Management Forecast and Stock Price informativeness

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Abstract

This study examines two financial forecast legal environments, mandatory versus voluntary by investigating the relationship between the finical forecast disclosure reform and firm-specific future earnings response coefficient (FERC). The study collects the sample from 2003 to 2009 and focuses on Taiwan where the authority reformed the financial forecast regime in 2005. The study provides evidence that the financial forecast influences the FERC and finds that the impact of stock price informativeness only on mandatory financial forecast regime. Further, the result reveals that the financial forecast of the complete form is more likely with high FERC's than that of summary form. Last, the study suggests that the mandatory financial forecast allows investors to have better expectations of future earnings.

Keywords: Management Forecasts, Financial Forecast Reform, Future Earnings Response Coefficient, Price Informativeness

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1. Introduction

Management forecast is an important channel of corporate disclosure that provides forward-looking information in the capital market to reduce information asymmetry (Healy and Palepu, 2001). The management announces management forecast to shorten the gap between the market and the company's expectations to reduce information asymmetry. Recent studies have shown that management forecasts provide more information to investors than any other accounting source (Beyer et al., 2010). For several decades, management forecasts have been the focus of significant academic interest (Agapova and Madura, 2016).

Management forecast is a mechanism to improve the timeliness of information to improve accounting quality. Nevertheless, relevant empirical literature does not provide results on a comparative study on mandatory and voluntary regulatory regimes (Baber et al., 2006; and Dechow et al., 2010). Most researches conduct that management forecast is a voluntary mechanism by which managers establish or alter market earnings expectations and influence the reputation (Hirst, Koonce and Venkataramna, 2008). Taiwan, however, offers an opportunity to examine both regimes due to its unique regulatory switch in 2005 from mandatory to voluntary management forecast disclosure, a time when most developed markets only required voluntary disclosure. Before 2005, managers were required to provide financial forecasts in Taiwan. After the change of financial forecast environment to relax restrictions of firms' forecast disclosure, managers can disclose the forecast information voluntarily. Regulators expect that managers will convey more private information on the corporate profitability or performance in the voluntary disclosure regime. Surprisingly, limited studies discuss this important and unanswered question whether to regulate or deregulate the corporate disclosure is better for conveying the information. Thus, the purpose of this paper is to examine whether management forecast in either mandatory or voluntary financial forecast regimes is associated with the ability of the current return to reflect future earnings information.

Prior research provides evidence that different legal and regulatory environment influences the management disclosure behaviors (Baginski et al., 2002; Shroff et al., 2012; Shi et al., 2013). The characteristics of management are positively related to the decision whether firms issue voluntary forecasts (Hribar and Yang, 2016). Voluntary financial forecast allows managers to choose the frequency, precision, and horizon of their forecasts. These choices influence investors' ability to interpret the forecast and reflect the implications of the forecast in current stock prices. Regulators and accountants supervise and review the forecasts for increasing the credibility of financial forecast information. Thus, this paper is curious about whether the current return is able to reflect the information in future earnings in either the mandatory or voluntary disclosure environment.

This paper uses the coefficient on future earnings to measure the stock price

informativeness. Firms whose stock returns reflect financial forecasts information on future earnings has higher stock price informativeness. Thus, the future earnings response coefficient, FERC, should be greater. Prior studies examine the relation between voluntary corporate disclosure and FERC (Lundholm and Myers, 2002; Oswald and Zarowin, 2007) and especially focus on the impact of management forecast on FERC (Choi et al., 2011). This study extends previous research to explore whether the forecast information in two different regimes is associated with the contemporaneous returns to reflect future earnings.

This study has several contributions. First, this paper complements previous management forecast studies by investigating whether different financial forecasts disclosure regime affects the ability of returns to reflect future earnings information. It addresses that financial forecast is one informativeness tool of the corporate disclosure in the capital market. Second, this study differs from Baginski et al., (2002) research to fill a void in the disclosure literature. To the best of our knowledge, this research is the first to prove the effect of mandatory and voluntary disclosure on FERC in a single country-specific regulation. It contributes to documenting the shift of information disclosure regulation in the market conditioning environment across mandatory versus voluntary financial forecast regimes in Taiwan. Last, this study discusses the stock price informativeness in two different disclosure requirements which assist policymakers and regulators further understanding the different effect of disclosure regulations. The financial forecast reform in Taiwan relaxes restrictions on firms' forward-looking disclosure. This result provides the new insight of either regulation or deregulation improving the efficiency of the capital market.

