

# **Consistency of Earnings Performance Trends and the Credibility of Management Forecasts**

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*This study examines the relationship between the firm's actual earnings increases trend (ERN), the benchmark of consistently meeting and beating analysts' expectations (MBE) in the prior period and the credibility of management earnings forecasts. The results show that when firms have either a consecutive earnings increases trend or an MBE trend, the market positively reacts to the good news forecasts. When firms show both earnings performance trends, the market reacts to the forecasts in an additive way. The study also finds that the market negatively reacts to the bad news forecasts regardless of the earnings performance trends.*

## **INTRODUCTION**

This study investigates how investors react to the management earnings forecasts based on the firm's actual earnings increases trend (ERN) and the benchmark of consistently meeting and beating analysts' expectations (MBE). Specifically, it examines whether consistent earnings increases trend and the consistent MBE trend jointly impact investor's reactions to management earnings forecasts.

Prior studies find that when firms have an earnings increases trend or an MBE trend, investors positively react to management earnings forecasts (Koch and Park, 2011; Bartov, Givoly, & Hayn, 2002). However, when firms exhibit both earnings performance trends, whether investors jointly use both patterns to react to the management forecast is arguable. On one side, if investors think both performance measures are useful and provide different information about the firm's future performance independently, there should be a more pronounced market reaction because the effect of each pattern is added together, which is called the additive effect. On the other hand, prior studies find that some firms try to manipulate earnings or management forecasts to consistently beat or meet analysts' expectations. When this happens, the effect of one performance measure may depend on the other one, which is called the interactive effect. However, there is no research focused on their joint effects. Therefore, this study investigates how investors react to management forecasts based on the two earnings performance trends.

Specifically, the study runs a cross-sectional regression model to examine if investor's reactions to management forecasts are affected by both the consistent earnings increases trend and the consistent MBE trend. It finds that the market positively reacts to the management forecasts from firms with either a consecutive earnings increases trend or from firms with an MBE trend when managers release good news forecasts. When firms exhibit both trends, the market additively reacts to good news forecasts instead of interactively reacting to good news forecasts. It also finds that the market negatively reacts to bad news forecasts from firms with a consistent ERN trend or an MBE trend. The negative effect of bad news is greater than the positive effect of good news, which is consistent with prior research that investors perceive bad news is more credible than good news.

This study has several contributions. First, it contributes to the management earnings forecast literature by providing evidence that both earnings increases trend and MBE trend have an incremental effect on the credibility of management forecasts. Although there is some research focused on the relationship between earnings performance and the credibility of management forecasts, there is no study combined both the earnings increases trend and the MBE trend over multiple periods to examine their joint effects. However, based on psychological and behavioral studies, those two measures can either additively affect or interactively affect investors' beliefs regarding the credibility of management forecasts (Wright, 1979; Einhorn et al., 1979). Therefore, this study fills the gap between the joint effects of the consecutive earnings increases trend and the MBE trend.

The study also has practical implications. It can help managers understand how prior years' earnings performance information can impact market perceptions of current voluntary disclosure information so managers can disclose financial information strategically.

The next section reviews the related literature. Section three discusses theories and develops the hypotheses. Section four describes the research design. Sections 5 and 6 present sample selection and the data analysis results. Section 7 is the conclusion.

## **LITERATURE REVIEW**

### **Market Reactions to the MBE Trend**

Prior research finds that managers have incentives to voluntarily disclose company's earnings forecasts information. Through earnings forecasts disclosure, managers can align market participants' expectations with their private information to reduce information asymmetry and cost of capital. In particular, managers can release bad news earlier through forecast disclosures to avoid a negative earnings surprise at the earnings announcement date and to reduce the risk of litigation. Furthermore, the forecast information can signal managers' competence and prospects for the company's future performance to build up their reputation. Therefore, managers have incentives to disclose credible forecast information. However, on the other hand, managers also have incentives to disclose their earnings forecast information opportunistically to mislead investors. Specifically, they may strategically manipulate earnings information to align their information with market expectations, and such manipulations may not easily be found by investors (Rogers and Stocken, 2005).

