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盈餘管理與經理人盈餘預測修正的關聯性

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摘要：利用日本的上市公司的強制盈餘修正資料，本文主要探討企業的盈餘管理行動與盈餘預測的關聯性。日本雖然強制企業發布盈餘預測，但也容許企業在預見將來的盈餘可能有重大變動時可以修正之前所發布的盈餘預測數字。先前的研究文獻對於盈餘預測修正的研究主要有兩項結果。有文獻指出企業會進行盈餘管理以避免修正盈餘預測，但也有研究結果指出企業會先發布偏高的初始盈餘預測，然後再慢慢的調降後續預測以避免負的盈餘驚喜。本研究利用應計項目與實質盈餘指標發現，盈餘管理與盈餘預測修正有負的相關。本研究同時也發現在向下修正盈餘預測的公司與發佈多次盈餘預測修正的公司的盈餘管理也是與盈餘預測修正之間有負的相關。但是本研究並沒有在向上修正盈餘預測的公司發現盈餘管理與盈餘預測修正之間的關聯。本研究同時發現，在發布多次盈餘修正的情況下，向上修正與向下修正的結果是不變的。

關鍵詞：盈餘管理、經理人盈餘預測、盈餘預測修正

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Association between Earnings Management and Management Earnings Forecasts: Evidence from Mandatory Revisions

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Abstract: Using mandatory forecast revisions data from listed firms in Japan, I examine the association between earnings management and management earnings forecasts. Japan's disclosure system allows firms to revise previous earnings forecasts if they foresee any significant changes. Previous studies have yielded somewhat mixed results: (a) firms manage earnings to avoid issuing earnings revisions and (b) firms issue upward-biased initial forecasts and then revise subsequent forecasts downward to avoid negative earnings surprises. Using metrics for both accrual-based and real earnings management, I find that earnings management is negatively associated with earnings forecast discrepancies. I also find a negative association between earnings management and forecast discrepancies for firms that issue downward forecast revisions and multiple forecast revisions. However, I find no association between earnings management and forecast discrepancies for firms that issue upward revisions. The results hold for upward and downward revisions under the condition of multiple revisions.

Keywords: earnings management, management earnings forecasts, earnings forecast revisions

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I. Introduction

The US-based literature defines management earnings forecasts (MEFs) as voluntary disclosures (e.g., King, Pownall, and Waymire, 1990; Hirst, Koonce, and Venkataraman, 2008). Since the 1970s, MEFs have been found to have information that could influence stock prices (Patell, 1976; Penman, 1980). From the incentive to issue MEFs to the consequences of doing so, the literature has listed abandoned research on why and how the managers issue earnings forecasts. For example, managers issue MEFs to avoid the risk of litigation (Skinner, 1994, 1997), to reduce information asymmetry (Ajinkya and Gift, 1984; Verrecchia, 2001; Nagar, Nanda, and Wysocki, 2003; Ajinkya, Bhojraj, and Sengupta, 2005), and to find the best time to release MEFs to maximize the value of their equity compensations by boosting stock prices (Aboody and Kasznik, 2000).

In contrast to research in the US, where MEFs are by nature voluntary disclosures, I study MEFs in Japan where they are mandatory. MEFs in Japan are substantially different from those in the US. First, issuing MEFs in Japan is mandatory (as required by the securities exchanges in Japan, such as the Tokyo Stock Exchange [TSE]). Second, revising previous earnings forecasts is also mandatory (as required by the Financial Instruments and Exchange Act of Japan). As a result, the disclosure environment to be discussed in this paper will be very different from the US-based research in the literature. For example, because issuing MEFs is mandatory in Japan, it is unnecessary to discuss the incentives and motivations of managers to issue earnings forecasts. The regulations require the firms to release MEFs on a regular basis; therefore, it is hard for managers to time the market to maximize the value of their equity compensation.

However, the differences between the voluntary and mandatory MEF environments create a unique setting for academic examination. For example, a manager in a voluntary setting will be reluctant to revise previous MEFs, but a manager in a mandatory environment will be required to make revisions if they foresee any significant changes. Other MEF measures in a voluntary disclosure setting that have been intensively examined by prior research are the occurrence and frequency of MEFs. In a mandatory disclosure setting, the measures will then be the occurrence and frequency of MEF revisions.

Because mandatory MEF requirements are not common, few prior studies in the literature published in English have examined the unique mandatory disclosure environment in Japan. From an earnings management perspective, Herrmann, Inoue, and Thomas (2003) find that Japanese firms manage earnings through sales of marketable securities and fixed assets to avoid revising MEFs. On the other hand, Kato, Skinner, and

Kunimura (2009) show that Japanese firms constantly make upward-biased initial forecasts, then revise the forecasts downward in subsequent revisions. Nagata and Nguyen (2017) show that institutional (both domestic and foreign) ownership is associated with the frequency of MEF issuance.

The motivations of prior studies seem to be contradictory because Herrmann et al. (2003) argue that managers are reluctant to revise MEFs, while Kato et al. (2009) show that managers constantly revise MEFs downward to avoid earnings surprises. However, the overall results suggest that firms that do not revise MEFs may have engaged in earnings management, while firms that revise MEFs downward may not have done so. Moreover, there is also an aspect of MEF revisions that is unexplored by the prior studies: i.e., upward revisions.

While the motivations proposed by Herrmann et al. (2003) and Kato et al. (2009) are easy to understand, there are more reasons for firms to manage earnings when they revise MEFs upward. If the firm revises an MEF upward to guide earnings expectations, as opposed to making a downward revision, an upward revision could easily create a negative earnings surprise. Therefore, the upward-revising firms have a much greater opportunity to manage earnings than downward-revising firms.