A reduction in information asymmetry lowers the opportunity for investors to profit from informed trading and therefore reduces the costs to investors of acquiring private information (Diamond, 1985; King et al., 1990). Moreover, a reduction in information asymmetry increases liquidity in the company's stock and reduces the cost of capital (Diamond and Verrecchia, 1991). The reduction in information asymmetry is greater if investors believe that management forecasts are more informative about stock prices.

The remainder of this study is organized as follows. The next section reviews the earlier literature on the financial forecast and develops the hypothesis. Section 3 presents the sample selection and research methodology. Section 4 reports the empirical findings and analysis. The final section summarizes and concludes the study.

2. Literature review

In 1991, the Taiwan Securities and Futures Exchange Commission (TSFEC) started to require firms in Taiwan to report their management forecasts. The quality of financial report disclosure and the information transparency has been under criticism in some Asian countries. In 2005, the authority of Taiwan revised the management forecast policy from mandatory to

voluntary disclosure to improve management forecast quality. The main reason is to eliminate the issuance of excessive optimistic management forecasts (Jaggi, Chin, Lin and Lee, 2006). The new policy of management forecasts is more flexible than the old one, with listed companies voluntarily publishing management forecasts in the form of either the summary financial forecast or complete financial forecast.

Prior studies demonstrate the relation between mandatory and voluntary disclosures of different issues. Boubaker, Gounopoulos, and Kallias (2017) prove that management forecasts reveal low levels of error in countries with voluntary disclosure such as Australia, Hong Kong and England compared with countries disclosing mandatory earnings forecasts such as New Zealand and Malaysia. Einhorn (2005) examines that various features of mandatory reporting affect managers' propensity to provide voluntary disclosure. Francis et al. (2008) find that firms exhibiting better earnings quality provide a larger quantity of voluntary disclosures in annual reports than do firms exhibiting poor earnings quality.

The financial forecast is the management estimation of future financial conditions, operating results and cash flows according to the business plan and operating environment. When preparing the financial forecast, management should collect the timely information from various sources to assure the quality, reasonableness, and reliability. Most investors prefer using financial forecasts to make decisions. The market reaction of management forecasts is well documented by the prior research (Ajinkya and Gift, 1984; Hutton et al., 2003; Karamnou and Vafeas, 2005). Managers often issue financial forecasts to reduce information asymmetry (Dianond and Verrecchia, 1991; Leuz and Verrecchia, 2000) because the forecast information is value relevant, and thus influence firm's stock price. This study explores whether financial forecasts not only affect the informativeness on current stock price but also influence future earnings in the different legal and regulatory environment.

This paper argues that financial forecast, the estimation of future financial conditions, operating results and cash flows made by management, contains more relevant forward-looking information which assists investors to better predict future earnings and thus has greater FERC. The following hypotheses are developed:

Hypothesis 1*: Financial forecasts firms have greater FERCs than non-financial forecast firms in the mandatory financial forecast regime.*

Hypothesis2*: Financial forecasts firms have greater FERCs than non-financial forecast firms in the voluntary financial forecast regime.*

The mandatory disclosure regulation and voluntary disclosure environment have different legal conditions in firms' disclosure behaviors (Beyer et al., 2010). Therefore, in 2005, the financial forecast reform in Taiwan relaxing restrictions on firms' forecast disclosure is a special opportunity to test the shift of the disclosure environment. The government regulators argue that the voluntary forecast adoption would coincide with other international capital market and managers will be more willing to disclose the private information such as firms' profitability and the performance. Thus, the financial forecasts increase the transparency and reduce the misleading disclosure (Liu, 2017). However, opponents argue that the mandatory financial forecasts can avoid managers' distortions on forecasts information and restrict the management incentives.

This paper posits that the voluntary financial forecast should have firms with incentives to strategically and selectively disclose management forecast. However, the mandatory financial forecast has been supervised by regulators and accountants strictly which may assist investors to predict future earnings. This study tests the inference with the following hypothesis:

Hypothesis 3*: Financial forecasts firms in the mandatory regime have greater FERC than financial forecast firms in the voluntary financial forecast regime.*

3. Empirical Method

This study hand-collected management forecast data announced in Taiwan Market Observation Post System from 2003 to 2009. Other company financial information is collected from Taiwan Economic Journal (TEJ). This study begins with forecasts made in 2003 when the government regulators legalized the financial forecasts principle of public firms and end with forecasts made in 2009 when the construction of the stock price informativeness variables in any year requires the returns and earnings data in the subsequent three year periods.