Jennings (1987) finds that investors' reactions to management earnings forecasts depend on the unexpected or surprise earnings and the credibility of management forecasts. Therefore, managers tend to avoid missing analyst consensus forecasts and try to beat and meet analysts' expectations to obtain a positive earnings surprise at the earnings announcement day. One of the strategies that managers use is to release pessimistic or unfavorable earnings forecasts in the early stage in an attempt to "walk down" analysts' forecasts and then to beat analysts' expectations to get positive earnings surprises when the actual earnings are announced.

Some studies find that walking-down strategy works for managers and that companies which consistently meet and beat analysts' expectations get a higher market premium than companies that do not consistently beat or meet analysts' expectations (Bartov et al., 2002; Kasznik & McNichols, 2002). Bartov et al. (2002) find that companies consistently meeting and beating analysts' quarterly earnings expectations receive higher market returns than companies that fail to do so even after controlling for

contemporaneous earnings performance. This market premium is not due to investors' market overreactions after examining the subsequent market returns but due to the predictability of future performance.

Kasznik and McNichols (2002) find that the market positively reacts to management forecasts from companies that consistently meet analysts' expectations over three years after controlling for the company's fundamental value. They also find that the market premium is persistent in the subsequent three years, which indicates investors' perceptions of consistent MBE patterns on the company's future performance. Lopez and Rees (2002) find that the earnings response coefficient (ERC) for firms beating analysts' expectations is more than three times greater than the ERC for firms missing analysts' expectations after controlling for the systematic component of historical forecast errors and that the market penalizes firms for missing analysts' forecasts after controlling for bad news.

However, a study by Rees and Twedt (2010) finds that firms with an MBE pattern experience negative returns when they provide downward earnings guidance during the quarter and that these negative returns are greater than the premiums they obtain at the earnings announcement date after controlling for the magnitude of the total earnings news. Kross, Ro and Suk (2011) find that analysts seem to understand management's strategy and react to the bad news forecasts from firms with a long trend of MBE less weakly than from firms without the trend of MBE, which indicates that analysts seem to discount the credibility of bad news issued by firms with an MBE trend.

Generally, prior research finds that market participants positively react to management forecasts from firms which have been consistent at meeting or beating analysts' expectations because of their predictability of future performance. However, prior research also finds that the market reacts to earnings forecasts based on the sign of the news. It places more credibility in bad news and reacts to it more strongly than good news. Investors will not place credibility in good news and positively react to good news until they can find other credible information to confirm that good news. The prior earnings increase trend is another source of information that investors may use to assess the credibility of management forecasts.

### **Market Reactions to the Earnings Increases Trend**

In a recent study, Graham et al. (2005) document that 96.9% of the managers that responded to the survey prefer a smooth earnings path so as to reduce the perceived risk and cost of capital and to improve the investors' predictability of future earnings. Barth et al. (1999) find that firms with long strings of annual earnings growth have significantly higher market returns than firms that do not have this string and that the return increases with the length of consecutive periods of growth after controlling for growth risk and opportunities. However, the market returns will reduce significantly if the string of earnings growth is broken. Therefore, firms have incentives to maintain and extend the string of consistent earnings growth.

Myers, Myers and Skinner (2007) find that firms with a long string of consecutive increases in quarterly EPS incur more than 20% higher annual abnormal returns than firms without the string and that the market premium is reduced once the string is broken. Tucker and Zarowin (2006) find that the stock price of firms with consecutive earnings increases is highly correlated with the future earnings response coefficient, which indicates that firms use income smoothing to improve earnings information and to signal the firms' future performance.

