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journal homepage: www.elsevier.com/locate/jfecVoluntary disclosures around share repurchases[☆]Paul Brockman^{a,*}, Inder K. Khurana^a, Xiumin Martin^b^a University of Missouri-Columbia, Columbia, MO 65211-2600, USA^b Olin School of Business, Washington University in St. Louis, St. Louis, MO, 63130-4899, USA

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ABSTRACT

Managers increase the frequency and magnitude of bad news announcements during the 1-month period prior to repurchasing shares. To a lesser extent, they also increase the frequency and magnitude of good news announcements during the 1-month period following their repurchases. These results are consistent with Barclay and Smith's [1988. Corporate payout policy: Cash dividends versus open-market repurchases. *Journal of Financial Economics* 22, 61–82.] conjecture that share repurchases, unlike dividends, create incentives for managers to manipulate information flows. We further show that managers provide downward-biased earnings forecasts before repurchases and that managers' propensity to alter information flows prior to share repurchases increases with their ownership interest in the firm.

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1. Introduction

The remarkable growth in share repurchases has attracted considerable attention in academic literature and the business press. Share repurchases increased significantly after the Securities and Exchange Commission (SEC) adopted rule 10b-18 in 1982, providing companies with a safe harbor (or legal shield) from the threat of being sued for price manipulation. U.S. corporations announced repurchases of approximately \$1.8 trillion worth of shares between 1996 and 2005, and the value of share repurchases exceeded dividends for the first time in the late 1990s. Aggregate NYSE, Amex, and Nasdaq share repurchases, which represented 5% of total corporate payouts in 1977, climbed to 53% of total payouts in 2005 (Legg Mason Capital Management, 2006). This trend

suggests that repurchasing stock is the preferred method of distributing cash to shareholders in the U.S. equity markets (Grullon and Michaely, 2002).

In spite of this growth in repurchase activity, disclosure requirements associated with this form of corporate payout are relatively lenient in the U.S. regulatory environment. Corporations can repurchase shares without announcing that they are doing so, and those that make such announcements are under no obligation to implement their proposed plans.¹ In this lightly regulated disclosure environment, managers have considerable discretion over the flow of information around share repurchases. It is somewhat surprising that, given the flexible disclosure environment and growing importance of repurchases, no study to date has examined the relation between managers' voluntary disclosures and share repurchase programs.

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¹ Rule 10b-18 was amended in November 2003 to require that firms report the total number of shares repurchased and the average price per share on a quarterly basis. Nonetheless, U.S. disclosure requirements "are among the least stringent" of all major stock exchanges examined in Kim, Varaiya, and Schremper (2004).

In this paper, we examine whether managers alter the regular flow of information around share repurchases. Barclay and Smith (1988, p. 65) note that

... managers can alter the normal flow of information to the market, delaying the release of good news until after a repurchase and accelerating the release of bad news so it is available before a repurchase. Although firms release information to the market continuously, managers have considerable discretion over the timing and detail of the releases ...

We test both the timing and content (i.e., “detail”) of voluntary disclosures around share repurchases. Managers can alter the timing of normal information flows by releasing more bad news before repurchases and more good news after repurchases. Managers might also alter the content of information flows by providing overly pessimistic forecasts before repurchases and overly optimistic forecasts after repurchases.

We follow the approach of Noe (1999) and Cheng and Lo (2006) and focus on management forecasts to examine Barclay and Smith’s (1998) conjecture. As noted in Healy and Palepu (2001, p. 426), “management forecasts make it possible to assess whether the forecast preceded or lagged particular changes in variables of interest using daily or weekly data, which enables researchers to conduct more powerful tests of motivations of voluntary disclosure.”

We conduct several tests to investigate whether managers alter information flows around share repurchase events. Our first test investigates whether management releases more bad news prior to the beginning of a share repurchase. We use 3-day abnormal returns around management forecasts as proxies for the information content of news releases. Specifically, we classify the forecast as good news (bad news) if the abnormal returns are positive (negative) and then compare the forecasts that occur within 30 days before the start of a share repurchase with those that fall outside of this 30-day window. Consistent with our prediction, we find that firms release significantly more bad news, both in terms of frequency and magnitude, before the start of a share repurchase. A share repurchase increases the probability of disclosing bad news during the pre-repurchase period by 9%, and the average bad news magnitude by roughly 4%.

Our second test investigates whether management releases more good news after the completion of repurchases. We compare news releases within 30 days after the completion of share repurchases with those that fall outside of this window. We find that firms release significantly more good news in terms of frequency, but not in terms of magnitude, after the completion of a share repurchase. The probability of disclosing good news in the post-repurchase period increases by 4%, but the good news magnitude does not change by an economically meaningful amount. Consistent with previous studies (Gong et al., 2008), this finding suggests that managers are primarily concerned with altering information flows in the pre-event window. These results hold after controlling for an array of variables used in prior research. They are

also robust to sample variations, as well as changes in underlying market conditions and reporting regimes.

Taken together, these empirical results reveal consistent evidence of opportunistic disclosure practices around share repurchases. However, they are also consistent with managers adjusting their repurchase decisions around voluntary disclosures. To distinguish between these two arguments, we next investigate the content of voluntary disclosures.

We use the bias in management earnings forecasts to measure the content of voluntary disclosures and examine the forecast bias both before and after repurchases. Consistent with expectations, we show that management earnings forecasts are biased downward before the start of repurchasing but there is no consistent bias in management earnings forecasts after the completion of repurchases. Taken with our previous findings, these results show that the disclosure of bad news is driven by the repurchase decision, and not vice versa. Furthermore, we employ a two-stage estimation procedure to control for endogeneity between voluntary disclosures and share repurchase decisions. The results confirm that managerial disclosure decisions are driven by their repurchase decisions.

We also examine the effect of managerial incentives on voluntary disclosure policy.² Barclay and Smith (1988, p. 65) argue that managers have private incentives to repurchase shares at low prices in order to “transfer value from the stockholders who sell their shares to themselves and to the remaining stockholders who choose not to sell.” We confirm this hypothesis by finding a positive and significant relation between private incentives and managerial opportunism using various measures of managers’ private incentives (e.g., stock option grants, restricted stock grants, and restricted stock and common stock ownership). All else equal, managers with high ownership interests are more likely to release more bad news before share repurchases. We find weaker evidence that managers with high ownership interests are more likely to release good news following share repurchases. These results suggest that managers not only exploit their private information advantages, they actively “create” information advantages.

Overall, our findings contribute to the voluntary disclosure literature on managers’ self-interested behavior in response to share repurchases. Hirst et al. (2006) note that a vast literature on management forecasts focuses on the consequences; however, substantially fewer studies examine the choice of forecast characteristics as an outcome variable. In other words, the possibility that managers deliberately choose forecast characteristics has not been extensively researched (Baginski et al., 2004). Our paper fills this void and provides direct evidence that managers strategically alter the content and timing of information flows around repurchase programs. Our findings corroborate several studies that point to the

² Anecdotal evidence suggests that managers are concerned about buying back shares at a lower price. For example, Fishbein (1987) reports that Tyco was keen on buying back stock at the lowest price possible, and open stock market repurchases allowed it to time its purchases carefully.

timing of voluntary disclosures, including Lang and Lundholm (2000) who show that managers increase disclosure levels to hype stock prices before equity offerings; Cheng and Lo (2006), who find that insiders time voluntary disclosures to maximize insider trading profits; and Aboody and Kasznik (2000), who find that CEOs manage the timing of voluntary disclosures around stock option awards.

Our study also contributes to the literature on share repurchases. Much of the prior literature focuses on the determinants and consequences of share repurchase decisions.³ We provide direct evidence for Barclay and Smith's (1988) conjecture that repurchasing managers will alter information flows.⁴ One major implication of our findings is that increasing amounts of total corporate payouts are subject to opportunistic disclosure strategies. Recent empirical research shows that managers continue to substitute repurchases for dividends while setting corporate payout policies (Grullon and Michaely, 2002; Skinner, 2008). In contrast to repurchases, dividends are paid out on a pro rata basis and are therefore relatively insensitive to information asymmetries. Our results suggest that the growing use of repurchases provides managers with the motive and opportunity to exploit their information advantages.

The remainder of the paper proceeds as follows. Section 2 describes the sample and outlines research design. Section 3 presents the empirical results and provides sensitivity tests, while Section 4 summarizes and concludes the paper.

2. Sample selection and methodology

2.1. Sample

We form our sample from the intersection of (a) the First Call database that contains management forecasts, (b) the Security Data Corporation (SDC) Merger and Acquisition database on share repurchases, (c) the merged Compustat annual industrial file, including the primary, secondary, tertiary, and full coverage research files, and (d) the return files from the Center for Research in Security Prices (CRSP). The First Call database covers management forecasts for January 1994 through December 2005. Following Cheng and Lo (2006), we include all management forecasts, whether they are for earnings or other summary measures such as cash flows or revenues and whether the forecasts are for quarterly or annual periods. Cheng and Lo note that more than 99% of the forecast days in their sample contain an earnings forecast. Moreover, we treat multiple forecasts by the same firm on

the same day (e.g., an earnings forecast for next quarter and for next year) as a single forecast event.

We distinguish between good news forecasts and bad news forecasts by focusing on abnormal stock returns around the management forecasts. We obtain daily returns from the CRSP daily stock returns file and daily index returns from the daily index returns file and calculate the abnormal returns as the excess returns over the CRSP value-weighted index over the three-day window $[-1, 1]$ around management forecasts. If the abnormal return is positive (negative), we classify the forecast as good news (bad news).

