Market Overreaction to Bad News and Share
Repurchase: Evidence from Japan

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Abstract

We examine the relationship between the market reaction to management earnings forecasts and subsequent share repurchase announcements. Our results show that repurchase firms experience a larger market reaction to bad news of management earnings forecasts than non-repurchase firms before repurchase announcements. By contrast, there is little difference in the market reaction to good news between repurchase firms and non-repurchase firms. Additionally, little difference exists in the information content of management forecasts between repurchase firms and non-repurchase firms. In summary, our results imply that Japanese companies announce share repurchases in response to market overreactions to bad news in management earnings forecasts.

Keywords: share repurchase, management earnings forecasts, market reaction

1. Introduction

Share repurchasing is a method of distributing cash to shareholders and its use has rapidly grown recently in Japan. Figure 1 shows that 605 companies in the Japanese stock market spent a record JPY 5.75 trillion, approximately $47.83 billion, on share repurchases in the 2015–16 fiscal year[1]. We investigate why companies repurchase shares using Japanese data which captures this remarkable growth in share repurchases. Prior literature proposes a variety of hypotheses to explain why firms repurchase shares including the free cashflow hypothesis, dividend substitution hypothesis, optimal leverage hypothesis, and the undervaluation hypothesis. Among these, the undervaluation hypothesis is most likely to be dominant and widely supported in previous studies.

However, little is known about what events trigger the share repurchase decision for managers. In this paper, we show that managers of Japanese companies repurchase shares in response to the market overreaction to bad news in management earnings forecasts. Management earnings forecasts are effectively mandated and play an important role as a part of financial information disclosure in Japan. Kato et al. (2009) document that the rules for management forecasts have their roots in requests from the "Kabuto-club," a club of journalists at the Tokyo Stock Exchange (TSE) in 1965. These early requests have been gradually incorporated into TSE rules and amended several times to date. TSE strongly demands listed companies to issue their forecasts of sales, earnings, and dividends concurrently with earnings announcements. Iwasaki et al. (2015) briefly summarize the TSE requirements regarding management earnings forecasts. In the fiscal year to March 2015, 96.7%[2] of publicly traded firms provided

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[1] From Apr. 1, 2015 to Mar. 31, 2016.
[2] Related news release from TSE is available at
http://www.jpx.co.jp/news/1023/nlsgeu0000010f85-att/nlsgeu0000010f9y.pdf (in Japanese).

earnings forecasts in their "Earnings Reports," known as "Kessan-Tanshin." This context enables us to capture a less biased sample of management earnings forecasts information over a relatively long time.

We examine the relationship between the market reaction to management earnings forecasts and subsequent share repurchase announcements. Our results show that repurchase firms experience a larger market reaction to bad news of management earnings forecasts than non-repurchase firms before repurchase announcements. In contrast, there is little difference in the market reaction to good news between repurchase firms and non-repurchase firms. Additionally, little difference exists in the information content of management forecasts between repurchase firms and non-repurchase firms. In summary, our results suggest that Japanese companies repurchase shares in response to market overreactions to bad news in management earnings forecasts.

The remainder of this paper is organized as follows. Section 2 reviews the extant literature and develops our hypotheses. The research design and our sampling procedure are presented in Section 3. Results of our empirical analysis are presented in Section 4, followed by our conclusions in Section 5.

2. Prior Literature and Hypotheses Development

Previous studies show that firms tend to repurchase their own stock when they are more likely to be undervalued in the stock market (Ikenberry et al. 1995; Dittmar 2000; Brav et al. 2005). Through a survey and interviews, Brav et al. (2005) reveal that stock undervaluation is a primary reason explaining managers' share repurchase decisions. Dittmar (2000) provides evidence consistent with undervaluation. However, there are few studies which investigate what events trigger the buyback decisions of

firms' managers. A related study, conducted by Peyer and Vermaelen (2009), finds that repurchase firms experience significant analyst downgrades before repurchase announcements. They interpret this finding as share repurchasing being firms' response to the market overreaction to this bad news.

