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Do managers really disclose bad news early? Examination of management forecast in Japan's effectively mandated disclosure

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ABSTRACT

Previous studies investigating the asymmetry of stock market reactions to news have shown that managers delay the disclosure of bad news. By focusing on the Japanese market, where the information environment for investors regarding management forecasts is well developed and a lot of information is provided to investors, we find that managers disclose bad news earlier. Furthermore, we show that the higher the market's expectations of management's forecasts at the beginning of the fiscal year, the earlier management disclose bad news. We focus on disclosure systems outside the U.S., and contribute to previous studies by showing that differences in disclosure systems affect management's disclosure behavior.

1. Introduction

Whether managers disclose bad news early or not has been a major research interest in accounting. Empirical studies focusing on the asymmetry of stock price reactions to news generally show that managers delay the disclosure of bad news (Kothari, Shu, and Wysocki 2009; Baginski, Campbell, Hinson, and Koo 2018; Ali, Li, and Zhang 2019). This is because managers withhold the disclosure of bad news in the hope that a later good event will "bury" the bad news (Verrecchia 2001; Hermalin and Weisbach 2007). Previous studies have shown that managers delay the disclosure of bad news when they face career concerns (Hermalin and Weisbach 2007; Kothari et al. 2009; Baginski et al. 2018; Bao, Kim, Mian, and Su 2019; Ali et al. 2019).

It should be noted, however, that the studies that present such results focus on management forecasts revisions for U.S. firms. We focus on management forecasts for Japanese firms and develop a hypothesis that differs from previous studies. Specifically, we predict that the institutional background of management forecasts in Japan will encourage managers to disclose bad news early.

While many previous studies argue that delaying the disclosure of bad news benefits managers (Hermalin and Weisbach 2007; Kothari et al. 2009; Baginski et al. 2018; Bao et al. 2019; Ali et al. 2019), it is important to note that managers may incur costs by withholding information (Baginski et al. 2018). For example, Jung and Kwon (1988) theoretically demonstrated that the cost of delaying bad news increases as the likelihood that firm stakeholders perceive that managers have intentionally concealed information increases. This suggests that when a firm's information environment is good, i.e., when there is a high probability that investors can independently recognize the firm's bad news, this information environment encourages managers to disclose bad news early. Since the

information environment regarding Japanese managers' forecasts is much richer than that in the U.S., and investors have a high probability of independently detecting bad news that managers are withholding, we expect that this will encourage managers to disclose bad news early.

The most important feature of the disclosure of Japanese management earnings forecasts is that, while the disclosure of U.S. management earnings forecasts is voluntary, in Japan they are disclosed in accordance with the requirements of the Tokyo Stock Exchange. This disclosure system is called the “Financial Summary (Kessan Tanshin in Japanese)” and it is described as “effectively mandated disclosure” (Kato, Skinner, and Kunimura 2009). The features of the Japanese management forecast disclosure system are as follows: (1) almost all listed firms in Japan disclose their management forecasts for the next period at the same time as they announce their actual earnings, (2) forecasts not only for net income but also for sales, operating income, dividends, etc. are disclosed at the same time, and (3) if there is a “significant” revision to the management forecast, the disclosure of the revision to the forecast is legally mandatory.

These institutional features provide investors and analysts with management forecasts for almost all firms on the date of the earnings announcement, providing investors with a benchmark for predicting subsequent revisions to earnings forecasts (i.e., news events) and facilitating comparisons with other firms in the same industry. In addition to net income, the provision of related information such as sales, operating income, and dividends would make it easier to predict changes in net income. The rich information environment regarding management forecasts makes it easier for investors and analysts to detect attempts by management to withhold bad news.

Furthermore, in Japan, the disclosure of forecast revisions is mandatory when a large

revision to earnings forecast is expected. The reason why managers withhold the disclosure of bad news is to offset the bad news with good news that occurs before the earnings announcement date, but the mandatory disclosure of forecast revisions significantly limits such possibilities. Therefore, we expect Japanese managers to disclose bad news early.

We conduct our analysis using a sample of 18,053 observations in which management forecasts of net income are disclosed for the period from 2009 to 2022. First, we examine the stock market reaction to the net income revision, following the analysis of Kothari et al. (2009) to test the above prediction. We find that the stock market reaction to downward revisions of earnings forecasts is smaller than that to upward revisions, suggesting that managers tend to disclose bad news early. While the results are consistent with our predictions, they differ from the results of previous studies of US firms. Second, we examine the effect of market expectations of management's initial earnings forecast on the disclosure of bad news. Previous studies of Japanese firms have shown that management forecasts, which are released at the same time as actual earnings, have more information content than actual earnings, suggesting that management forecasts play a dominant role in shaping investors' expectations (Conroy et al. 1998; Darrough and Harris 1991; Ota 2010; Iwasaki, Kitagawa, and Shuto 2023). Therefore, when a manager announces a high earnings forecast but fails to achieve it, the market is expected to impose a large penalty in response. Consistent with this prediction, we find that the tendency for managers to disclose bad news early is more pronounced for firms with high market expectations at the beginning of the period.

This study contributes to the existing literature on the disclosure of bad news. First, we extend the previous studies by focusing on institutional factors outside the United

States and revealing that differences in disclosure environments affect management's disclosure behavior. One of the major differences between Japan and the U.S. in terms of management earnings forecasts is that in the U.S. they are disclosed on a voluntary basis, whereas in Japan they are disclosed systematically under the requirements of the Tokyo Stock Exchange. We show that managers disclose bad news early when the information environment for investors regarding management forecasts is well developed and abundant information is available. Second, we improve the identification of the research setting in previous studies. Since management forecasts are a voluntary disclosure in U.S. firms, there is a concern about sample selection bias in previous studies, where only firms with good performance disclose. The results of U.S. firms that disclose good news early should be interpreted with caution in light of this bias. In the Japanese setting, where almost all firms disclose management forecasts, such problems do not arise.

