



# Do managers intentionally use repurchase tender offers to signal private information? Evidence from firm financial reporting behavior<sup>☆</sup>

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## Abstract

Signaling is the most commonly cited explanation for stock repurchases in the academic literature. Yet, there is little evidence on whether managers intentionally use repurchases as signaling devices. Using a firm's financial reporting behavior to infer managerial intent, we find evidence suggesting that managers intentionally use fixed-price repurchase tender offers to signal undervaluation. In contrast, we find no evidence that managers use Dutch-auction tender offers to signal undervaluation. Instead, firms engaging in Dutch-auction repurchases act as if they are trying to deflate their earnings prior to the repurchases to further reduce the repurchasing price.

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## 1. Introduction

The most commonly cited explanation for repurchases in the academic literature is signaling.<sup>1</sup> According to the signaling hypothesis, “firms use share repurchase announcements

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<sup>1</sup>See Bhattacharya (1979), Dann (1981), Vermaelen (1981, 1984), Constantinides and Grundy (1989), Lakonishok and Vermaelen (1990), Comment and Jarrell (1991), Dann, Masulis, and Mayers (1991), and Persons (1997).

to signal to the market that their shares are undervalued” (Rau and Vermaelen, 2002, p. 249). Yet, in spite of the popularity of the signaling proposition, there is little empirical evidence on whether managers *intentionally* use repurchases to signal their private information. In this study, we attempt to address this issue by examining firms’ financial reporting behavior prior to repurchase tender offers.

It is often suggested that managers who intend to signal their private information are more likely to use repurchase tender offers than open market repurchases. To be credible, a signal must be costly. Rau and Vermaelen (2002, p. 249) argue, “The problem with considering open-market repurchase programs as costly signals is that these programs are not firm commitments – it is costless to announce a repurchase and not carry it out later.” Repurchase tender offers, in contrast, can be very costly. As Fried (2000) explains, a firm generally has to hire investment bankers to structure the repurchase, lawyers to register the offering with the Securities and Exchange Commissions (SEC), and an outside firm to administer the repurchase. In addition, managers pay an average premium of 21.8% in repurchase tender offers according to Lakonishok and Vermaelen (1990) and 16.8% according to Comment and Jarrell (1991). However, it is puzzling that managers would incur the huge costs associated with repurchase tender offers just to signal their private information.

Consistent with the signaling hypothesis, the average firm experiences very positive repurchase announcement abnormal returns (Dann, 1981; Comment and Jarrell, 1991) and post-repurchase announcement long-term abnormal returns (Peyer and Vermaelen, 2006). As Vermaelen (1984, p. 163) states, the justification for considering a stock repurchase “an information signal stems from results [on the post-repurchase announcement abnormal returns] reported by previous research.” However, because managers have incentives to repurchase when the shares are undervalued, a repurchase may be associated with positive abnormal returns even if the managers’ intent is not to signal (Maxwell and Stephens, 2003; Grullon and Michaely, 2004; Brav, Graham, Harvey, and Michaely, 2005). Thus, abnormal returns are not conclusive evidence that managers intentionally use repurchases as signaling devices. Our study is, to our knowledge, the first to (attempt to) establish managerial intent.

We examine whether there is evidence indicating that managers *intentionally* use repurchase tender offers to signal undervaluation by analyzing the managers’ pre-repurchase financial reporting behavior and the association between the reporting behavior and the firms’ abnormal returns. Examining the pre-repurchase reporting behavior allows us to distinguish repurchase tender offers that are intended for signaling from those that are conducted for other purposes.<sup>2</sup> We argue that managers engaging in repurchases for nonsignaling reasons have incentives to deflate their stock price prior to the repurchases to reduce the repurchase price. One tool that managers allegedly use to manipulate their stock price is “earnings management” (see, e.g., Teoh, Welch, and Wong, 1998a,b; Healy and Wahlen, 1999). Hence, we posit that managers could use their

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<sup>2</sup>These purposes include: distribution of excess cash (Brennan and Thakor, 1990), change toward the optimum financial leverage (Dittmar, 2000), reduction of agency costs (Denis and Denis, 1993; Grullon and Michaely, 2004), financing of employee stock option plans (Kahle, 2002), expropriation of creditors (Maxwell and Stephens, 2003), earnings management (Grullon and Ikenberry, 2000), and maximization of employee stock option value (Jolls, 1998). See Grullon and Ikenberry (2000) for a review of the literature on stock repurchases.

reporting discretion to deflate the repurchase stock price.<sup>3</sup> We label this conjecture the “opportunistic reporting behavior” hypothesis. However, because attempts at price reduction prior to share repurchases are not consistent with managers intentionally signaling undervaluation, we argue that managers who use repurchases to signal undervaluation are unlikely to deflate earnings prior to repurchases. This conflict between managers’ incentives to deflate the stock price prior to stock repurchases and their incentives to signal favorable private information allows us to distinguish repurchase tender offers that are conducted for signaling purposes from those that are conducted for nonsignaling purposes.

We find that the average firm engaging in Dutch-auction tender offers reports significantly negative discretionary accruals in the quarter preceding a repurchase tender offer. In contrast, the average firm engaging in fixed-price offers reports insignificantly positive discretionary accruals. These results are consistent with the conjecture that fixed-price tender offers are more likely than Dutch-auction tender offers to be used to signal positive private information.<sup>4</sup> Apparently, managers engaging in Dutch-auction tender offers are generally more interested in minimizing the repurchase price than in revealing their private beliefs about firm value.<sup>5</sup> We also find evidence suggesting that the incentive to deflate earnings prior to repurchases increases in the percentage of the firm owned by the chief executive officer (CEO).

As we argue above, managers who intend to signal favorable private information have little incentive to manage earnings downward prior to stock repurchases. In this regard, the failure to find significant negative discretionary accruals prior to fixed-price tender offers is consistent with the signaling hypothesis; however, it is not conclusive evidence that managers intend to signal. To further test whether managers use fixed-price tender offers as signaling devices, we analyze the association between discretionary accruals prior to fixed-price tender offers and the abnormal returns both around and after the repurchase announcements. We base our analyses partly on the conjecture that managers use discretionary accruals to reinforce other signals (Louis and Robinson, 2005).<sup>6</sup> Consistent with the signaling hypothesis, we find a positive association between pre-repurchase

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<sup>3</sup>This conjecture is consistent with extant evidence that managers deflate earnings prior to management buyouts (Perry and Williams, 1994). Note that, as long as managers use their discretion within the limits of the generally accepted accounting principles (GAAP), earnings management is not illegal. Managers have discretion in their financial reporting because accounting requires estimates (e.g., bad debt allowances). In addition, the accounting rules often provide managers with discretion regarding how to account for certain transactions (e.g., capital versus operating lease accounting).

<sup>4</sup>See Comment and Jarrell (1991), Gay, Kale, and Noe (1991), Lee, Mikkelsen, and Partch (1992), Persons (1994), Fried (2000), and Grullon and Ikenberry (2000) for discussions related to the differential signaling strengths of fixed-price and Dutch-auction tender offers.

<sup>5</sup>In a fixed-price tender offer, the repurchase price is set by managers. In contrast, in a Dutch-auction tender offer, managers offer a price range to investors to bid. The repurchase price in a Dutch-auction tender offer is therefore likely to be determined by the most pessimistic investors instead of the managers. Hence, it is less likely that a Dutch-auction tender offer is used to convey managerial optimism. In fact, it is reported that the first Dutch-auction tender offer was conducted by Todd Shipyards in 1981, whereby Bear Stearns advised the company to structure the transaction as a Dutch auction with the sole intent of reducing the repurchase price. Todd Shipyards ended up repurchasing the shares at \$26.50 or less instead of the \$28 it had originally planned to pay in a fixed-price tender offer (Fried, 2000).

<sup>6</sup>Other studies on the role of accruals as a signaling device include Watts and Zimmerman (1986), Guay, Kothari, and Watts (1996), and Arya, Glover, and Sunder (2003). We provide more details on managerial motivation for bundling the repurchase and the discretionary accruals signals in the next section.

discretionary accruals and the repurchase announcement returns for fixed-price tender offers. The results also indicate that the firms that report the highest discretionary accruals (i.e., report aggressively) prior to fixed-price repurchase tender offers experience the largest positive abnormal returns over the three years after the repurchase announcement. Moreover, we find evidence indicating that the information content of fixed-price tender offers and discretionary accruals decreases in the availability of alternative means of communication and increases in CEO ownership.

Prior studies find that, on average, repurchase firms experience positive long-term abnormal returns. Interestingly, we find that the superior long-term performance after fixed-price tender offer announcements is strongest for those firms that report the highest positive discretionary accruals in the quarter prior to the repurchases. This result is consistent with the conjecture that a manager's financial reporting behavior prior to a fixed-price tender offer acts as an indicator of managerial intent to signal undervaluation. Furthermore, prior studies find that (discretionary) accruals are negatively associated with future stock performance (Sloan, 1996; Xie, 2001). This association happens when reporting discretion is used to deflate (inflate) the accruals component of earnings and the earnings deflation (inflation) reverses in the future due to the inherent nature of accruals. However, we find that the superior long-term performance after fixed-price tender offer announcements is actually strongest for those firms that report the highest positive discretionary accruals in the quarter prior to the repurchases.

Because the effect of opportunistic earnings management has to reverse over time, we also posit that the positive abnormal returns associated with Dutch-auction tender offers might be partly attributable to the reversal of the pre-repurchase stock price deflation. At first glance, one may argue that the announcement of a Dutch-auction repurchase should alert investors to managers' incentives to deflate their reported earnings prior to the repurchase. However, prior studies find that investors fail to completely undo the stock price effects of earnings management around corporate events such as equity offerings and stock-for-stock mergers (Teoh, Welch, and Wong, 1998a, b; Louis, 2004). As Louis (2004) illustrates, as long as investors cannot directly observe managers' actions, it is likely that the pre-event earnings management will be correlated with the post-event stock price performance. Consistent with our conjecture, we find that the positive long-term abnormal returns after Dutch-auction repurchase announcements are driven mainly by firms that report negative discretionary accruals prior to the repurchase announcements. We also find a more muted association between the market reaction to the repurchase announcement and pre-repurchase discretionary accruals for firms engaging in Dutch-auction tender offers than for firms engaging in fixed-price tender offers. This result suggests that the market is somewhat aware of the pre-repurchase income-decreasing incentive of managers engaging in Dutch-auction repurchases. However, the association between the post-repurchase long-term abnormal returns and the pre-repurchase negative discretionary accruals suggests that any correction for the effects of pre-repurchase discretionary accruals around the announcements of the Dutch-auction tender offers is only partial.