Taking advantage of the unique disclosure environment in Japan, where MEFs are effectively mandatory, I examine the association between earnings management and MEFs under the condition of forecast revisions in this study. I use both accrual-based and real earnings management metrics to measure earnings management. Following Herrmann et al. (2003), I first examine the association between earnings management and earnings forecast discrepancies. I then examine the association between earnings management and management forecast discrepancies conditional on (a) downward revision, (b) upward revision, and (c) multiple revisions. I find that earnings management is negatively associated with forecast discrepancies, suggesting possible income smoothing. I find the same results for forecast discrepancies and earnings management conditional on downward and multiple revisions. However, I find no such results for upward revisions.

This study contributes to the literature by showing that (both accrual-based and real) earnings management and forecast discrepancies (current performance in Herrmann et al. 2003) have a negative association in a mandatory disclosure environment. This result is consistent with the finding of Herrmann et al. (2003) that firms sell assets and withhold gains and losses to smooth earnings. In addition, by showing that earnings management and MEFs have no association under the condition of upward revisions, this study contributes to the literature by ruling out the possibility of both earnings guidance and management around upward forecast revisions. The results reported in this study confirm

that MEFs are effectively mandated in Japan (e.g., Kato et al. 2009) and forecast revisions can be used by investors as a proxy for firms' earnings management activities whether or not to avoid revise earnings forecasts.

The remainder of the paper proceeds as follows. Section II describes the institutional settings and hypotheses. Section III discusses the research design. Section IV presents the sample and descriptive statistics. Section V reports the empirical results. Section VI concludes the paper.

II. Institutional Background and Hypotheses

MEFs and Forecast Revisions

The issuance of MEFs in Japan started in the mid-1970s following a request from the TSE to listed firms. As a result, in the following fiscal year almost all firms listed on the TSE started to issue earnings forecasts along with reports of current fiscal year earnings. The forecasts include sales, operating income (since 2008), earnings before extraordinary items, net income, earnings per share, and dividends per share. Because the issuance of MEFs is in response to a request from the TSE and not a legal requirement, issuing MEFs is a voluntary form of disclosure rather than a mandatory one. Nevertheless, almost all listed firms in Japan issue MEFs.

In addition to the regular issuance of MEFs, firms are required to issue MEF revisions in a timely manner when they foresee significant changes in future earnings. If managers foresee that sales will deviate from the previous forecast by 10%, or other earnings measures will deviate from previous forecasts by 30%, they must revise the previous forecasts by issuing a new forecast. If firms do not issue MEFs by the end of the fiscal year, they must issue a new forecast based on fiscal year-end realized earnings measures. Such MEF revisions were introduced into the Financial Instruments and Exchange Act (Article 166-2-3) to prevent insider trading in 1989. Therefore, MEFs in Japan constitute de facto mandatory disclosure. In addition, the TSE also established the Timely Disclosure Rules in 1999, and failure to comply with these rules means that managers are subject to punishment (e.g., cash fines or delisting).

MEFs and Earnings Management

Most prior studies examine MEFs from a voluntary disclosure perspective. Patell (1976) and Penman (1980) find that MEFs contain information that influences stock prices. Furthermore, Aboody, and Kasznik (2000) find that managers time the release of MEFs to maximize the value of their stock options. Nagar et al. (2003) find that managers use MEFs

to influence stock prices to mitigate information asymmetry. In addition to the stock market reactions, Skinner (1994, 1997) finds that managers issue MEFs to reduce litigation risks. Kasznik (1999) finds that managers try to meet MEFs by managing earnings.

As noted in the previous paragraph, most studies in the literature examine voluntary MEFs and mandatory MEFs have been left unexplored. Only a few studies in English examine the mandatory MEF setting of Japan. Herrmann et al. (2003) study the relationship between mandatory MEFs and earnings management, and show that managers sell marketable securities and fixed assets with unrealized holding gains or losses to avoid revising previous MEFs. In contrast, Kato et al. (2009) find that managers frequently revise their MEFs. They find that managers usually issue an upward-biased initial forecast and then revise the subsequent forecasts downward to avoid negative earnings surprises.

It seems that two studies provide mixed evidence from contrasting perspectives; e.g., the managers described by Herrmann et al. (2003) are reluctant to revise forecasts, but those reported by Kato et al. (2009) constantly revise their forecasts downward. However, the evidence provided in these two studies is consistent in terms of the relationship between earnings management and earnings forecast. Their results can be summarized as follows: firms that do not revise forecasts may engage in earnings management, but firms that revise forecasts downward may not. If fact, the evidence shown by Herrmann et al. (2003) that Japanese firms manage earnings upward (downward) by selling assets to avoid losses (gains) to avoid issuing earnings forecast revisions is evidence for income smoothing instead of income-increasing earnings management.

However, evidences provided by Herrmann et al. (2003) are based on the historical costs. With the marked-to-market accounting being introduced to the Japanese generally accepted accounting standards in the early 2000s, Japanese managers' abilities to manage earnings through assets sales have been largely limited. Therefore, if the firms resort to accruals-based earnings management and real earnings management, it is expected that the relation between MEF and earnings management in Herrmann et al. (2003) can also be observed. In other words, firms manage earnings to avoid revise earnings forecasts can be observed. To reconcile the results of prior studies and to address the relationship between earnings management and earnings revisions, I developed the following hypotheses for this study. The first hypothesis is:

H1: Earnings management is negatively associated with forecast discrepancies.

Kato et al. (2009) reports that Japanese firms constantly issue downward revisions. If the firms revise forecasts downward to avoid negative earnings surprises, the firms also have less incentive to manage earnings upward. Of course, it is even possible for income

smoothing to be observed. Therefore, the second hypothesis is:

H2: When downward revisions are made, earnings management is negatively associated with forecast discrepancies.

For upward revisions, my conjecture is two sided. On the one hand, if the intention of upward revisions is to guide earnings expectations, then the firms have an incentive to manage earnings to meet their forecast revisions. On the other hand, if the upward revisions are ex post revisions to reflect a boost in earnings, then the firms have less incentive to manage earnings. Therefore, I do not have a prediction for upward revision.