2. Previous studies and hypotheses development

2.1 Previous studies

Previous studies have focused on when managers with different disclosure motives disclose their private information (Healy and Palepu 2001; Verrecchia 2001). Some studies argue that managers disclose bad news early in order to reduce litigation risk and improve reputation (Skinner 1994; Kasznik and Lev 1995; Baginski, Hassell and Kimbrough 2002). On the other hand, other studies argue that managers delay the disclosure of bad news when they have career concerns (Hermalin and Weisbach 2007; Kothari et al, 2009; Baginski et al. 2018; Bao et al. 2019; Ali et al. 2019). This is because managers withhold the disclosure of bad news in the hope that a later good event will "bury" the bad news (Verrecchia 2001; Hermalin and Weisbach 2007).

Previous studies focusing on the asymmetry of stock market reactions to news have generally shown that managers delay the disclosure of bad news. Kothari et al. (2009) assume that when managers delay reporting by accumulating information without disclosing it, the stock market reaction to the information will be larger, and they examine the revision of managers' earnings forecasts as a proxy variable for news. They show that investors react more strongly to bad news than to good news, and interpret this result as suggesting that managers, on average, delay the disclosure of bad news. In addition, Kothari et al. (2009) show that factors such as (1) litigation risk, (2) management career concerns, (3) insider ownership, (4) information asymmetry, and (5) the enforcement of Regulation FD affect the timing of bad news disclosure. Baginski et al. (2018) and Ali et al. (2019) extend Kothari et al. (2009) by refining the proxy variables and identification strategies related to career concerns. Both papers show that career concerns are a factor that promotes the withholding of bad news.

While many previous studies have shown that managers delay the disclosure of bad news, it is important to note that managers face the costs associated with withholding information (Baginski et al. 2018). For example, if investors believe that managers are intentionally hiding bad news, delaying the disclosure of that news increases the cost of penalties to managers' reputations, careers, and the likelihood of litigation (Jung and Kwon 1988; Rogers and Stocken 2005; Baginski et al. 2018).

Many previous studies show that managers, on average, delay bad news as a result of this cost-benefit consideration. However, all previous studies have investigated U.S. firms. We extend previous studies by predicting a different result by investigating the Japanese market, which has a different information environment than the U.S. While previous studies use management earnings forecasts as a proxy variable for news, the

disclosure of management earnings forecasts differs greatly between Japan and the U.S. In the U.S., management earnings forecasts are disclosed on a voluntary basis, while in Japan, it is disclosed systematically according to the requirements of the Tokyo Stock Exchange. This disclosure system is called the "Kessan Tanshin" system, and is described as an effectively mandatory disclosure (Kato et al. 2009).

In the following, we explain that, under this framework, the cost of withholding bad news is very high. We also discuss the expectation that managers are likely to disclose bad news early and present this as a hypothesis.

2.2 Institutional background and hypotheses development

Compared to the disclosure system in the U.S., the characteristics of the disclosure system for management forecasts in Japan can be summarized as follows (Kato et al. 2009; Iwasaki et al. 2023; Kitagawa and Shuto 2024).

1. Listed companies are expected to release point forecasts of annual earnings on each annual earnings announcement date and revisions of these forecasts on interim earnings announcement dates. Thus, managers provide initial forecasts for year t when year $t - 1$ earnings are announced, and revisions (including confirmations) when interim earnings are announced.
2. Managers are expected to provide forecasts for sales, operating income, earnings before extraordinary items and taxes, net income, earnings per share and dividend per share.
3. Forecasts must be updated if there are "significant" revisions in management

estimates, defined as either changes in sales estimates of 10% (or more), or in earnings estimates of 30% (or more, known as the "Significance Rule"), or both. In contrast to the initial forecasts encouraged by the stock exchange listing rules, these revisions are required under the Act (Securities Listing Regulations, Rule 405, Paragraphs 1 and 3).

The characteristics of the disclosure environment described above may encourage managers of Japanese firms to disclose bad news early. First, almost all listed Japanese firms disclose their earnings forecasts for the next fiscal year at the same time as they announce their actual earnings. This provides investors with a uniform benchmark for predicting future news. In the U.S., where disclosure is voluntary, the situation is different in that only a limited number of firms disclose information at their own discretion. In addition, under voluntary disclosure, there is a sample selection bias in that only firms with good earnings results disclose their earnings forecasts. Furthermore, in Japan, not only net income, but also multiple performance measures such as sales, operating income, and dividend forecasts are disclosed simultaneously. By simultaneously considering multiple earnings and dividend forecasts, the information asymmetry between managers and external parties is mitigated, and analysts and investors can more easily predict future news regarding earnings forecasts for net income. In fact, it is common practice in Japan for analysts to refer to management forecasts when making their own forecasts (Ota 2010; Noma 2014).[1] Noma (2014) argues that analysts in Japan herd around management

[1] Ota (2010) shows that more than 90% of changes in analysts' forecasts are explained by management forecasts alone. He also reveals that financial analysts also somewhat modify management forecasts when certain financial factors indicate that the credibility of management forecasts is in doubt. He concludes that Japanese management forecasts provide useful information for the market and have a significant influence on analysts' forecasts.

forecasts and tend to trust management forecasts because they believe that managers in Japanese firms are highly disciplined. Japanese investors and analysts have a good information environment regarding management forecasts, making it relatively easy for them to detect management attempts to hide bad news.

Consistent with this argument, Kothari et al. (2009) show that the higher the information asymmetry between managers and investors, the more managers delay the disclosure of bad news. They also show that the introduction of Regulation FD, which mitigates information asymmetry among investors, reduces the delay in disclosing bad news. These results suggest that a firm's information environment affects managers' disclosure behavior.

Second, Japanese firms are forced to disclose information when there is a significant revision in management's forecast. The reason why managers withhold bad news is to offset its effect with good news that may come later. For example, managers of U.S. firms can withhold disclosure of bad news until the end of the fiscal year. In Japan, however, managers must disclose during the fiscal year if they expect earnings to be revised by a certain amount or more. This system may reduce the likelihood that managers will withhold bad news.