Table 1 reports the distribution of sample firms. The firms with financial forecasts account for approximately 59.17% of all firms during the mandatory period. However, the approximately 2.33% of all firms during voluntary period issue the financial forecasts. This decreases the possibility that firms would not likely to convey more private information to the market in the voluntary disclosure regime.

Table 1 Sample composition

Panel A: Sampling

	Mandatory regime (2003 to 2004)		**Voluntary regime (2005-2009)**	
	Forecast firms	Control firms	Forecast firms	Control firms
Initial sample firms	1186	778	136	5705
Less:				
Firms in the financial and insurance industry that regulate by other Act or Criterion	(59)	(19)	(10)	(194)
Missing data of variable (income or return & control variables)	(38)	(7)	(1)	(21)
Final sample	**1089**	**752**	**125**	**5490**
Total sample	**1841**		**5615**	

Panel B: By year

year	Forecast sample **(A)**	Full sample (B)	Percentage (A÷B)×100%
Mandatory regime			
2003	518	871	59.47%
2004	571	970	58.87%
Voluntary regime			
2005	67	1041	6.44%
2006	30	1080	2.78%
2007	12	1130	1.06%
2008	9	1164	0.77%
2009	7	1200	0.58%
Total	1214	7456	16.28%

This study refers Choi et al. (2011) by using Lundholm and Myers (2002) model, based on Collins et al. (1994) method, to calculate FERCs where combines three years of future returns $R_{t3}(=\sum_{i=1}^{3} X_{t+i})$ and earnings $X_{t3}(=\sum_{i=1}^{3} R_{t+i})$ to capture returns over the fiscal year. The coefficient in the model is predicted in price-earnings relation to past earnings (β_1), current earnings (β_2) and future earnings (β_3).

$$R_t = \beta_0 + \beta_1 X_{t-1} + \beta_2 X_t + \sum_{i=1}^{3}(\beta_{3i} X_{t+i} + \beta_{4i} R_{t+i}) + \varepsilon_t$$
$$= \beta_0 + \beta_1 X_{t-1} + \beta_2 X_t + \beta_3 X_{t3} + \beta_4 R_{t3} + \varepsilon_t \quad . \qquad (1)$$

This paper explores the impact of the financial forecast reform on the stock price informativeness as reflected in the FERC. First, this study individually examines an indicator variable for the issuance of the financial forecast, *ISSUE*, which is set equal to 1 for the firm issued forecast information during fiscal year t and otherwise 0. If financial forecast information to the market regarding the future earnings of the firm, this study expects the coefficient β_8 to

be significantly positive by estimating the following regression.

$$R_t = \beta_0 + \beta_1 X_{t-1} + \beta_2 X_t + \beta_3 X_{t3} + \beta_4 R_{t3} + \beta_5 ISSUE + \beta_6 ISSUE_t * X_{t-1} + \beta_7 ISSUE_t * X_t + \beta_8 ISSUE_t * X_{t3} + \beta_9 ISSUE_t * R_{t3} + \varepsilon_t \quad (2)$$

Next, this study focuses on financial forecast firms and creates an indicator variable, *REF*, for the time period of pre- versus post- financial forecast reform, is set equal to 1 for firm-years in the mandatory financial forecast regime and 0 otherwise. The empirical perdition is whether the mandatory forecasts enhance the effect of regulation and improve the disclosure quality of earnings beyond the information contained in current earnings. The FERC is higher for mandatory forecast firms than voluntary forecast firms. To test the hypotheses, this research estimates the following regression:

$$R_t = \beta_0 + \beta_1 X_{t-1} + \beta_2 X_t + \beta_3 X_{t3} + \beta_4 R_{t3} + \beta_5 REF + \beta_6 REF_t * X_{t-1} + \beta_7 REF_t * X_t + \beta_8 REF_t * X_{t3} + \beta_9 REF_t * R_{t3} + \varepsilon_t \quad (3)$$

Third, this paper follows Choi et al. (2011) to extend equation (3) where includes additional control variables related to FERC. It adds *SIZE* (firm size), *ANAL* (analyst's followings), *LOSS* (loss of future earnings), *EARV* (earnings volatility) and GROW (firm growth) as control variables.