A study by Koch and Park (2011) examines the relationship between the string of consecutive earnings increases and the credibility of management earnings forecasts. They argue that firms with consecutive earnings increases may perform well and have superior ability to make earnings forecasts. By using a five-year consecutive annual earnings growth sample, they find that firms with a string of consecutive earnings increases have significantly pronounced stock price reactions as well as analyst forecast revisions around the good news management forecasts, which indicates that management forecasts made by firms with a history of consecutive earnings growth is more credible. They also find that management forecasts made by firms with a string of consecutive earnings increases are more accurate relative to the ex post actual earnings.

In an experimental research study, Koonce and Lipe (2010) examine the joint effect of MBE and consecutive earnings increases over multiple time periods. They find that both consecutive strings affect investors' judgments. When only an MBE trend exists or an earnings growth trend exists, investors react to either one of the consecutive earnings strings. When two earning performance patterns exist together investors use those two measures in an additive way rather than substituting or interacting one with the other, which indicates that those two measures provide different information about a firm's prospect in the future and about management's credibility. Tan, Wang, and Zhang (2015) suggest that investors have different readability and judgements regarding the consistency of benchmark performance. This study supplements the prior experimental studies by investigating whether both earnings growth trend and MBE trend have an additive effect or an interactive effect on the investors' perception of the company's forecast information.

### Theory and Hypotheses Development

The effect of forecast information on a firm's stock price can be explained by the dividend discount model valuation framework. This model assumes that the dividend payout ratio is constant. Based on the model, the firm's stock price is relevant to the expected earnings and cost of capital.

$$P_t = k \sum_{t=1}^{\infty} \frac{E_t}{(1+r)^t} \quad (1)$$

Where  $P$  is the stock price,  $k$  is the dividend payout ratio that is assumed to be a constant percentage of earnings,  $E$  is expected earnings and  $r$  is the cost of capital.

The model shows that the issuance of forecast information can affect stock prices in two ways. First, the release of earnings forecasts information may reveal information to the market and change investors' future earnings expectation, which can impact stock prices. Second, forecast information may lead to a change in the discount rate associated with these earnings by affecting the information costs, estimated risks and transaction costs associated with firms' stocks.

Prior research shows that forecast information may affect both expected earnings and the discount rate. Patell (1976) suggests that credible management forecasts that differ from existing earnings expectations can lead investors to revise their expectations of the level of future abnormal earnings and thus cause stock price revisions. In the Trueman (1986) model, the earnings forecast can reveal information about the mean of future cash flows immediately by signaling management's expectation of changes in the firm's future economic environment and performance. In the Merton (1985) model, management forecasts can reduce required rates of return if they reduce the information costs to uninformed investors. Therefore, the disclosure of management forecasts is related to the change in the level of future earnings expectations and to the change of the stock price.

Furthermore, Jennings (1987) documents that, investors' reactions to management earnings forecasts depend on the unexpected earnings and the credibility of management forecasts. He views the credibility of management forecasts differently based on the sign of the forecast news. If the forecast news is bad, investors place more credibility in it and negatively react to the news, which indicates investors' conservatism. If the forecast news is good, investors may not believe it until they can find other sources of information to confirm that the news is credible. Prior research documents that both the MBE trend and the consecutive earnings increases trend are used by investors to confirm the credibility of management forecasts and to estimate the firms' future performance.

Based on psychological and behavioral studies, investors may react three different ways when firms exhibit both performance measures: the Single-Measure model, the Additive model and the Interactive model. The Single-Measure model means that investors substitute one performance measure with the other one and only one performance measure is significant (Payne, Bettman, & Johnson, 1993). The Additive model means that each performance measure provides different information independently and investors combine the information from both earnings performance measures additively and positively react to management forecasts from firms with both earnings performance strings (Wright, 1979). The

Interactive model means that the effect of one performance measure depends on the effect of the other performance measure. Investors use both measures interactively or complementarily (Eighorn, Kleinmuntz, & Kleinmuntz, 1979).