Given our interest in examining how firms strategically manage information flows, our focus is on management forecasts around share repurchase programs.⁵ Share repurchase programs involve little to no mandatory disclosure. Under open market repurchases, the board of directors typically authorizes a maximum dollar amount of shares to be repurchased. However, companies are not required to make announcements about their share repurchase plans. Companies are also under no obligation to implement share repurchase plans authorized by the board. Given the relative lack of mandatory disclosures around repurchases, voluntary disclosures take on greater importance. The timing and content of voluntary disclosures are particularly important at the initiation of the repurchase program when managers begin to buy shares, and at the end of the program after managers have finished accumulating the desired number of shares.

Managers can disclose opportunistically by releasing more bad news prior to initiating their repurchases in order to buy back shares at relatively low prices. After completing their repurchases, managers can disclose more good news to reap private benefits.⁶ We therefore focus on these two events. For the pre-repurchase event, we compare management forecasts issued within a 30-day window prior to the beginning of share repurchases relative to all other management forecasts issued by our sample firms over the 1994–2005 sample period. We define this sample as the pre-repurchase event sample. For the post-repurchase event, we compare management forecasts issued within a 30-day window

³ The determinants include managerial incentives (Fenn and Liang, 2001), undervaluation (Vermaelen, 1981; Stephens and Weisbach, 1998), and leverage (Bagwell and Shoven, 1988). Studies examining the impact of share repurchase on liquidity include Barclay and Smith (1988), Miller and McConnell (1995), and Brockman and Chung (2001).

⁴ Gong et al. (2008) investigate required disclosures and find that firms manage their reported earnings downward prior to repurchases, consistent with our finding that managers manipulate discretionary disclosures.

⁵ The four primary methods used by companies to repurchase shares are open market purchases, Dutch auctions, fixed-price tender offers, and privately negotiated purchases. Under open market purchases, companies simply purchase their own shares in the open market at the market price like any other investor. In a Dutch auction, management determines the number of shares it intends to buy, an expiration date, and a price range within which it is willing to buy; all tendering shareholders at or below the clearing price receive the clearing price for their stock. Under fixed-price tender offers, management offers to repurchase a specific number of shares at a fixed price before an expiration date, and shareholders can elect to tender their shares. In case of privately negotiated purchases, a company strikes a deal with a shareholder or a group of shareholders. Open-market repurchases are the most commonly used method of share repurchases in the U.S., followed by Dutch auctions and fixed-price tenders. Privately negotiated repurchases in the U.S. are relatively rare.

⁶ SDC collects information on repurchase events from several sources: SEC filings (e.g., 10Ks and 10Qs), surveys of companies with repurchase programs, and news sources (e.g., Reuters, Dow Jones, The Wall Street Journal, The New York Times).

Table 1

Details of sample observations

This table describes the two repurchase samples during the period 1994–2005. The pre-repurchase event window refers to the 30 days prior to the date a share repurchase begins; the post-repurchase event window refers to the 30 days after the date a share repurchase is completed. A management forecast is classified as good news (bad news) if the abnormal return, computed as the excess firm return over the CRSP value-weighted index over the 3-day window $[-1, 1]$ around management forecasts, is positive (non-positive).

	Share repurchase event window					
	Pre-repurchase			Post-repurchase		
<i>Panel A: Sample size</i>						
# Of share repurchase programs during 1994–2005 time period				760		721
# Of single-repurchase programs				160		115
# Of multi-repurchase programs				600		606
# Of management forecasts falling within the event window				807		802
# Of unique firms				628		616
# Of management forecasts issued by unique firms that do not fall within the event window				11,494		12,168
Total # of management forecasts in the sample				12,301		12,970
# Of bad news forecasts				6219		6209
# Of bad news forecasts				6082		6461
	<i>N</i>	<i>Mean</i>	<i>Std</i>	<i>Q1</i>	<i>Median</i>	<i>Q3</i>
<i>Panel B: Descriptive statistic of implementation events (pre-repurchase sample)</i>						
Days between repurchase initiation and repurchase completion	760	510	536	161	344	632
For single repurchase program	160	126	215	44	76	141
For multiple repurchase program	600	613	549	256	437	729
<i>Panel C: Descriptive statistic of implementation events (post-repurchase sample)</i>						
Days between repurchase initiation and repurchase completion	721	727	706	228	468	1047
for single repurchase program	115	147	208	61	90	156
for multiple repurchase program	606	837	713	331	585	1159

following the completion of the share repurchases relative to all other management forecasts issued by our sample firms over the 1994–2005 sample period. It is worth noting that firms can implement an authorized share repurchase program over a single or multiple repurchase periods. The timing and content of voluntary disclosures are particularly important at the initiation of the repurchase program when managers begin to buy shares, and at the end of the program after managers have finished accumulating the desired number of shares. Therefore, we treat multiple repurchase executions as a single event as if they were implemented under a single share repurchase program.⁷ Given that both management forecasts and share repurchase are discrete events, the merging process yields samples of different sizes for the two repurchase events.

Table 1 provides details for our full sample. We identify 807 management forecasts that were issued within 30 days prior to the beginning dates of 760 share repurchase programs by 628 unique firms. Of the 760 share repurchase programs, 160 are single repurchase programs and the remainder are multiple repurchase programs; we are further able to identify 147 open market

repurchases, 19 Dutch auctions, three privately negotiated transactions, and one fixed-price tender offer. For this set of 628 unique firms, we identify 11,494 management forecasts issued during the 1994–2005 period that do not fall within 30 days prior to the beginning dates of share repurchases. Thus, we have a total of 12,301 pre-repurchase management forecasts out of which 6,219 (6,082) are classified as good (bad) news.

Similarly, the second column in Panel A of Table 1 indicates that there are 802 management forecasts issued within 30 days after the completion dates of 721 share repurchase programs by 616 unique firms. Of the 721 share repurchase programs, 115 are single repurchase programs and the remainder are multiple repurchase programs; we are further able to identify 114 open market repurchases, four Dutch auctions, two privately negotiated transactions, and one fixed-price tender offer. For this set of 616 firms, we identify 12,168 post-repurchase management forecasts issued during the 1994–2005 period that do not fall within 30 days after the completion dates of share repurchases. Thus, we have a total of 12,970 post-repurchase management forecasts out of which 6,461 (6,509) are classified as good (bad) news.

In Panel B of Table 1, we report the number of calendar days between implementation dates using our pre-repurchase sample. The mean (median) number of days between the beginning and completion of a repurchase period is 510 (344). The mean (median) number of days between the beginning and completion of a repurchase period is 126 (76) for single repurchase programs and 613 (437) for multiple repurchase programs.

⁷ For example, if a firm announces its intention to repurchase \$200 million of shares under a given repurchase program, and then completes three repurchases within a period of 3 months, we treat these three repurchases as a single event. Our analyses focus on the 1-month period before the first actual repurchase execution of each share repurchase program (i.e., the pre-repurchase period), and on the 1-month period following the last repurchase execution of the repurchase program (i.e., the post-event period).

In Panel C of Table 1, we report the number of calendar days between implementation dates using our post-repurchase sample. The mean (median) number of days between the beginning and completion of a repurchase period is 727 (468). The mean (median) number of days between the beginning and completion of a repurchase period is 147 (90) for single repurchase programs and 837 (585) for multiple repurchase programs. Panels B and C of Table 1 suggest that it generally takes 4–5 months to complete a single repurchase program, while multiple repurchase programs last approximately two to three years in our sample.

2.2. Research design

To examine how managers strategically time information flows around share repurchases, we build on Cheng and Lo (2006) and estimate two models that use two related dependent variables. The first dependent variable is an indicator variable (GN) that is equal to one if the management forecast is classified as good news and zero otherwise. As noted previously, abnormal returns during the 3-day window $[-1, 1]$ around management forecasts are used to classify the forecast as good or bad news. The second dependent variable is a continuous variable (SRET) that equals the abnormal return over the 3-day window $[-1, 1]$ around management forecasts. GN captures the frequency (or percentage) of management forecasts that are classified as good news (versus good news), whereas SRET captures the magnitude of good news relative to bad news forecasts.

Specifically, we estimate the following models^{8,9}:

$$Pr(GN_t) = \alpha + \beta_0 \text{Repurchase}_t + \beta_1 \text{LOG_MKT}_{t-1} + \beta_2 \text{MB}_{t-1} + \beta_3 \text{ROE}_{t-1} + \beta_4 \text{ABRET}_{t-1} + \varepsilon_t \quad (1)$$

$$\text{SRET}_t = \alpha + \beta_0 \text{Repurchase}_t + \beta_1 \text{LOG_MKT}_{t-1} + \beta_2 \text{MB}_{t-1} + \beta_3 \text{ROE}_{t-1} + \beta_4 \text{ABRET}_{t-1} + \varepsilon_t \quad (2)$$

where

Repurchase = 1 when a management earnings forecast falls within the event window (30 days prior to the beginning date of the share repurchase for the pre-repurchase sample, and 30 days after the completion date of a share repurchase for the post-repurchase sample) and 0 otherwise

LOG_MKT natural logarithm of market value as of the fiscal year preceding the date of the management forecast

MB market-to-book ratio as of the fiscal year preceding the date of the management forecast

ROE return on equity as of the fiscal year preceding the date of the management forecast

ABRET cumulative abnormal returns computed as the excess firm returns over the CRSP value-weighted

index during the three months ending 2 days before the issuance of a management forecast

We use robust logistic regressions clustered by year and industry (based on two-digit SIC codes) to estimate model (1).¹⁰ We use pooled ordinary least squares (OLS) with Roger's (1983, 1993) robust standard errors clustered by year and industry to estimate model (2). We control for the size of the firm (variable LOG_MKT) because generally, the larger the firm, the greater is the information available about the firm. We also control for growth opportunities by using the market-to-book ratio (variable MB) in the regression. The variable ROE captures firm performance and is included because forecast type could be related to firm performance when asymmetric information is present. Finally, we include a cumulative abnormal returns variable (ABRET) to control for the momentum effect.