$$\begin{aligned} R_t = {} & \beta_0 + \beta_1 X_{t-1} + \beta_2 X_t + \beta_3 X_{t3} + \beta_4 R_{t3} + \beta_5 ISSUE \\ & + \beta_6 ISSUE_t * X_{t-1} + \beta_7 ISSUE_t * X_t + \beta_8 ISSUE_t * X_{t3} + \beta_9 ISSUE_t * R_{t3} \\ & + \theta_1 SIZE_t + \theta_2 SIZE_t * X_{t3} + \theta_3 LOSS_t + \theta_4 LOSS_t * X_{t3} \\ & + \theta_5 GROW_t + \theta_6 GROW_t * X_{t3} + \theta_7 EARV_t + \theta_8 EARV_t * X_{t3} \\ & + \theta_9 ANAF_t + \theta_{10} ANAF_t * X_{t3} + \varepsilon_t \end{aligned} \quad (4)$$

Table 2 Descriptive statistics

Panel A: Full sample(n=7456)					
Variable	Mean	Median	Std. Dev.	25%	75%
R_t	8.8050	5.8794	46.0642	-19.4118	34.3186
X_{t-1}	-0.0173	0.0631	0.4308	0.0125	0.0942
X_t	-0.0174	0.0571	0.4064	0.0068	0.0910
X_{t3}	-0.0317	0.1531	0.7410	-0.0404	0.2560
R_{t3}	27.2885	26.1539	65.4569	-9.8257	66.2841
SIZE	15.0307	14.8688	1.2853	14.1026	15.7380
LOSS	0.2521	0.0000	0.4343	0.0000	1.0000
GROW	6.3992	3.5400	33.2443	-11.0550	18.7800
EARV	1.3203	0.9737	1.1606	0.5552	1.6803
ANAF	1.2893	1.3863	0.6886	0.6931	1.7918

Panel B: Forecast sample firms and control firms (n=7456)

	forecast firms (n=1214)			*control firms (n=6242)*			*Difference*	
Variable	*Mean*	*Median*	*SD.*	*Mean*	*Median*	*SD.*	*t-test*	*Wilcoxon z-test*
R_t	-4.3071	-4.7071	44.0344	11.3552	8.3979	46.0201	-15.6623***	-13.1050***
X_{t-1}	0.0066	0.0670	0.3689	-0.0220	0.0613	0.4417	0.0286**	0.0057***
X_t	0.0102	0.0737	0.3520	-0.0228	0.0528	0.4160	0.033***	0.0209***
X_{t3}	-0.0488	0.1893	0.8605	-0.0284	0.1462	0.7155	-0.0204	0.0431***
R_{t3}	18.8900	14.2635	73.5707	28.9219	28.3369	63.6369	-10.0319***	-14.0734***
SIZE	14.7526	14.5311	1.2896	15.0847	14.9433	1.2775	-0.3321***	-0.4122***
LOSS	0.2224	0.0000	0.4160	0.2579	0.0000	0.4375	-0.0355***	0.0000**
GROW	20.4287	14.8950	35.2616	3.6707	1.4900	32.1367	16.758***	13.4050***
EARV	1.3394	1.0166	1.0938	1.3166	0.9655	1.1732	0.0228	0.0511
ANAF	1.6371	1.7918	0.3874	1.2216	1.3863	0.7135	0.4155***	0.4055***

Panel C: Comparing forecast firms between mandatory and voluntary regimes (n=1214)

	Mandatory forecast firms (n=1089)			*Voluntary forecast firms (n=125)*			*Difference*	
Variable	*Mean*	*Median*	*SD.*	*Mean*	*Median*	*SD.*	*t-test*	*Wilconxon z-test*
R_t	-6.7490	-6.5045	43.2229	16.9666	14.2879	45.4682	-23.715***	-20.792***
X_{t-1}	-0.0009	0.0642	0.3871	0.0724	0.0942	0.1078	-0.0733**	-0.0300***
X_t	0.0026	0.0728	0.3704	0.0763	0.0811	0.0615	-0.0737**	-0.0083**
X_{t3}	-0.0615	0.1857	0.8540	0.0621	0.2093	0.9112	-0.1236	-0.0236**
R_{t3}	18.274	12.530	74.392	24.2535	24.4502	66.0060	-5.9792	-11.9194**
SIZE	14.658	14.487	1.1877	15.5686	15.2456	1.7732	-0.9097***	-0.7579***
LOSS	0.2360	0.0000	0.4248	0.1040	0.0000	0.3065	0.1320***	0.0000***
GROW	21.258	15.550	36.194	13.2033	9.9100	24.7013	8.0548**	5.6400*
EARV	1.3312	1.0072	1.0916	1.4105	1.1273	1.1143	-0.0793	-0.1201
ANAF	1.6148	1.6094	0.3817	1.8318	1.9459	0.3836	-0.2170***	-0.3365***