Jung and Kwon (1988) theoretically demonstrated that the cost of delaying bad news increases as the probability that stakeholders will recognize that management has intentionally withheld information increases. The two important implications of Jung and Kwon's (1988) theoretical model are as follows: First, if investors believe that the probability of management recognizing bad news increases as the end of the fiscal year approaches, then management will disclose bad news. Second, they showed that if a firm's information environment is good, i.e., if there is a high probability that investors can

independently detect the firm's news, then this information environment will encourage management to disclose bad news early. Based on the implications of Jung and Kwon (1988), Japanese managers are more likely to have an incentive to disclose bad news early.

Moreover, in the Japanese market, earnings forecasts have more information content than actual earnings (Conroy et al. 1998; Darrough and Harris 1991; Ota 2010; Iwasaki et al. 2023), and they have various economic consequences that affect both managers and firms (Otomasa, Shiiba, and Shuto 2020; Ishida and Hachiya 2021). For example, Ota (2010) employs Ohlson's (2001) framework to investigate the value relevance of management earnings forecasts, and finds that management earnings forecasts have the highest correlation and incremental explanatory power with stock prices (returns) compared to book value and current earnings. Furthermore, previous studies indicate that the achievement of management forecasts is significantly related to management turnover and management compensation (Otomasa et al. 2020; Ishida and Hachiya 2021). As a result, the penalty for delaying bad news is likely to be very large. Therefore, in the Japanese market, where earnings forecast disclosure is effectively mandatory, we expect managers to disclose bad news early.

Based on the above discussion, we formulate the following Hypothesis 1.

H1: The stock market reaction to the disclosure of bad news is smaller than the stock price reaction to the disclosure of good news.

We expect that the tendency for management to disclose bad news early will be stronger the higher the market's expectations for earnings forecasts. As mentioned above, almost all firms in Japan release their earnings forecasts for the next fiscal year when they

announce their financial results. These initial forecasts have more information content than the actual earnings announced at the same time, and they are an important source of information for investors in Japan (Conroy et al. 1998; Darrough and Harris 1991; Ota 2010; Iwasaki et al. 2023). For example, Iwasaki et al. (2023) show that investors respond positively to firms that announce earnings forecasts that predict an increase in earnings, even when actual earnings have declined. Japanese corporate managers are also known to issue optimistic forecasts with this outcome in mind (Kato et al. 2009; Iwasaki et al. 2023). This argument suggests that management forecasts play a dominant role in shaping investor expectations when Japanese firms announce their financial results.

For firms that issue earnings forecasts that are higher than investors' expectations, investors' expectations that the firm will achieve its earnings forecast will be high. If management issues an unexpectedly high earnings forecast but fails to meet it, the market's reaction is expected to be a large penalty. Therefore, firms with high market expectations based on initial forecasts may disclose bad news earlier. We use two variables as proxies for market expectations: (1) forecast innovation (the value obtained by subtracting the current period's actual earnings from the next period's earnings forecast) and (2) the magnitude of the stock price reaction on the day the earnings forecast is announced. Forecast innovation captures whether management announced a high earnings forecast or not. The stock price reaction on the announcement day of the earnings forecast is a variable that captures whether investors actually react positively to the earnings forecast. We hypothesize the following.

H2: The tendency of managers to disclose bad news early becomes more pronounced for firms with high market expectations at the beginning of the fiscal year.

3. Preliminary analysis

Previous studies provide evidence that management forecasts of bad news are associated with larger stock price reactions than good news for U.S. firms (Kothari et al. 2009). We re-examine whether there is an asymmetric market reaction to management earnings forecasts in Japan, where the disclosure of management forecasts is effectively mandatory. Our sample consists of management forecasts of annual earnings between 2009 and 2022 from the *Nikkei NEEDS Financial QUEST* database.[2]

We define the news in management's earnings forecasts, *Forecast Revision* as follows.

Forecast Revision = (management's forecast of net income – management's previous forecast of net income) / the absolute value of management's previous forecast of net income

To examine market reactions to these management forecast revisions, we collect daily stock returns on the days around management forecast announcements. We define the market reaction, *Ret* as follows.

Ret = the cumulative abnormal stock returns during the five-day period surrounding the announcement of the management forecast. The abnormal returns are defined as the

[2] Our analysis focuses on net income because it is recognized as the most important performance measure in the Japanese market, and most previous studies of Japanese firms have also focused on net income (Kato et al. 2009; Ishida et al. 2021; Ishida and Hachiya 2021; Iwasaki et al. 2023; Kitagawa and Shuto 2023). Additional analysis of alternative earnings measures is conducted in the Additional Analysis section.

firm's stock return minus the weighted average market return by market capitalization (excluding the financial industry).

Following the method of Kothari et al. (2009), we conduct a preliminary analysis of the time series of stock market movements prior to the announcement of management's forecast. Figure 1 shows the return patterns of good news forecasts (*Forecast Revision* is positive) and bad news forecasts (*Forecast Revision* is negative) samples over a 60-day period prior to management's forecasts. Specifically, Panel A plots the mean cumulative abnormal stock returns. Panel A indicates that the magnitude of the cumulative average abnormal return over 60 days is slightly larger for the good news forecasts sample than for the bad news forecasts sample. The absolute values of the mean cumulative abnormal return for both samples increase smoothly and steadily over this window. The results suggest that the news is gradually released (leaked), regardless of whether it is good or bad. In both samples, we see a large price reaction around the announcement of management's forecast during the window, but the good news forecast seems to be slightly larger. Panel B reports the cumulative abnormal return scaled by the total return over the window. This essentially provides an estimate of the fraction of total news that is revealed over time. Consistent with the tendency in Panel A, Panel B shows that the fraction of the cumulative abnormal return for the bad news sample remains consistently above that of the good news sample until the announcement date.