The remainder of the study is organized as follows. The following section briefly discusses the managerial motivation for bundling the repurchase and the earnings signals. Section 3 explains the sample selection process and presents some descriptive statistics. Section 4 analyzes the stock performance of the repurchasing firms. Section 5 reports stock performance before and around the repurchase announcements. Section 6 analyzes the

association between pre-repurchase reporting behavior and repurchase announcement abnormal returns. Section 7 analyzes the long-term stock performance after the repurchase announcement. The study concludes in Section 8.

## 2. Managerial motivation for bundling the repurchase and the earnings signals

Because earnings inflation potentially increases a firm's repurchasing cost, we contend that managers will inflate earnings prior to share repurchases only when they are most bullish on the firm's future and they intend to signal their views to the market. Prior studies argue that managers use financial reporting discretion to signal private information.<sup>7</sup> In particular, [Louis and Robinson \(2005\)](#) find that managers use discretionary accruals to reinforce stock split signals. The rationale is that, on the one hand, a stock split is only partially effective as a signal. That is, the market underreacts to the signal conveyed by a stock split. Hence, managers who are very optimistic about their firms' prospects might use other means of communication (e.g., reporting discretion) to reinforce the stock split signal. On the other hand, because managers are often assumed to use their discretion to mislead investors, discretionary accruals alone are likely to be regarded as opportunistic. To reinforce a signal of favorable private information, managers can use discretionary accruals in conjunction with other signals. Given that prior studies indicate that the market also underreacts to repurchase announcements ([Peyer and Vermaelen, 2006](#)), we posit that managers could use financial reporting discretion to reinforce repurchase signals as well. The key difference between the stock split setting and the stock repurchase setting is that managers also have the incentive to manage earnings downward prior to stock repurchases whereas there is no such countervailing incentive prior to stock splits.

One might argue that managers could just send a more powerful signal by paying a higher repurchase premium. However, as we explain earlier, although a signal needs to be costly to be credible, the cost of a repurchase tender offer can be very high, and at some point it will no longer be optimal to increase the cost. For many firms, the use of discretionary accruals is likely a less costly means of reinforcing the repurchase signal because it does not require any additional cash outflow to tendering (i.e., leaving) shareholders. The disadvantage of discretionary accruals is that, when used alone, they are likely to be construed as opportunistic. When coupled with another signal, however, they can serve as an effective tool to convey favorable private information. Managers could use stock repurchases and discretionary accruals as substitutes. In that case, managers would either (1) repurchase and report no discretionary accruals or (2) not repurchase and report high positive discretionary accruals. If firms report high positive discretionary accruals in conjunction with repurchases, then we contend that discretionary accruals and repurchases act as complements.

Managers typically have alternative means to communicate their private information to the capital markets. The trade-off that they generally face is between the credibility and the cost of the signal. For instance, instead of using accruals or repurchases to signal their private information, managers could simply communicate their beliefs through press releases and conference calls. However, potential legal costs might discourage them from communicating their optimism through these mediums. Existing studies suggest that

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<sup>7</sup>See [Watts and Zimmerman \(1986\)](#), [Guay, Kothari, and Watts \(1996\)](#), [Arya, Glover, and Sunder \(2003\)](#), and [Louis and Robinson \(2005\)](#).

managers are disinclined to make optimistic projections because they believe that such projections would expose them to lawsuits if the predicted outcomes do not materialize (Ruhnka and Bagby, 1986; Skinner, 1994, 1997). Thus, managers are likely to prefer indirect communication mediums, such as stock repurchases and discretionary accruals, to more direct mediums, such as press releases and conference calls, to convey their optimism.

### 3. Sample selection and descriptive statistics

The study covers repurchase tender offers by US companies that were announced between January 1981 and December 2001, inclusive. We end the sample in 2001 because we need to compute abnormal returns over the three years subsequent to the repurchase announcement. The sample of stock repurchases is obtained from the Security Data Company's online database of domestic acquisitions. A transaction is included in the sample if it satisfies the following criteria:

- (1) the repurchase is a nondefensive and nonmerger (nonacquisition)-related tender offer;
- (2) the repurchase announcement is not accompanied by announcements of other major events, such as sell-offs of major divisions or downgrades of the firm's securities by a rating agency;
- (3) the proportion of shares outstanding sought in the transaction is available on SDC<sup>8</sup>;
- (4) returns data are available from the Center for Research in Security Prices (CRSP); and
- (5) price, common shares outstanding, book value of common equity, total liabilities, net income, and data necessary to estimate discretionary accruals are available on Compustat.

Using the Factiva (formerly Dow Jones) database, we also identify and eliminate those observations that involve repurchases from odd-lot holders. We delete repurchases of convertible warrants, preferred stocks, and/or class B shares.<sup>9</sup> The final sample consists of 177 repurchase tender offers, including 80 fixed-price tender offers and 97 Dutch-auction tender offers.

Most repurchases are open market repurchases. However, we examine repurchase tender offers instead of open market repurchases because repurchase tender offers provide a better setting to conduct our analyses. Open market repurchases usually take several months to several years to complete whereas repurchase tender offers are usually completed within a month (Fried, 2000). In addition, contrary to open market repurchases, repurchase tender offers entail substantial costs, involve outside parties, and are generally

<sup>8</sup>We use the actual proportion of shares repurchased if it is reported on SDC and the proportion of shares sought is not.

<sup>9</sup>In addition, we also delete the January 14, 1982 announcement by Northwest Industries and the March 9, 1990 announcement by Synalloy Corp because they were re-announcements of previously announced repurchases. We delete the July 10, 1992 announcement by Sonesta International. The company announced the repurchases of 300,000 shares. At the same time, the Sonnabend family, who controlled 62.3% of the common stock, entered into an agreement to sell 450,000 shares to the company. We delete the July 31, 1985 announcement by Van Dusen Air Inc because it was related to an attempt by an investment group to take the company private. We also delete the October 9, 2000 announcement by JLK Direct because it was related to an attempt by a shareholder who owned 83% of the company to take it private. Finally, we delete the July 28, 1982 announcement by Tesoro Petroleum because the firm was facing liquidation.

carried out.<sup>10</sup> Because repurchase tender offers are completed in a much more timely manner than open market repurchases, they offer a less noisy setting to test questions related to financial reporting as well as performance around repurchases. Moreover, because a repurchase tender offer is generally much more costly than an open market repurchase, it is likely to serve as a more credible signal. Further, the differences between the two types of repurchase tender offers (i.e., fixed-price and Dutch-auction) help to distinguish between the signaling hypothesis and the opportunistic reporting behavior hypothesis.

Table 1 reports descriptive statistics. Firms engaging in Dutch-auction tender offers are significantly larger than firms engaging in fixed-price tender offers, as indicated by their annual NYSE/AMEX/NASDAQ size-decile assignment.<sup>11</sup> This result is consistent with the conjecture that managers engaging in fixed-price tender offers are more likely to be signaling private information, given that information asymmetry, and hence the need to signal private information, is likely higher for smaller firms. Firms engaging in fixed-price tender offers have significantly higher average book-to-market ratios (0.997) compared to firms engaging in Dutch-auction tender offers (0.730). The average proportion of shares outstanding sought in the transactions is also higher in fixed-price tender offers (0.279) than in Dutch-auction tender offers (0.161).

We also report analyst coverage and institutional investor ownership for the repurchasing firms. We obtain the number of analysts covering the firms from the Institutional Brokers Estimate (I/B/E/S) database and institutional investor ownership from the CDA/Spectrum Institutional Money Manager Holdings database. The number of analysts covering the firms and the percentage of institutional investor ownership are generally low, but they are significantly lower for fixed-price tender offers than for Dutch-auction tender offers, at 1.76 and 26.8% compared to 3.90 and 39.6%, respectively. This finding suggests that managers engaging in fixed-price tender offers have less access to analysts and institutional investors, which is consistent with the conjecture that managers are more likely to use fixed-price tender offers than Dutch-auction tender offers to signal their private information.

Finally, we report the CEO stock ownership of the repurchasing firms. We hand-collect data on CEO ownership from SEC proxy statements on the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. The EDGAR system starts in 1992. Accordingly, we limit analyses involving CEO ownership to the 106 repurchases that took place after 1992 and have CEO information on EDGAR. We find that CEO stock ownership is generally low, but it is significantly higher for fixed-price tender offers (an average of 13.3%) than for Dutch-auction tender offers (6.8%). The CEO's total stock and option ownership is also significantly higher for fixed-price tender offers (an average of 14.6%) compared to Dutch-auction tender offers (7.5%).

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<sup>10</sup>Managers not interested in signaling might prefer open market repurchases to tender offers. However, they face legal constraints if they want to repurchase large amounts of shares quickly. See Fried (2000) for a discussion of legal issues related to using open market repurchases for large buybacks in a short time period.

<sup>11</sup>Consistent with Lakonishok and Vermaelen (1990), we use annual size deciles instead of total market capitalization. The time-series distribution of Dutch-auction tender offers is tilted toward the most recent years, which biases toward finding that firms engaging in Dutch-auction tender offers have larger market capitalization than those engaging in fixed-price tender offers.