In terms of our predictions, the test coefficient on the variable Repurchase is of interest. We expect managers to release more bad news during the 30-day period prior to the beginning date of a share repurchase. Hence, we expect the coefficient on the variable Repurchase in both models (1) and (2) to be negative for the pre-repurchase sample. In contrast, we expect managers to release more good news during the 30-day period after the completion of a share repurchase. Hence, we expect the coefficient on the variable Repurchase in both models (1) and (2) to be positive for the post-repurchase sample.

3. Empirical results

3.1. Descriptive statistics

Table 2 reports the descriptive statistics of the variables used for the two samples. The descriptive statistics for all variables in Table 2 are similar across the two samples. Thus, we only discuss the pre-repurchase sample, which focuses on the beginning of share repurchases. Approximately 6.6% of management forecasts are issued within the 30 days prior to the beginning of stock repurchases, which implies that about 93.4% of management forecasts are outside the event window.

The average abnormal return around pre-repurchase management forecasts is -0.9% . These abnormal returns vary from -4.2% for the lower quartile to 3.9% for the upper quartile. The negative mean return is driven by the larger magnitude of negative abnormal returns relative to that of positive abnormal returns. The average abnormal return for good news forecasts is 5.8% , and the average abnormal return for bad news forecasts is -7.7% . Overall, our results are consistent with Cheng and Lo (2006) who find management forecasts to be associated with negative abnormal returns on average.

⁸ For brevity, we suppress firm subscript i .

⁹ We also estimate both models (1) and (2) with industry (based on two-digit SIC codes) fixed effects. The results of these alternative specifications are quantitatively similar to those reported in the paper.

¹⁰ Finally, we use robust logistic regressions clustered by firm to estimate model (1), and pooled OLS with Roger's (1983, 1993) robust standard errors clustered by firm to estimate model (2), and the results are quantitatively similar to those reported in the paper.

Table 2

Summary statistics

This table provides summary statistics for the pre- and post-repurchase samples. Repurchase is a dummy variable coded as 1 when a management earnings forecast falls within the event window (30 days prior to the beginning date of the share repurchase for the pre-repurchase sample and 30 days after the completion date of the share repurchase for the post-repurchase sample) and 0 otherwise; SRET is the abnormal return calculated as the excess firm return over the CRSP value-weighted index over the 3-day window $[-1, 1]$ around the issuance of management forecasts; Good news is the abnormal return for observations when SRET is positive; Bad news is the abnormal return for observations when SRET is non-positive; GN is a dummy variable coded as 1 if SRET is positive, 0 otherwise; MKTCAP is the market value of equity as of the fiscal year preceding the date of the management forecast; MB is the market-to-book ratio as of the fiscal year preceding the date of the management forecast; ROE is the return on equity as of the fiscal year preceding the date of the management forecast; and ABRET is the cumulative abnormal return computed as the excess firm return over the CRSP value-weighted index during the three months ending two days before the issuance of a management forecast.

Variable	N	Mean	Std dev	Lower quartile	Median	Upper quartile
<i>Pre-repurchase sample</i>						
Repurchase	12,301	0.066	0.248	0.000	0.000	0.000
SRET	12,301	-0.009	0.105	-0.042	0.001	0.039
Good news	6219	0.058	0.066	0.016	0.038	0.077
Bad news	6082	-0.077	0.094	-0.101	-0.043	-0.017
GN	12,301	0.506	0.500	0.000	1.000	1.000
MKTCAP(\$mil)	12,301	10,909	35,496	574	1677	6155
MB	12,301	3.753	3.868	1.638	2.595	4.285
ROE	12,301	0.166	0.285	0.074	0.152	0.239
ABRET	12,301	0.020	0.235	-0.107	0.005	0.121
<i>Post-repurchase sample</i>						
Repurchase	12,970	0.062	0.241	0.000	0.000	0.000
SRET	12,970	-0.008	0.092	-0.041	0.000	0.037
Good news	6461	0.055	0.065	0.015	0.036	0.074
Bad news	6509	-0.071	0.078	-0.094	-0.041	-0.017
GN	12,970	0.498	0.500	0.000	0.000	1.000
MKTCAP(\$mil)	12,970	10,255	35,251	514	1576	5607
MB	12,970	3.652	3.874	1.619	2.478	4.096
ROE	12,970	0.161	0.267	0.071	0.145	0.230
ABRET	12,970	0.026	0.233	-0.096	0.010	0.123

The pre-repurchase sample firms have a mean market value of around \$10.9 billion and a mean market-to-book ratio of 3.75. The mean return on equity (ROE) is 16.6%, with an interquartile range of 16.5%. Our sample firms are on average larger and more profitable than the sample firms in Cheng and Lo (2006), who focus on the relation between insider trading and voluntary disclosure and report mean market equity values of \$362 million and a mean ROE of 6% for their sample. Our mean abnormal returns during the 3 months preceding the issuance of management forecasts is 2.4%.

3.2. Univariate results

In Panel A of Table 3, we segregate management forecasts for each sample by news type (good versus bad) and by whether the management forecast falls within or outside the share repurchase event window. We find a significant association between news type and whether the management forecast falls within or outside the share repurchase event window (χ^2 -statistic = 29.81 for the pre-repurchase sample, and χ^2 -statistic = 4.01 for the post-repurchase sample).

More specifically, for the pre-repurchase sample, the frequency of bad news is greater for management forecasts issued 30 days prior to the beginning of a share repurchase than it is for management forecasts issued outside the event window (58% versus 49%, respectively). In contrast, the frequency of good news is greater for management forecasts issued 30 days after the

completion of share repurchases than it is for management forecasts issued outside the event window (53% versus 50%, respectively).

Panel B of Table 3 reports that the average abnormal return around the issuance of management forecasts within the event window for the pre-repurchase sample is -4.9% and statistically significant at the 0.01 level. In contrast, the abnormal return outside the event window is -0.6% and insignificant at the 0.10 level. The abnormal returns around the issuance of management forecasts within and outside the event window for the post-repurchase sample are -0.9% and -0.8%, respectively. The difference is statistically insignificant. Overall, the univariate results suggest that managers release relatively more bad news, both in terms of frequency and magnitudes, leading up to the beginning of share repurchases. We also find that good news announcements occur with greater frequency following the completion of repurchases but do not have significantly more positive magnitudes.

3.3. Multivariate results

Table 4 presents regression results for the full sample to test whether firms manage voluntary disclosures around share repurchases after controlling for other firm characteristics that potentially affect management forecast news. Panel A reports logistic regression results based on model (1). The coefficient on firm size (LOG_MKT) is positive and statistically significant at the 0.05 level for

Table 3

Univariate analysis—full sample

This table presents univariate results for testing the difference in forecast news between repurchase events and non-repurchase events. Panel A reports the frequency of good news and bad news around management forecasts that fall in the repurchase event window versus those that fall outside the event window. Panel B reports the magnitude of good news and bad news around management forecasts that fall in the repurchase event window versus those that fall outside the event window. The pre-repurchase event window refers to 30 days prior to the date a share repurchase begins; the post-repurchase event window refers to 30 days after the date a share repurchase is completed. A management forecast is classified as good news (bad news) if the abnormal return, computed as the excess firm return over the CRSP value-weighted index over the 3-day window $[-1, 1]$ around management forecasts, is positive (non-positive). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Association between news type (good versus bad) and event window type (share repurchase event window versus non-share repurchase event window)						
Event Window type	Share repurchase event					
	Pre-repurchase sample			Post-repurchase sample		
	Good news	Bad news	Total	Good news	Bad news	Total
Management forecasts within event window	333 (42%)	474 (58%)	807	427 (53%)	375 (47%)	802
Management forecasts outside event window	5886 (51%)	5608 (49%)	11,494	6034 (50%)	6134 (50%)	12,168
Total	6219	6082	12,301	6251	6197	12,970
Chi-square test of difference	29.81***			4.01**		

Panel B: Abnormal returns around management forecast issuance across share repurchase event window type (share repurchase event window vs. non-share repurchase event window) ^b			
Event window type	Share repurchase event		
	Pre-repurchase sample		Post-repurchase sample
Management forecasts (1)		−0.049 (−9.27)***	−0.009 (−2.46)**
Management forecast (2) outside event window		−0.006 (−6.70)***	−0.008 (−9.99)***
Diff (1–2)		−0.043 (−7.96)***	−0.001 (−0.41)

both the pre- and post-repurchase samples. These results suggest that large firms tend to have a higher percentage of good news. The coefficient on market-to-book ratio (MB) is negative and statistically significant at the 0.01 level for the pre-repurchase sample, and negative but statistically insignificant for the post-repurchase sample. The coefficient on return on equity (ROE) is not statistically significant at the 0.10 level. The coefficient on ABRET is positive and statistically significant at the 0.05 level, which is consistent with notion that stocks with positive abnormal returns in one period continue to earn positive abnormal returns in the near future. The coefficient on Repurchase is negative and statistically significant at the 0.01 level for the pre-repurchase sample, and positive and statistically significant at the 0.05 level for the post-repurchase sample.