These results suggest that bad news is disclosed earlier than good news. This is consistent with our hypothesis, but differs from the results of Kothari et al. (2009), which show that bad news has a significantly larger impact on stock price reactions than good

news at the time of the forecast announcement.[3]

4. Research design

4.1 Hypothesis 1

To test Hypothesis 1, we conduct a regression analysis that examines the asymmetric market reactions to management forecasts of positive and negative news. As proposed by Kothari et al. (2009), the baseline regression specification is defined as follows:

$$Ret = \alpha + \beta_0 Bad\ News + \varepsilon \quad (1)$$

where

Ret = the cumulative abnormal stock returns during the five-day period surrounding the announcement of the management forecast. Abnormal returns are defined as the firm's stock return minus the weighted average market return by market capitalization (excluding the financial industry).

Bad News = dummy variable that takes the value of one if *Forecast Revision* is positive, and zero otherwise.

As Kothari et al. (2009) indicated, the intercept in the above model (α) captures the stock market response to good news management forecasts. The coefficients on *Bad News* (β_0) capture the incremental market reactions to bad news forecasts. The sum of the intercepts and the coefficients on *Bad News* ($\alpha + \beta_0$) capture the total market reactions to

[3] It should be noted that Figure 1 does not take into account the possibility that other forecasts may be included within 60 days of the announcement of a forecast. Taking this possibility into account, the same trend can be confirmed even when the sample is limited to cases where the previous forecast was published 60 days earlier (results not tabulated).

bad news forecasts. We test whether the absolute magnitude of the market response to bad news ($|\alpha + \beta_0|$) is statistically smaller than the absolute magnitude of the market response to good news ($|\alpha|$) using an *F*-test.

Furthermore, we estimate a model that includes the magnitude of the news (*Forecast Revision*) in the forecasts as follows:

$$Ret = \alpha + \beta_0 Bad\ News + \beta_1 Forecast\ Revision + \beta_2\ Bad\ News \times Forecast\ Revision + \varepsilon \quad (2)$$

The coefficient for the interaction term *Bad News* × *Forecast Revision* represents the differential in the market reaction per unit of bad news and good news. If the coefficient of the interaction term (β_2) is significantly negative, it indicates that investors' reactions to negative forecast revisions are less pronounced than their reactions to positive ones. This is consistent with the hypothesis that managers tend to disclose or leak bad news at an early stage.

4.2 Hypothesis 2

To test Hypothesis 2, we employ regression models (3) and (4) to examine the influence of market expectations on the asymmetric stock market reactions to good and bad news.

$$Ret = \alpha + \beta_0\ Bad\ News + \beta_1\ High\ Expectation + \beta_2\ Bad\ News \times High\ Expectation + \varepsilon \quad (3)$$

$$Ret = \alpha + \beta_0\ Bad\ News + \beta_1\ High\ Expectation + \beta_2\ Bad\ News \times High\ Expectation + \beta_3 Forecast\ Revision + \beta_4\ Bad\ News \times Forecast\ Revision + \varepsilon \quad (4)$$

The *High Expectation* variable represents the market expectations at the time of the initial forecast announcement. As discussed in Section 2, firms that announce unexpectedly high earnings forecasts at the beginning of the fiscal period are expected to face significant market expectations. As a result, the penalty for missing the earnings forecast at the end of the period is expected to be severe. Managers seeking to mitigate such a penalty will make an early downward revision. We measure the market's expectations at the beginning of the period by focusing on the forecast innovations (management net income forecasts minus the previous-period net income) and the reaction of the stock price. Specifically, we use two alternative variables as follows:

High Expect1 = dummy variable that takes the value one if the initial forecast innovation of net income exceeds the median, and zero otherwise.

High Expect2 = dummy variable that takes the value one if the initial forecast innovation of net income exceeds the median and the abnormal stock return over the five days at the initial management forecast of net income exceeds the median, and zero otherwise.

In accordance with the approach outlined by Baginski et al. (2018), we test the hypothesis that market reactions to disclosures of bad news and good news will differ. It is expected that the market response of bad news will be less pronounced in a market with initial high expectations ($|\alpha+\beta_0+\beta_1+\beta_2|$ minus $|\alpha+\beta_1|$) than in a market with initial low expectations ($|\alpha+\beta_0|$ minus $|\alpha|$). Appendix A maps the coefficients of models (3) and (4) to the test of Hypothesis 2.

5. Sample selection

The sample consists of firms (excluding financial institutions) that have disclosed earnings forecasts for the fiscal year ending March 2009 through the fiscal year ending March 2022. The financial statement data are obtained from the consolidated financial statements. The financial statement data is obtained from *Nikkei NEEDS Financial QUEST*, and the stock price data is obtained from the *Daily Return Data for Listed Japanese Stocks*.

Table 1 describes the sample selection procedure. To ensure the comparability of earnings, we set the following sample selection criteria. First, there are no changes in the accounting standards applied by the firms. Second, the accounting period is 12 months.

In order to ascertain the standard practice of disclosing earnings forecasts, we apply the following conditions to the sample. First, management forecasts are released only for the next period on the date of announcement. This restriction eliminates the possibility of management forecasts for multiple fiscal periods being released on the same day. Second, initial earnings forecasts are released within 45 days of the end of the fiscal year. (45-Day Rule).[4] The third condition is that the revision of the management's forecast will be completed within one year from the initial forecast. This restriction prevents the inclusion of forecasts made after the financial results for the particular fiscal year have been announced. The fourth condition is that the value of the *Forecast Revision* is not equal to zero. This procedure entails the exclusion of management forecasts for which the data

[4] The "45-Day Rule" in Financial Summary (Kessan Tanshin in Japanese) refers to the regulatory requirement that publicly listed companies must disclose their financial results within 45 days of the end of their fiscal year. This rule ensures the timely and consistent reporting of financial statements, which facilitates transparency in Japan's stock market and allows investors to assess companies' recent financial performance on a regular schedule.

necessary for calculating *Forecast Revision* is unavailable, as well as those for which *Forecast Revision* is zero (i.e., the forecast has not been modified).