In this paper, we focus on the market reaction to management earnings forecasts, not analyst forecasts, as one of the primary events that stimulate managers' decisions to repurchase their stocks in Japan. Management earnings forecasts are effectively mandated[3] and play an important role vis-a-vis financial information disclosure in Japan. Management earnings forecasts are a primary disclosure mechanism that provides information about expected future earnings[4]. Management earnings forecasts are found to be affecting stock prices, that is, useful for investors to assess and predict firms' future cashflows (Patell 1976; Penman 1980)). Management earnings forecasts have decision usefulness for investors; however, there is information asymmetry regarding these forecasts between managers and current or potential investors because managers may have private information about the future operation of their company. Therefore, investors may discount or underestimate the management forecasts because of information asymmetry, resulting in significant undervaluation or managers taking the view that their firms are substantively undervalued. This perceived undervaluation could finally cause managers to repurchase stocks of their companies.

This undervaluation could be caused in two ways when management forecasts are issued: one is overreaction to bad news, and the other is underreaction to good news. Therefore, we expect that the overreaction (underreaction) to bad (good) news in management forecasts is related to the share repurchase announcement.

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[3] Kato et al. (2009) and Iwasaki et al. (2015) briefly summarize the institutional background of management earnings forecasts in Japan.

[4] Dechow et al. (1998) demonstrate that earnings information is conducive to predictions of future operating cash flows.

H1a: Market reaction to the management earnings forecasts is *larger* for repurchase firms than non-repurchase firms when management forecasts are classified as *bad* news.

H1b: Market reaction to the management earnings forecasts is *smaller* for repurchase firms than non-repurchase firms when management forecasts are classified as *good* news.

3. Research Design and Sample

3.1. Empirical Model

We estimate the following regression equation to test *H1a* and *H1b*:

$$CAR_{i,t} = \alpha + \beta_1 MFNews_{i,t+1} + \beta_2 EarningsSurprise_{i,t} + \beta_3 DividendNews_{i,t+1}$$
$$+ \beta_4 DividendSurprise_{i,t} + \delta Controls + \sum Year + \sum Industry + \varepsilon_{i,t} \qquad (1)$$

where $CAR_{i,t}$ is the three-day (−1, +1) market-adjusted stock return around the management forecast announcement [5]. Forecast news, $MFNews_{i,t}$, represents the information contained in the management forecast. We calculate $MFNews_{i,t}$ as the initial management forecast of net income for year $t+1$ minus analyst consensus forecast of net income for year $t+1$ available at the end of fiscal year t, divided by the market capitalization at the end of fiscal year t. Earnings surprise, $EarningsSurprise_{i,t}$, is measured as realized net income for year t less the latest management forecast of net income for year t, divided by the market capitalization at the end of fiscal year t. Since the Japanese stock exchange requires listed companies to issue initial management

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[5] Estimation window of the market model is (−210, −11), and our empirical results are not affected when we change the event window from (−1, +1) to (0, +1), (−1, +2) or (0, 2).

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forecasts for the next fiscal year concurrently with earnings announcements for the last fiscal year within 45 days after the end of the last fiscal year, we include *EarningsSurprise$_{i,t}$* to control for the earnings surprise in contemporaneous earnings announcements.

Similarly, we include the dividend forecast variable, *DividendNews$_{i,t+1}$*, calculated as the difference between management forecast of dividend per share for year *t+1* and realized dividend per share for year *t*, divided by the closing stock price at the end of fiscal year *t*[6], and the dividend surprise variable, *DividendSurprise$_{i,t}$*, calculated as the difference between realized dividend per share for year *t* and the latest management forecast of dividend per share for year *t*, divided by the closing stock price at the end of fiscal year *t*. **Controls** include a size variable, *MV$_{i,t}$*, calculated as the natural logarithm of the market capitalization at the end of fiscal year *t*, market-to-book ratio, *MTB$_{i,t}$*, calculated as the natural logarithm of the market-to-book ratio at the end of the fiscal year *t*, and leverage variable, *LEV$_{i,t}$*, calculated as the total liability divided by the book value of equity at the end of fiscal year *t*.