Panel B of Table 4 reports OLS regression results based on model (2). The coefficients on the control variables have the same signs and similar levels of statistical significance as those in Panel A. More importantly, the coefficient on Repurchase is negative and statistically significant at the 0.01 level for the pre-repurchase sample, and positive and statistically insignificant at the 0.10 level for the post-repurchase sample. Taken together, the results in Panels A and B of Table 4 corroborate the results

at the univariate level reported in Table 3, suggesting that our findings are robust to multivariate-level specifications controlling for other factors that potentially affect management forecast news.

It is worth noting that the influence of share repurchases on the pre-repurchase voluntary disclosure of bad news is not only statistically significant but also economically significant. The beginning of a share repurchase increases the probability of disclosing bad news by 9%, and the magnitude of the bad news by about 4%. In contrast, the completion of a repurchase increases the probability of disclosing good news by 4%; however, the good news magnitude increases only by about 0.06%.

The consistently stronger pre-repurchase results are likely due to an asymmetry in managerial incentives during the different event periods. Managers have incentives both to delay and to accelerate the release of bad news in order to coincide with the pre-repurchase period. In contrast, they only have an incentive to delay the release of good news (accumulated during the repurchase period) during the post-repurchase period; they do not have an equally compelling (symmetric) incentive to accelerate the release of good news during the post-repurchase period. These different timing incentives are consistent with our empirical results in both Tables 3 and 4.

Table 4

Regression results

This table reports the regression results of estimating the relation between the repurchase event and disclosure of bad news. Panel A of this table presents logistic regression results with Wald-statistics clustered by industry and year using the dependent variable, GN, a dummy variable, coded as 1 if SRET (abnormal return calculated as the excess firm return over the CRSP value-weighted index over the 3-day window $[-1, 1]$ around issuance of management forecasts) is positive, and 0 otherwise. Panel B of this table presents ordinary least squares regression results with robust t-statistics clustered by industry and year using the dependent variable, SRET. Pre-repurchase refers to the 30 days prior to a share repurchase, and post-repurchase refers to the 30 days following a share repurchase. The independent variables included in the table are defined as follows: Repurchase is a dummy variable coded as 1 when a management earnings forecast falls within the event window (30 days prior to the beginning date of the share repurchase for the pre-repurchase sample; and 30 days after the completion date of the share repurchase for the post-repurchase sample) and 0 otherwise; LOG_MKT is the natural logarithm of market value of equity as of the fiscal year preceding the date of the management forecast; MB is the market-to-book ratio as of the fiscal year preceding the date of the management forecast; ROE is the return on equity as of the fiscal year preceding the date of the management forecast; and ABRET is the cumulative abnormal return computed as the excess firm return over the CRSP value-weighted index during the 3 months ending 2 days before the issuance of management forecast. The change in probability in Panel A is computed as the difference in the probability of releasing bad news estimated using models with Repurchase = 0 versus Repurchase = 1 while holding other variables at the median values. Repurchase effect in Panel B is the effect of Repurchase on the 3-day abnormal return around management forecasts, computed as the difference in the abnormal returns estimated from the model with Repurchase = 0 versus Repurchase = 1. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: GN as dependent variable		
Variable	Parameter estimate (Wald-statistic in parentheses)	
	Pre-repurchase	Post-repurchase
Intercept	-0.1029 (1.24)	-0.1868 (4.12)**
Repurchase	-0.3609 (22.97)***	0.1656 (6.14)**
LOG_MKT	0.0274 (5.06)**	0.0251 (5.50)**
MB	-0.0171 (9.64)***	-0.0048 (1.53)
ROE	-0.0128 (0.03)	-0.0541 (0.53)
ABRET	0.4021 (21.12)***	0.3241 (6.27)**
Change in probability (%)	9	-4
N	12301	12970
Likelihood ratio	69.95	27.45
Percent concordance	52.91	51.21
Panel B: SRET as dependent variable		
Variable	Parameter estimate (t-statistic in parentheses)	
	Pre-repurchase	Post-repurchase
Intercept	-0.0214 (-3.61)***	-0.0221 (-4.98)***
Repurchase	-0.0392 (-7.25)***	0.0006 (0.15)
LOG_MKT	0.0027 (3.65)***	0.0021 (3.91)***
MB	-0.0015	-0.0007

Table 4 (continued)

Panel B: SRET as dependent variable		
Variable	Parameter estimate (t-statistic in parentheses)	
	Pre-repurchase	Post-repurchase
ROE	(-4.22)*** -0.0025 (-0.53)	(-2.55)** -0.0015 (-0.44)
ABRET	0.0302 (4.56)***	0.0255 (5.55)***
Repurchase effect (%)	-3.92	0.06
N	12301	12970
Adj-R ²	0.018	0.005

Taken together, this first set of univariate and multivariate results reveals consistent evidence of opportunistic disclosure practices before share repurchases. The results also reveal weaker evidence of opportunistic disclosures after the completion of repurchases. Both the pre- and post-repurchase results, however, are also consistent with managers adjusting their repurchase decisions around voluntary disclosures. To distinguish between these two possibilities, we next investigate the content of voluntary disclosures. In a later section, we will use a two-stage estimation approach to provide additional evidence on the direction of causality.

3.4. Bias of voluntary disclosures around share repurchases

To examine the information content of voluntary disclosures, we follow Ajinkya et al.'s (2005) model specification and estimate the following model:

$$\begin{aligned} \text{BIAS1}(\text{BIAS2}) = & \alpha + \beta_0 \text{Repurchase}_t + \beta_1 \text{LOG_MKT}_{t-1} \\ & + \beta_2 \text{MB}_{t-1} + \beta_3 \text{LITIGATION}_{t-1} + \beta_4 \text{LOSS}_{t-1} \\ & + \beta_5 \text{EARNVOL}_{t-1} + \varepsilon_t \end{aligned} \quad (3)$$

where

BIAS1 (management forecast of earnings per share (EPS)—actual EPS)*100/price at the beginning of forecast month

BIAS2 (management forecast of earnings per share (EPS)—actual EPS)/absolute value of management forecast of earnings per share

LITIGATION 1 for all firms in the biotechnology (2833–2836 and 8731–8734), computers (3570–3577 and 7370–7374), electronics (3600–3674), and retail (5200–5961) industries, and 0 otherwise

LOSS 1 if the firm reported losses in the current period, and 0 otherwise

EARNVOL standard deviation of quarterly earnings over 12 quarters ending in the year before management forecast, divided by median asset value over the 12 quarters

Other variables are as defined before.

The dependent variable in model (3), BIAS1 (BIAS2), captures the forecast bias contained in managers' voluntary disclosures. Aboody and Kasznik (2000) use a similar approach to capture insiders' opportunistic manipulation of disclosure content. If managers manipulate the content of their voluntary disclosures around share repurchases, we expect their earnings forecasts to contain more negatively biased information prior to share repurchases. Negatively biased forecasts will guide investor expectations of firm value downward in order to achieve a lower share buy-back price. However, if managers make repurchase decisions simply by following bad news disclosures, we would not expect to observe systematically biased information releases during the pre-repurchase period.¹¹

We also test whether managers release more positively biased information after the completion of share repurchases. Similar to the asymmetric incentives in the timing of disclosures, there are asymmetric incentives in the content of disclosures. Value-maximizing managers have a strong incentive to issue downward-biased forecasts during the pre-repurchase period, but little (if any) incentive to issue upward-biased forecasts during the post-repurchase period. The issuance of downward-biased forecasts ahead of a repurchase allows the manager to accumulate company shares at below full-information prices. Although managers generally have an incentive to issue upward-biased forecasts, this incentive is not as uniquely tied to the post-repurchase period as the downward-biased forecast is to the pre-repurchase period.¹² In this section, we test for forecast biases in both the pre- and post-repurchase samples.

We include firm size (LOG_MKT), market-to-book ratio (MB), litigation risk (LITIGATION), loss (LOSS), and earnings volatility (EARNVOL) as control variables in model (3). The prior literature provides evidence supporting the positive association between firm size and management earnings forecasts (Kasznik and Lev, 1995). Francis, Philbrick, and Schipper (1994) suggest that litigation risk is one incentive for corporate disclosure. We use the market-to-book ratio as a proxy for proprietary costs (Bamber and Cheon, 1998). Prior research suggests that earnings are less value relevant for firms incurring losses (Hayn, 1995) and that meeting or beating financial analyst expectations is less important for these firms (Degeorge, Patel, and Zeckhauser, 1999). Brown (2001) documents substantial differences between the analyst forecast errors of profitable and unprofitable firms. Analysts have greater problems forecasting earnings for unprofitable firms. The same is likely true of managers. Waymire (1985) finds an

association between a firm's earnings volatility and the frequency of management earnings forecasts. Kross, Lewellen, and Ro (1994) use a similar measure called "stability," defined as the standard deviation of return on equity.