Following Kothari et al. (2009), we exclude firms that meet the following conditions to ensure that our sample captures economically meaningful management forecast revisions. First, the absolute value of the *Forecast Revision* is less than 1%. Second, the absolute value of the previous management net income forecast is less than the 1st percentile. Third, *Forecast Revision* is less than 1 percentile or more than 99%. In addition, after removing earnings forecasts that were released concurrently with the quarterly earnings announcement (i.e., bundled forecast) and restricting the sample to fiscal years for which stock price variables could be calculated, the final sample size is 18,053. Note that if multiple management forecasts (revisions) are released in a single fiscal period, all of them are included in the analysis.

Table 2 presents the descriptive statistics. Panel A shows the descriptive statistics for the sample in which the firm announces the management forecast revision, Panel B shows the descriptive statistics for the sample in which *Forecast Revision* is negative (bad news forecasts), and Panel C shows the descriptive statistics for the sample in which *Forecast Revision* is positive (good news forecasts). We find that there are 8,725 observations for good news forecasts and 9,328 observations for bad news forecasts. We also find that the mean *Ret* of the good news sample is larger than that of the bad news sample. These results suggest that good news is disclosed less frequently than bad news but has a greater impact on stock prices, and thus managers may disclose good news relatively late. This result contrasts with the findings of Kothari et al. (2009) that bad news forecasts are disclosed more frequently and the stock price reaction is larger.

6. Results

To test Hypothesis 1, the estimation results for regression models (1) and (2) are summarized in Table 3. Table 3 shows the results of stock price reactions to management forecast revisions. The results indicate that the stock price reacts less to bad news than to good news. The first column shows that the intercept (α) is 0.038, the coefficient for *Bad News* (β_0) is -0.064, and the sum of both ($\alpha + \beta_0$) is -0.026 in regression model (1). The difference between the stock price reaction to good news ($|\alpha|$) and the stock price reaction to bad news ($|\alpha + \beta_0|$) is -0.012, which is statistically significant (*F*-value is 88.000).

The second column of Table 3 shows the results of the regression model (2) that controls for the amount of the news in the forecasts. The results also show that the stock price reacts less to bad news than to good news. The difference between the stock price reaction to good news ($|\alpha|$) and the stock price reaction to bad news ($|\alpha + \beta_0|$) is -0.003, which is statistically significant (*F* value is 4.175). Furthermore, the interaction variable, *Forecast Revision* × *Bad News*, is negatively correlated and statistically significant. In sum, the stock price response to bad earnings forecasts is less pronounced than to good forecasts. This result is consistent with the hypothesis that managers tend to disclose bad news at an earlier point in time.

Next, to test Hypothesis 2, we examine whether the tendency of managers to disclose bad news early is more pronounced for firms with high market expectations. We report the results of regression models (3) and (4) in Table 4. The first column of Table 4 reports the estimated coefficients from the regression model (3). In a situation where market expectations are high, the difference in stock price reaction to bad news and good news (High Expectation) is -0.015, which is statistically significant (*F*-value is 67.949). The asymmetric stock price reaction in the context of low market expectations (Low

Expectation) is statistically significant at -0.009. The difference between the high expectation and low expectation groups is -0.007, which is statistically significant at the 0.01 level and negative (*F*-value is 7.306). In addition, the coefficient for the interaction between bad news and high expectations, *Bad News* × *High Expect1*, is -0.007, which is statistically significant and negative. These findings provide empirical support for Hypothesis 2, indicating that managers with high market expectations are more likely to disclose bad news earlier.

The second column of Table 4 presents the estimated coefficients from the regression model (4). The results are also consistent with the Hypothesis 2. The difference in the asymmetric stock response between the high expectation and low expectation groups is -0.006, which is statistically significant at the 0.05 level and negative (*F*-value is 6.690).

The results remain consistent even when we use alternative proxies for market expectations. Instead of *High Expect1*, we use *High Expect2* in regression models (3) and (4). The third and fourth columns of Table 4 present the results that are consistent with the Hypothesis 2.

7. Additional results

The results of our main analyses suggest that managers tend to disclose bad news at an earlier. This section presents additional analyses to assess the robustness of this finding. First, we use an alternative proxy based on earnings per share (*Forecast EPS Revision*). Kothari et al. (2009) use management EPS forecasts as a measure of good news and bad news. The results of this analysis indicate that, even when earnings per share is considered, the stock price is less sensitive to bad news than to good news (Table 5 and Table 6). The results demonstrate that our hypotheses are supported even when alternative earnings

forecasts are used.

Second, we conduct an analysis using all earnings forecast items disclosed under the disclosure system in Japan. Specifically, we measure a dummy variable that equals one if the number of downward revisions to net sales, operating income, ordinary income, net income, and earnings per share is greater than the number of upward revisions to each of these performance measures, and zero otherwise, and then conduct a reanalysis of the main analysis. The results indicate that the stock price reaction to bad news is significantly smaller than that to good news (not tabulated). Thus, the results remain robust even when considering news that includes all earnings forecasts.

8. Summary and conclusion

This study presents evidence of asymmetric stock market reactions to good and bad news about management forecasts in an information environment where management forecasts are effectively mandatory. First, we find that the stock market reaction to downward earnings revisions (i.e. bad news) is smaller than that to upward revisions (i.e. good news). Second, we also find that the tendency for managers to disclose bad news early is more pronounced for firms with high market expectations at the beginning of the period. These results suggest that managers tend to disclose bad news early, which differs from the results of previous studies of US firms. We contribute to previous studies by revealing that managers disclose bad news early when the information environment for investors regarding management forecasts is well developed and a lot of information is provided. Our results suggest that differences in disclosure environments affect management's disclosure behavior. This finding may have useful implications for policy makers regarding disclosure.