We first divide our sample into a bad news sample, which includes firm-year observations with negative *MFNews$_{i,t}$*, and a good news sample, which includes firm-year observations with positive *MFNews$_{i,t}$*. We further split each sample into repurchase firms and non-repurchase firms based on the presence of share repurchase announcement in year *t+1* and estimate Equation (1) by OLS panel regression for each subsample. In the bad news sample, we expect that the market reaction to management earnings forecasts is larger for repurchase firms than non-repurchase firms. That means the coefficient of *MFNews$_{i,t}$*, *β$_1$*, will be larger for repurchase firms than non-repurchase firms in the bad news sample. By contrast, we expect the market reaction to the management earnings forecasts is smaller for repurchase firms than non-repurchase

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[6] We calculate the dividend news variable in this way because analyst consensus estimates of dividend per share are relatively less available than that of net income in our sample.

firms in the good news sample. Hence, we predict that β_1 will be smaller for repurchase firms than non-repurchase firms in the good news sample.

3.2. Data and Summary Statistics

We obtain management earnings forecasts data, accounting data, and stock prices and stock returns data from the NEEDS Financial QUEST database, which is widely used in analyses of Japanese companies, over the 2004 to 2015 period. We also extract a sample of share repurchase announcements between Apr. 1, 2004, and Mar. 31, 2016[7]. In addition, analyst consensus forecasts data are collected from S&P's Capital IQ database.

We include forecast-year observations that meet the following criteria in our sample: (1) initial annual management forecasts are issued contemporaneously with earnings announcements for the last fiscal year, (2) analyst consensus forecasts are available at the end of the last fiscal year, (3) fiscal year ends on Mar. 31, (4) compliant with Japanese accounting standards, (5) non-financial company, (6) share repurchase announcements are issued after initial annual management forecasts, and (7) other variables used in the regression analysis are available. In all, our final sample contains observations for 1,569 repurchase firms and 6,025 non-repurchase firms. We winsorize all continuous variables at the 1% and 99% levels in our sample.

Panel A of Table 1 shows descriptive statistics and Panel B of Table 1 presents a correlation matrix for the variables in our sample. The mean value of $D\_ShareRepurchase_{t+1}$, that equals one where firms' announce share repurchase in year $t+1$, is 0.207; thus, 20.7% of firms in our sample announce share repurchase. The

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[7] Until Sep. 2003, share repurchase decisions needed to be approved by resolutions at shareholders meetings in Japan. That means listed companies could not repurchase stocks flexibly.

low-negative mean and median value of *MFNews*$_{i,t}$ indicate that managers issue lower estimates of earnings than analyst consensus estimates; this is consistent with prior literature that managers issue pessimistic forecasts (Matsumoto 2002; Cotter et al. 2006). Cumulative abnormal returns around management forecasts date (*CAR*$_{i,t}$) is positively related to *MFNews*$_{i,t}$, *EarningsSurprise*$_{i,t}$, and *DividendNews*$_{i,t+1}$, as expected, but negatively associated with *DividendSurprise*$_{i,t}$.

(Insert Table 2 about here)

4. Results

4.1. Principal Results

Table 2 shows the main results associated with *H1a* and *H1b*. Two columns on the left side of Table 2 report the regression results for Equation (1) in the bad news sample for repurchase firms and non-repurchase firms, respectively. Two columns on the right side of this table report the regression results for Equation (1) in the good news sample for repurchase firms and non-repurchase firms, respectively. In the bad news sample, the coefficient of *MFNews*$_{i,t}$ is larger for repurchase firms than non-repurchase firms, consistent with *H1a*.