Table 5 presents results based on model (3). The coefficients on Repurchase are negative and statistically significant at the 0.10 level for both BIAS1 and BIAS2 in the pre-repurchase sample. This result suggests that management lowers EPS forecast numbers opportunistically before a share repurchase to guide investor expectations of firm value downward, which allows managers to begin accumulating company shares at relatively low prices. For the post-repurchase sample, neither of the relevant coefficients is

Table 5

Regression results: dependent variable: forecast bias of news

This table reports ordinary least squares regression results of estimating the relation between a repurchase event and forecast bias operationalized as BIAS1 and BIAS2. Robust standard errors clustered by industry and year are used for estimation. BIAS1 is defined as (management forecast of earnings per share (EPS)—actual EPS) scaled by price at the beginning of the forecast month; BIAS2 is defined as (management forecast of earnings per share (EPS)—actual EPS) scaled by the absolute value of the management forecast of earnings per share. Pre-repurchase refers to the share repurchase initiation sample, and post-repurchase refers to the share repurchase completion sample. The independent variables included in the regression are: Repurchase is equal to 1 when a management earnings forecast falls within the event window (30 days prior to the beginning date of the share repurchase for the pre-repurchase sample; and 30 days after the completion date of the share repurchase for the post-repurchase sample) and 0 otherwise; LOG_MKT is the natural logarithm of market value as of the fiscal year preceding the date of the management forecast; MB is the market-to-book ratio as of the fiscal year preceding the date of the management forecast; LITIGATION is equal to 1 for all firms in the biotechnology (2833–2836 and 8731–8734), computer (3570–3577 and 7370–7374), electronics (3600–3674), and retail (5200–5961) industries, and 0 otherwise; LOSS is equal to 1 if the firm reported losses in the current period, and 0 otherwise; EARNVOL is standard deviation of quarterly earnings over the 12 quarters ending in the year before the management forecast, divided by the median asset value for the period. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Variable	Parameter estimate(t-statistic in parentheses)			
	Dependent variable = BIAS1		Dependent variable = BIAS2	
	Pre-repurchase	Post-repurchase	Pre-repurchase	Post-repurchase
Intercept	0.6914 (4.33)***	0.3586 (1.40)	0.4297 (1.33)	0.3881 (0.98)
Repurchase	-0.1029 (-1.82)*	-0.0106 (-0.15)	-0.1817 (-2.25)**	0.1542 (0.65)
LOG_MKT	-0.0543 (-2.60)**	-0.0149 (-0.42)	-0.0353 (-0.98)	-0.0383 (-0.73)
MB	-0.0089 (-1.24)	-0.0081 (-0.77)	-0.0036 (-0.43)	-0.0197 (-1.03)
LITIGATION	0.0694 (1.20)	0.0455 (0.66)	0.0627 (0.77)	0.1511 (1.37)
LOSS	-0.3052 (-4.31)***	-0.2423 (-1.45)	-0.14177 (-0.56)	-0.2816 (-1.56)
EARNVOL	0.0495 (0.05)	0.5032 (0.28)	-0.8125 (-0.56)	0.8474 (0.35)
N	5980	6116	5933	6057
Adj-R ²	0.021	0.007	0.001	0.011

¹¹ To the extent that BIAS1 and BIAS2 are computed as the difference between management forecasts and reported earnings, there is a potential that we do not fully capture management's opportunistic behavior in managing earnings forecasts downward if reported earnings are also downward biased. For example, Gong et al. (2008) find that managers manage reported earnings downward before share repurchases. However, this earnings management behavior will bias against finding results consistent with our expectations.

¹² It is possible, of course, that positively biased post-repurchase forecasts are used by the manager as part of a personal trading strategy, as opposed to a company trading strategy.

statistically significant.¹³ This result suggests that managers do not increase EPS forecast numbers opportunistically following the completion of share repurchases.

It is worth noting that the influence of repurchases on the pre-repurchase forecast bias is not only statistically significant but also economically significant. The share repurchase beginning event increases the downward bias in management forecasts by 3.1 (7.6) cents with BIAS1 (BIAS2) as the dependent variable.¹⁴ Overall, our Table 5 results confirm that managers behave opportunistically by altering the content of their voluntary disclosures. The results in Table 5 also corroborate Gong et al. (2008) who find that the difference in operating profits between pre- and post-repurchase periods is driven mainly by downward pre-repurchase earnings management. That is, they do not find evidence of abnormally high post-repurchase operating profits.¹⁵

3.5. Two-stage estimation of share repurchase and management forecasts

Our previous finding that managers issue more downward-biased forecasts prior to repurchases strongly suggests that managers adjust their disclosures to facilitate repurchases, and not vice versa. However, to provide further support for this direction of causality and to address the potential endogeneity between voluntary disclosures and share repurchases, we estimate the relation between these two decisions using a two-stage regression approach. In the first stage, we estimate the probability of a share repurchase based on a set of exogenous or predetermined instrumental variables that have been identified from prior research (e.g., Brockman and Chung, 2001) along with the control variables used in model (1). The estimated model is as follows¹⁶:

$$\begin{aligned} Pr(\text{Repurchase}_t) = & \delta_0 + \delta_1 \text{Risk-free rate}_t + \delta_2 \text{CFO}_{t-1} \\ & + \delta_3 \text{MKTMOV}_t + \delta_4 \text{NUMREP}_{t-1} + \delta_5 \text{LOG_MKT}_{t-1} \\ & + \delta_6 \text{MB}_{t-1} + \delta_7 \text{ROE}_{t-1} + \delta_8 \text{ABRET}_{t-1} + e_{it} \end{aligned} \quad (4)$$

¹³ Similar results are obtained for both the pre- and post-repurchase samples when we analyze the data by scaling the difference between management's forecast of EPS and actual EPS by the book value of equity per share as of the fiscal year preceding the management earnings forecast.

¹⁴ The mean price at the beginning of forecast month is \$30 and the mean absolute value of management earnings forecast is \$0.42 for our sample. The downward bias is calculated as (coefficient on repurchase*price) = 0.1029*30 or (coefficient on repurchase*absolute value of management earnings forecast) = 0.1817*0.42*100.

¹⁵ We use a common sample with both pre- and post-repurchase management forecasts during the two event windows, and test the difference in GN and SRET between pre- and post-repurchase periods. We find that the association of the frequency of releasing bad news within event periods is statistically significant at the 0.01 level ($\chi^2 = 10.27$), and the difference in SRET between pre- and post-periods is also statistically significant at the 0.01 level ($t = 3.27$).

¹⁶ Firm specific variables (e.g. CFO and NUMREP) are measured at time $t-1$ to ensure that they are predetermined, and hence are unlikely to be affected by disclosure policy during year t . However, marketwide variables (e.g., Risk-free rate and MKTMOV) are measured at time t because they are unlikely to be affected by firm-specific disclosure policy; instead, they could affect firm-specific disclosure policy contemporaneously.

where

Risk-free rate	annual return from a risk-free asset (three-month Treasury bill) during the year of the share purchase
CFO	cash flow from operations scaled by total assets preceding the year of the share purchase
MKTMOV	standard deviation of the value-weighted monthly market return during the year of the share purchase
NUMREP	number of share repurchases made preceding the year of the share repurchase

All other variables are as defined before.

In the second stage, we estimate models (1) and (2) by replacing Repurchase with the expected probability of a share repurchase estimated from the first-stage regression.

Table 6 reports our two-stage regression results for both samples. Panel A presents results based on GN as the dependent variable in the second stage, and Panel B presents results based on SRET as the dependent variable in the second stage. The concordance pair for the first-stage regression is fairly high, ranging from 66% to 70%, which suggests that the instrumental variables perform reasonably well at predicting share repurchases. Two observations emerge from the first-stage regression results. First, the coefficients on LOG_MKT and ABRET are both negative, suggesting that firms undertake share repurchases when they are relatively undervalued, consistent with prior research (Stephens and Weisbach, 1998). Second, consistent with Brockman and Chung (2001), we find that the number of share repurchases made during a year can predict the probability of subsequent share repurchases.

The coefficient estimates from the second stage reported in Table 6 are qualitatively similar to those reported in Table 4 based on single-stage regressions. As before, our primary focus is on the Repurchase coefficient. The coefficient in both Panel A and Panel B is negative and statistically significant at the 0.01 level for the pre-repurchase event sample. This coefficient is positive in both Panel A and Panel B for the post-repurchase event sample, and it is only statistically significant at the 0.10 level in Panel B when SRET serves as the dependent variable. These results corroborate those in Table 5 and provide further evidence that management opportunistically releases bad news more frequently before the beginning of share repurchases to facilitate the coming share repurchase event—after controlling for endogeneity between disclosure decisions and share repurchase decisions.