H3: When upward revisions are made, earnings management is positively (negatively) associated with forecast discrepancies.

III. Research Design

Metrics for Earnings Management

The main purpose of this study is to examine the association between earnings management and earnings forecast revisions. Using the following procedures, developed by Cohen and Zarowin (2010), I used metrics from both accruals and real earnings management, because Zang (2012) shows a trade-off between accrual-based and real earnings management methods.

Proxy for Accruals-based Management

Following prior studies (e.g., DeFond and Jiambalvo, 1994; Kasznik, 1999; Francis, LaFond, Olsson, and Schipper, 2005; Cohen and Zarowin, 2010; Zang, 2012), I used a model that is a modification of that developed by Jones (1991) to calculate discretionary accruals as a measure of accrual-based management:

$$TA_{it} / Assets_{i,t-1} = \alpha_1(1 / Assets_{i,t-1}) + \alpha_2(\Delta Sales_{it} / Assets_{i,t-1}) + \alpha_3(PPE_{it} / Assets_{i,t-1}) + \varepsilon_{it} \quad (1)$$

where TA_{it} is the total accruals defined as net income minus cash flow from operating activities. Definitions of other variables are as follows: $Assets_{i,t-1}$ is the lagged total assets, $\Delta Sales_{it}$ is the change in sale from t-1 year, and PPE_{it} is gross property, plant, and equipment. As indicated in the model, all variables were scaled by lag assets, including the scaled intercept. As suggested in prior studies, I used a cross-sectional estimate of the above regression for industry–year with at least 20 observations. The residuals generated by

regression (1) are the discretionary accruals, *DA*, as proxies for accrual-based earnings management.

Proxies for Real Earnings Management

Also following prior studies (e.g., Dechow, Kothari, and Watts, 1998; Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2012), I used abnormal cash flows from operating activities (hereafter, abnormal CFO), discretionary expenses, and production costs as proxies for real earnings management. The first step was to estimate the normal level of CFO, discretionary expenses, and production costs. The normal cash flows from operations are presented in the form of a linear function of current sales and changes in current sales. The deviation between realized CFO and estimated normal CFO is defined as the abnormal CFO; i.e., residuals of the estimation regression are used as a proxy for the abnormal CFO. The regression function is as follows:

$$CFO_{it} / Assets_{i,t-1} = \alpha_1(1 / Assets_{i,t-1}) + \alpha_2(Sales_{it} / Assets_{i,t-1}) + \alpha_3(\Delta Sales_{it} / Assets_{i,t-1}) + \varepsilon_{it} \quad (2)$$

Production costs are defined as the sum of COGS and change in inventory between the beginning and end of the period. First, COGS was modeled as a linear function of current sales:

$$COGS_{it} / Assets_{i,t-1} = \alpha_1(1 / Assets_{i,t-1}) + \alpha_2(Sales_{it} / Assets_{i,t-1}) + \varepsilon_{it} \quad (3)$$

Then, change in inventory was modelled as a linear function of both current and lagged changes in sales:

$$\Delta INV_{it} / Assets_{i,t-1} = \alpha_1(1 / Assets_{i,t-1}) + \alpha_2(\Delta Sales_{it} / Assets_{i,t-1}) + \alpha_3(\Delta Sales_{i,t-1} / Assets_{i,t-1}) + \varepsilon_{it} \quad (4)$$

Equations (3) and (4) were combined to generate the following model to estimate normal production costs:

$$Prod_{it} / Assets_{i,t-1} = \alpha_1(1 / Assets_{i,t-1}) + \alpha_2(Sales_{it} / Assets_{i,t-1}) + \alpha_3(\Delta Sales_{it} / Assets_{i,t-1}) + \alpha_4(\Delta Sales_{i,t-1} / Assets_{i,t-1}) + \varepsilon_{it} \quad (5)$$

Dechow et al. (1998) first model normal discretionary expenses as a linear function of current sales. Roychowdhury (2006) argues that if a firm tries to manage its reported earnings upward by increasing sales in any specific year, then using current sales will

generate significantly lower residuals. Instead of current sales, it is suggested that lagged sales should be used to estimate normal discretionary expenses. Therefore, the model becomes:

$$Disx_{it} / Assets_{i,t-1} = \alpha_1(1 / Assets_{i,t-1}) + \alpha_2(Sales_{i,t-1} / Assets_{i,t-1}) + \varepsilon_{it} \quad (6)$$

where $Disx_{it}$ is general sales and administrative expenses.[1]

I estimated the above regressions for real earnings management with the same treatment used for the regression for accrual-based earnings management. I estimated the cross-section regressions for each industry and each year, and required at least 20 observations for each industry.

Main Regression

Following prior studies (e.g., Herrmann et al., 2003; Cohen and Zarowin, 2010; Chi, Lisic, and Pevzner, 2011), I developed the following regression using variables that are available on databases to estimate the association between earnings management and MEFs conditional on the earnings forecast revisions. This was done to control for firms' capital structure, performance, size, and growth opportunities while incorporating the functions of monitoring by outsiders and incentives of insiders.

$$\begin{aligned} EM_{it} = {} & \beta_0 + \beta_1 MEF_{it} + \beta_2 Share_{it} + \beta_3 ROA_{it} + \beta_4 Leverage_{it} + \beta_5 MVE_{it} \\ & + \beta_6 MtoB_{it} + \beta_7 SO_{it} + \beta_8 INST_{it} + \beta_9 FRGN_{it} + \beta_{10} DirOwn_{it} \\ & + \sum y Industry_{it} + \sum \eta Year_{it} + \varepsilon_{it} \end{aligned} \quad (7)$$

For regression (7), I also controlled for industry fixed effects and year fixed effects. I winsorized all of the values of continuous variables in the top and bottom 1% to eliminate extreme observations. For the results, I report t statistics adjusted for robust standard errors, clustered by firms.