Table 1

## Descriptive statistics

*SIZE* is the NYSE/AMEX/NASDAQ size-decile assignment at the end of the year prior to the repurchase announcement. *BTM* is the ratio of book-to-market value of equity at the end of the fiscal quarter preceding the pre-repurchase earnings announcement. *LEVERAGE* is the ratio of total liabilities to market capitalization at the end of the fiscal quarter preceding the pre-repurchase earnings announcement. *SOUGHT* is the share of the firm that managers seek to repurchase. *COVERAGE* is the number of analysts who cover a firm in the last I/B/E/S forecast issued in the 92 days that precede the earnings announcement prior to the repurchase announcement (Analyst following is set to zero for firms that are not covered by I/B/E/S at any time over the 92 days that precede the earnings announcement). *IO* is the number of shares held by institutional investors at the end of the quarter immediately preceding the earnings announcement prior to the repurchase announcement deflated by the number of common shares outstanding (*IO* is set to zero if it is missing). *CEO\_OWNI* is the percentage of stock ownership of the CEO based on information provided in the last proxy statement released prior to the repurchase announcement. *CEO\_OWNI2* is the percentage of stock and option ownership of the CEO based on information provided in the last proxy statement released prior to the repurchase announcement. ++ and +++ indicate that the difference between “Fixed-price” and “Dutch-auction” is significant at the 5% and 1% levels, respectively, in a one-tail test. The tests of mean differences are based on the *t*-statistic, assuming unequal variances, and the tests for median differences are based on the Wilcoxon two-sample test.

Variable	Full sample			Fixed-price			Dutch-auction		
	<i>N</i>	Mean	Median	<i>N</i>	Mean	Median	<i>N</i>	Mean	Median
<i>SIZE</i>	177	6.684	7.000	80	5.850 <sup>+++</sup>	6.000 <sup>+++</sup>	97	7.371	8.000
<i>BTM</i>	177	0.851	0.723	80	0.997 <sup>+++</sup>	0.861 <sup>+++</sup>	97	0.730	0.670
<i>LEVERAGE</i>	177	0.882	0.629	80	0.926	0.650	97	0.846	0.604
<i>SOUGHT</i>	177	0.214	0.166	80	0.279 <sup>+++</sup>	0.206 <sup>+++</sup>	97	0.161	0.142
<i>COVERAGE</i>	177	3.000	0.000	80	1.755 <sup>+++</sup>	0.000 <sup>+++</sup>	97	3.897	1.000
<i>IO</i>	177	0.338	0.352	80	0.268 <sup>+++</sup>	0.215 <sup>+++</sup>	97	0.396	0.417
<i>CEO_OWNI</i>	106	0.086	0.031	30	0.133 <sup>++</sup>	0.095 <sup>+++</sup>	76	0.068	0.016
<i>CEO_OWNI2</i>	106	0.095	0.047	30	0.146 <sup>+++</sup>	0.102 <sup>+++</sup>	76	0.075	0.028

#### 4. Financial reporting behavior prior to repurchases

We analyze firms’ discretionary accruals in the quarter prior to the repurchase announcements using an abnormal accruals model.<sup>12</sup> We proxy for discretionary accruals by the residual from the modified version of the Jones (1991) model suggested by Louis, Robinson, and Sbaraglia (2007). Specifically, for each *calendar* quarter and two-digit SIC-code industry, we estimate the following model using all firms that have the necessary data on Compustat:

$$TA_i = \sum_{j=1}^4 \lambda_{j-1} Q_{j,i} + \lambda_4 \Delta SALE_i + \lambda_5 PPE_i + \lambda_6 LTA_i + \lambda_7 ASSET_i + \varepsilon_i, \quad (1)$$

where *TA* is total quarterly accruals; *Q* is a binary variable taking the value one for fiscal quarter *j* and zero otherwise;  $\Delta SALE$  is the quarterly change in sales; *PPE* is property, plant, and equipment at the end of the quarter; *LTA* is the lag of total accruals; *ASSET* is total assets at the beginning of the quarter; and  $\varepsilon$  is the residual.

<sup>12</sup>We use the terms “abnormal accruals,” “discretionary accruals,” and “unexpected accruals” interchangeably throughout the paper.

Total accruals are defined as the change in noncash current assets minus the change in current liabilities plus the change in debt in current liabilities minus depreciation. All the variables, including the indicator variables, are scaled by total assets at the beginning of the quarter. After deflating the model, *ASSET* is transformed into a column of ones, which allows us to estimate the model with the standard intercept. To mitigate the effect of outliers and errors in the data, for each calendar quarter we delete the top and bottom one-percentiles of the deflated *TA*,  $\Delta$ *SALE*, *PPE*, and *LTA* variables.

Following Kothari, Leone, and Wasley (2005), we adjust the unexpected accruals for performance. For each quarter and each industry (two-digit SIC code), we create five portfolios of at least four firms each by sorting the data into return on assets (ROA) quintiles measured four quarters prior to the quarter of the portfolio formation. The discretionary accruals for a given firm are the unexplained accruals for that firm minus the average unexplained accruals of the matched portfolio. In addition to controlling for performance, the portfolio-benchmarking approach controls for random effects arising from other events that may affect accruals or other managerial incentives to manage earnings, such as managerial compensation, insider trading, etc. That is, the difference between the average discretionary accrual of the control portfolio and the discretionary

Table 2

Average pre-repurchase announcement reported financial performance

*DA* is our proxy for discretionary accruals for the quarterly earnings announcement that immediately precedes the repurchase announcement. *NDA* is nondiscretionary accruals (total accruals minus discretionary accruals) for the quarterly earnings announcement that immediately precedes the repurchase announcement adjusted for the two-digit SIC code industry median. *NDE* is nondiscretionary earnings (net income minus discretionary accruals) for the quarterly earnings announcement that immediately precedes the repurchase announcement adjusted for the (two-digit SIC code) industry median. *NDCHE*, nondiscretionary change in earnings, is the seasonal change in net income for the quarterly earnings announcement that precedes the repurchase announcement minus *DA*. *ADJ\_ROA* is return on assets for the quarterly earnings announcement that immediately precedes the repurchase announcement minus the median return on assets of the two-digit SIC code industry. *ADJ\_CFO* is cash flow from operations for the quarterly earnings announcement that immediately precedes the repurchase announcement minus the median cash flow from operations of the two-digit SIC code industry. We report one-tailed *p*-values in brackets and two-tailed *p*-values in parentheses.

	Full sample ( <i>N</i> = 177)	Fixed-price ( <i>N</i> = 80)	Dutch-auction ( <i>N</i> = 97)
<i>DA</i> (%)	−0.667 [0.041]	0.146 (0.782)	−1.338 [0.007]
<i>NDA</i> (%)	0.267 (0.103)	0.249 (0.213)	0.283 (0.260)
<i>NDE</i> (%)	1.732 (0.000)	1.001 (0.172)	2.335 (0.000)
<i>NDCHE</i> (%)	0.927 (0.028)	0.044 (0.941)	1.655 (0.005)
<i>ADJ_ROA</i> (%)	0.671 (0.000)	0.600 (0.066)	0.729 (0.004)
<i>ADJ_CFO</i> (%)	1.423 [0.001]	0.673 (0.348)	2.041 [0.000]

accrual of the repurchase firm proxies for earnings management that relates solely to the repurchases.<sup>13</sup>

The industry-adjusted operating performance measures are reported in Table 2. On average, firms report significantly negative discretionary accruals in the quarter prior to repurchase tender offers. It is interesting to note that even though, on average, repurchasing firms report income-decreasing abnormal accruals, there is no evidence that they experience poor operating performance. In fact, the repurchasing firms have higher nondiscretionary earnings, return on assets, and cash flows from operations than their industry peers.

Next, we partition the sample on the type of tender offer. We find that the pre-repurchase negative average discretionary accruals are driven entirely by the Dutch-auction repurchases. The average firm engaging in Dutch-auction repurchases reports statistically significant discretionary accruals of about  $-1.34\%$  of total assets, whereas the average firm engaging in fixed-price repurchases reports insignificantly positive discretionary accruals.<sup>14</sup> Firms engaging in Dutch-auction repurchases also tend to have more cash flows from operations than firms engaging in fixed-price repurchases, which suggests that firms are more likely to undertake Dutch-auction tender offers when they have abundant operating cash flows.

## 5. Stock performance before and around repurchase tender offer announcements

We estimate the repurchasing firms' stock performance before and around the repurchase announcements. We use market-adjusted returns to proxy for the market performance in the months prior to and around the repurchase announcement. We measure the pre-repurchase market performance from day  $-130$  to day  $-68$  (approximately three months) and from day  $-67$  to day  $-5$  (approximately three months) relative to the repurchase announcement date (day 0). We measure the market reaction over both the seven days centered on the announcement date and the three days starting on the repurchase announcement date.

The results are reported in Table 3. Over the window  $[-130, -68]$ , repurchasing firms experience an average abnormal return of about  $-3.5\%$ , which is consistent with the conjecture that firms time their repurchases to coincide with temporary declines in their stock prices (Brav, Graham, Harvey, and Michaely, 2005). The abnormal return does not seem to vary much with the type of repurchase. The repurchasing firms experience an average abnormal return of about  $-2.6\%$  over the window  $[-67, -5]$ . The negative abnormal returns seem to be somewhat driven by the Dutch-auction repurchases (a statistically significant average of about  $-3.6\%$  versus a statistically insignificant average of about  $-1.4\%$  for fixed-price tender offers). These results are somewhat consistent with our conjecture that managers engaging in fixed-price tender offers take actions prior to the repurchases to mitigate their stock undervaluation, whereas those engaging in Dutch-

<sup>13</sup>See Kothari, Leone, and Wasley (2005) for a more detailed explanation of the implications of using a benchmark approach.

<sup>14</sup>Note, we do not assume that our measure of discretionary accruals captures actual earnings management. We believe that managers have so much discretion in reporting their firms' financial performance that it is improbable for an outsider to know exactly by how much they have manipulated their reports. Our measure of discretionary accruals serves only as a proxy for the extent to which managers try to deflate their stock prices.

Table 3

Average stock performance around tender offer repurchases

$CAR [-130, -68]$  is the percentage market-adjusted return from day 130 to day 68 prior to the repurchase announcement.  $CAR [-67, -5]$  is the percentage market-adjusted return from day 67 to day 5 prior to the repurchase announcement.  $CAR [-3, +3]$  is the percentage market-adjusted return over the seven days centered on the repurchase announcement date.  $CAR [0, +2]$  is the percentage market-adjusted return over the three days starting on the repurchase announcement date. One-tailed  $p$ -values are reported in brackets.