3.6. Managerial incentives

Managerial incentives for altering information flow can vary with management's stake in the company. As argued in Barclay and Smith (1988), if managers' compensation includes stock options, stock appreciation rights, restricted stock, or phantom stock, then they have private

Table 6

Two-stage regression results

This table presents results for estimating the relation between firms' share repurchases and disclosure of bad news based on a two-stage procedure to account for endogeneity. Panel A uses two logistic regression models. The first stage models a firm's decision to repurchase, and the second stage estimates the relation between a repurchase and the probability of releasing bad news. In the second stage, the dependent variable, GN, is a dummy variable coded as 1 if SRET is positive, 0 otherwise. Panel B uses the same first-stage logistic regression model as in Panel A. At the second stage, ordinary least square regression is used to estimate the relation between a repurchase and the magnitude of bad news. In the second stage, the dependent variable, SRET, is the abnormal return calculated as the excess firm return over the CRSP value-weighted index over the 3-day window $[-1, 1]$ around issuance of management forecasts. The independent variables included in the second stage are defined as follows: Repurchase is a dummy variable coded as 1 when a management earnings forecast falls within the event window (30 days prior to the beginning date of the share repurchase for the pre-repurchase sample; and 30 days after the completion date of the share repurchase for the post-repurchase sample) and 0 otherwise; LOG_MKT is the natural logarithm of market value as of the fiscal year preceding the date of the management forecast; MB is the market-to-book ratio as of the fiscal year preceding the date of the management forecast; ROE is the return on equity as of the fiscal year preceding the date of the management forecast; and ABRET is the cumulative abnormal return computed as the excess firm return over the CRSP value-weighted index during the 3 months ending 2 days before the issuance of a management forecast. Additional independent variables are: Risk-free rate is the annual return from the risk-free asset during the repurchase year; CFO is cash flow from operations scaled by total assets as of the fiscal year preceding the repurchase; MKTMOV is the standard deviation of the value-weighted monthly market return during the repurchase year; NUMREP is the number of share repurchases during the year preceding the repurchase. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: GN as dependent variable in the second-stage regression				
Variable	Dependent variable			
	Pre-repurchase		Post-repurchase	
	Repurchase	GN	Repurchase	GN
Intercept	-2.2831 (116.59)***	0.4987 (13.33)***	-2.2756 (127.31)***	-0.1996 (3.70)*
Risk-free rate	1.6711 (69.26)***		0.6593 (3.67)*	
CFO	0.0308 (4.65)**		0.0528 (7.63)***	
MKTMOV	0.1468 (0.01)		0.0612 (0.01)	
NUMREP	-0.2219 (46.48)***		0.4149 (299.71)***	
Repurchase	-5.4559 (54.41)***		0.4907 (1.29)	
LOG_MKT	-0.0778 (10.51)***	-0.0168 (1.39)	-0.1744 (54.11)***	0.0307 (7.19)***
MB	0.0011 (0.47)	-0.0113 (4.17)**	0.0009 (0.01)	-0.0011 (0.03)
ROE	0.5698 (21.11)***	0.1917 (6.96)**	-0.2135 (1.71)	-0.0825 (1.36)
ABRET	-1.4067 (63.36)***	-0.0176 (0.02)	-0.9751 (28.38)***	0.3603 (20.21)***
N	11,702	11,702	12,266	12,266
Likelihood ratio	284.01	89.02	313.95	26.82
Percent concordance	66.00	53.11	70.00	51.30
Panel B: SRET as dependent variable in the second stage regression				
Variable	Dependent variable			
	Pre-repurchase		Post-repurchase	
	Repurchase	SRET	Repurchase	SRET
Intercept	-2.2831 (116.59)***	0.0341 (4.39)***	-2.2756 (127.31)***	0.0191 (-3.38)***
Risk-free rate	1.6711 (69.26)***		0.6593 (3.67)*	
CFO	0.0308 (4.65)**		0.0528 (7.63)***	
MKTMOV	0.1468 (0.01)		0.0612 (0.01)	
NUMREP	-0.2219 (46.48)***		0.4149 (299.71)***	
Repurchase		-0.5205 (-10.55)***		0.0375 (1.72)*
LOG_MKT	-0.0778 (10.51)***	-0.0019 (-2.38)**	-0.1744 (54.11)***	0.0024 (4.20)***

Table 6 (continued)

Panel B: SRET as dependent variable in the second stage regression				
Variable	Dependent variable			
	Pre-repurchase		Post-repurchase	
	Repurchase	SRET	Repurchase	SRET
MB	0.0011 (0.47)	−0.0006 (−1.98)*	0.0009 (0.01)	−0.0006 (−2.41)**
ROE	0.5698 (21.11)***	0.0145 (3.07)***	−0.2135 (1.71)	−0.0024 (−0.69)
ABRET	−1.4067 (63.36)***	−0.0005 (−0.84)	−0.9751 (28.38)***	0.0278 (5.87)***
N	11,702	11,702	12,266	12,266
Likelihood ratio	284.01		313.95	
Percent concordance Adj-R ²	66.00	0.021	70.00	0.003

incentives to alter the flow of information to achieve the lowest price possible for buying back shares. We therefore examine whether the propensity to release bad (good) news before (after) the beginning (completion) of a share repurchase varies with management stock compensation as a proportion of firm equity. The models we use to test this conjecture are as follows:

$$Pr(GN_t) = \alpha + \beta_0 \text{Repurchase}_t + \beta_1 \text{STK}_{t-1} + \beta_2 \text{Repurchase}_t * \text{STK}_{t-1} + \beta_3 \text{LOG_MKT}_{t-1} + \beta_4 \text{MB}_{t-1} + \beta_5 \text{ROE}_{t-1} + \beta_6 \text{ABRET}_{t-1} + \varepsilon_t \quad (5)$$

$$\text{SRET}_t = \alpha + \beta_0 \text{Repurchase}_t + \beta_1 \text{STK}_{t-1} + \beta_2 \text{Repurchase}_t * \text{STK}_{t-1} + \beta_3 \text{LOG_MKT}_{t-1} + \beta_4 \text{MB}_{t-1} + \beta_5 \text{ROE}_{t-1} + \beta_6 \text{ABRET}_{t-1} + \varepsilon_t \quad (6)$$

where STK denotes the proportion of stock compensation to managerial wealth. We use two measures to capture this concept. We define the first variable, STKOPT, as the sum of the value of CEO stock option grants (valued by the Black-Scholes option pricing model) and the value of CEO restricted stock grants, all scaled by the firm's market value. We defined a second variable, STKHLD, as the sum of the value of CEO stock options (as valued by the Black-Scholes option pricing model), the value of CEO restricted stocks, and the value of stock held by the CEO, all scaled by the firm's market value.¹⁷ We obtain management compensation data from the ExecuComp-Compustat database. Other variables are as defined before.

In both models (5) and (6), our primary variable of interest is the interaction term between the proportion of management's stock compensation (STK) and

Repurchase. We argue that higher stock compensation implies that management has more at stake in the company and therefore a greater incentive to alter information flows prior to share repurchases. Thus, we expect the coefficient on the interaction term to be negative for the pre-repurchase sample. If managers also alter the information flow strategically during the post-repurchase period, then we expect the coefficient on the interaction term to be positive for the post-repurchase sample.

Panel A of Table 7 reports results based on model (5) for the pre-repurchase and post-repurchase samples. For each sample, the first column presents results based on the STKOPT measure, and the second column reports results based on the STKHLD measure. Our primary focus is on the interaction between Repurchase and STKOPT (STKHLD). As hypothesized, the Repurchase*STKOPT coefficient for our pre-repurchase sample is negative and statistically significant at the 0.10 level. Similarly, the Repurchase*STKHLD coefficient is also negative and statistically significant at the 0.05 level. The probability that a manager will release bad news prior to a share repurchase increases with the level of equity-based compensation.¹⁸ For the post-repurchase sample, the coefficients on the two interaction terms are positive but only statistically significant at the 0.10 level when STKHLD serves as the proxy for management stock compensation.

Panel B of Table 7 reports results based on model (6) for the pre-repurchase and post-repurchase samples. The results are qualitatively similar to those reported in Panel A. In short, the coefficients on Repurchase*STKOPT and Repurchase*STKHLD are negative and statistically significant at the 0.05 level for the pre-repurchase sample. For the post-repurchase sample, neither the

¹⁷ As a sensitivity test, we measure equity incentives as the number of stock option grants and restricted stock grants for the fiscal year scaled by the total outstanding shares of the firm. We also measure equity incentives as the total CEO ownership (i.e., restricted stock plus new stock option grants plus exercisable and unexercisable option grants from previous years plus common stocks) scaled by CEO current compensation including salary, bonus, and stock options. The results are qualitatively similar.

¹⁸ For an interquartile change in STKOPT, the probability of releasing bad news prior to actual share repurchases increases by 1.83%. For an interquartile change in STKHLD, the probability of releasing bad news prior to actual repurchase increases by 1.89%.

Table 7

Regression results of stock compensation on propensity of voluntary disclosure around share repurchases

This table reports results for the relation between firms' propensity to alter information flows around share repurchases and managerial equity incentives. Panel A of this table presents logistic regression results with Wald-statistics clustered by industry and year using the dependent variable GN, a dummy variable coded as 1 if SRET (abnormal return calculated as the excess firm return over the CRSP value-weighted index over the three-day window $[-1, 1]$ around issuance of management forecasts) is positive, and 0 otherwise. Panel B of this table presents ordinary least squares regression results with robust t-statistics clustered by industry and year using the dependent variable, SRET. Pre-repurchase refers to the share repurchase initiation sample, and post-repurchase refers to share repurchase completion sample. The independent variables included in the table are defined as follows: Repurchase is a dummy variable coded as 1 when a management earnings forecast fall within the event window (30 days prior to the beginning date of the share repurchase for the pre-repurchase sample; and 30 days after the completion date of the share repurchase for the post-repurchase sample) and 0 otherwise; LOG_MKT is the natural logarithm of market value as of the fiscal year preceding the date of the management forecast; MB is the market-to-book ratio as of the fiscal year preceding the date of the management forecast; ROE is the return on equity as of the fiscal year preceding the date of the management forecast; and ABRET is the cumulative abnormal return computed as the excess firm returns over the CRSP value-weighted index during the 3 months ending 2 days before the issuance of the management forecast; STKOPT is the sum of CEO stock options granted in the current year (valued with the Black-Scholes model) plus CEO restricted stock grants, scaled by market value of the firm; STKHLD is the sum of CEO stock options granted in the current year (valued with the Black-Scholes model) plus CEO restricted stock grants plus the number of shares owned by the CEO*fiscal year end stock price, scaled by the market value of the firm; change in probability in Panel A is computed as the incremental difference in the probability of releasing bad news estimated from the model between when Repurchase = 0 and when Repurchase = 1 holding other variables at the median values when STKOPT (STKHLD) is set to the upper quartile value compared to STKOPT (STKHLD) being set to the lower quartile value. Repurchase effect in Panel B is the incremental effect of Repurchase on the 3-day abnormal returns around management forecasts when STKOPT (STKHLD) is set to the upper quartile value compared to STKOPT (STKHLD) being set to the lower quartile value. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: GN as dependent variable