***Significant at the 1% level, **Significant at the 5% level, * Significant at the 10% level.

Note: $\boldsymbol{R_t}$ = the cumulative return for fiscal year t; $\boldsymbol{X_{t-1}}$ = income available to common shareholders before extraordinary items deflated by the market value of equity at the beginning of fiscal year t; $\boldsymbol{X_t}$ = income available to common shareholders before extraordinary items during the *t-1* year deflated by the market value of equity at the beginning of fiscal year t; $\boldsymbol{X_{t3}}$ = the sum of income available to common shareholders before extraordinary items from year t+1 to year t+3 deflated by the market value of equity at the beginning of fiscal year t; $\boldsymbol{R_{t3}}$ = the sum of cumulative return from year t+1 to year t+3; ***SIZE*** = the natural logarithm of the assets at the beginning of fiscal year. ***LOSS*** = a dummy variable that one if X_{t3} is negative and zero otherwise; ***GROW*** = the percentage of the firm's annual change in sales from last year divided by lagged sales; ***EARV*** = the standard deviation of earnings form year t to t+3; ***ANAL*** = the natural logarithm of number of analysts following the firm.

$$
\begin{aligned}
R_t = {} & \beta_0 + \beta_1 X_{t-1} + \beta_2 X_t + \beta_3 X_{t3} + \beta_4 R_{t3} + \beta_5 REF \\
& + \beta_6 REF_t * X_{t-1} + \beta_7 REF_t * X_t + \beta_8 REF_t * X_{t3} + \beta_9 REF_t * R_{t3} \\
& + \theta_1 SIZE_t + \theta_2 SIZE_t * X_{t3} + \theta_3 LOSS_t + \theta_4 LOSS_t * X_{t3} \\
& + \theta_5 GROW_t + \theta_6 GROW_t * X_{t3} + \theta_7 EARV_t + \theta_8 EARV_t * X_{t3} \\
& + \theta_9 ANAF_t + \theta_{10} ANAF_t * X_{t3} + \varepsilon_t
\end{aligned} \quad . \qquad (5)
$$

4. Empirical results

4.1 Descriptive statistics

Panel A of Table 2 shows the summary statistics for the full sample of 7456 firms. Panel B presents descriptive statistics separately for firms with or without forecast disclosure. The univariate tests indicate that forecast firms and control firms are significantly different. Forecast firms are more likely to have the negative cumulative return for fiscal year t. The mean of forecasts firms is significantly small size, and firms also have less loss, higher growth, and more analysts' followings. Panel C of Table 2 indicates that there are statistical differences for cumulative return for fiscal year t. Mandatory forecast firms have significantly negative cumulative return than voluntary forecast firms.

4.2 Correlation

Table 3 results indicate that the returns and contemporaneous earnings are significantly positive correlated. Results of correlations between the control variables are not very high. Only the correlation between Xt3 and Loss is greater than 0.50, but the multicollinearity is not a problem after the VIF test.

4.3 Regression Results

Table 4 presents the regression results of estimating equation (1). This research uses column 1 to report traditional FERC model (equation 1), column 2 to present our major model (equation 2) for examining the effect of firms issuing management forecasts, and column 3 to provide the full FERC model (equation 4).

Panel A of Table 4 presents the effect of the forecast issuance on the FERC under the mandatory forecast regime, the overall model is highly significant. The model 1 in column 1, we find that the coefficient on X_t is significantly positive, suggesting that the current earnings are positively associated with the return. The coefficient on X_{t3} is significantly positive, indicating that the return-increasing effect on future earnings.

The model 2 in column 2 shows that the coefficient on $ISSUE*X_t$ is insignificant, implying the current management forecast could not influence R_t where the ERC does not capture meaningful informativeness. However, the coefficient on $ISSUE*X_{t3}$ is significantly positive, suggesting that the market participants could significantly reflect the future earnings on the reruns of firms issuing forecast in the mandatory forecast regime. Therefore, to consider the impact of management forecasts on the FERC is necessary.

The main results of model 4 in column 3 report the coefficient on $ISSUE*X_t$ is insignificant, consistent with the model 2 column. However, the coefficient on $ISSUE*X_{t3}$ is significantly positive, indicating that returns of management forecast firms to reflect future earnings in the mandatory forecast regime. Furthermore, the results of the control variables show that the influence of FERCs in the mandatory forecast regime is less likely when firms are the loss, and firms are followed by fewer analysts.