We test whether the coefficient differences are statistically significant by regressing Equation (1) with the interaction term of repurchase dummy, *D_ShareRepurchase*$_{t+1}$, and *MFNews*$_{i,t}$ in the combined bad news sample of repurchase and non-repurchase firms. The coefficient of the interaction term can be interpreted as the difference of the coefficient of *MFNews*$_{i,t}$ between repurchase and non-repurchase firms. The left side of the last row of Table 2 shows the coefficient of the interaction is significantly positive. This result confirms that the market reacts more to bad

management forecasts of repurchase firms and is consistent with the notion that firms repurchase their stocks when managers view their stocks as undervalued with respect to management earnings forecasts.

In contrast, the coefficient of *MFNews*$_{i,t}$ of repurchase firms is similar to that of non-repurchase firms in the good news sample, inconsistent with *H1b* that the market reaction to good news of management forecasts is smaller for repurchase firms than non-repurchase firms.

In summary, our principal results imply that Japanese firms announce a share repurchase in response to market overreactions to bad news in management earnings forecasts.

(Insert Table 2 about here)

4.2. Additional Analysis

In the principal analysis, we find evidence consistent with the expectation that share repurchase is a firm's response to the overreaction to bad news in management forecasts. However, there is a possibility that repurchase firms issue more pessimistic earnings forecasts and the stock market reacts strongly to such forecasts. To examine whether repurchase firms issue earnings forecasts differently from non-repurchase firms, we estimate the regression in Equation (2).

$MFNews_{i,t+1} = \alpha + \beta_1 D\_ShareRepurchase_{i,t+1} + \beta_2 EarningsSurprise_{i,t}$

$\qquad + \beta_3 DividendNews_{i,t+1} + \beta_4 DividendSurprise_{i,t} + \boldsymbol{\delta Controls}$ \qquad (2)

$\qquad + \sum Year + \sum Industry + \varepsilon_{i,t}$

The definitions of all variables in Equation (2) are similar to that in the main analysis. If the management forecasts of repurchase firms are more pessimistic or optimistic than that of non-repurchase firms, the coefficient of $D\_ShareRepurchase_{i,t+1}$ should be statistically significant.

(Insert Table 3 about here)

Table 3 shows the regression results of Equation (2) for the full sample, bad news sample, and good news sample, respectively. The coefficient of $D\_ShareRepurchase_{i,t+1}$ is statistically insignificant for each sample. This result suggests that management forecasts of repurchase firms are not different from those of non-repurchase firms regarding the news contained in management earnings forecasts.

5. Conclusions

We examine the relationship between market reactions to management earnings forecasts and subsequent share repurchase announcements. Our results show that repurchase firms experience a larger market reaction to bad news of management earnings forecasts than non-repurchase firms before repurchase announcements. By contrast, there is little difference in the market reaction to good news between repurchase firms and non-repurchase firms. Additionally, little difference exists in the information content of management forecasts between repurchase firms and non-repurchase firms. In summary, our results imply that Japanese companies repurchase stocks in response to the market overreactions to bad news in management earnings forecasts.
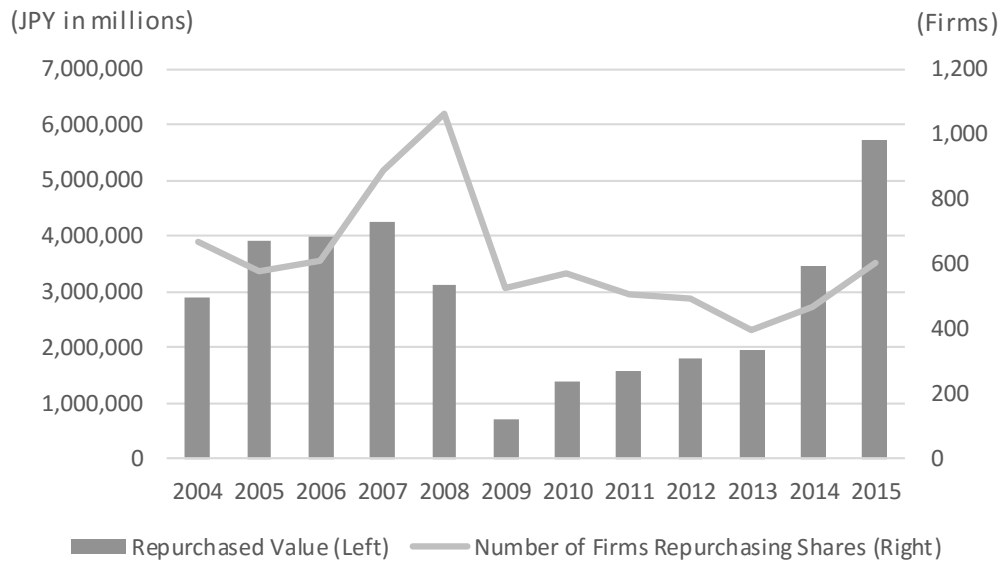
This paper provides evidence that market overreactions to bad news in