Variable	Parameter estimate			
	(Wald -Statistic in parentheses)			
	Pre-repurchase		Post-repurchase	
Intercept	0.3182 (5.86)**	0.1972 (2.62)	0.0018 (0.01)	-0.1918 (2.36)
Repurchase	-0.2049 (3.29)*	-0.1896 (2.74)*	0.1787 (2.24)	0.0515 (0.22)
LOG_MKT	-0.0147 (0.94)	-0.0031 (0.04)	0.0116 (0.57)	0.0311 (4.07)**
MB	-0.0072 (1.54)	-0.0095 (2.73)*	-0.0018 (0.08)	-0.0047 (0.56)
ROE	-0.0967 (1.04)	-0.0904 (0.92)	-0.0926 (0.68)	-0.0987 (0.77)
ABRET	0.0992 (0.79)	0.0887 (0.66)	0.2492 (6.85)***	0.2361 (6.26)**
STKOPT	-0.2127 (3.55)*		-0.2282 (5.71)***	
RP*STKOPT	-0.6521 (2.91)*		-0.1267 (0.08)	
STKHLD		0.0034 (0.33)		0.0121 (2.84)*
RP*STKHLD		-0.0511 (5.23)**		0.0529 (3.53)*
Change in probability (%)	1.83	1.89	-0.69	1.78
N	8119	7922	8647	8490
Likelihood ratio	31.13	19.72	26.41	21.78
Percent concordance	52.00	49.51	51.11	50.81

Panel B: SRET as dependent variable

Variable	Parameter estimate			
	(t-Statistic in parentheses)			
	Pre-repurchase		Post-repurchase	
Intercept	0.0103 (1.48)	-0.0031 (-0.47)	-0.0015 (-0.25)	-0.0158 (-2.91)***
Repurchase	-0.0213 (-3.22)***	-0.0197 (-2.93)***	0.0009 (0.17)	-0.0021 (-0.40)
LOG_MKT	-0.0008 (-1.01)	0.0005 (-0.75)	0.0001 (0.11)	0.0014 (2.29)**
MB	-0.0005 (-1.60)	-0.0007 (-2.28)**	-0.0001 (-0.74)	-0.0004 (-1.45)
ROE	-0.0003 (-0.05)	-0.0016 (-0.34)	-0.0015 (-0.33)	-0.0035 (-0.76)

Table 7 (continued)

Panel B: SRET as dependent variable				
Variable	Parameter estimate			
	(t-Statistic in parentheses)			
	Pre-repurchase		Post-repurchase	
ABRET	0.0039 (0.47)	0.0058 (0.68)	0.0154 (2.69)***	0.0173 (3.37)***
STKOPT	-0.0228 (-3.12)***		-0.0195 (-4.60)***	
RP*STKOPT	-0.0597 (-2.37)**		-0.0062 (-0.22)	
STKHLD		0.0002 (0.90)		0.0007 (1.83)*
RP*STKHLD		-0.0045 (-2.63)***		0.0011 (1.22)
Compensation interaction effect (%)	-0.15	-0.03	0.00	0.00
N	8119	7922	8647	8490
Adj-R ²	0.019	0.008	0.011	0.004

Repurchase*STKHLD coefficient nor the Repurchase*STKOPT coefficient is significant at the 0.10 level.¹⁹

Taken together, our Table 7 results confirm that managerial incentives play a role in determining voluntary disclosure policy. These results also lend further support to previous findings showing that managers' manipulation of pre-repurchase information flows is a first-order effect, while managers' manipulation of post-repurchase information flows is a second-order effect.²⁰

3.7. Sensitivity tests

3.7.1. Sensitivity tests based on common sample

Given that we identify the sample of initiations and completions separately, our sample contains firms in the pre-repurchase period that are not necessarily the same as those in the post-repurchase period. To address this concern, we conduct a robustness check replicating the results of Table 4 on a common sample of firms that issue management forecasts both in the pre- and post-repurchase periods. We report the partial results in Panel A of Table 8. The coefficients on Repurchase are negative and statistically significant at the 0.01 level for the

¹⁹ Prior to share repurchases, an interquartile change in STKOPT increases the bad news magnitude by 0.15% annually, and an interquartile change in STKHLD increases the bad news magnitude by 0.03%.

²⁰ We also test whether insider holdings increase after the management forecast release and prior to the share repurchase to examine the degree to which managers benefit personally from altering information flows. Similarly, we test whether insider holdings decrease after the management forecast release following the completion of the repurchase program. We find that insiders significantly increase purchases and reduce sales of the firm's shares prior to actual share repurchases. We do not find abnormal insider trading during the post-repurchase period, consistent with Lee et al.'s (1992) study of insider trading following self-tender offers. These insider trading results lend further support to previous findings that managers benefit from opportunistically releasing more bad news prior to actual share repurchases.

pre-repurchase sample for both GN and SRET as the dependent variable. The coefficients on Repurchase are positive but statistically insignificant at the 0.10 level for the post-repurchase sample for both GN and SRET as the dependent variable. In other words, repeating the analyses on the restricted samples gives results that are qualitatively similar to those obtained from the full sample, although we do lose significance on one of the post-repurchase results.

3.7.2. Sensitivity tests for confounding events

We conduct a robustness test to mitigate the effects of confounding pre-repurchase and post-repurchase events. In our analysis thus far, we classify all management forecasts outside the 30 days prior to a repurchase as non-events with respect to the pre-repurchase sample. However, some of these forecasts could be classified as post-repurchase event forecasts (and vice versa). Because we expect more good news announcements during the post-repurchase event window, the inclusion of such forecasts in the pre-repurchase non-event window could potentially bias our empirical findings in favor of the predicted direction. To address this issue of confounding events, we re-estimate models (1) and (2) but excluding management forecasts in each of the two samples if they fall in the event window of the other share repurchase event. Panel B of Table 8 shows that the coefficient estimates on Repurchase are similar to those reported in Table 4. Therefore, we can conclude that our results are robust to deleting management forecasts falling around confounding events.²¹

²¹ We also re-estimate models (1) and (2) after excluding from our control sample all management forecasts that occur during multiple repurchase programs; that is, we exclude all forecasts that occur after the first repurchase and before the last repurchase of a given repurchase program. We continue to find negative and significant Repurchase

Table 8

Partial regression results based on a common sample and (a) reduced sample with observations around confounding events deleted

This table reports partial regression results of estimating the relation between a repurchase event and the disclosure of bad news for a common sample and a reduced sample deleting confounding events. This table presents the coefficient estimate on Repurchase in model (1) and Wald-statistics clustered by industry and year using a logistic regression with the dependent variable GN, a dummy variable coded as 1 if SRET (abnormal return calculated as the excess firm return over the CRSP value-weighted index over the 3-day window $[-1, 1]$ around issuance of management forecasts) is positive, and 0 otherwise. This table also presents the coefficient estimate on Repurchase in model (2) and robust t-statistics clustered by industry and year using ordinary least squares regression with the dependent variable, SRET. Panel A reports regression results for the two models based on the common sample. Common sample refers to the sample with a common set of firms that are included in both the pre-repurchase event window and the post-repurchase event window. Panel B reports regression results based on a sample deleting confounding events. Confounding events refer to the non-event forecasts for the pre-repurchase sample that fall in the post-repurchase event window or vice versa. Pre-repurchase refers to the share repurchase initiation sample, and post-repurchase refers to the share repurchase completion sample. The independent variables included in the model are defined as follows: Repurchase is a dummy variable coded as 1 when a management earnings forecast falls within the event window (30 days prior to the beginning date of the share repurchase for the pre-repurchase sample; and 30 days after the completion date of the share repurchase for the post-repurchase sample) and 0 otherwise; LOG_MKT is the natural logarithm of market value as of the fiscal year preceding the date of the management forecast; MB is the market-to-book ratio as of the fiscal year preceding the date of the management forecast; ROE is the return on equity as of the fiscal year preceding the date of the management forecast; and ABRET is the cumulative abnormal return computed as the excess firm returns over the CRSP value-weighted index during the 3 months ending 2 days before the issuance of management forecast. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable	N_PRE	Pre-repurchase	N_POST	Post-repurchase
<i>Panel A: Regression results based on common sample</i>				
GN	4963	-0.4341	4995	0.1942
Model (1)		(9.58)***		(1.87)
SRET	4963	-0.0296	4995	0.0031
Model (2)		(-3.42)***		(0.48)
<i>Panel B: Regression results deleting confounding events</i>				
GN	11899	-0.3862	12,060	0.1442
Model (1)		(24.05)***		(2.83)*
SRET	11,899	-0.0425	12,060	-0.0025
Model (2)		(-7.41)***		(-0.62)

(footnote continued)

coefficients in both the GN and SRET pre-repurchase regressions. For the post-repurchase regressions, the results are also similar to those in Table 4. We find a positive and significant Repurchase coefficient for the GN regression, and a positive but insignificant Repurchase coefficient for the SRET regression. Lastly, we analyze interior management forecasts during repurchase programs with multiple repurchases (i.e., management forecasts that occur after the first repurchase and before the last repurchase of a given repurchase program). Consistent with our previous results, we find negative and significant Repurchase coefficients in both the GN and SRET pre-repurchase regressions. We also find mixed results for the post-repurchase regressions; the GN Repurchase coefficient is positive but insignificant, while the SRET Repurchase coefficient is positive and significant.