Although some research argues that managers may manipulate earnings or earnings expectations to maintain the consecutive strings, investors can use the subsequent earnings report to assess whether they have misrepresented their information so as to mislead investors. Previous research also documents that the cost of capital is greater if investors find that managers misrepresent their information to mislead investors. King and Wallin (1991) document that managers seek to credibly convey the accuracy of their estimated information for the purpose of maintaining a good reputation for high quality disclosures.

Based on the above discussions, it is expected that stock market reactions to good news forecasts are positive for firms with either a consistent earnings increases trend or a consistent MBE trend. It is also expected that stock market reactions to good news forecasts are more pronounced for firms with both consistent trends based on the Koonce and Lipe (2010) experimental study. Because bad news is perceived to be more credible than good news, the market may or may not react to the bad news forecasts based on the prior earnings performance trend. It is not predicted how the market reacts to bad news forecasts based on the prior earnings performance. The hypotheses for good news forecasts are formally stated:

H1: The stock market positively reacts to good news forecasts from firms with a consistent earnings growth trend.

H2: The stock market positively reacts to good news forecasts from firms which consistently meet or beat analysts' forecasts.

H3: The stock market is more responsive to good news forecasts from firms with both an earnings increases trend and an MBE trend than to news from firms with only one performance trend.

### **Research Design**

In order to test how investors react to management forecasts based on firms' prior earnings performance measures, a three-day cumulative abnormal returns (CAR) is used on the management earnings forecasts announcement day as a proxy for investors' reactions to the credibility of managements' forecasts and cross-sectional regression of CAR on ERN is run; MBE and their interactions are also examined. CAR is used as a measure of the credibility of the management forecast based on the Hutton and Stocken (2009) study. They find that the market is more responsive to management forecasts from good reputation firms and more promptly impounds the information in the stock price, which results in a change in the stock returns. Therefore, the CAR reflects investors' perceptions about the credibility of management forecasts. If investors consider the forecasts news to be more credible, they should have more pronounced reactions, which will have a stronger effect on stock prices. If they cannot confirm the credibility of management forecasts, they may not have more pronounced reactions to the news.

The market adjusted return model to measure three-day CAR is used. The event window is from (-1, +1) and event day 0 is the management earnings forecast announcement date. The CRSP equal-weighted return is used as the market adjusted return and estimate the market adjusted model parameters from event day -210 to event day -11, totally about 200 days.

Based on Jennings (1987), the market reaction to the management forecast is a function of unexpected news and the credibility of the news. Consistent with prior research (Koch and Park, 2011), management forecast news is defined as good news if the management earnings forecast is greater than or equal to that of the prior consensus analyst forecast scaled by the stock price of the firm on the first day of the fiscal year when the management forecast is made.<sup>1</sup> If the management forecast is less than that of the prior consensus analysts' forecast, it is bad news. Good news is a dummy variable taking the value of one if the news is good, otherwise taking the value of zero. Bad news is coded in the same way (Hutton and Stocken, 2009).

Test variables are the prior consecutive earnings increases trend and the MBE trend. The string of prior earnings increases and MBE is calculated as the number of consecutive years that firms have an

earnings increases trend or an MBE trend. Three years is used as a cut-off point to identify firms which consecutively meet or beat the prior consensus analysts' forecast or consecutively increases in annual earnings before extraordinary items (Kasznik & McNichols, 2002). MBE and ERN are dummy variables, which take the value of one if the number of years of MBE or earnings increases is three or more; otherwise they take the value of zero. The two test variables are then interacted with unexpected news (NEWS) and the direction of the surprise news (GOOD or BAD) to test the hypotheses. Therefore, a model is constructed in which the investors' reaction is a function of the surprised news and the string of ERN and MBE.

