.429
% shares held before buyout	0.767	0.157	−1.035	0.043
Target' financial shareholding	−1.370	0.022	0.006	0.994
Target' director shareholding	0.291	0.110	−0.379	0.331
Dummy for foreign fund	0.091	0.210	0.084	0.235
Dummy for bank-affiliated fund	−0.150	0.230	−0.090	0.674
Target' asset (logarithm)	0.033	0.217	0.069	0.189
Target' debt ratio	−0.259	0.027	0.128	0.637
Target' Tobin's Q (logarithm)	0.232	0.005	0.113	0.348
Target' ROA	−1.162	0.001	−0.258	0.717
Target's quick ratio	−0.055	0.005	0.059	0.102
Industry fixed effects	Yes		Yes	
Year fixed effects	Yes		Yes	
Observations	46		56	
R-squared	0.96		0.86	

Table 6. Abnormal returns associated with buyout announcement day. Abnormal returns are estimated by the standard risk-adjusted market model, using the firm's stock returns and TOPIX-based market returns from 300 to 31 days prior to the first press report date as the estimation period. CAR (−*m*, +*n*) is the cumulative abnormal returns beginning from *m* days before through *n* days after the press announcement day. Test statistics follow Campbell et al. (1997).

	No.	*Mean*	*p-value*	*Median*	*p-value*
(1) CAR for all sample targets					
Announcement day −1	111	.022	.000	.0035	.107
Announcement day 0	111	.094	.000	.0709	.000
Announcement day +1	111	.015	.000	.0004	.635
Announcement (−1, +1)	111	.131	.000	.1196	.000
(2) CAR for PIPE targets					
Announcement day −1	46	.033	.000	.007	.039
Announcement day 0	46	.038	.000	.007	.140
Announcement day +1	46	.002	.775	−.005	.555
Announcement (−1, +1)	46	.073	.000	.053	.077
(3) CAR for TOB Targets					
Announcement day −1	56	.021	.000	.0032	.423
Announcement day 0	56	.151	.000	.1183	.000
Announcement day +1	56	.028	.000	.0061	.181
Announcement (−1, +1)	56	.200	.000	.1762	.000

(4) Tests of differences in CAR between targets (2) and (3)	t-test p-value	Wilcoxon rank-sum p-value
Announcement day −1	.386	.605
Announcement day 0	.001	.000
Announcement day +1	.320	.150
Announcement (−1, +1)	.003	.001

Table 7. Regressions of announcement-associated abnormal returns. Sample is Japanese firms taken over by private equity funds during 2001-2015. Dependent variable is the cumulative abnormal returns beginning from 1 day before through 1 day after the press announcement. Explanatory variables are firm characteristics as of the preceding financial year-end. Buyout price premium is calculated as the offer price divided by the closing price as of 30 days before the press announcement day, minus one. Tobin's q is the ratio of market firm size (the sum of market capitalization of common stocks and book value of debt) of the book value of assets. Column (1) and (2) are estimated by OLS method, based on robust standard errors, whereas (3) and (4) are report the second stage results estimated by two-stage least squares method, with the PIPE treated as endogenous, instrumented by two variables—the proportion of PIPE in the preceding year of the target's buyout announcement, and the target's stock return variance xx relative to the announcement.

	(1)	OLS	(2)	OLS	(3)	2SLS IV	(4)	2SLS IV
	Coef.	*P-value*	*Coef.*	*P-value*	*Coef.*	*P-value*	*Coef.*	*P-value*
Constant	.443	.347	.473	.305	−.015	.979	.070	.895
PIPE dummy	−.114	.072	−.142	.022	.153	.374	.078	.601
Premium	.081	.151	.080	.152	.093	.089	.090	.099
% shares held before buyout	.189	.260	.499	.067	.163	.297	.716	.016
% shares intended to be held	.258	.135			.565	.040		
% shares bought			.238	.136			.415	.036
Dummy for management involved	.080	.250	.077	.286	.142	.026	.139	.055
Financial shareholding	−.077	.839	−.067	.865	−.386	.347	−.353	.409
Director shareholding	−.225	.206	−.231	.182	−.265	.045	−.275	.028
Dummy for foreign fund	−.029	.600	−.028	.618	−.038	.454	−.032	.522
Dummy for bank-affiliated fund	.092	.270	.085	.309	.115	.083	.099	.122
Target' asset (logarithm)	−.027	.175	−.027	.163	−.020	.297	−.017	.380
Target' debt ratio	.178	.064	.180	.060	.073	.547	.074	.557
Target' Tobin's Q	−.001	.967	−.007	.833	.003	.920	−.010	.734
Target' ROA before	.018	.929	.009	.963	.213	.255	.182	.300
Target's quick ratio	.026	.036	.026	.045	.021	.058	.021	.071
Industry fixed effects	Yes		Yes		Yes		Yes	
Observations	100		100		100		100	
Wald chi-squared			.		343.24	.000	286.79	.000
R-squared	.459		.458		.345		.361	
Tests of exogeneity: chi-squared					3.435	.064	2.797	.094
Test of overidentifying restrictions: chi-squared					.670	.413	1.511	.219

Table 8. Regressions of turnover of the target's board members. Sample is Japanese firms taken over by private equity funds during 2001-2015. The measures for board turnover in Column (1) is the percentage of former directors in the new board post-buyout, in Column (2) a dummy for targets whose director appointed as the new top, and in Column (3) a dummy for targets whose top is appointed as the new top post-buyout. The results for OLS method are reported in Column (2), and for probit estimation in Column (2) and (3), since the two-stage least square method, using the same instrumental variables as in Table 7, does not reject the exogeneity test.