The dependent variable, EM_{it}, is the four metrics for earnings management generated by the regressions above in this section. *Ab_CFO*, *Ab_Prod*, *Ab_Disx*, and *DA* denote abnormal cash flows, abnormal production costs, abnormal discretionary expenses, and discretionary accruals, respectively. Among these metrics, *DA* is a positive measure of accrual-based earnings management. For real earnings management metrics, *Ab_CFO* is a negative measure, *Ab_Prod* is a positive measure, and *Ab_Disx* is a negative measure. If the firms engage in income-increasing earnings management, then the expected signs for

[1] Japanese GAAP includes advertising and R&D expenses in SG&A expenses. To avoid counting advertising and R&D expenses twice in discretionary expenses, I use only SG&A as discretionary expenses.

variables are consistent with the predictions of the metrics. For example, if a firm engages in real earnings management by reducing discretionary expenses to increase income, then the coefficients for independent variables in the *Ab_Disx* regression should be negative. Hence, a positive coefficient for the independent variables in the *DA* regression indicate income-increasing accrual-based management.

MEF is the forecast discrepancy measured as the difference between initial forecasts of net income and realized net income over total assets. This is the same as the current performance described by Herrmann et al. (2003). This measure captures the magnitude of management forecast discrepancies. *Share* is the natural logarithm of the number of outstanding shares and it is intended to capture the possibility for firms to manage earnings. As suggested by Barton and Simko (2002) and Zang (2012), if the firm has more outstanding shares, it will be difficult to manage earnings in terms of per-share earnings. *SO* is an indicator variable set equal to 1 if the firm offers stock options incentives to its managers, while *DirOwn* is the percentage of shares held by the directors of the firm. Cheng and Warfield (2005) and Bergstresser and Philippon (2006) provide evidence for the association between earnings management and stock-based compensation as well as managerial ownership; therefore, I include *SO* to capture the effect of performance-based compensation as an incentive for earnings management. I also include *DirOwn* to control for managers' incentives for earnings management. As suggested in prior literature (e.g., Healy and Wahlen, 1999; Cohen and Zarowin, 2010), I also included *ROA*, *Leverage*, *MVE*, and *MtoB* to control for the characteristics of firms that are related to earnings management. Definitions of these variables are as follows. *ROA* is the return on assets. *Leverage* is measured as total liability over total assets. *MVE* is market capitalization expressed as a natural logarithm. *MtoB* is the market-to-book ratio of the value of equity.

Finally, I included two ownership variables, *INST* and *FRGN*, to control for the effect of outside monitoring on earnings management. *INST* is the percentage of shares held by the institutional investors, and *FRGN* is the percentage of shares held by foreign investors. Bushee (1998) and Matsumoto (2002) provide evidence that higher proportions of institutional ownership are associated with active earnings management activities, while Guo, Huang, Zhang, and Zhou (2015) show that foreign investors have a role in restraining real earnings management in Japan.

IV. Sample and Descriptive Statistics

Data and Sample Selection

I obtained financial and MEF data from the Nikkei NEEDS-FinancialQuest database.[2] Furthermore, I obtained governance-related data from the Nikkei NEEDS-Cges. The original sample consisted of firms listed on the TSE.[3] Table 1 reports the sample selection process. I started from 18,756 observations for firms listed on the TSE from 2006 to 2014.[4] First, I deleted 1,079 observations from financial industries and 182 observations in regulated industries. Because I estimated abnormal variables for each industry and year for all accrual-based and real earnings management measures, I required a minimum of 20 observations for each industry-year. Moreover, I dropped 896 observations that did not meet this requirement. Finally, I removed 1,697 and 2,639 observations from the sample because of missing forecast data and financial data, respectively.[5] The final sample consisted of 12,263 observations.

Table 1 Sample Selection

Total Observations		18,756
Deductions:		
Financial Institutions	1,079	
Regulated Industries (electricity and gas)	182	
Industry-year with less than 20 observations	896	
Missing management earnings forecast data	1,697	
Missing financial data	2,639	
Total:		6,493
Final Observations		12,263

Descriptive Statistics

Table 3 summarizes the descriptive statistics for all the variables in the regression models. The means for *Abn_CFO*, *Abn_PROD*, *Abn_DISX*, and *DA* are -0.003, -0.0014, -0.0019, and 0.0001, respectively. The reported numbers are consistent with their nature of regression residuals.

In Table 3, I also present detailed statistics for MEFs. *MEF* indicates that the mean forecast discrepancy is 1.75% over total assets. I also present other statistics for forecasts as supporting evidences. The percentage for firms that revise their forecasts is 80%, i.e.,

[2] This is the same data source used by Skinner (2008) and Kato et al. (2009).
[3] This is the same source used Skinner and Srinivasan (2012).
[4] Nikkei NEED-Cges starts from 2005. I dropped the first-year data because of its incomplete coverage compared with later years.
[5] Missing financial data also include that used to calculate the abnormal variables.

43.86% of firms revise forecasts downward while 36.22% revise upward. The statistics also indicate that 41.72% of firms revise their forecasts multiple times.[6]

Table 3 shows the pairwise Pearson and Spearman correlations matrix. Panel A of Table 3 shows the correlation between the abnormal variables (dependent variables) and the variables of interest (forecast revision variables). No correlation is particularly high between dependent and forecast variables. Panel B of Table 5 shows the correlations between the dependent and control variables. Note that *ROA* is highly correlated with *Ab_CFO* (0.4112), *Ab_PROD* (-0.1988), and *DA* (0.2189).