	Full sample ( $N = 177$ )	Fixed-price ( $N = 80$ )	Dutch-auction ( $N = 97$ )
$CAR [-130, -68]$	-3.520 [0.002]	-3.749 [0.025]	-3.331 [0.021]
$CAR [-67, -5]$	-2.622 [0.029]	-1.423 [0.261]	-3.611 [0.019]
$CAR [-3, +3]$	13.494 [0.001]	16.609 [0.000]	10.926 [0.000]
$CAR [0, +2]$	12.207 [0.000]	14.959 [0.000]	9.937 [0.000]

auction tender offers try to temporarily keep their shares undervalued so that they can repurchase them cheaper.

We find strong market reactions to the repurchase announcements. The average abnormal return is about 13.5% for the full sample, 16.6% for fixed-price tender offers, and 10.9% for Dutch-auction tender offers over the window  $[-3, +3]$ . We use the window  $[-3, +3]$  following [Comment and Jarrell \(1991\)](#); however, we note that almost all the abnormal returns occur over the window  $[0, +2]$ . The average market-adjusted return is about 12.2% for the full sample, 15.0% for fixed-price tender offers, and 9.9% for Dutch-auction tender offers over the window  $[0, +2]$ . Consistent with [Comment and Jarrell \(1991\)](#), firms engaging in fixed-price tender offers outperform those engaging in Dutch-auction tender offers around the repurchase announcement.

## 6. The association between pre-repurchase reporting behavior and repurchase announcement abnormal returns

In this section, we examine the association between pre-repurchase discretionary accruals and the market reaction to the repurchase announcement.

### 6.1. Regression model

We model the market reaction to the repurchase announcement as a function of the type of repurchase tender offer (Dutch-auction versus fixed-price), discretionary accruals, and the interaction between the type of repurchase and discretionary accruals. We also control for the percentage of the firm that managers seek to repurchase and leverage. More specifically, we use the following model:

$$CAR_i = \alpha_0 + \alpha_1 DUTCH_i + \alpha_2 DA_i + \alpha_3 DA * DUTCH_i + \alpha_4 LSOUGHT_i + \alpha_5 LLEV_i + \varepsilon_i, \quad (2)$$

where *CAR* is the market-adjusted return over the three days starting on the repurchase announcement date; *DUTCH* is a binary variable taking the value one for Dutch-auction tender offers and zero for fixed-price tender offers; *DA* is our proxy for discretionary accruals; *LSOUGHT* is the log of the percentage of the firm that managers seek to repurchase; and *LLEV* is the log of the ratio of total liabilities to market capitalization at the end of the fiscal quarter preceding the pre-repurchase earnings announcement.

We argue that, because earnings inflation increases the repurchasing cost by increasing the stock price, managers will inflate earnings prior to repurchase tender offers only when they are very optimistic about their firms' prospects and they intend to signal their optimism to the market. Under the signaling hypothesis, we expect the pre-repurchase discretionary accruals to be positively associated with the repurchase announcement abnormal return. However, managers also have incentives to deflate their reported earnings prior to a repurchase. The announcement of a repurchase could alert investors to the managers' incentives to deflate their reported earnings, which then could induce a negative association between the pre-repurchase discretionary accruals and the repurchase announcement abnormal returns.

We include *LSOUGHT* in the regression model for two reasons. First, the strength of the signal, and hence the market reaction to the repurchase announcement, is likely to increase in the proportion of the company that managers seek to repurchase. Second, a repurchase reduces the supply of shares, thereby inducing upward price pressure from an increase in relative demand. Because the number of shares sought in fixed-price tender offers is significantly higher than the number of shares sought in Dutch-auction tender offers, the difference in the abnormal returns around the repurchase tender offers between the two types of repurchases could be due to the effects of the number of shares sought instead of the information conveyed by the type of repurchase per se. We control for leverage because prior studies suggest that low leverage firms tend to repurchase shares to move their leverage toward an optimum level (Dittmar, 2000) and high leverage firms tend to inflate earnings to avoid debt covenant violations (DeFond and Jiambalvo, 1994; Klein, 2002).

## 6.2. Main regression results

The main results are reported in Table 4. We find a significantly positive correlation between pre-repurchase discretionary accruals and the market reaction to the repurchase announcement for fixed-price tender offers. The coefficient on *DA* for fixed-price repurchases,  $\alpha_2$ , is significantly positive, suggesting that discretionary accruals are at least partially effective in reinforcing the repurchase signal for firms engaging in fixed-price tender offers. Consistent with the conjecture that the market is likely to be alerted to pre-repurchase earnings deflation by firms engaging in Dutch-auction tender offers, the incremental effect of Dutch-auction repurchases,  $\alpha_3$ , is significantly negative. We find no evidence that the coefficient on *DA* for Dutch-auction repurchases ( $\alpha_2 + \alpha_3$ ) is statistically significant. As expected, the coefficient on *LSOUGHT* is significantly positive. The coefficient on *LLEV* is also positive. One explanation for this result is that a repurchase by a weakly levered firm sends a less credible signal about firm value because it is more likely than a repurchase by a highly levered firm to be undertaken in an effort to increase leverage than to signal undervaluation.

We conjecture that the strength of the signals will decrease in analyst coverage and institutional investor ownership. For a firm that has high analyst coverage and

Table 4

The association between pre-repurchase discretionary accruals and stock performance around repurchase tender offer announcements

*CAR* is the percentage market-adjusted return over the three days starting on the repurchase announcement date. *DUTCH* is a binary variable taking the value one for Dutch-auction tender offers and zero for fixed-price tender offers. *DA* is our proxy for discretionary accruals for the quarterly earnings announcement that immediately precedes the repurchase announcement. *LSOUGHT* is the log of the percentage of the firm that managers seek to repurchase. *LLEV* is the log of the ratio of total liabilities to market capitalization at the end of the fiscal quarter preceding the pre-repurchase earnings announcement. Communication channel availability (*CCA*) is deemed high if institutional investor ownership is above the sample median and at least one analyst covers the firm in the last I/B/E/S forecast issued in the 92 days that precede the earnings announcement prior to the repurchase announcement. It is deemed low if institutional investor ownership is below the sample median and no analyst forecast is provided on I/B/E/S over the 92 days that precede the earnings announcement prior to the repurchase announcement. We label the repurchases that do not fall in either the low or the high *CCA* group “other repurchase tender offers.” *T*-values are reported in parentheses. \*/\*\*/\*\*\* (+ /++ /+++ ) indicates significance at the 10%/5%/1% level using a two-tailed (one-tailed) test.

$$CAR_i = \alpha_0 + \alpha_1 DUTCH_i + \alpha_2 DA_i + \alpha_3 DA * DUTCH_i + \alpha_4 LSOUGHT_i + \alpha_5 LLEV_i + \varepsilon_i.$$

Variable	Full sample of repurchase tender offers ( <i>N</i> = 177)	Low communication channel availability ( <i>N</i> = 58)	High communication channel availability ( <i>N</i> = 58)	Other repurchase tender offers ( <i>N</i> = 61)
<i>Intercept</i>	23.293*** (9.93)	25.679*** (5.18)	14.705*** (3.97)	24.503*** (6.93)
<i>DUTCH</i>	-3.433++ (-1.92)	-5.260+ (-1.39)	1.878 (0.83)	-3.849 (-1.24)
<i>DA</i>	0.727+++ (2.76)	1.370++ (2.30)	0.228 (0.40)	0.632++ (1.77)
<i>DA*DUTCH</i>	-0.935+++ (-2.77)	-1.397++ (-1.78)	-0.272 (-0.45)	-1.321+++ (-2.46)
<i>LSOUGHT</i>	4.393+++ (3.35)	4.035+ (1.34)	2.804+ (1.60)	4.936+++ (2.48)
<i>LLEV</i>	2.991+++ (3.37)	2.484+ (1.48)	2.546++ (2.35)	4.621+++ (2.46)
<i>Adj.-R<sup>2</sup></i>	0.187	0.152	0.078	0.226

institutional investor ownership, a repurchase and income-increasing discretionary accruals are more likely to be related to other incentives than to signaling because managers can use these alternative channels to communicate their beliefs and in turn have less of a need to use indirect communication devices. While managers are reluctant to express their optimism through press releases and conference calls, they are presumably more willing to provide indirect hints to analysts and institutional investors.<sup>15</sup> Thus, firms can avoid the costs associated with repurchases by communicating directly to analysts and institutions. The likelihood of mispricing, and hence managerial incentives to signal, is likely to decrease in the levels of analyst coverage and institutional investor ownership.

<sup>15</sup>Lees (1981) reports that interviews with managers are the primary sources of analysts' information. The recent adoption of Regulation FD, however, certainly makes it more difficult for managers to communicate with analysts.

All else equal, a firm that has no analyst coverage is more likely to be mispriced because no analyst is disseminating information about the firm.<sup>16</sup> Similarly, because institutional investors are presumably sophisticated (Wermers, 1999, 2000; Nofsinger and Sias, 1999), they are more likely to detect and arbitrage mispricing.

To test the conjecture that the signals are stronger when managers have fewer alternative channels to communicate their private beliefs, we group the firms by their *Communication Channel Availability (CCA)* and assess whether the information content of fixed-price repurchases and discretionary accruals increases in *CCA*. We deem *CCA* to be high if institutional investor ownership is above the sample median and at least one analyst covers the firm in the last I/B/E/S forecast issued in the 92 days that precede the earnings announcement prior to the repurchase announcement; *CCA* is deemed low if institutional investor ownership is below the sample median and no analyst forecast is provided on I/B/E/S over the 92 days that precede the earnings announcement prior to the repurchase announcement. We label the repurchases that do not fall in either the low or the high *CCA* group “other repurchase tender offers.”