The following cross-sectional multiple regression models modified from Hutton and Stocken (2009)<sup>2</sup> are used:

$$\begin{aligned}
 \text{CAR}_{it} = & \alpha_0 + \beta_1 \text{ERN}_{it} + \beta_2 \text{MBE}_{it} + \beta_3 \text{ERN}_{it} * \text{MBE}_{it} + \beta_4 \text{NEWS}_{it} * \text{GOOD}_{it} + \beta_5 \text{NEWS}_{it} * \text{BAD}_{it} \\
 & + \beta_6 \text{ERN}_{it} * \text{NEWS}_{it} * \text{GOOD}_{it} + \beta_7 \text{MBE}_{it} * \text{NEWS}_{it} * \text{GOOD}_{it} + \beta_8 \text{ERN}_{it} * \text{MBE}_{it} * \text{NEWS}_{it} * \text{GOOD}_{it} \\
 & + \beta_9 \text{ERN}_{it} * \text{NEWS}_{it} * \text{BAD}_{it} + \beta_{10} \text{MBE}_{it} * \text{NEWS}_{it} * \text{BAD}_{it} + \beta_{11} \text{ERN}_{it} * \text{MBE}_{it} * \text{NEWS}_{it} * \text{BAD}_{it} \\
 & + \beta_{12} \text{POINT}_{it} * \text{NEWS}_{it} + \beta_{13} \text{ROA}_{it} * \text{NEWS}_{it} + \beta_{14} \text{SIZE}_{it} * \text{NEWS}_{it} + \beta_{15} \text{MB}_{it} * \text{NEWS}_{it} \\
 & + \beta_{16} \text{FCF}_{it} * \text{NEWS}_{it} + \beta_{17} \text{LEV}_{it} * \text{NEWS}_{it} + \beta_{18} \text{HORIZON}_{it} * \text{NEWS}_{it} + \beta_{19} \text{MFA}_{it-1} * \text{NEWS}_{it} + \varepsilon_{it} \quad (2)
 \end{aligned}$$

In the model, the coefficients of MBE and ERN capture the effect of the earnings increases trend and the MBE trend that investors use to assess the credibility of management earnings forecasts. The signs of ERN are not predicted; nor are MBE and the interaction of ERN and MBE individually because investors' reaction depends on the sign of management forecasts news. Coefficients of NEWS\*GOOD and NEWS\*BAD capture the effect of management forecasts news on the firms' abnormal returns and are expected to be positive, which means that investors positively react to good news forecasts and negatively react to bad news forecasts.

To test H1 and H2 that the stock market positively reacts to good news forecasts from firms with either a consistent earnings increases trend or an MBE trend, the interaction of ERN\*NEWS\*GOOD and MBE\*NEWS\*GOOD is used to capture the different effect conditioned on the good news. It is expected that the signs of ERN\*NEWS\*GOOD and MBE\*NEWS\*GOOD are positive based on the prior research that both prior earnings performance trends include information about firms' future performance. Koonce and Lipe (2010) find that when both patterns exist, investors use both of them in an additive way to assess the credibility of management forecasts because of the different information they may contain. Therefore, the interaction of ERN\*MBE\*NEWS\*GOOD is used to test H3, capturing the effect of firms with both strings conditioned on the good news. It is expected that the coefficient of ERN\*MBE\*NEWS\*GOOD is positively related to the CAR and that the coefficient is greater than that of MBE\*GOOD or ERN\*GOOD.

In order to test how the market negatively reacts to bad news forecasts, the interaction of ERN\*NEWS\*BAD is used; interaction of MBE\*NEWS\*BAD; and interaction of ERN\*MBE\*NEWS\*BAD to capture the different effect conditioned on the bad news. The sign of interaction effects of earnings strings with bad news forecasts is not predicted since bad news is perceived to be more credible than good news and investors may or may not use prior earnings performance information to assess the credibility of management forecasts.