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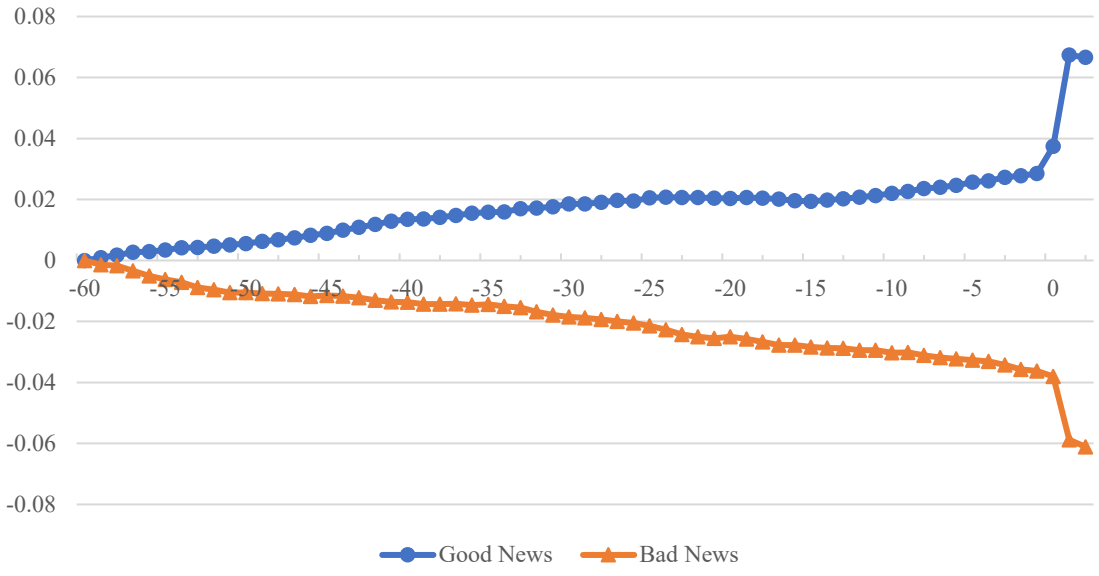
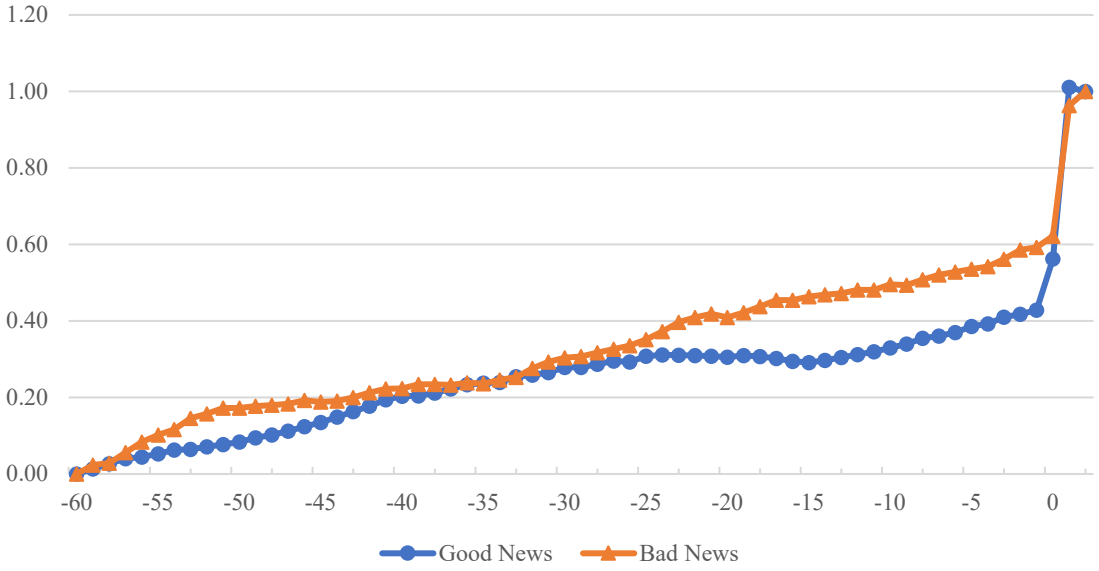
Figure1. Cumulative stock returns prior to good and bad news management earnings forecasts.

Panel A. Mean cumulative market-adjusted return.



Panel B. Percentage of news released.



Note: Cumulative stock returns prior to good and bad news management earnings forecasts. Sample comprises 19,002 annual management forecasts of net income between March 2009 and March 2022, sourced from the *Nikkei NEEDS Financial QUEST*. The good news sample consists of all observations where *Forecast Revision* > 0. The bad news sample consists of all observations where *Forecast Revision* < 0. Panel A presents the mean cumulative market-adjusted returns for the good versus bad news samples prior to the management forecast date (day 0). Panel B presents the cumulative news up to day *t* scaled by the total news over the entire period (captures the percentage of total news released at any point in time). This hypothesis testing method is in accordance with Kothari et al. (2009).

Table 1. Sample selection procedure.

	Number of observations
The annual management earnings forecasts issued by non-financial firms during the 2009/03 to 2022/03 fiscal years.	183,870

Less:	
There is no change in accounting standards.	4,109
The number of months in the fiscal year is not 12 months.	9,352
Management's forecasts for several fiscal years are disclosed on the same date.	260
Initial management forecasts are announced 45 days or more after the end of the fiscal year.	13,306
Revisions to management forecasts are announced without 12 months of the date on which the initial management forecast is announced.	1,758
The data required for calculating the management forecasts revision (*Forecast Revision*) cannot be obtained	36,211
The absolute value of the management forecasts revision (*Forecast Revision*) is zero	80,609
The absolute value of the management forecasts revision (*Forecast Revision*) less than 1 percent (Kothari et al., 2009)	186
The absolute value of the previous management forecasts less than 1 percentile (Kothari et al., 2009)	454
The management forecasts revision (*Forecast Revision*) at the top and bottom 1 percent level (Kothari et al., 2009)	2,027
The management forecasts, which are issued on the day of the quarterly earnings announcement (i.e., bundled forecasts)	17,111
The data required for calculating the abnormal return (*Ret*) cannot be obtained	434
Management earnings forecasts for empirical tests	18,053

Note: Sample comprises annual management forecasts of net income between March 2009 and March 2022, sourced from the *Nikkei NEEDS Financial QUEST*. The financial statement data is derived from consolidated financial statements. The stock price data is sourced from the *Daily Return Data for Japanese Listed Stocks*.