Consistent with our expectations, we find that our results are driven by firms with low communication channel availability. For fixed-price tender offers, the conditional mean difference between the abnormal returns around the repurchase announcements for the low and high communication channel availability firms (that is, the difference between the regression intercepts) is 10.97%. Untabulated results show an unconditional mean difference of 9.62%. The difference between the market reactions to Dutch-auction and fixed-price tender offer announcements is also driven by the low communication channel availability firms. The difference between the abnormal returns for Dutch-auction and fixed-price tender offers,  $\alpha_1$ , is negative (−5.26%) for the low communication channel availability firms, whereas it is positive (1.88%) for the high communication channel availability firms. The coefficient on the discretionary accrual variable (*DA*),  $\alpha_2$ , is 1.37 for the low communication channel availability firms, whereas it is only 0.23 for the high communication channel availability firms. Similarly, the coefficient on the interaction between *DUTCH* and *DA*,  $\alpha_3$ , is −1.40 for the low communication channel availability firms, whereas it is only −0.27 for the high communication channel availability firms.

### 6.3. Comparing the earlier with the later years of the sample

We obtain the number of analysts following the firms from I/B/E/S. Because I/B/E/S has covered progressively more firms over time and because we set missing analyst coverage to zero, the earlier years of the sample are likely to be overrepresented among those firms with no analyst coverage. To ensure that the results are not driven by the earlier years of the sample, we replicate our analysis over two subperiods: 1981–1996 and 1997–2001.<sup>17</sup> The results are reported in Table 5. Surprisingly, we find that the results are stronger for the later years of the sample. For instance, for the low communication channel availability

<sup>16</sup>Some might argue that analysts can, and do, mislead investors by “hying” particular stocks; however, in general, coverage by analysts brings awareness of the firm to the market, which greatly subsumes sporadic incidences of analyst hying. Furthermore, while there are alleged cases in which analysts have tried to hype particular stock prices, we do not know of any allegation of an analyst trying to depress a firm’s stock price. Thus, given that in our setting the mispricing is related to undervaluation instead of overvaluation, the possibility of analysts misleading investors is not a concern.

<sup>17</sup>We do not split the time period equally because most of the sample is concentrated in the later years.

Table 5

The association between pre-repurchase discretionary accruals and stock performance around repurchase announcements: comparing the earlier with the later years of the sample

*CAR* is the percentage market-adjusted return over the three days starting on the repurchase announcement date. *DUTCH* is a binary variable taking the value one for Dutch-auction tender offers and zero for fixed-price tender offers. *DA* is our proxy for discretionary accruals for the quarterly earnings announcement that immediately precedes the repurchase announcement. *LSOUGHT* is the log of the percentage of the firm that managers seek to repurchase. *LLEV* is the log of the ratio of total liabilities to market capitalization at the end of the fiscal quarter preceding the pre-repurchase earnings announcement. Communication channel availability (*CCA*) is deemed high if institutional investor ownership is above the sample median and at least one analyst covers the firm in the last I/B/E/S forecast issued in the 92 days that precede the earnings announcement prior to the repurchase announcement. It is deemed low if institutional investor ownership is below the sample median and no analyst forecast is provided on I/B/E/S over the 92 days that precede the earnings announcement prior to the repurchase announcement. We label the repurchases that do not fall in either the low or the high *CCA* group “other repurchase tender offers.” *T*-values are reported in parentheses. \*/\*\*/\*\*\* (+/++/+++ ) indicates significance at the 10%/5%/1% level using a two-tailed (one-tailed) test.

$$CAR_i = \alpha_0 + \alpha_1 DUTCH_i + \alpha_2 DA_i + \alpha_3 DA * DUTCH_i + \alpha_4 LSOUGHT_i + \alpha_5 LLEV_i + \varepsilon_i.$$

Variable	Period: 1981–1996				Period: 1997–2001			
	Full sample of repurchase tender offers	Low communication channel availability	High communication channel availability	Other repurchase tender offers	Full sample of repurchase tender offers	Low communication channel availability	High communication channel availability	Other repurchase tender offers
	( <i>N</i> = 98)	( <i>N</i> = 29)	( <i>N</i> = 31)	( <i>N</i> = 38)	( <i>N</i> = 79)	( <i>N</i> = 29)	( <i>N</i> = 27)	( <i>N</i> = 23)
<i>Intercept</i>	16.306 (6.66)	15.546** (2.50)	12.306*** (2.75)	18.919*** (6.35)	34.625*** (8.67)	33.307*** (4.52)	23.712*** (3.11)	45.864*** (6.47)
<i>DUTCH</i>	-1.630 (-0.87)	-0.554 (-0.10)	3.276 (1.08)	-1.489 (-0.53)	-7.853+++ (-2.48)	-13.678++ (-2.12)	-1.639 (-0.38)	-16.412+++ (-2.75)
<i>DA</i>	0.374 (1.29)	0.721 (1.07)	0.371 (0.47)	0.011 (0.03)	1.219+++ (2.93)	2.835+++ (2.75)	-1.011 (-0.89)	1.594+++ (2.97)
<i>DA*DUTCH</i>	-0.529+ (-1.41)	-0.811 (-0.97)	-0.356 (-0.39)	-0.321 (-0.55)	-1.562+++ (-2.92)	-2.988+ (-1.64)	0.995 (0.86)	-2.320+++ (-3.06)
<i>LSOUGHT</i>	2.559++ (1.87)	0.781 (0.22)	3.395+ (1.45)	4.396+++ (2.50)	6.837+++ (3.06)	3.109 (0.57)	4.472+ (1.47)	7.258++ (2.17)
<i>LLEV</i>	1.436+ (1.59)	0.865 (0.45)	0.638 (0.42)	2.296+ (1.53)	5.168+++ (3.30)	3.995+ (1.40)	3.746++ (2.35)	9.076++ (2.23)
<i>Adj. R<sup>2</sup></i>	0.067	-0.133	-0.014	0.164	0.357	0.390	0.103	0.536

firms, the coefficient on the discretionary accruals variable is about 0.72 in the earlier period and about 2.84 in the latter period. This result suggests that the low communication channel availability effect is not driven by misclassification due to low I/B/E/S coverage in the earlier years of the sample. The conditional mean difference between the market reaction to the fixed-price repurchase announcements and the market reaction to Dutch-auction repurchase announcements is quite remarkable. For the low communication channel availability firms, the average reaction to the fixed-price tender offers is about 0.55% higher than the average reaction to the Dutch-auction tender offers in the earlier period and about 13.68% higher over the latter period.

A comparison of the intercepts across the early and late periods shows that the conditional mean abnormal returns are much higher in the latter period across all levels of communication channel availability. Untabulated results also show that the average abnormal returns around the announcements of fixed-price tender offers is 11.49% in the earlier period and 22.16% in the latter period.<sup>18</sup> For Dutch-auction tender offers, the average abnormal returns are 9.54% in the earlier period and 10.29% in the latter period. These results suggest that fixed-price tender offers are more associated with undervaluation in recent years. A potential alternative explanation is that the market has become more efficient in processing the information content of repurchase announcements. If the information content of fixed-price repurchases remains constant and the market has processed the information content of the repurchase announcement more efficiently over time, then there would be a reduction in the long-term abnormal returns in the latter years. However, Peyer and Vermaelen (2006) find that long-term abnormal returns after repurchases still persist in recent years.<sup>19</sup> Nonetheless, we cannot rule out the possibility that the market has learned over time.<sup>20</sup>

#### 6.4. *The effect of CEO ownership*

We posit that managers engaging in repurchases for nonsignaling reasons have incentives to deflate their stock price prior to the repurchases in order to reduce the repurchase price. Consistent with this conjecture, we find that, on average, managers report significant income-decreasing accruals prior to Dutch-auction repurchases. The incentive to reduce the repurchase price should increase in the managers' ownership in the firm. Managers who have no ownership typically receive no direct benefits from reducing the repurchase price. To test this conjecture, we analyze whether firms report more income-decreasing accruals prior to Dutch-auction repurchases when their CEOs have large stock and option holdings.

The results are reported in Panel A of Table 6. Consistent with our conjecture, we find evidence of income-decreasing abnormal accruals for the high (above-median) CEO ownership firms and not for the low CEO ownership firms for the full sample. The results are mainly driven by the Dutch-auction repurchases. For the fixed-price tender offers,

<sup>18</sup>To ensure that the large average market reaction in the latter years is not driven by a few outliers, we also compute the median abnormal return. We find median abnormal returns of 16.37% for the latter years and 9.50 for the earlier years.

<sup>19</sup>An analysis of the long-term abnormal returns for our sample firms shows no clear evidence that the post-repurchase long-term abnormal returns are lower in the latter years. We discuss our long-term abnormal return measures in Section 7.

<sup>20</sup>We provide more discussion on this topic in Section 7.2, when we examine the long-term abnormal returns.

Table 6

Controlling for the percentage of CEO ownership

We hand-collect data on CEO ownership from SEC proxy statements on EDGAR. The EDGAR system starts in 1992. Therefore, we limit analyses involving CEO ownership to the 106 repurchases that took place after 1992 and have CEO information on EDGAR. CEO ownership is deemed low (high) if it is below (above) the sample median. We delete all observations that do not have ownership data on EDGAR. “Stock ownership” includes ownership of both restricted and unrestricted stock. “Total ownership” includes both stock and stock options. They are expressed as percentages of common shares outstanding.