Forecast specificity is controlled using POINT based on Baginski et al. (1993), who conclude that market reactions to management forecasts increase with the forecast specificity. If the forecast is a point forecast, it takes the value of one. If the forecast is a range forecast, it takes the value of zero. It is expected that the sign of POINT be positive. Firm profitability is controlled by including ROA because prior earnings performance trends might be associated with profitability. The sign of ROA is expected to be positive. Firm SIZE and MB is controlled because big firms and firms with high growth potential can attract more attention from market participants, which results in more analyst following and less information asymmetry. It is expected that there is a negative relationship between market reactions and firm size; and market to book value. Financial leverage is controlled because prior research finds that the more debts the firm has, the more likely managers manipulate earnings optimistically and that forecasts

from firms of this type are less credible (Rogers and Stocken, 2005; Koch, 2006). Therefore, the coefficient for financial leverage is expected to be negative. The forecast horizon is also controlled because the length of days between the forecast disclosure date and the actual earnings announcement date can affect the forecast bias. The longer the period, the more optimistic the forecast might be and it may result in less of a market reaction (Johnson, et al., 2001). Therefore, the sign of HORIZON is expected to be negative. Prior research also finds that prior management forecast accuracy is important for investors to assess the credibility of management forecasts in the current year (Williams, 1996; Hutton and Stocken, 2009). Therefore, the accuracy of management forecasts in the prior year is controlled and a negative coefficient is expected.

### Sample Selection

Management forecasts of annual earnings per common share (EPS) made between the January 1, 1994 and December 31, 2009 periods are obtained from the First Call Earnings Guidance Database<sup>3</sup>. This study restricts management forecasts to point estimates and range estimates and convert range forecasts into point estimates by taking the midpoint of the range based on prior research. The original data include 33,725 management annual earnings forecasts. Actual earnings data and analyst earnings forecasts data are also obtained from the First Call Historical database to provide the same scale. First, Compustat earnings announcement dates are used to identify and delete 1,461 management forecasts made three days before the actual earnings are released to eliminate the pre-earnings announcement effect. The last management forecast is used when there is more than one management forecast during the year, which results in 10,221 management forecasts. Firms in regulated industries such as financial services, transportation and utilities are excluded, which results in 8,449 management forecasts. Then, management forecasts are merged with analyst forecasts. At least two analysts' forecasts are required for each firm so as to calculate the MBE trend and news, which deletes 610 management forecasts. In addition, 674 forecasts are eliminated for which the control variables data are not included in Compustat. Next, the management forecast is merged with the stock price from CRSP to calculate 3-day CARs, which deletes 61 management forecasts. These selection criteria result in a final sample of 7,104 management earnings forecasts of 1,904 firms, from which 3,450 forecasts are good news and 3,654 forecasts are bad news. The sample shows that about 38% of management forecasts have either a long string of earnings increases or a long string of MBE. Twenty-two percent of management forecasts have both strings.

Table 1 presents descriptive statistical analysis of variables based on the string of earnings increases and MBE<sup>4</sup>. In general, firms with longer consecutive earnings increases and MBE trends are more likely to have higher cumulative abnormal returns. They are more likely to be bigger firms, have more good news and less bad news, be more profitable, have more free cash flows, have less debt, have more accurate management forecasts in prior years and have a shorter horizon compared with firms which do not have the longer consecutive earnings increases string or a consecutive MBE string. For the firms with an earnings increases string (except for the POINT variable) all the control variables between long and short strings are significantly different at 1% or 5% based on the t-test of differences between means and the Wilcoxon z-test of differences between medians. For the firms which consistently meet or beat analysts' expectations, all the control variables between long and short strings are also significantly different at the 1% and 5% levels. The mean and median CARs for firms with both long strings are positive with the median CAR = 0.0036. The mean and median CARs for firms with both short strings are negative with the median CAR = -0.0052. The tests of differences between means indicates that they are significantly different with  $t = 4.71$ ,  $p < .0001$ . Overall, firms with longer consecutive earnings performance trends usually have good operating performance and financial performance.