In Panel B of Table 4, the model 1 in column 1, the coefficient on X_t is significantly positive, implying that the current earnings could influence the return. The coefficient on X_{t3} is significantly positive, indicating that the return could be reflected on future earnings, consistent with Lundholm and Myers (2002) and Choi et al. (2011).

However, in the model 2 in column 2 and the model 4 in column 3, findings show that the coefficients on $ISSUE*X_t$ and $ISSUE*X_{t3}$ are insignificant in the voluntary regime, implying that the ability of current returns could not reflect current earnings and future earnings. It suggests that management forecasts in the voluntary regime provide less information than in the mandatory regime which does not allow stock prices to reflect future earnings. The control variables in the model 4 in column 3 indicate that the impact of FERCs in the mandatory forecast regime is more likely for small firms, less likely in firms' loss, more likely for growing firms, more likely for smaller earnings variability, and firms with more analysts' followings.

Table 3 Correlation matrix

	R_t	X_{t-1}	X_t	X_{t3}	R_{t3}	*SIZE*	*LOSS*	*GROW*	*EARV*
X_{t-1}	-0.0934***								
	(0.0011)								
X_t	0.2932***	0.1591***							
	(0.0000)	(0.0000)							
X_{t3}	0.2251***	0.2284***	0.2478***						
	(0.0000)	(0.0000)	(0.0000)						
R_{t3}	0.0169	0.0382	0.0142	0.4130***					
	(0.5567)	(0.1837)	(0.6200)	(0.0000)					
SIZE	0.0962***	-0.0174	0.0405	0.0364	-0.0426				
	(0.0008)	(0.5446)	(0.1582)	(0.2046)	(0.1379)				
LOSS	-0.2468***	-0.1985***	-0.2676***	-0.5738***	-0.3629***	-0.0656**			
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0223)			
GROW	0.3751***	0.0796***	0.2236***	0.1336***	0.0112	-0.0202	-0.1631***		
	(0.0000)	(0.0055)	(0.0000)	(0.0000)	(0.6956)	(0.4820)	(0.0000)		
EARV	-0.0129	-0.1039***	-0.2085***	-0.3479***	-0.0745***	-0.0224	0.2908***	0.0941***	
	(0.6525)	(0.0003)	(0.0000)	(0.0000)	(0.0094)	(0.4351)	(0.0000)	(0.0010)	
ANAF	-0.0607**	0.2861***	0.1802***	0.1169***	-0.0226	0.2447***	-0.1423***	0.1425***	0.0503*
	(0.0345)	(0.0000)	(0.0000)	(0.0000)	(0.4309)	(0.0000)	(0.0000)	(0.0000)	(0.0795)

***Significant at the 1% level, **Significant at the 5% level, * Significant at the 10% level.

Table 4 The effect of forecast issuance on the FERC

Panel A: Mandatory Regime (from 2003 to 2004)

	Column 1 Model (1)		*Column 2* Model (2)		*Column 3* Model (4)	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
INTERCEPT	-2.2216	(0.3782)	1.3786	(0.6542)	-35.6331**	(0.0114)
X_{t-1}	-21.3637***	(0.0000)	-11.6706***	(0.0000)	-11.1043***	(0.0000)
X_t	23.9100***	(0.0000)	20.4968***	(0.0000)	19.2580***	(0.0000)
X_{t3}	12.1839***	(0.0000)	4.8854**	(0.0190)	16.9779	(0.4128)
R_{t3}	-0.0288	(0.3544)	0.0227	(0.4735)	-0.0388	(0.2461)
ISSUE			-6.1356***	(0.0070)	-6.3012***	(0.0029)
ISSUE $*X_{t-1}$			-14.5292	(0.1184)	-12.1426*	(0.0986)
***ISSUE* $*X_t$**			**7.6251**	**(0.2992)**	**5.4723**	**(0.3106)**
***ISSUE* $*X_{t3}$**			**15.4533*** **	**(0.0000)**	**12.2096*** **	**(0.0001)**
ISSUE $*R_{t3}$			-0.0900***	(0.0079)	-0.0318	(0.4244)
SIZE					3.8041***	(0.0008)
SIZE$*X_{t3}$					1.3623	(0.2960)
LOSS					-10.3430***	(0.0049)
LOSS$*X_{t3}$					-28.4050**	(0.0356)
GROW					0.3257***	(0.0000)
GROW$*X_{t3}$					0.0083	(0.7333)
EARV					3.3669***	(0.0012)
EARV$*X_{t3}$					0.5079	(0.6050)
ANAF					-19.9840***	(0.0000)
ANAF$*X_{t3}$					-6.1032**	(0.0245)
Sample size	1841		1841		1841	
χ^2	37.3197***		45.3234***		114.2222***	
Adjust R^2	0.1434		0.1694		0.2943	