Table 2. Descriptive statistics

Panel A: Descriptive statistics for the full sample

Variable	N	Mean	SD	Min	p25	Median	p75	Max
Forecast Revision	18,053	-0.208	0.983	-5.7	-0.492	-0.054	0.313	1.955
Ret	18,053	0.005	0.088	-0.917	-0.036	0.001	0.039	1.074

Panel B: Descriptive statistics for the bad news sample that consists of observations where *Forecast Revision* < 0

Variable	N	Mean	SD	Min	p25	Median	p75	Max
Forecast Revision	9,328	-0.811	0.991	-5.7	-0.872	-0.472	-0.246	-0.01
Ret	9,328	-0.026	0.078	-0.558	-0.059	-0.021	0.01	1.074

Panel C: Descriptive statistics for the good news sample that consists of observations where *Forecast Revision* > 0

Variable	N	Mean	SD	Min	p25	Median	p75	Max
Forecast Revision	8,725	0.437	0.381	0.01	0.172	0.324	0.557	1.955
Ret	8,725	0.038	0.086	-0.917	-0.006	0.024	0.067	0.941

Note: The full sample comprises 18,053 annual management forecasts of net income between March 2009 and March 2022, sourced from the *Nikkei NEEDS Financial QUEST*. *Forecast Revision* = (management's forecast of net income – management's previous forecast of net income) / the absolute value of management's previous forecast of net income. *Ret* = the cumulative abnormal stock returns during the five-day period surrounding the announcement of the management forecast. The abnormal returns are defined as the firm's stock return minus the weighted average market return by market capitalization (excluding financial industry). The good news sample consists of 9,328 observations where *Forecast Revision* > 0. The bad news sample consists of 8,715 observations where *Forecast Revision* < 0.

Table 3. Market reactions to management forecasts in Equations (1) and (2)

Variable	Equation (1) Coefficient (*t*-statistic)	Equation (2) Coefficient (*t*-statistic)
Intercept	0.038***	0.024***
	(37.213)	(17.787)
Bad News	-0.064***	-0.045***
	(-45.833)	(-25.983)
Bad News × *Forecast Revision*		-0.025***
		(-8.336)
Forecast Revision		0.032***
		(11.287)
N	18,053	18,053
Adj. *R*	0.1336	0.1458
Coefficients *F*-test:		
Difference	-0.012***	-0.003**
F-value	88.000	4.175

Note: The sample comprises 18,053 annual management forecasts of net income between March 2009 and March 2022. *Bad News* = dummy variable that takes the value one if *Forecast Revision* is positive, and zero otherwise. *Forecast Revision* = (management's forecast of net income – management's previous forecast of net income) / the absolute value of management's previous forecast of net income.

The difference between the market reaction to bad news versus good news (Difference) is $(|\alpha + \beta_0|) - (|\alpha|)$. We test the difference using by F-test.

*** and ** represent significance at 1 percent and 5 percent two-tailed levels, respectively.

Table 4. Market reaction to initial management forecasts and revisions in Equations (3) and (4)

Variable	Equation (3) Coefficient (*t*-statistic)	Equation (4) Coefficient (*t*-statistic)	Equation (3) Coefficient (*t*-statistic)	Equation (4) Coefficient (*t*-statistic)
Intercept	0.035***	0.022***	0.036***	0.022***
	(28.602)	(14.677)	(31.305)	(14.745)
Bad News	-0.061***	-0.043***	-0.061***	-0.041***
	(-35.351)	(-21.817)	(-38.410)	(-21.968)
Bad News × *High Expect1*	-0.007***	-0.005*		
	(-2.729)	(-1.915)		
Bad News × *High Expect2*			-0.012***	-0.012***
			(-4.164)	(-4.389)
Bad News × *Forecast Revision*		-0.025***		-0.025***
		(-8.143)		(-8.320)
High Expect1	0.007***	0.006***		
	(3.613)	(2.997)		
High Expect2			0.009***	0.009***
			(4.131)	(4.338)
Forecast Revision		0.032***		0.032***
		(11.111)		(11.302)
N	17,786	17,786	17,786	17,786
Adj. *R*	0.1357	0.1481	0.1361	0.1488
Coefficients *F*-test:				
Low Expectation	-0.009***	-0.001	-0.010***	-0.002
F-value	26.882	0.117	50.537	1.159
High Expectation	-0.015***	-0.007***	-0.016***	-0.008***
F-value	67.949	10.404	45.574	9.839
Difference	-0.007***	-0.006**	-0.006**	-0.006**
F-value	7.306	6.690	4.369	4.737

Note: The sample comprises annual management forecasts of net income between March 2009 and March 2022. *Bad News* = dummy variable that takes the value one if *Forecast Revision* is positive, and zero otherwise. *Forecast Revision* = (management's forecast of net income – management's previous forecast of net income) / the absolute value of management's previous forecast of net income. *High Expect1* = dummy variable that takes the value one if the initial forecast innovation of net income exceeds the median, and zero otherwise. *High Expect2* = dummy variable that takes the value one if the initial forecast innovation of net income exceeds the median and the abnormal stock return over the five days at the initial management forecast of net income exceeds the median, and zero otherwise.

The differential market reaction to bad news versus good news in the low market expectation (Low Expectation) is $(|\alpha+\beta_0| - (|\alpha|)$. We test the difference using by F-test.

The differential market reaction to bad news versus good news in the high market expectation (High Expectation) is $(|\alpha+\beta_0+\beta_1+\beta_2|) - (|\alpha+\beta_1|)$. We test the difference using by F-test.

The difference between the high expectation differential and the low expectation differential (Difference) is $(|\alpha+\beta_0+\beta_1+\beta_2| - |\alpha+\beta_1|) - (|\alpha+\beta_0| - |\alpha|)$. We test the difference using by F-test.