management earnings forecasts is one of the triggering events for share repurchase announcements. Our study contributes to the share repurchase literature. We find the "unknown event" which causes managers to repurchase stocks. Excepting our study, only Peyer and Vermaelen (2009) unveil triggering events of share repurchases. They find that repurchase firms experience significant analyst downgrades before repurchase announcements by investigating repurchase programs in the United States, where financial analysts play an important role in information processing. We show that repurchase firms experience a larger market reaction to bad news of management earnings forecasts than non-repurchase firms by analyzing Japanese firms, which are effectively mandated to issue annual and half-year management earnings forecasts.

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Figure 1 Yearly Share Repurchase in Japan

(JPY in millions)

(Firms)

Legend: Repurchased Value (Left) — Number of Firms Repurchasing Shares (Right)

Data Source: NEEDS Financial Quest 2.0

<h3 style="text-align:center;">**Table 1 Data**</h3>

Panel A Descriptive Statistics

	Mean	S.D.	Min.	25%	Median	75%	Max.	N
$D\_ShareRepurchase_{i,t+1}$	0.207	0.405	0	0	0	0	1	7,594
$CAR_{i,t}$	0.003	0.059	-0.155	-0.030	0.000	0.035	0.178	7,594
$MFNews_{i,t+1}$	-0.004	0.020	-0.081	-0.011	-0.003	0.003	0.079	7,594
$EarningsSurprise_{i,t}$	0.002	0.009	-0.027	-0.001	0.001	0.005	0.037	7,594
$DividendNews_{i,t+1}$	0.000	0.004	-0.024	0.000	0.000	0.001	0.011	7,594
$DividendSurprise_{i,t}$	0.001	0.004	-0.026	0.000	0.000	0.002	0.013	7,594
$MV_{i,t}$	11.320	1.362	8.361	10.363	11.236	12.219	14.651	7,594
$MTB_{i,t}$	0.313	0.602	-0.988	-0.104	0.257	0.676	2.112	7,594
$LEV_{i,t}$	1.331	1.254	0.117	0.508	0.930	1.684	7.029	7,594