*Panel A: Average percentage abnormal accruals for the earnings announcement immediately prior to the repurchase announcement*

Ownership	Full sample		Fixed-price		Dutch-auction	
	Low ( <i>N</i> = 53)	High ( <i>N</i> = 53)	Low ( <i>N</i> = 15)	High ( <i>N</i> = 15)	Low ( <i>N</i> = 38)	High ( <i>N</i> = 38)
Stock ownership	0.047 [0.535]	-1.051 [0.075]	1.090 (0.314)	0.790 (0.555)	-0.365 [0.276]	-1.777 [0.021]
Total ownership	-0.054 [0.460]	-0.950 [0.097]	1.090 (0.314)	0.790 (0.555)	-0.506 [0.203]	-1.636 [0.031]

*Panel B: Average percentage abnormal returns around tender offer repurchases*

Ownership	Full sample		Fixed-price		Dutch-auction	
	Low ( <i>N</i> = 53)	High ( <i>N</i> = 53)	Low ( <i>N</i> = 15)	High ( <i>N</i> = 15)	Low ( <i>N</i> = 38)	High ( <i>N</i> = 38)
Stock ownership	10.511 (0.000)	14.858 (0.000)	15.894 (0.000)	23.243 (0.002)	8.387 (0.000)	11.547 (0.000)
Total ownership	10.787 (0.000)	14.582 (0.000)	15.894 (0.000)	23.243 (0.002)	8.771 (0.000)	11.163 (0.000)

*Panel C: The association between pre-repurchase discretionary accruals and stock performance around repurchase announcements*

$$CAR_i = \alpha_0 + \alpha_1 DUTCH_i + \alpha_2 DA_i + \alpha_3 DA * DUTCH_i + \alpha_4 LSUGHT_i + \alpha_5 LLEV_i + \varepsilon_i.$$

Variable	Stock ownership		Total ownership	
	Low ( <i>N</i> = 53)	High ( <i>N</i> = 53)	Low ( <i>N</i> = 53)	High ( <i>N</i> = 53)
<i>Intercept</i>	20.960*** (5.45)	35.946*** (6.78)	20.763*** (5.30)	35.859*** (6.86)
<i>DUTCH</i>	-7.713+++ (-2.72)	-5.489+ (-1.31)	-7.751+++ (-2.65)	-5.603+ (-1.36)
<i>DA</i>	-0.819 (-1.47)	1.960+++ (2.83)	-0.818 (-1.44)	1.984+++ (2.90)
<i>DA*DUTCH</i>	0.652 (0.97)	-1.968+++ (-2.49)	0.582 (0.85)	-1.977+++ (-2.54)
<i>LSUGHT</i>	1.125 (0.52)	7.001+++π (2.64)	1.009 (0.47)	6.791+++ (2.59)
<i>LLEV</i>	4.462+++ (2.99)	7.112+++ (3.67)	4.413+++ (3.08)	7.530+++ (3.72)
<i>Adj.-R<sup>2</sup></i>	0.238	0.413	0.231	0.425

there is no evidence of income-decreasing abnormal accruals whether CEO ownership is high or low. The results hold whether CEO ownership is limited to stock ownership or includes stock options.<sup>21</sup>

In Panel B of Table 6, we report the market reaction to the repurchase announcements conditional on CEO ownership. We observe that the abnormal returns around fixed-price repurchase announcements are much higher for high CEO ownership firms. In Panel C, we estimate the association between pre-repurchase abnormal accruals and the market reaction. The results show that the positive association between pre-repurchase abnormal accruals and the market reaction is driven by the high CEO ownership firms. Overall, the results suggest that the information content of the accruals and repurchase signals increases with CEO ownership.

### 6.5. Controlling for the potential effects of insider trading

We benchmark our discretionary accruals measure to the average discretionary accruals of an industry/performance-matched portfolio. In addition to performance, the portfolio-benchmarking approach controls for random effects arising from other incentives to manage earnings and events that may affect accruals (Kothari, Leone, and Wasley, 2005). However, some effects may be systematically associated with repurchase tender offers. Prior studies suggest that managers tend to inflate (deflate) earnings before they sell (buy) (Huddart and Louis, 2007), and patterns of insider trading are likely different for repurchasing firms than for the average firm (Lee, Mikkelsen, and Partch, 1992; Louis and White, 2007).

To ensure that our results are not driven by insider trading, we replicate the results after deleting all firms that have insider trading over the three months (92 days) starting on the day of the earnings announcement. We obtain insider trading data from the Thomson Insider Filing Feed database. Because insiders who are not officers or directors are unlikely to be involved in or privy to the earnings management activities of the firm, we exclude trades by affiliated persons, affiliates of investment advisors, beneficial owners of the company's securities, beneficial owners as custodians, beneficial owners as trustees, investment advisors, shareholders, indirect shareholders, or chairmen emeritus who are not also either an officer or a director. Including trades by these insiders does not qualitatively change the results, however.

The results are reported in Table 7. We identify 113 repurchase tender offers (59 fixed-price offers and 54 Dutch-auction offers) that were not followed by insider trading.<sup>22</sup> Results reported in Panel A show that the average abnormal accruals are  $-1.25\%$ ,  $0.02\%$ , and  $-2.62\%$  for the full sample, the fixed-price repurchase subsample, and the Dutch-auction repurchase subsample, respectively. Results reported in Panel B show that the average abnormal returns around the repurchase announcements are  $13.53\%$ ,  $16.53\%$ , and  $10.25\%$  for the full sample, the fixed-price repurchase subsample, and the Dutch-auction repurchase subsample. Results reported in Panel C show that the market reaction for the fixed-price repurchases is positively associated with the pre-repurchase abnormal

<sup>21</sup>Note that, for fixed-price tender offers, sorting by "total ownership" results in the same groupings as sorting by "stock ownership," even though the ownership amounts differ. This results in similar findings for both stock ownership and total ownership for fixed-price firms in Panels A and B.

<sup>22</sup>Among the additional 64 repurchases, 19 are followed by net insider purchases (6 fixed-price tender offers and 13 Dutch-auction tender offers) and 45 are followed by net insider sales (15 fixed-price tender offers and 30 Dutch-auction tender offers).

Table 7

Controlling for the potential effects of insider trading

This table reports results for the 113 repurchase tender offers that are not followed by any insider trading over the 92 days starting on the day of the earnings announcement that immediately precedes the repurchase announcement. *CAR* is the percentage market-adjusted return over the three days starting on the repurchase announcement date. *DUTCH* is a binary variable taking the value one for Dutch-auction tender offers and zero for fixed-price tender offers. *DA* is our proxy for discretionary accruals for the quarterly earnings announcement that immediately precedes the repurchase announcement. *LSOUGHT* is the log of the percentage of the firm that managers seek to repurchase ranked into deciles within the fixed-price and Dutch-auction subsamples. *LLEV* is the log of the ratio of total liabilities to market capitalization at the end of the fiscal quarter preceding the pre-repurchase earnings announcement.

*Panel A: Average percentage abnormal accruals for the earnings announcement immediately prior to the repurchase announcement*

	Full sample ( <i>N</i> = 113)	Fixed-price ( <i>N</i> = 59)	Dutch-auction ( <i>N</i> = 54)
<i>DA</i>	−1.245 [0.010]	0.016 (0.980)	−2.623 [0.001]

*Panel B: Average percentage abnormal returns around tender offer repurchases*

	Full sample ( <i>N</i> = 113)	Fixed-price ( <i>N</i> = 59)	Dutch-auction ( <i>N</i> = 54)
<i>CAR</i>	13.532 [0.000]	16.533 [0.000]	10.252 [0.000]

*Panel C: The association between pre-repurchase discretionary accruals and stock performance around repurchase announcements (*N* = 113)*

$CAR_i = \alpha_0 + \alpha_1 DUTCH_i + \alpha_2 DA_i + \alpha_3 DA * DUTCH_i + \alpha_4 LSOUGHT_i + \alpha_5 LLEV_i + \varepsilon_i$ .

	<i>Intercept</i>	<i>DUTCH</i>	<i>DA</i>	<i>DA*DUTCH</i>	<i>LSOUGHT</i>	<i>LLEV</i>	<i>Adj. R</i> <sup>2</sup>
Coefficient estimate	28.349***	−3.960 <sup>+</sup>	1.047 <sup>+++</sup>	−1.207 <sup>+++</sup>	6.631 <sup>+++</sup>	4.033 <sup>+++</sup>	0.251
( <i>t</i> -value)	(9.05)	(−1.59)	(3.28)	(−2.93)	(3.67)	(3.33)	

accruals ( $t$ -statistic = 3.28). Overall, our results hold and even appear stronger after removing potential contamination due to insider trading.

## 7. Long-term stock performance after the repurchase announcement

Prior studies find that firms experience significant positive abnormal returns over the years after repurchase tender offer announcements, which suggests that the market does not fully impound the information content of repurchase tender offer announcements in a timely manner. In this section, we analyze the extent to which discretionary accruals signals are fully priced by repurchase announcements.

### 7.1. Measuring long-term abnormal returns

We measure the post-repurchase market performance over the one and three years after the stock repurchase month using Fama's (1998) calendar-time approach. We begin by computing monthly abnormal returns of individual firms using the benchmark return adjustment procedure of Daniel, Grinblatt, Titman, and Wermers (1997).<sup>23</sup> This procedure controls for size, book-to-market, and return momentum.<sup>24</sup> Controlling for momentum is very important in this setting given that returns are likely to be low prior to repurchases. Then, for each month, we group the firms that had repurchases within the last one (three) year(s) into one portfolio and calculate the average abnormal returns of the monthly portfolios. This yields a time series of monthly portfolio average abnormal returns. We use the mean and standard deviation of the monthly portfolio abnormal returns to make inferences. In addition to combining Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure with Fama's (1998) method, we also use Carhart's (1997) four-factor model.<sup>25</sup> Note that both approaches are consistent with Fama's (1998)

<sup>23</sup>Alternatively, we could use the matched-firm procedure suggested by Barber and Lyon (1997). The matched-firm approach mitigates the effect of positive skewness on long-run abnormal returns; however, as Lyon, Barber, and Tsai (1999) point out, it may also lead to noisy point estimates. We use a matched-portfolio approach instead of a matched-firm approach because our abnormal returns are on a monthly basis. Skewness bias is most severe for return measurement periods of one year or more (see Ikenberry, Shockley, and Womack (1999) for a discussion on the effect of skewness on benchmark portfolio returns). Accordingly, Fama (1998, p. 295) suggests that the monthly abnormal returns "can be estimated in any reasonable way, for example, with a matching firm or matching portfolio approach, or with a formal asset pricing model." The matched-portfolio approach also enables us to match on multiple dimensions without losing any observations, which is important given our small sample size.

<sup>24</sup>First, we assign each stock that has book value of equity on Compustat and price and shares outstanding on CRSP to a size quintile (using NYSE size quintile breakpoints). Within each size quintile, we rank the stocks based on their industry-adjusted book-to-market ratios and assign them to book-to-market quintiles, yielding a total of 25 fractiles sorted on size and book-to-market. We then sort the stocks into quintiles within each of the 25 size and book-to-market fractiles based on the prior 12-month stock return, resulting in a total of 125 fractiles. Next, we compute a monthly value-weighted buy-and-hold return for each of the 125 fractile portfolios. The benchmark portfolios are reconstructed annually at the end of June. The monthly abnormal return for each stock is the difference between the stock's monthly raw return and its monthly benchmark portfolio return.