Table 2 Descriptive Statistics

Variables	Mean	S.D.	25%	50%	75%
Ab_CFO	-0.0003	0.0533	-0.0303	-0.0014	0.0285
Ab_Prod	-0.0014	0.1439	-0.0507	0.0152	0.0769
Ab_Disx	-0.0019	0.1349	-0.0698	-0.0175	0.036
DA	0.0001	0.0474	-0.025	0.0009	0.0258
MEF	0.0175	0.0278	0.003	0.008	0.019
MEF Revision	0.8008	0.3994	1	1	1
Downward Revisions	0.4386	0.4962	0	0	1
Upward Revisions	0.3622	0.4807	0	0	1
Multiple Revision	0.4172	0.4931	0	0	1
Share	17.4546	1.6349	16.6811	17.4571	18.3829
ROA	0.0264	0.0443	0.0089	0.0245	0.0473
Leverage	0.5082	0.196	0.3608	0.5133	0.6575
MVE	10.2486	1.5908	9.0747	10.0449	11.2583
MtoB	1.2069	1.006	0.6127	0.9056	1.4118
SO	0.2896	0.4536	0	0	1
INST	0.1838	0.1569	0.0511	0.1451	0.2889
FRGN	0.1104	0.1126	0.019	0.0731	0.1718
DirOwn	0.0514	0.09	0.0022	0.01	0.0548

[6] The sample mean for revisions in this study is 1.324. This indicates that firms, on average, revised their forecasts 1.3 times in any given fiscal year. The maximum number of revisions is six times in a fiscal year in this study.

Table 3 Pearson (lower) and Spearman (upper) Correlation Matrix

	Ab_CFO	*Ab_Prod*	*Ab_Disx*	*DA*	*MEF*	*Share*	*ROA*	*Leverage*	*MVE*	*MtoB*	*SO*	*INST*	*FRGN*	*DirOwn*
Ab_CFO	1	**-0.3006**	**0.0657**	**-0.631**	-0.0201	-0.0226	**0.3974**	**-0.2080**	**0.1710**	**0.1942**	**0.0734**	**0.1680**	**0.1670**	**0.0395**
Ab_Prod	**-0.3110**	1	**-0.8314**	**0.1322**	**-0.0657**	**-0.0276**	**-0.2150**	**0.1622**	**-0.1573**	**-0.1823**	**-0.0902**	**-0.0878**	**-0.1182**	**-0.0403**
Ab_Disx	**0.0894**	**-0.8935**	1	**-0.0853**	**0.0566**	**0.0656**	**0.0333**	**-0.055**	**0.1125**	**0.0956**	**0.0721**	0.0188	**0.0486**	**0.0375**
DA	**-0.6431**	**0.1565**	**-0.1085**	1	**-0.0810**	**-0.0444**	**0.1269**	**-0.0410**	**-0.0552**	**-0.0351**	**-0.0258**	**-0.0398**	**-0.0380**	**0.0232**
MEF	**-0.0869**	**-0.0372**	**0.0539**	**-0.1973**	1	**-0.0867**	**-0.1299**	**-0.0523**	**-0.1626**	**-0.0396**	**0.0736**	**-0.0268**	**-0.0239**	**0.0714**
Share	**-0.0535**	**0.0502**	-0.0192	-0.0209	**-0.0516**	1	**-0.0931**	**0.1484**	**0.6708**	**0.1906**	**-0.0307**	**0.4719**	**0.4493**	**-0.6359**
ROA	**0.4112**	**-0.1988**	**0.0353**	**0.2189**	**-0.4407**	**-0.1046**	1	**-0.3535**	**0.2963**	**0.4285**	**0.1327**	**0.2933**	**0.3030**	**0.1048**
Leverage	**-0.1934**	**0.1359**	**-0.0419**	**-0.0461**	**0.0381**	**0.1305**	**-0.3128**	1	**-0.1281**	**0.0882**	**-0.1122**	**-0.2005**	**-0.2429**	**-0.1319**
MVE	**0.1652**	**-0.1161**	**0.0673**	**-0.0404**	**-0.1735**	**0.6028**	**0.2857**	**-0.1191**	1	**0.5010**	**0.1395**	**0.7547**	**0.7309**	**-0.4089**
MtoB	**0.2031**	**-0.2227**	**0.1469**	**-0.0601**	**0.0514**	**0.0043**	0.3197	**0.1166**	**0.3410**	1	**0.1812**	**0.2879**	**0.2684**	**-0.0855**
SO	**0.0799**	**-0.1206**	**0.0943**	**-0.0297**	**0.0759**	**-0.0809**	**0.1075**	**-0.1128**	**0.1475**	**0.1665**	1	**0.1759**	**0.1837**	**0.1091**
INST	**0.1624**	**-0.0433**	**-0.0246**	**-0.0281**	**-0.0590**	**0.3938**	**0.2585**	**-0.1916**	**0.7322**	**0.1969**	**0.1793**	1	**0.9028**	**-0.2911**
FRGN	**0.1574**	**-0.0815**	0.0122	**-0.0277**	**-0.0325**	**0.3623**	**0.2536**	**-0.2226**	**0.6930**	**0.2134**	**0.1897**	**0.8732**	1	**-0.2668**
DirOwn	**0.0768**	**-0.1266**	**0.1137**	-0.0184	**0.0640**	**-0.4779**	**0.1192**	**-0.0595**	**-0.2353**	**0.1186**	**0.1788**	**-0.1691**	**-0.1433**	1

Coefficients in bold indicate significance at the 0.01 level. See Appendix for variable definitions. Pearson correlations in the lower triangle and Spearman correlation in the upper triangle.

V. Empirical Results

Main Results

In this section, I present the regression results shown in Table 4. The results reported in Table 4 are the association between the earnings management metrics and *MEF* (i.e., the forecast discrepancy between the initial MEF and realized net income). I find a positive coefficient of 0.1583 (t=5.66), a negative coefficient of -0.5142 (t=-5.45), and a positive coefficient of 0.2192 (t=2.40) for *MEF* in the *Abn_CFO*, *Abn_PROD*, and *Abn_DISX* regressions, respectively. If firms engage in real earnings management to avoid revise earnings forecasts, then I expected the coefficients for *Abn_CFO*, *Abn_PROD*, and *Abn_DISX* to be positive, negative, and positive, respectively. The results are consistent with the expected signs of hypothesis H1, suggesting a negative association between forecast discrepancies and real earnings management activities. As for accrual management, I find a negative coefficient of -0.1891 (t=-6.80) for *MEF* in the *DA* regression. The result for accrual management also suggests a negative association with forecast discrepancies. Overall, the results reported in Table 4 suggest a negative association between (both accrual-based and real) earnings management and forecast discrepancies, consistent with the expectations of hypothesis H1.