***, **, and * represent significance at 1 percent, 5 percent and 10 percent two-tailed levels, respectively.

Table 5. Market reactions to management EPS forecasts in Equations (1) and (2)

Variable	Equation (1) Coefficient (*t*-statistic)	Equation (2) Coefficient (*t*-statistic)
Intercept	0.038***	0.028***
	(36.616)	(17.200)
Bad News EPS	-0.063***	-0.050***
	(-45.204)	(-24.069)
Bad News EPS × *Forecast EPS Revision*		-0.017***
		(-4.702)
Forecast EPS Revision		0.021***
		(6.126)
N	17,493	17,493
Adj. *R*	0.1307	0.1389
Coefficients *F*-test:		
Difference	-0.016***	-0.012***
F-value	154.988	91.853

Note: The sample comprises annual management forecasts of earnings per share between March 2009 and March 2022.
Bad News EPS = dummy variable that takes the value one if *Forecast EPS Revision* is positive, and zero otherwise.
Forecast EPS Revision = (management's forecast of earnings per share – management's previous forecast of earnings per share) / the absolute value of management's previous forecast of earnings per share.
The difference between the market reaction to bad news versus good news (Difference) is $(|\alpha + \beta_0|) - (|\alpha|)$. We test the difference using by F-test.
*** represent significance at 1 percent two-tailed levels.

Table 6. Market reaction to initial management EPS forecasts and revisions in Equations (3) and (4)

Variable	Equation (3) Coefficient (*t*-statistic)	Equation (4) Coefficient (*t*-statistic)	Equation (3) Coefficient (*t*-statistic)	Equation (4) Coefficient (*t*-statistic)
Intercept	0.035***	0.026***	0.035***	0.026***
	(28.014)	(14.633)	(30.759)	(14.778)
Bad News EPS	-0.061***	-0.047***	-0.060***	-0.046***
	(-34.384)	(-20.934)	(-37.586)	(-20.907)
Bad News EPS × High Expect3	-0.005**	-0.004		
	(-2.130)	(-1.484)		
Bad News EPS × High Expect4			-0.011***	-0.011***
			(-3.812)	(-3.893)
Bad News EPS × Forecast EPS Revision		-0.015***		-0.015***
		(-4.021)		(-4.064)
High Expect3	0.006***	0.005***		
	(3.441)	(2.932)		
High Expect4			0.009***	0.008***
			(3.914)	(3.901)
Forecast EPS Revision		0.021***		0.021***
		(6.018)		(6.011)
N	17,234	17,234	17,233	17,233
Adj. *R*	0.1327	0.1420	0.1341	0.1436
Coefficients *F*-test:				
Low Expectation	-0.009***	-0.004*	-0.011***	-0.006***
F-value	25.096	3.606	50.348	7.718
High Expectation	-0.016***	-0.012***	-0.017***	-0.012***
F-value	73.588	21.880	49.779	18.570
Difference	-0.008***	-0.007***	-0.006**	-0.006**
F-value	9.165	8.364	4.897	4.487

Note: The sample comprises annual management forecasts of earnings per s between March 2009 and March 2022. *Bad News EPS* = dummy variable that takes the value one if *Forecast EPS Revision* is positive, and zero otherwise. *Forecast EPS Revision* = (management's forecast of earnings per share – management's previous forecast of earnings per share) / the absolute value of management's previous forecast of earnings per share. *High Expect3* = dummy variable that takes the value one if the initial forecast innovation of earnings per share exceeds the median, and zero otherwise. *High Expect4* = dummy variable that takes the value one if the initial forecast innovation of earnings per share exceeds the median and the abnormal stock return over the five days at the initial management forecast of earnings per share exceeds the median, and zero otherwise.

The differential market reaction to bad news versus good news in the low market expectation (Low Expectation) is $(|\alpha+\beta_0|) - (|\alpha|)$. We test the difference using by F-test.

The differential market reaction to bad news versus good news in the high market expectation (High Expectation) is $(|\alpha+\beta_0+\beta_1+\beta_2|) - (|\alpha+\beta_1|)$. We test the difference using by F-test.

The difference between the high expectation differential and the low expectation differential (Difference) is $(|\alpha+\beta_0+\beta_1+\beta_2| - |\alpha+\beta_1|) - (|\alpha+\beta_0| - |\alpha|)$. We test the difference using by F-test.

***, **, and * represent significance at 1 percent, 5 percent and 10 percent two-tailed levels, respectively.

Appendix A. Test of Hypothesis H2 using the coefficients in Equations (3) and (4)

	High Market Expectation (Column 1)	Low Market Expectation (Column 2)
Reaction to Bad News (Row 1)	$\lvert\alpha+\beta_0+\beta_1+\beta_2\rvert$	$\lvert\alpha+\beta_0\rvert$
Reaction to Good News (Row 2)	$\lvert\alpha+\beta_1\rvert$	$\lvert\alpha\rvert$
Differential Market Reaction to Bad News versus Good News (Row 1 – Row 2)	$\lvert\alpha+\beta_0+\beta_1+\beta_2\rvert-\lvert\alpha+\beta_1\rvert$	$\lvert\alpha+\beta_0\rvert-\lvert\alpha\rvert$
Difference between High Expectation Differential and Low Expectation Differential (Column 1 – Column 2)	$(\lvert\alpha+\beta_0+\beta_1+\beta_2\rvert-\lvert\alpha+\beta_1\rvert)-(\lvert\alpha+\beta_0\rvert-\lvert\alpha\rvert)<0$	

Equation (3): $Ret = \alpha + \beta_0\, Bad\ News + \beta_1\, High\ Expectation + \beta_2\, Bad\ News \times High\ Expectation + \varepsilon$

Equation (4): $Ret = \alpha + \beta_0\, Bad\ News + \beta_1\, High\ Expectation + \beta_2\, Bad\ News \times High\ Expectation + \beta_3 Forecast\ Revision + \beta_4\, Bad\ News \times Forecast\ Revision + \varepsilon$

Note: This hypothesis testing method is in accordance with Baginski et al. (2018).