<sup>25</sup>For each month, we group the firms that had repurchases within the last one (three) year(s) into one portfolio and calculate the average excess returns of the monthly portfolios over the risk-free rate. This yields a time series of monthly portfolio average excess returns. We then run a time-series regression of the monthly portfolio average excess returns on the time series of the four factors, that is, the market excess return over the risk-free rate factor, the small-minus-big capitalization factor, the high-minus-low book-to-market factor, and the momentum factor. The mean monthly abnormal return is represented by the regression intercept.

calendar-time approach. We also report buy-and-hold abnormal returns using Daniel, Grinblatt, Titman, and Wermers's (1997) procedure.<sup>26</sup>

## 7.2. Average long-term abnormal returns

The average long-term abnormal returns are reported in Table 8. The average monthly abnormal returns over the one (three) year(s) after the repurchase announcement month are about 0.37% (0.76%) for the full sample, 0.82% (1.01%) for fixed-price tender offers, and 0.20% (0.63%) for Dutch-auction tender offers using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio approach, and 0.40% (0.76%) for the full sample, 0.98% (1.02%) for fixed-price tender offers, and 0.30% (0.84%) for Dutch-auction tender offers using Carhart's (1997) four-factor model.<sup>27</sup> The average one-year (three-year) buy-and-hold returns after the repurchase announcement month are about 4.94% (27.65%) for the full sample, 6.81% (31.27%) for fixed-price tender offers, and 3.40% (24.67%) for Dutch-auction tender offers. The three-year abnormal returns are all statistically significant. Consistent with prior studies, these results indicate that firms outperform in the years after repurchase tender offers and that the performance tends to be stronger after fixed-price repurchases. As we mention earlier, untabulated results provide no clear evidence that the post-repurchase long-term abnormal returns are lower in the latter years of the sample.

At first glance, one might infer from the long-term stock performance after the fixed-price repurchase announcements that the tools the managers use to signal the undervaluation are not effective or that the market has not learned over time. However, because managers are more likely to signal when their firms are the most undervalued, long-term abnormal returns do not indicate that the signals were ineffective. The effectiveness of the signals should be evaluated by how the market reacts to the repurchase announcement (relative to the total undervaluation) and the association between the market reaction and the other actions that the managers take to reinforce the repurchase signal. A failure to observe a reduction in long-term abnormal returns may be due to an increase in the magnitude of the undervaluation in the more recent years. That is, the long-term abnormal returns could stay constant while representing a smaller portion of the

<sup>26</sup>We winsorize the top and bottom one-percentiles of the abnormal returns. Winsorization is likely to mitigate skewness biases in long-term buy-and-hold returns (Cowan and Sergeant, 2001).

<sup>27</sup>Note that when using Fama's (1998) method, the mean abnormal return for the full sample does not have to be the average of the mean abnormal returns for the subsamples. In fact, the mean abnormal return for the full sample can be lower than the mean abnormal returns of both subsamples, as it is here. This result occurs when one subsample has more monthly observations and the average abnormal return for these monthly observations is lower than the average abnormal return for the rest of the sample. Consider a simple case with three dates. On date 1, there is a fixed-price tender offer with a return of -15% (there is no return for Dutch-auction tender offers on that date). On date 2, there is a fixed-price tender offer with a return of 20% and a Dutch-auction tender offer with a return of 13%. On date 3, there is a fixed-price tender offer with a return of 25% and a Dutch-auction tender offer with a return of 11%. In this example, the time series of the average returns are -15% (date 1), 20% (date 2), and 25% (date 3) for the fixed-price tender offers, 13% (date 2) and 11% (date 3) for the Dutch-auction tender offers, and -15% (date 1), 16.5% (date 2), and 18% (date 3) for the full sample. Note that there is no return for the Dutch-auction tender offer on date 1, which explains why the mean of the time-series averages for the full sample will not be equal to the mean of the two subsamples. The means of the time-series averages are 10%, 12%, and 6.5% for the fixed-price tender offers, the Dutch-auction tender offers, and the full sample, respectively. The mean for the full sample is lower than the means for both the fixed-price tender offers and the Dutch-auction tender offers.

Table 8

Average long-term abnormal returns after tender offer repurchases

*MONTHLY1Y\_Daniel* is the percentage monthly abnormal return over the year subsequent to the repurchase announcement month using Fama's (1998) procedure. The returns are adjusted using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure. *MONTHLY1Y\_Carhart* is the percentage monthly abnormal return over the year subsequent to the repurchase announcement month using Carhart's (1997) four-factor model. *BUY&HOLD1Y\_Daniel* is the buy-and-hold abnormal return over the year subsequent to the repurchase announcement month using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure. *MONTHLY3Y\_Daniel* is the percentage monthly abnormal return over the three years subsequent to the repurchase announcement month using Fama's (1998) procedure. The returns are adjusted using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure. *MONTHLY3Y\_Carhart* is the percentage monthly abnormal return over the three years subsequent to the repurchase announcement month using Carhart's (1997) four-factor model. *BUY&HOLD3Y\_Daniel* is the buy-and-hold abnormal return over the three years subsequent to the repurchase announcement month using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure. One-tailed *p*-values are reported in brackets.

	Aggregate sample ( <i>N</i> = 177)	Fixed-price tender offer ( <i>N</i> = 80)	Dutch-auction tender offer ( <i>N</i> = 97)
One-year horizon returns:			
<i>MONTHLY1Y_Daniel</i>	0.372 [0.123]	0.822 [0.076]	0.196 [0.289]
<i>MONTHLY1Y_Carhart</i>	0.399 [0.127]	0.980 [0.054]	0.304 [0.209]
<i>BUY&amp;HOLD1Y_Daniel</i>	4.941 [0.099]	6.814 [0.143]	3.397 [0.233]
Total ownership			
<i>MONTHLY3Y_Daniel</i>	0.757 [0.000]	1.006 [0.002]	0.626 [0.010]
<i>MONTHLY3Y_Carhart</i>	0.755 [0.000]	1.024 [0.003]	0.840 [0.002]
<i>BUY&amp;HOLD3Y_Daniel</i>	27.653 [0.002]	31.270 [0.018]	24.669 [0.020]

overall undervaluation, which is plausible if the undervaluation signaled by fixed-price repurchases is more pronounced in the latter years and a larger portion of the undervaluation is corrected at the repurchase announcement. This conjecture is consistent with the observed magnitude of the market reaction to the repurchase announcements in the latter years relative to the overall abnormal returns associated with fixed-price repurchases.<sup>28</sup>

<sup>28</sup>For instance, the average abnormal return over the three days starting on the announcement date of a fixed-price tender offer and the average calendar-month abnormal return (based on Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio approach) over the three years after the announcement month of a fixed-price tender offer are about 11.492% and 0.754%, respectively, for the earlier years of the sample (1981–1996). The ratio between the average fixed-price repurchase announcement abnormal return and the average post-repurchase monthly abnormal return is about 15.24. In comparison, for the latter years of the sample (1997–2001), the average fixed-price repurchase announcement abnormal return and the average calendar-month abnormal return over the three years after the announcement month of a fixed-price tender offer are about 22.158% and 0.912%. The ratio between the average fixed-price repurchase announcement abnormal return and the average post-repurchase monthly abnormal return is about 24.30 over the latter period.

### 7.3. The association between pre-repurchase reporting behavior and long-term post-repurchase stock performance

We analyze the association between pre-repurchase discretionary accruals and post-repurchase long-term abnormal returns. Because the long-term abnormal returns obtained under Fama's (1998) procedure are averaged across firms every month, they are not conducive to cross-sectional regression analyses. We could compute coefficient estimates by month or by year and then use the means and standard deviations of the time series of the coefficient estimates to make inferences (Fama and MacBeth, 1973). However, there are too few observations to run monthly or annual regressions. Because of this problem, we conduct regression analysis using buy-and-hold abnormal returns as the dependent variable. The results of the regression analysis are reported in Panel A of Table 9. Consistent with the signaling hypothesis, we find a positive association between the buy-and-hold abnormal returns and the discretionary accrual proxy (*DA*). The coefficient is much larger when returns are measured over three years than when it is measured over one year (5.06 versus 2.81). However, the *t*-value is larger for the one-year-horizon returns than for the three-year-horizon returns (2.33 versus 1.71). The coefficient on the interaction between *DA* and *DUTCH* is negative. Again, the coefficient is larger for the three-year-horizon returns but more statistically significant for the one-year-horizon returns. This result is likely due to the fact that three-year buy-and-hold abnormal returns are larger and noisier than one-year abnormal returns.

Because of potential cross-correlation and other problems with long-term buy-and-hold abnormal returns, we also analyze how the average *monthly* long-term abnormal returns vary with the level of abnormal accruals. More specifically, we separately sort the samples of fixed-price and Dutch-auction repurchase tender offers into quartiles based on pre-repurchase discretionary accruals. We treat each discretionary accrual quartile as a separate sample and then estimate the average monthly abnormal returns separately for each of the discretionary accrual subsamples using the methods described in Section 7.1.

The results are reported in Panels B and C of Table 9. Consistent with the signaling hypothesis, we find evidence that firms that report the largest discretionary accruals in the quarter prior to fixed-price tender offers experience the strongest positive monthly abnormal returns in the years after the repurchase announcement. For the highest discretionary accruals firms (those in the fourth quartile), the average monthly abnormal returns over the one-year (three-year) horizon are about 2.75% (1.99%) and 2.76% (2.22%) using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio approach and Carhart's (1997) four-factor model, respectively. This finding is quite remarkable. Prior studies find that firms that report high (discretionary) accruals fare poorly in the future (Sloan, 1996; Xie, 2001). However, consistent with the signaling hypothesis, we find that superior long-term performance after fixed-price repurchases is strongest for firms that report the largest discretionary accruals prior to the repurchases. These results indicate that for firms engaging in fixed-price tender offers, high pre-repurchase discretionary accruals are indicators of superior long-term performance.