For the control variable results, consistent with prior studies (e.g., Healy and Wahlen, 1999; Cohen and Zarowin, 2010), *MVE* and *MtoB* both have negative associations with all earnings management metrics. Also consistent with prior studies, *Leverage* has a positive association with earnings management. Variables that control for managers' incentive to manage earnings, *SO* and *DirOwn*, both have negative associations with real earnings management. *INST* has a positive association with real earnings management, consistent with findings of prior studies (e.g., Bushee, 1998; Matsumoto, 2002) that institutional ownership may encourage firms' earnings management activities. To my surprise, *FRGN* plays no role in restraining firms' earnings management activities, which is not consistent with the findings of Guo et al. (2015).

Results for Downward Revisions

In this study, 43.86% of firms revise their forecasts upward and 36.22% of firms downward. Therefore, I further divide the sample into upward and downward revisions to estimate the association between earnings management and MEF revisions.

In Table 5, I summarize the regression results for earnings management and MEF revisions under the condition of downward revisions. As with the results reported in Table

4, I find a positive coefficient of 0.1631 (t=3.51), a negative coefficient of -0.6456 (t=-4.91), a positive coefficient of 0.2154 (t=1.70), and a negative coefficient of -0.2225 (t=-5.47) for *MEF* in the *Abn_CFO*, *Abn_PROD*, *Abn_DISX*, and *DA* regressions, respectively. The results suggest that revising forecasts downward has a negative association with management earnings.

Table 4 Earnings Management and Forecast Discrepancy

	Ab_CFO	*Ab_Prod*	*Ab_Disx*	*DA*
MEF	0.1583***	-0.5142***	0.2192**	-0.1891***
	(5.66)	(-5.45)	(2.40)	(-6.80)
Share	-0.0017***	0.0039	-0.003	0.0026***
	(-2.63)	(1.09)	(-0.82)	(3.89)
ROA	0.4747***	-0.4385***	-0.103	0.3010***
	(22.00)	(-4.91)	(-1.19)	(14.42)
Leverage	-0.0305***	0.0974***	-0.0543***	0.0072**
	(-7.94)	(5.33)	(-3.00)	(1.97)
MVE	0.0022***	-0.0164***	0.0180***	-0.0048***
	(2.68)	(-3.65)	(4.02)	(-6.30)
MtoB	0.0061***	-0.0283***	0.0216***	-0.0046***
	(6.06)	(-5.79)	(4.73)	(-4.74)
SO	0.0010	-0.0192***	0.0203***	-0.0011
	(0.74)	(-3.04)	(3.25)	(-0.92)
INST	0.0095	0.1857***	-0.2016***	-0.0090
	(1.15)	(4.24)	(-4.65)	(-1.29)
FRGN	-0.0111	-0.0811	0.0574	0.0126
	(-0.98)	(-1.32)	(0.96)	(1.28)
DirOwn	0.0124	-0.1495**	0.1785***	-0.0215**
	(1.30)	(-2.51)	(3.07)	(-2.36)
Constant	-0.0046	0.1163**	-0.1411***	0.0035
	(-0.51)	(2.38)	(-2.83)	(0.41)
Fixed-effects	Industry / Year			
Clustered	Firm			
# of Observations	12,263			
Adj. R-squared	0.2180	0.1267	0.0701	0.0934

*, **, *** denote 0.1, 0.05, and 0.01 significance level, respectively. All models include industry fixed effects and year fixed effects. The t-statistics in the parentheses are calculated using standard errors adjusted for clustering at the firm level. All continuous variables are winsorized at the top and bottom 1 percent. Appendix documents definitions for all variables.

Table 5 Forecast Discrepancy in Downward Revision

	Ab_CFO	*Ab_Prod*	*Ab_Disx*	*DA*
MEF	0.1631***	-0.6456***	0.2154*	-0.2225***
	(3.51)	(-4.91)	(1.70)	(-5.47)
Share	-0.0018*	0.0053	-0.0038	0.0019**
	(-1.83)	(1.16)	(-0.81)	(2.02)
ROA	0.4552***	-0.5606***	-0.0934	0.3444***
	(11.79)	(-4.32)	(-0.74)	(9.96)
Leverage	-0.0273***	0.0672***	-0.0490**	0.0079*
	(-5.27)	(3.17)	(-2.35)	(1.67)
MVE	0.0018*	-0.0212***	0.0240***	-0.0044***
	(1.67)	(-3.84)	(4.31)	(-4.47)
MtoB	0.0031**	-0.0242***	0.0214***	-0.0012
	(2.23)	(-3.58)	(3.25)	(-1.06)
SO	-0.0011	-0.0127	0.0164**	0.0002
	(-0.61)	(-1.63)	(2.12)	(0.15)
INST	0.0174	0.1749***	-0.2194***	-0.0056
	(1.64)	(2.94)	(-3.70)	(-0.55)
FRGN	-0.013	-0.0355	0.0314	0.0033
	(-0.91)	(-0.39)	(0.35)	(0.23)
DirOwn	0.0088	-0.1639**	0.1947***	-0.0077
	(0.71)	(-2.26)	(2.76)	(-0.67)
Constant	0.003	0.1416**	-0.1738***	0.0072
	(0.22)	(2.31)	(-2.81)	(0.58)
Fixed-effects	Industry / Year			
Clustered	Firm			
# of Observations	5,378			
Adj. R-squared	0.1716	0.096	0.0687	0.1572

*, **, *** denote 0.1, 0.05, and 0.01 significance level, respectively. All models include industry fixed effects and year fixed effects. The t-statistics in the parentheses are calculated using standard errors adjusted for clustering at the firm level. All continuous variables are winsorized at the top and bottom 1 percent. Appendix documents definitions for all variables.