Panel B: Voluntary Regime (from 2005 to 2009)

	Column 1 Model (1)		*Column 2* Model (2)		*Column 3* Model (4)	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
INTERCEPT	18.7483***	(0.0000)	18.7945***	(0.0000)	80.3345***	(0.0000)
X_{t-1}	-9.5646***	(0.0000)	-9.4517***	(0.0000)	-9.1533***	(0.0000)
X_t	29.4110***	(0.0000)	29.3674***	(0.0000)	26.2930***	(0.0000)
X_{t3}	11.6619***	(0.0000)	11.6221***	(0.0000)	69.8874***	(0.0000)
R_{t3}	-0.1782***	(0.0000)	-0.1799***	(0.0000)	-0.2168***	(0.0000)
ISSUE			-3.9648	(0.6785)	-2.0851	(0.8118)
ISSUE $*X_{t-1}$			-85.4140	(0.1525)	-65.8539	(0.2070)
***ISSUE* $*X_t$**			**123.9796**	**(0.3335)**	**75.5893**	**(0.5190)**
***ISSUE* $*X_{t3}$**			**-5.5405**	**(0.7241)**	**-6.3018**	**(0.6305)**
ISSUE $*R_{t3}$			0.0653	(0.3345)	0.0989*	(0.0681)
SIZE					-3.6723***	(0.0000)
SIZE$*X_{t3}$					-2.9113***	(0.0003)
LOSS					-11.9111***	(0.0000)
LOSS$*X_{t3}$					-12.8456*	(0.0532)
GROW					0.3359***	(0.0000)
GROW$*X_{t3}$					0.0747**	(0.0208)
EARV					2.0372***	(0.0050)
EARV$*X_{t3}$					-2.4516***	(0.0024)
ANAF					-7.0447***	(0.0000)
ANAF$*X_{t3}$					3.2323*	(0.0663)
Sample size	5615		5615		5615	
F-value	27.1302***		13.9852***		37.3578***	
Adjust R^2	0.1326		0.1338		0.2226	

***Significant at the 1% level, **Significant at the 5% level, * Significant at the 10% level.

Note: R_t = the cumulative return for fiscal year t;X_{t-1}= income available to common shareholders before extraordinary items deflated by the market value of equity at the beginning of fiscal year t; X_t= income available to common shareholders before extraordinary items during the *t-1* year deflated by the market value of equity at the beginning of fiscal year t; X_{t3}= the sum of income available to common shareholders before extraordinary items from year t+1 to year t+3 deflated by the market value of equity at the beginning of fiscal year t; R_{t3}= the sum of cumulative return from year t+1 to year t+3; *ISSUE*= 1 for a firm issued forecast information during fiscal year t and 0 otherwise; *SIZE* = the natural logarithm of the assets at the beginning of fiscal year. *LOSS*= a dummy variable that one if X_{t3} is negative and zero otherwise; *GROW* = the percentage of the firm's annual change in sales from last year divided by lagged sales; *EARV* = the standard deviation of earnings form year t to t+3; *ANAL* = the natural logarithm of number of analysts following the firm.

Table 5 tests whether FERCs have different incentive impact between the mandatory and voluntary management forecast information. The model 1 in column 1, the coefficient on X_t is significantly positive and X_{t3} is significantly positive, confirming that returns reflect future earnings when firms issue management forecast for the fiscal year.

In the model 2 in column 2 and the model 5 in column 3, the coefficients on *REF** X_{t3} are significantly positive, suggesting that the impact of FERC on the mandatory management forecast firms is greater than voluntary management forecast firms. No prior empirical study explores the relations between different forecast systems. The result provides evidence that mandatory management forecast disclosure have more information than voluntary management forecast disclosure. The returns can better reflect future earnings in the mandatory management forecast regime.