Consistent with the conjecture that Dutch-auction tender offers are generally conducted for nonsignaling purposes, we find no evidence that Dutch-auction pre-repurchase discretionary accruals are positively associated with long-term abnormal returns. In fact, among the firms engaging in Dutch-auction tender offers, those that report negative discretionary accruals tend to experience the highest post-repurchase announcement long-term abnormal returns.

Table 9

The association between pre-repurchase discretionary accruals and post-repurchase announcement abnormal returns

For the fixed-price repurchases, the trading strategy consists of taking a long position in the high discretionary accrual firms and a short position in the low discretionary accrual firms starting in the month after the repurchase announcement. For the Dutch-auction repurchases, the trading strategy consists of taking a long position in the low discretionary accrual firms and a short position in the high discretionary accrual firms starting in the month after the repurchase announcement. The positions are closed after one year. *DUTCH* is a binary variable taking the value one for Dutch-auction tender offers and zero for fixed-price tender offers. *DA* is our proxy for discretionary accruals for the quarterly earnings announcement that immediately precedes the repurchase announcement. *BUY&HOLD1Y\_Daniel* is the buy-and-hold abnormal return over the year subsequent to the repurchase announcement month using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure. *MONTHLY3Y\_Daniel* is the percentage monthly abnormal return over the three years subsequent to the repurchase announcement month using Fama's (1998) procedure. The returns are adjusted using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure. *MONTHLY3Y\_Carhart* is the percentage monthly abnormal return over the three years subsequent to the repurchase announcement month using Carhart's (1997) four-factor model. *BUY&HOLD3Y\_Daniel* is the buy-and-hold abnormal return over the three years subsequent to the repurchase announcement month using Daniel, Grinblatt, Titman, and Wermers's (1997) matched-portfolio procedure. We report two-tailed *p*-values in parentheses and one-tailed *p*-values in brackets.

Panel A: Regression analysis ( $N = 177$ )

Dependent variable	Intercept	<i>DUTCH</i>	<i>DA</i>	<i>DA*DUTCH</i>	Adj. R <sup>2</sup>
<i>BUY&amp;HOLD1Y_Daniel</i>	6.404 (1.14)	-4.901 (-0.64)	2.812 <sup>++</sup> (2.33)	-4.227 <sup>+++</sup> (-2.74)	0.0265
<i>BUY&amp;HOLD3Y_Daniel</i>	3.053 <sup>**</sup> (2.22)	-5.870 (-0.31)	5.062 <sup>++</sup> (1.71)	-5.067 <sup>+</sup> (-1.34)	0.0004

Panel B: Comparing the one-year abnormal returns across discretionary accrual quartiles

Quartile of DA	Full sample		Fixed-price		Dutch-auction	
	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>
First quartile	0.575 (0.375)	0.830 (0.211)	-0.047 (0.962)	0.295 (0.777)	<b>1.225</b> <b>[0.042]</b>	<b>1.425</b> <b>[0.025]</b>
Second quartile	0.349 (0.529)	0.343 (0.572)	0.353 (0.681)	-0.040 (0.967)	0.130 [0.419]	0.782 [0.129]
Third quartile	-0.478 (0.288)	-0.595 (0.322)	-0.631 [0.780]	0.000 [0.500]	0.004 (0.993)	-0.181 (0.717)
Fourth quartile	0.842 (0.221)	0.996 (0.172)	<b>2.749</b> <b>[0.012]</b>	<b>2.763</b> <b>[0.017]</b>	-0.254 (0.681)	-0.332 (0.613)

Panel C: Comparing the three-year abnormal returns across discretionary accrual quartiles

Quartile of DA	Full sample		Fixed-price		Dutch-auction	
	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>
First quartile	0.520 (0.160)	0.792 (0.050)	0.581 (0.356)	0.824 (0.229)	<b>0.581</b> <b>[0.090]</b>	<b>0.835</b> <b>[0.035]</b>
Second quartile	1.238 (0.006)	1.248 (0.008)	1.004 (0.125)	1.025 (0.135)	<b>1.124</b> <b>[0.015]</b>	<b>1.548</b> <b>[0.004]</b>
Third quartile	0.059 (0.856)	0.017 (0.963)	-0.059 [0.547]	0.139 [0.400]	0.263 (0.443)	0.280 (0.430)

Table 9 (continued)

<i>Panel C: Comparing the three-year abnormal returns across discretionary accrual quartiles</i>						
Quartile of DA	Full sample		Fixed-price		Dutch-auction	
	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>	<i>MONTHLY3Y Daniel</i>	<i>MONTHLY3Y Carhart</i>
Fourth quartile	1.072 (0.025)	1.345 (0.008)	<b>1.993</b> <b>[0.011]</b>	<b>2.218</b> <b>[0.010]</b>	0.242 (0.587)	<b>0.586</b> (0.180)
<i>Panel D: Trading strategy</i>						
	High DA (Fourth quartile)		Low DA (First quartile)		High – Low	
Fixed-price	33.201 [0.021]		–4.009 (0.743)		37.210 [0.032]	
Dutch-auction	2.093 (0.769)		13.003 [0.160]		–10.910 [0.230]	

This finding is consistent with our prior finding suggesting that, on average, firms engaging in Dutch-auction tender offers tend to report negative discretionary accruals prior to repurchases and Sloan (1996) and Xie's (2001) finding that firms that report large income-decreasing (abnormal) accruals tend to outperform in the future. Overall, the behavior of managers engaging in Dutch-auction repurchases seems more consistent with efforts to reduce the repurchase price than with efforts to signal undervaluation.<sup>29</sup>

#### 7.4. Trading strategy

Finally, we assess whether there is an opportunity to implement profitable trading strategies around announcements of repurchase tender offers. A potential trading strategy would consist of taking long positions in the high (income-increasing) abnormal accrual

<sup>29</sup>Firms engaging in Dutch-auction tender offers have strong operating performance on average. Therefore, the earnings deflation prior to Dutch-auction tender offer announcements could be related to earnings smoothing. Managers could smooth earnings toward “permanent” earnings, toward market expectations, or toward some target that is determined by the structure of their performance-based compensation. However, the results do not seem consistent with managers smoothing earnings toward permanent earnings. If a positive earnings shock is temporary and managers smooth earnings downward toward permanent earnings, then there is no reason to expect the downward earnings management to be positively correlated with future abnormal returns since the managers report (their estimated) permanent earnings. The downward earnings management might be positively correlated with future abnormal returns if managers actually smooth earnings toward market expectations or some performance-based compensation target. Because managers would manage earnings downward when unmanaged earnings are unexpectedly high, if our results are associated with earnings smoothing, then we would expect a positive association between the high nondiscretionary change in earnings and abnormal returns. The idea is that firms with the highest nondiscretionary change in earnings are more likely to smooth earnings downward. To test this hypothesis, we measure a nondiscretionary change in earnings as the seasonal change in earnings minus discretionary accruals. Untabulated results provide no evidence that the abnormal returns are associated with the highest nondiscretionary change in earnings. Thus, it does not appear that the positive abnormal returns after Dutch-auction tender offer announcements are due to pre-repurchase earnings smoothing.

firms and short positions in the low (income-decreasing) abnormal accrual firms after fixed-price repurchase announcements. An opposite strategy could be implemented after Dutch-auction repurchases, that is, one could take long positions in the low (income-decreasing) abnormal accrual firms and short positions in the high (income-increasing) abnormal accrual firms. Because our sample is relatively small, we define high (low) abnormal accrual firms as firms in the top (bottom) quartile of the abnormal accrual rankings instead of the top (bottom) decile as in previous studies. We implement the strategies by opening the positions at the beginning of the first month after the repurchase announcement month and closing them after 12 months.

We report pooled results for the trading strategies in Panel D of Table 9. All the returns are adjusted for known risk factors using Daniel, Grinblatt, Titman, and Wermers's (1997) benchmark portfolio procedure. The trading strategies yield abnormal returns of 37.21% for fixed-price tender offers and 10.91% for Dutch-auction tender offers, although the abnormal return is not statistically significant for Dutch-auction tender offers, which is likely due to the small sample size. For fixed-price tender offers, the profit comes mainly from the high discretionary accrual side of the hedge portfolio, whereas for Dutch-auction tender offers, it comes exclusively from the low discretionary accrual side.

## 8. Conclusion

The academic literature commonly argues that managers use share repurchases to signal undervaluation. Consistent with signaling, prior studies find that the average repurchasing firm experiences very positive abnormal returns. However, a repurchase may be associated with positive abnormal returns even if the managers' intent is not to signal.

We argue that managers engaging in repurchases for nonsignaling reasons have incentives to deflate their stock prices prior to the repurchases in an attempt to reduce the repurchase price. Because attempts at price reduction prior to share repurchases are not consistent with managers intentionally signaling undervaluation, we posit that managers who use repurchases to signal undervaluation are unlikely to deflate earnings prior to repurchases. We contend that managers are likely to bundle upward discretionary accruals with share repurchases when they are most confident about their firms' prospects. Our rationale is that because earnings inflation potentially increases a firm's cost of repurchasing shares, managers will inflate earnings prior to repurchase tender offers only when they are very optimistic about their firms' prospects and they intend to signal their optimism to the market.

We find evidence suggesting that, indeed, many managers use fixed-price tender offers as signaling devices and that a firm's financial reporting behavior prior to a fixed-price tender offer is an indicator of managerial intent to signal favorable private information. Moreover, the information content of fixed-price tender offers and discretionary accruals decreases in the availability of alternative means of communication and increases in CEO ownership. In contrast, we find that, on average, firms engaging in Dutch-auction tender offers, particularly those with high CEO ownership, seem more interested in deflating their stock prices prior to repurchases than in signaling undervaluation. We also find that their long-term abnormal returns are positively associated with pre-repurchase earnings deflation. The market apparently corrects for the pre-repurchase downward earnings management at the repurchase announcement; however, the correction seems to be only partial.

Our study contributes to the literature by providing empirical evidence suggesting that managers *intentionally* use fixed-price repurchase tender offers to signal favorable private information. While the signaling hypothesis is largely accepted in the academic literature, our study is, to our knowledge, the first to (attempt to) establish managerial intent. The results seem to suggest that managers' incentives to use fixed-price repurchases to signal have increased in recent years. Further studies should explore potential explanations for this phenomenon.

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