Panel B Correlation Matrix

	1	2	3	4	5	6	7	8	9
1 $D\_ShareRepurchase_{i,t+1}$		-0.013	-0.007	-0.033	0.021	0.067	0.071	0.052	-0.132
2 $CAR_{i,t}$	-0.017		0.409	0.096	0.187	-0.026	0.015	-0.049	0.026
3 $MFNews_{i,t+1}$	0.002	0.380		0.124	0.154	0.028	0.080	0.018	-0.032
4 $EarningsSurprise_{i,t}$	-0.037	0.071	0.090		0.056	0.187	0.062	0.088	0.035
5 $DividendNews_{i,t+1}$	0.018	0.164	0.119	0.056		0.002	0.132	0.150	0.054
6 $DividendSurprise_{i,t}$	0.056	-0.041	-0.086	0.091	0.087		0.023	0.247	-0.099
7 $MV_{i,t}$	0.072	0.001	0.074	0.021	0.087	0.040		0.323	0.120
8 $MTB_{i,t}$	0.041	-0.064	0.004	0.059	0.078	0.171	0.313		0.094
9 $LEV_{i,t}$	-0.121	0.035	0.021	0.009	0.055	-0.102	0.123	0.143	

Pearson (Spearman) correlations are reported below (above) the diagonal.

Table 2 Market Reaction to Management Forecasts and Share Repurchase

Dependent Variable	$CAR_{i,t}$			
	Bad News		Good News	
	Repurchase firms	Non-repurchase firms	Repurchase firms	Non-repurchase firms
$MFNews_{i,t+1}$	1.150	0.855	0.979	0.950
	[6.67]***	[7.18]***	[4.73]***	[4.66]***
$EarningsSurprise_{i,t}$	0.666	0.151	0.329	0.291
	[2.45]**	[1.11]	[1.49]	[1.53]
$DividendNews_{i,t+1}$	1.273	1.516	1.553	2.525
	[1.85]*	[6.25]***	[2.13]**	[7.72]***
$DividendSurprise_{i,t}$	-1.037	-0.499	-0.033	0.499
	[-2.13]**	[-1.71]*	[-0.05]	[1.84]*
$MV_{i,t}$	0.000	0.000	-0.001	0.001
	[0.03]	[-0.28]	[-0.20]	[0.57]
$MTB_{i,t}$	-0.007	-0.011	0.009	0.001
	[-1.40]	[-4.78]***	[1.50]	[0.45]
$LEV_{i,t}$	0.002	0.005	0.002	-0.001
	[1.17]	[4.77]***	[0.52]	[-1.09]
_cons	0.004	0.007	0.034	0.014
	[0.21]	[0.62]	[1.30]	[0.77]
Year&Industry Effect	Included	Included	Included	Included
Adj-R-squared	0.126	0.108	0.236	0.153
N	1,024	3,695	545	2,330
Difference of the coefficient of $MFNews_{i,t+1}$	0.365		0.013	
	[2.12]**		[0.05]	

* p<0.1, ** p<0.05, *** p<0.01

All *t*-statistics in parentheses are based on standard errors adjusted for heteroscedasticity, and clustering at the firm and the year level.

Table 3 Share Repurchase and Management Forecasts

Dependent Variable	MFNewsi,t+1		
	Full	Bad News	Good News
D_ShareRepurchase i,t+1	0.001	0.001	0.000
	[0.88]	[1.26]	[0.54]
EarningsSurprise i,t	0.187	0.082	0.065
	[4.07]***	[1.93]*	[1.51]
DividendNews i,t+1	0.633	0.510	0.116
	[9.46]***	[4.32]***	[0.60]
DividendSurprise i,t	-0.363	0.195	-0.508
	[-1.22]	[1.97]**	[-2.59]***
MV i,t	0.001	0.003	-0.002
	[3.26]***	[7.68]***	[-6.19]***
MTB i,t	-0.001	0.004	-0.006
	[-1.17]	[5.93]***	[-4.78]***
LEV i,t	0.000	-0.003	0.003
	[0.19]	[-8.03]***	[6.51]***
_cons	-0.016	-0.047	0.029
	[-4.01]***	[-9.72]***	[7.39]***
Year&Industry Effect	Included	Included	Included
Adj-R-squared	0.089	0.280	0.315
N	7,594	4,719	2,875

* p<0.1, ** p<0.05, *** p<0.01

All *t*-statistics in parentheses are based on standard errors adjusted for heteroscedasticity, and clustering at the firm and the year level.