	(1) OLS		(2) Probit		(3) Probit	
.	% former directors post-buyout		1 if new top appointed from former directors		1 if new top appointed from former tops	
	Coef.	*p-value*	*Coef.*	*p-value*	*Coef.*	*p-value*
Constant	.520	.003	1.703	.075	1.844	.041
PIPE dummy	−.137	.083	−.739	.070	−.695	.073
Target's ROA	−.052	.808	−.033	.973	.665	.483
Target's debt ratio	.006	.957	.121	.763	−.023	.952
% shares held post buyout	.108	.562	−.841	.402	−1.138	.234
Observations	102		102		102	.
F-value	1.58	.186				
R-squared	.060					
Wald chi-squared			4.00	.407	5.95	.203
Pseudo R-squared			.045		.057	.
Tests of exogeneity						
Chi-squared	0.65	0.421	1.06	0.304	0.77	0.380

Table 9. Table. Regressions of target's post-buyout operating profitability following the completion year. Sample include target firms taken over by private equity firms during 2001 through 2015. Dependent variable is the target's return on asset (adjusted for matching firms) in the 1st year following the year of completing buyout. ROA are adjusted for by subtracting the corresponding values of the matching non-buyout firms, selected by propensity scores methods. The models are estimated by OLS regressions, and the reported statistics are the estimated coefficients and the associated p-value based on robust standard errors. All models also include industry fixed effects.

	(1)		(2)		(3)		(4)	
	Coef.	*P value*	*Coef.*	*P value*	*Coef.*	*P value*	*Coef.*	*P value*
Constant	−.004	.504	−.556	.136	−.530	.182	−.553	.246
PIPE dummy	−.028	.208	−.009	.714	−.004	.877	.	.
Dummy for the 1st post-buyout year	−.006	.730	.016	.550	.020	.489	.009	.825
Interaction of PIPE and the 1st post-buyout year	.020	.651	−.001	.990	−.007	.872	.	.
Dummy for the 2nd post-buyout year	−.001	.976	.021	.467	.029	.366	−.024	.584
Interaction of PIPE and the 2nd post-buyout year	−.017	.759	−.043	.429	−.053	.342	.	.
Target's Ln(assets)			.024	.130	.023	.176	.025	.228
Dummy for foreign fund					.038	.350	.073	.298
Dummy for bank-affiliated fund					.042	.124	.079	.162
Industry fixed effects			Yes		Yes		Yes	.
Observations	189		189		189			112
R-squared	.013		.134		.147			.192

Table 10. Probit regressions of the probability of the targets staying public after takeover. The dependent variable is a dummy for the targets remaining public after buyout. Explanatory variables include the buyout choice and the target's characteristics as of the year preceding buyout. In the second column, the industry fixed effects are added. Results estimated by probit regressions are reported since the two-stage least square method, using the same instrumental variables as in Table 7, does not reject the exogeneity test.

	(1)		(2)	
	Coef.	P>z	Coef.	P>z
Constant	6.219	0.072	14.520	0.002
PIPE dummy	0.882	0.022	1.421	0.008
% shares held by acquirer post buyout	−2.396	0.007	−3.945	0.002
Dummy for foreign fund	−0.917	0.014	−1.449	0.020
Dummy for bank-affiliated fund	−0.084	0.848	−0.338	0.576
Target' Ln(asset)	−0.196	0.173	−0.456	0.015
Target' debt ratio	−0.279	0.561	−0.092	0.886
Target' Ln(Tobin's Q)	−0.090	0.625	−0.538	0.023
Target' ROA	0.847	0.508	2.049	0.190
Target' quick ratio	−0.145	0.095	−0.301	0.005
Year fixed effects	No		Yes	
Observations	102		101	
Wald chi-squared	34.11	0.000	44.83	0.003
Pseudo R-squared	0.292		0.482	
Wald test of exogeneity				
Chi-squared	0.89	0.346	0.13	0.716

Table 11. Survival analysis of the length of time to exit. Cox proportional hazards regressions are used to estimate the effect of buyout mode on the length of time to exit, which is defined as the number of months since takeover month before the acquirer exited the investment. Those targets which have not yet been exited by the acquirer as of end of 2016 (the end of investigation period), are treated as right censoring cases. Explanatory variables include a dummy for PIPE targets, fund's affiliations and other characteristics of target firms. Sample in Column (1) contain exited targets and non-exit targets (right censoring sample), but excludes bankrupt targets. Column (2) includes only exited targets. The reported coefficients can be exponentiated to indicate the ratio of the hazards (i.e., of the acquiring exiting the investment) for a one-unit change in the corresponding explanatory variable.

	(1)		(2)		(3)	
	Cox regression		Cox regression		OLS	
Sample	all		only exit targets		only exit targets	
Dependent variable	no. of months before exit		no. of months before exit		Ln (no. of months before exit)	
	Coef.	P>z	Coef.	P>z	Coef.	P>z
Constant	.	.	.	.	−0.252	0.923
PIPE dummy	0.882	0.061	1.670	0.003	−0.647	0.044
Target' debt ratio	0.340	0.606	1.432	0.074	−0.408	0.257
Target' Ln(asset)	0.114	0.481	−0.285	0.168	0.129	0.215
Dummy for foreign fund	−0.503	0.228	0.052	0.920	−0.057	0.855
Dummy for bank-affiliated fund	0.294	0.645	−0.801	0.277	−0.009	0.982
Target' Ln(Tobin's Q)	−0.050	0.896	−1.265	0.003	0.435	0.046
Target' ROA	4.416	0.037	6.592	0.004	−2.436	0.056
Year fixed effects	Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes	
Observations	98		63		63	
No. of exited deals	64		63		63	
R-squared					0.56	
LR chi-squared	59.94	0.003	57.26	0.006		
Test of proportional-hazards assumption: global test						
Chi-squared	36.92	0.293	28.05	0.712		