Results for Upward Revisions

The regression results for upward revisions are reported in Table 6. Unlike the findings for downward revisions, I find no association between any earnings management metrics and forecast discrepancies in relation to upward revisions. This result is very interesting.

While the incentives for downward revisions could be to avoid negative earnings surprises, managers may revise forecasts upward for earnings guidance. If upward revisions are intended to guide earnings expectations, then I would expect some earnings management for upward revisions. However, the results here reveal no association between all earnings management metrics and forecast discrepancies; therefore, there is no earnings guidance.

Table 6 Forecast Discrepancy in Upward Revision

	Ab_CFO	*Ab_Prod*	*Ab_Disx*	*DA*
MEF	0.0407	-0.2591	0.2562	0.0258
	(0.64)	(-1.31)	(1.32)	(0.36)
Share	-0.0021**	0.0044	-0.0031	0.0035***
	(-2.12)	(1.07)	(-0.76)	(3.46)
ROA	0.4550***	-0.3390***	-0.1299	0.2726***
	(13.03)	(-2.80)	(-1.14)	(7.32)
Leverage	-0.0366***	0.1282***	-0.0671***	0.0101*
	(-6.50)	(6.14)	(-3.37)	(1.91)
MVE	0.0022*	-0.0110**	0.0120**	-0.0051***
	(1.91)	(-2.28)	(2.47)	(-4.59)
MtoB	0.0072***	-0.0325***	0.0228***	-0.0055***
	(5.25)	(-6.07)	(4.68)	(-4.03)
SO	0.0027	-0.0244***	0.0221***	-0.0018
	(1.38)	(-3.56)	(3.30)	(-0.99)
INST	0.0037	0.1801***	-0.1868***	-0.0078
	(0.32)	(4.16)	(-4.39)	(-0.74)
FRGN	-0.0115	-0.1226**	0.1052**	0.0202
	(-0.74)	(-2.16)	(1.97)	(1.48)
DirOwn	0.0216	-0.1429**	0.1744***	-0.0387**
	(1.46)	(-2.22)	(2.87)	(-2.57)
Constant	0.0084	0.0306	-0.0743	-0.0128
	(0.60)	(0.55)	(-1.37)	(-0.96)
Fixed-effects	Industry / Year			
Clustered	Firm			
# of Observations	4,442			
Adj. R-squared	0.2072	0.1553	0.0774	0.0486

*, **, *** denote 0.1, 0.05, and 0.01 significance level, respectively. All models include industry fixed effects and year fixed effects. The t-statistics in the parentheses are calculated using standard errors adjusted for clustering at the firm level. All continuous variables are winsorized at the top and bottom 1 percent. Appendix documents definitions for all variables.

Results for Multiple Revisions

Finally, I report the results for firms that revise forecasts more than once in Panel A of Table 7. Descriptive statistics indicate that 41.72% of the firms in the sample revise earnings forecasts more than once. The results are the same as those reported in Table 4. I find positive coefficients for *MEF* in the *Abn_CFO* and *Abn_DISX* regressions, and negative coefficients for the *Abn_PROD* and *DA* regressions. All the signs of the coefficients are the opposite of those expected for earnings management (only the *MEF* coefficient in the *Abn_DISX* regression is not statistically significant), indicating a negative association with earnings management for firms that revise forecasts multiple times.

Furthermore, I examined the relationship between earnings management and MEFs for firms that revise forecasts downward or upward on multiple occasions. I find the same results for downward revisions (low earnings management) and upward revisions (no association) with multiple revisions, and the results are reported in Panels B and C of Table 7, respectively.

VI. Concluding Remarks

In this study, I examined the association between earnings management and MEF using data from firms in Japan where forecasts are effectively mandatory. For firms' earnings management activities, I use metrics for both accrual-based and real earnings management. For MEFs, I use forecast discrepancies. For the main results, I find a negative association between (both accrual-based and real) earnings management and earnings discrepancies. I also find that the same negative association exists when firms revise forecasts downward. However, I find no association when upward revisions are made. I further confirmed the negative association between earnings management and forecast discrepancies for firms that revise forecasts multiple times. The results show a strong negative association between earnings management and forecast discrepancies except for firms that make upward revisions. I obtained those findings while controlling for firms' incentive for earnings management and monitoring by outsiders. The results for control variables are also consistent with prior studies. Overall, the results of this study are consistent and robust.

Table 7 Panel A - Multiple Revisions

	Ab_CFO	*Ab_Prod*	*Ab_Disx*	*DA*
MEF	0.1399***	-0.3878***	0.1081	-0.1992***
	(3.62)	(-3.37)	(1.00)	(-5.51)
Share	-0.0027***	0.0075*	-0.0057	0.0036***
	(-2.93)	(1.84)	(-1.35)	(3.99)
ROA	0.4439***	-0.2675***	-0.2291***	0.3457***
	(15.28)	(-2.99)	(-2.65)	(12.62)
Leverage	-0.0287***	0.0769***	-0.0514**	0.0097**
	(-5.67)	(3.67)	(-2.50)	(2.00)
MVE	0.0024**	-0.0195***	0.0198***	-0.0051***
	(2.08)	(-3.88)	(3.84)	(-5.13)
MtoB	0.0060***	-0.0279***	0.0228***	-0.0060***
	(4.31)	(-4.99)	(4.34)	(-5.11)
SO	-0.0003	-0.0168**	0.0190**	-0.0002
	(-0.17)	(-2.22)	(2.54)	(-0.12)
INST	0.0190*	0.1762***	-0.2155***	-0.0126
	(1.80)	(3.48)	(-4.13)	(-1.24)
FRGN	-0.0226	-0.0728	0.0910	0.0148
	(-1.58)	(-0.94)	(1.16)	(1.07)
DirOwn	0.0129	-0.1330*	0.1562**	-0.0091
	(0.92)	(-1.84)	(2.17)	(-0.70)
Constant	0.0096	0.0859	-0.1100*	-0.0113
	(0.74)	(1.56)	(-1.89)	(-0.93)
Fixed-effects	Industry / Year			
Clustered	Firm			
# of Observations	5,116			
Adj. R-squared	0.2140	0.1103	0.0727	0.1451

*, **, *** denote 0.1, 0.05, and 0.01 significance level, respectively. All models include industry fixed effects and year fixed effects. The t-statistics in the parentheses are calculated using standard errors adjusted for clustering at the firm level. All continuous variables are winsorized at the top and bottom 1 percent. Appendix documents definitions for all variables.