3.7.3. Sensitivity tests for market conditions and reporting regimes

In this section, we examine the sensitivity of our results to market conditions and alternative reporting regimes. The stock market experienced both a boom and a precipitous decline during our sample period. To examine whether market conditions moderate the timing of voluntary disclosures around share repurchases, we partition our sample period into two subperiods (pre-2002 and post-2002) and re-estimate models (1) and (2) for each subperiod separately. Moreover, the Securities and Exchange Commission (SEC) implemented Regulation FD (Fair Disclosure) on October 23, 2000 which prohibits firms from privately disclosing value-relevant information to select securities markets professionals without simultaneously disclosing the same information to the public. This regulation can potentially boost the market reaction to the issuance of management forecasts, thereby enhancing the incentive of managers to alter information flow around share repurchases. To examine this possibility, we also partition our sample period into pre-Reg FD and post-Reg FD subperiods and re-estimate models (1) and (2) for each subperiod separately.²²

Panel A of Table 9 reports the coefficient estimates on the Repurchase variable for the pre- and post-2002 subperiods. For the pre-repurchase sample, the Repurchase coefficients are negative for both subperiods when GN serves as the dependent variable, but statistically significant at the 0.01 level only for the pre-2002 subperiod. The Repurchase coefficients are negative and statistically significant at the 0.01 level for both subperiods when SRET serves as the dependent variable. For the post-repurchase sample, none of the Repurchase coefficients is statistically significant at the 0.10 level. Thus, we find the same pattern for the two subperiods.

Panel B reports the coefficient estimates on the Repurchase variable for the pre- and post-Reg FD subperiods. We find that during both subperiods, the coefficient estimates on the Repurchase variable are negative and statistically significant at the 0.10 level or better for the pre-repurchase sample. For the post-repurchase sample, we generally find that Repurchase coefficients are positive and but statistically insignificant at the 0.10 level except during the post-Reg FD period. Overall, these results are consistent with management strategically altering its voluntary disclosure policy before share repurchases under different market conditions and reporting regimes.

3.7.4. Sensitivity tests for share repurchase characteristics

We also examined whether share repurchase characteristics affect the sensitivity of information flow to the share repurchase decision for the pre-repurchase sample.²³ For this analysis, we use only the 807 observations that fall within the pre-repurchase event window. We

²² We delete all observations in 2000 for the purpose of this sensitivity test.

²³ Because we have not found consistent evidence that management opportunistically alters information flows after the completion of share repurchases, we do not examine the cross-sectional difference in the

Table 9

Partial regression results—full sample partitioned across market conditions and reporting regime

This table reports partial regression results of estimating the relation between a repurchase event and the disclosure of bad news for the full sample partitioned on market conditions and reporting regimes. Panel A reports results for the full sample partitioned on market conditions (pre-2002 refers to the boom market, and post-2002 refers to the bear market) and Panel B reports results for the full sample partitioned on reporting regime (Pre-reg FD refers to the period prior to Regulation FD, and Post-reg refers to the period after Regulation FD). Both panels present the coefficient estimates on Repurchase in model (1) and Wald-statistic clustered by industry and year using a logistic regression with the dependent variable GN, a dummy variable coded as 1 if SRET (abnormal return is calculated as the excess firm return over the CRSP value-weighted index over the 3-day window $[-1, 1]$ around the issuance of management forecasts) is positive, and 0 otherwise. Both panels also present the coefficient estimates on Repurchase in model (2) and robust *t*-statistics clustered by industry and year using ordinary least squares regression with the dependent variable, SRET. Pre-repurchase refers to the share repurchase initiation sample, and post-repurchase refers to the share repurchase completion sample. The independent variables included in the model are defined as follows: Repurchase is a dummy variable coded as 1 when a management earnings forecast falls within the event window (30 days prior to the beginning date of a share repurchase for the pre-repurchase sample; and 30 days after the completion date of a share repurchase for the post-repurchase sample) and 0 otherwise; LOG_MKT is the natural logarithm of market value as of the fiscal year preceding the date of the management forecast; MB is the market-to-book ratio as of the fiscal year preceding the date of the management forecast; ROE is the return on equity as of the fiscal year preceding the date of the management forecast; and ABRET is the cumulative abnormal return computed as the excess firm return over the CRSP value-weighted index during the three months ending 2 days before the issuance of a management forecast. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable	Period	Pre-repurchase	Post-repurchase
<i>Panel A: Results across market conditions</i>			
GN	Before 2002	-0.6157	0.1851
Model (1)		(26.53)***	(2.16)
	After 2002	-0.1073	0.1401
		(1.08)	(2.18)
SRET	Before 2002	-0.0581	0.0035
Model (2)		(-6.31)***	(0.48)
	After 2002	-0.0186	0.0019
		(-3.34)***	(0.47)
<i>Panel B: Results across reporting regimes</i>			
GN	Pre-Reg FD	-0.6811	0.1846
Model (1)		(16.96)***	(0.72)
	Post-Reg FD	-0.1572	0.1694
		(2.77)*	(4.01)**
SRET	Pre-Reg FD	-0.0708	-0.0149
Model (2)		(-5.67)***	(-1.01)
	Post-Reg FD	-0.0159	0.0035
		(-3.11)***	(0.92)

estimate the following models:

$$Pr(GN_t) = \alpha + \beta_0 \text{Characteristic}_t + \beta_1 \text{LOG_MKT}_{t-1} + \beta_3 \text{MB}_{t-1} + \beta_4 \text{ROE}_{t-1} + \beta_5 \text{ABRET}_{t-1} + \varepsilon_t \quad (7)$$

(footnote continued)

tendency of altering information flow depending on repurchase characteristics during the post-repurchase period.

$$\text{SRET}_t = \alpha + \beta_0 \text{Characteristic}_t + \beta_1 \text{LOG_MKT}_{t-1} + \beta_3 \text{MB}_{t-1} + \beta_4 \text{ROE}_{t-1} + \beta_5 \text{ABRET}_{t-1} + \varepsilon_t \quad (8)$$

where Characteristic represents three characteristics of share repurchases: (1) the number of shares initially authorized by the board scaled by the total shares outstanding on the authorization date; (2) the value of share repurchases initially authorized scaled by the market value on the initial authorization date; and (3) the percentage of shares actually repurchased relative to the shares initially authorized. All other variables are as defined before.

We enter the three characteristics into the two regression models one at a time. Untabulated results show that the coefficients on the Characteristic variable are not statistically significant at the 0.10 level for the first two characteristics. For the percentage of shares actually repurchased relative to the shares initially authorized, the coefficient is negative and statistically significant at the 0.05 level for both models (7) and (8). We conclude that management's tendency to alter pre-repurchase information flow increases with the percentage of shares that companies buy back. This result and the results in Table 7 are consistent with Gong et al. (2008) who find that the extent of downward earnings management increases with CEO ownership and the percentage of company stock that managers repurchase.

4. Conclusions

In this paper, we investigate Barclay and Smith's (1988) conjecture that managers release more bad news before share repurchases and more good news after completing share repurchases. Both univariate and multivariate results indicate a significant difference in the frequency and magnitude of bad news prior to share repurchases. In contrast to their pre-repurchase incentives, managers have less incentive to manipulate disclosures in the post-repurchase period. We find limited evidence of managers altering information flows after the completion of a repurchase. Additional analyses similarly reveal that earnings forecasts tend to be biased downward before repurchases and not different after repurchases. Finally, we show that managerial incentives in the form of stock options, for example, significantly increase the likelihood of opportunistic disclosure behavior prior to share repurchases.

Overall, our empirical findings confirm that managers actively manipulate voluntary disclosures prior to share repurchases. Managers do not simply respond to existing bad news by voluntarily disclosing and then repurchasing relatively low-priced shares. Instead, managers alter the normal content of disclosures before upcoming repurchases. Without managerial opportunism, alternative hypotheses find it difficult to explain why overly pessimistic managers (i.e., those who have recently issued downward-biased forecasts) would choose to begin repurchasing shares. The managerial opportunism hypothesis, in contrast, is consistent with all of these results.

Our study contributes to the voluntary disclosure literature on managers' self-interested behavior, as well as to the corporate payout literature. Perhaps the most important implication of our findings is that with the rise in share repurchases, corporate payouts are increasingly subject to opportunistic disclosure strategies. Dividend payouts are much less susceptible to opportunistic disclosure policies because dividends are paid on a pro rata basis. Instead of passively receiving dividend payments, investors of repurchasing firms must decide whether to receive payouts by selling their shares. The sell versus hold decision depends on investors' assessment of the fundamental value of the firm—and this assessment is highly dependent on the quantity and quality of value-relevant information. Our results suggest that the growing use of repurchases has increased managers' opportunity to exploit information advantages.

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