Table 5 The effect of forecast firms under different regimes (mandatory or voluntary) on the FERC

	Column 1 Model (1)		*Column 2* Model (2)		*Column 3* Model (4)	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
INTERCEPT	-3.0586	(0.2029)	8.5703	(0.2398)	2.5774	(0.8868)
X_{t-1}	-22.2077***	(0.0017)	-90.4991	(0.1247)	-46.2125	(0.4346)
X_t	33.2907***	(0.0000)	208.1075**	(0.0419)	147.3703	(0.2073)
X_{t3}	11.9272***	(0.0000)	-2.4591	(0.3460)	-10.9997	(0.7395)
R_{t3}	-0.0455	(0.1266)	-0.0322	(0.6189)	-0.0645	(0.3270)
REF			-13.4138*	(0.0864)	-20.6796**	(0.0304)
REF $*X_{t-1}$			63.9405	(0.2812)	26.2109	(0.6567)
***REF* $*X_t$**			**-180.2372***	**(0.0782)**	**-123.0232**	**(0.2923)**
***REF* $*X_{t3}$**			**23.2917*****	**(0.0000)**	**19.4794*****	**(0.0013)**
REF $*R_{t3}$			-0.0336	(0.6456)	-0.0060	(0.9323)
SIZE					2.3317**	(0.0414)
SIZE$*X_{t3}$					1.3935	(0.2664)
LOSS					-6.1851	(0.1867)
LOSS$*X_{t3}$					-18.4894	(0.2435)
GROW					0.3963***	(0.0000)
GROW$*X_{t3}$					0.0442	(0.1404)
EARV					3.7470***	(0.0019)
EARV$*X_{t3}$					-0.2343	(0.7028)
ANAF					-22.6101***	(0.0000)
ANAF$*X_{t3}$					3.9750	(0.5147)
Sample size	1214		1214		1214	
F-value	20.1274***		20.7932***		61.5308***	
Adjust R^2	0.1466		0.1921		0.3289	

***Significant at the 1% level, **Significant at the 5% level, * Significant at the 10% level.

Note: $\boldsymbol{R_t}$ = the cumulative return for fiscal year t; $\boldsymbol{X_{t-1}}$ = income available to common shareholders before extraordinary items deflated by the market value of equity at the beginning of fiscal year t; $\boldsymbol{X_t}$ = income available to common shareholders before extraordinary items during the *t-1* year deflated by the market value of equity at the beginning of fiscal year t; $\boldsymbol{X_{t3}}$ = the sum of income available to common shareholders before extraordinary items from year t+1 to year t+3 deflated by the market value of equity at the beginning of fiscal year t; $\boldsymbol{R_{t3}}$ = the sum of cumulative return from year t+1 to year t+3; ***CS***=1 for firm disclose financial forecast by using complete forms and 0 for adopting summary form.; ***REF***= 1 for firm-years in mandatory financial forecast regime and 0 in voluntary financial forecast regime; ***SIZE*** = the natural logarithm of the assets at the beginning of fiscal year. ***LOSS***= a dummy variable that one if X_{t3} is negative and zero otherwise; ***GROW*** = the percentage of the firm's annual change in sales from last year divided by lagged sales; ***EARV*** = the standard deviation of earnings form year t to t+3; ***ANAL*** = the natural logarithm of number of analysts following the firm.

5. Conclusion

Management forecasts can reduce information asymmetry and the cost of capital, improving the efficiency of resource allocation in the capital market. Since 2005, regulators have constantly changed policies to promote and perfect the management forecast system in the Taiwan capital market. The management must release management forecasts when they anticipate that the firm's performance may fluctuate or deviate significantly from preliminary expectations. This provides investors with more timely information and reduces information asymmetry in the capital market. This study examine the informational content of the management forecast across diverse disclosure environments.

The main findings of this study are that the current returns reflect positively on future earnings when firms issue financial forecasts in the mandatory regime. Mandatory forecasts have greater informativeness because returns reflect the information of future earnings in the mandatory forecast regime. Further, this study shows that the FERCs are greater when firms issue management forecast with the complete form than with the summary form. The results support the hypothesis and consistent with the explanation that the mandatory disclosure regulation is needed, particularly because the mandatory forecast disclosure increase the informativeness which assists investors to form better expectations.

The implication of this study is that a mandatory financial forecast is an informativeness tool on the corporate disclosure practices in the emerging market. This is important which leads regulators to consider whether the reform on firms' disclosure policy did mitigate the information asymmetry and improve investment decision efficiency. To our knowledge, few studies present the empirical evidence that the mandatory and voluntary disclosure environment have different impacts on returns. The study is the first to link financial forecast reform and FERCs, and the finding implies that the mandatory forecast disclosure would be more useful for market participants to evaluate returns reflecting future earnings. Lastly, the results are of important interest to multiple user groups including market makers and investors, as they shed light on authorities puzzling decision to follow a strictly mandatory or a flexible voluntary regulation and by providing evidence of which variables and firm-specific factors affect managers' choices among the two mechanisms.

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