Table 7 Panel B – Downward Revision Conditional on Multiple Revisions

	Ab_CFO	*Ab_Prod*	*Ab_Disx*	*DA*
MEF	0.1391**	-0.5532***	0.0878	-0.1626***
	(2.39)	(-3.58)	(0.59)	(-3.20)
Share	-0.0028**	0.0100*	-0.0072	0.0029***
	(-2.44)	(1.90)	(-1.32)	(2.64)
ROA	0.4159***	-0.4090***	-0.2723*	0.4395***
	(8.14)	(-2.65)	(-1.79)	(9.86)
Leverage	-0.0262***	0.0502**	-0.0446*	0.0113*
	(-4.06)	(2.12)	(-1.88)	(1.83)
MVE	0.0018	-0.0274***	0.0283***	-0.0043***
	(1.27)	(-4.46)	(4.48)	(-3.52)
MtoB	0.0038**	-0.0203***	0.0187**	-0.0027*
	(2.03)	(-2.60)	(2.40)	(-1.79)
SO	-0.0015	-0.0093	0.0147	0.0002
	(-0.63)	(-1.02)	(1.61)	(0.09)
INST	0.0246*	0.2062***	-0.2516***	-0.0102
	(1.79)	(3.09)	(-3.58)	(-0.74)
FRGN	-0.0203	-0.0623	0.0780	0.0009
	(-1.05)	(-0.60)	(0.71)	(0.05)
DirOwn	0.0077	-0.1048	0.1439*	-0.0020
	(0.47)	(-1.24)	(1.70)	(-0.14)
Constant	0.0157	0.1235*	-0.1545**	-0.0095
	(0.98)	(1.77)	(-2.10)	(-0.63)
Fixed-effects	Industry / Year			
Clustered	Firm			
# of Observations	3,072			
Adj. R-squared	0.1536	0.0775	0.0649	0.2046

*, **, *** denote 0.1, 0.05, and 0.01 significance level, respectively. All models include industry fixed effects and year fixed effects. The t-statistics in the parentheses are calculated using standard errors adjusted for clustering at the firm level. All continuous variables are winsorized at the top and bottom 1 percent. Appendix documents definitions for all variables.

Table 7 Panel C – Upward Revision Conditional on Multiple Revisions

	Ab_CFO	*Ab_Prod*	*Ab_Disx*	*DA*
MEF	0.0466	-0.1704	0.1589	-0.0184
	(0.63)	(-0.70)	(0.70)	(-0.21)
Share	-0.0020	0.0031	-0.0033	0.0041***
	(-1.30)	(0.67)	(-0.74)	(2.93)
ROA	0.4545***	-0.2085	-0.2293*	0.2792***
	(9.64)	(-1.44)	(-1.78)	(5.51)
Leverage	-0.0334***	0.1125***	-0.0611***	0.0084
	(-4.26)	(4.53)	(-2.72)	(1.13)
MVE	0.0027	-0.0069	0.0075	-0.0058***
	(1.61)	(-1.28)	(1.36)	(-3.89)
MtoB	0.0075***	-0.0388***	0.0290***	-0.0077***
	(4.02)	(-6.12)	(5.06)	(-4.22)
SO	0.0019	-0.0285***	0.0264***	-0.0010
	(0.67)	(-3.57)	(3.41)	(-0.38)
INST	0.0079	0.1463***	-0.1702***	-0.0121
	(0.53)	(3.00)	(-3.55)	(-0.88)
FRGN	-0.0226	-0.0945	0.1154*	0.0293*
	(-1.17)	(-1.38)	(1.81)	(1.67)
DirOwn	0.0301	-0.1706**	0.1738**	-0.0369
	(1.34)	(-2.29)	(2.31)	(-1.61)
Constant	0.0011	0.0253	-0.049	-0.0116
	(0.05)	(0.38)	(-0.74)	(-0.60)
Fixed-effects		Industry / Year		
Clustered		Firm		
# of Observations		2,044		
Adj. R-squared	0.2057	0.1662	0.0945	0.0616

*, **, *** denote 0.1, 0.05, and 0.01 significance level, respectively. All models include industry fixed effects and year fixed effects. The t-statistics in the parentheses are calculated using standard errors adjusted for clustering at the firm level. All continuous variables are winsorized at the top and bottom 1 percent. Appendix documents definitions for all variables.

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Appendix – Variable Definitions

Ab_CFO	Abnormal cash flows
Ab_Prod	Abnormal production costs
Ab_Disx	Abnormal discretionary expenses
DA	Discretionary accruals estimated using cross-sectional Jone (1991) model
MEF	Forecast discrepancy, defined as the difference between the initial management earnings forecast on net income and the realized net income
Share	Natural logarithmn of numbers of share outstanding
ROA	Retun on assets
Leverage	Total liability over total assets
MVE	Natural logarithmn of the market capitalization
MtoB	Markert to book ratio of equity
SO	Indicator variable set equal to 1 if the firms adopt stock option as the management incentives
INST	The percentage of share held by institutional investors
FRGN	The percentage of share held by foreign investors
DirOwn	The percentage of share held by board of director members