**TABLE 1**  
**DESCRIPTIVE STATISTICS FOR LONG STRING FIRMS**

Variable	ERN (N = 2,669)				MBE (N = 2,812)			
	Mean	Median	SD	t	Mean	Median	SD	t
CAR	-0.0182	-0.0070	0.1187	3.81***	-0.0088	-0.0021	0.1000	2.67***
News	0.0171	-0.0003	1.4691	1.00	-0.0031	-0.0001	0.0711	0.78
Good	0.4469	0.0000	0.4973	2.30**	0.4882	0.0000	0.5001	2.47**
Bad	0.5531	1.0000	0.4973	2.30**	0.5118	1.0000	0.5001	2.47**
Point	2.2542	0.0000	0.4355	0.59	0.2230	0.0000	0.4164	2.21**
ROA	0.0047	0.0376	0.2167	17.07***	0.0341	0.0497	0.1110	5.92***
SIZE	6.6500	6.5098	1.6738	15.02***	7.0420	6.9381	1.5453	7.39***
MB	3.3947	2.0009	26.782	1.30	2.6692	2.2136	5.9427	1.44
FCF	0.0206	0.0390	0.1169	15.46***	0.0402	0.0500	0.0835	6.21***
Lev	0.5212	0.5270	0.2288	2.25**	0.4785	0.4863	0.2013	6.09***
Horizon	4.6416	4.3820	0.9241	7.13***	4.4771	4.2767	0.9581	5.17***
MFA	0.1003	0.0041	1.9865	1.98**	0.0108	0.0018	0.0419	2.14**

CAR <sub>it</sub>	=	a three-day market-adjusted return for firm i over the event window from one day before the management forecast to one day after the management forecast,
ERN <sub>it</sub>	=	dummy variable taking the value of one if years of actual earnings growth before the management forecast are three or more and consecutive years of MBE are less than three years, otherwise taking zero,
MBE <sub>it</sub>	=	dummy variable taking the value of one if years of MBE are three or more and years of consecutive earnings growth are less than three ; otherwise taking the value of zero,
NEWS <sub>it</sub>	=	forecast news defined as management forecasts minus the most recent consensus mean analyst forecasts deflated by the beginning of the fiscal year share price,
GOOD <sub>it</sub>	=	dummy variable taking the value of one if the management's earnings forecast is equal to or greater than the mean consensus analyst forecast prior to the management earnings forecast, and zero otherwise,
BAD <sub>it</sub>	=	dummy variable taking the value of one if the management's earnings forecast is less than the mean consensus analyst forecast prior to the management earnings forecast, and zero otherwise,
POINT <sub>it</sub>	=	management forecast precision which takes a value of one if management forecast is point, otherwise it is zero,
ROA <sub>it</sub>	=	return on assets for firm i during year t, calculated as income before interest/total assets from Compustat,
SIZE <sub>it</sub>	=	natural logarithm of the market value of the equity for the firm on the first day of the fiscal year in which the management forecast is made,
MB <sub>it</sub>	=	natural logarithm of the market to book value ratio for firm i,
FCF <sub>it</sub>	=	free cash flow for firm i, calculated as (operating income before depreciation-total income taxes-total interest and related expenses-capital expenditure)/ total assets from Compustat,
LEV <sub>it</sub>	=	financial leverage for firm i, calculated as total liabilities/total assets,
HORIZON <sub>it</sub>	=	natural logarithm of the number of days between the management forecast and fiscal period end date,
MFA <sub>it</sub>	=	management forecast accuracy, calculated as the management forecast-actual earnings in the fiscal year in which the management forecast is made,

The Pearson correlation coefficients analysis shows the correlation between the consecutive earnings growth trend and cumulative abnormal returns is significantly positive with the correlation equal to 0.055,  $p < 0.001$ , which partially supports the hypotheses. It also indicates that it is reasonable to use multiple regression analysis to examine the effect of the consecutive earnings growth trend and the MBE trend on the credibility of management forecasts. Moreover, multicollinearity is also tested among the independent variables to eliminate biases in the results. The variance inflation factor (VIF) is low and there is no indication of multicollinearity bias.

## RESULTS

### Main Analysis

Table 2 reports regression results for the impact of the consecutive earnings increases trend and the MBE trend on the credibility of management forecasts. The overall estimated regression model is significant with the adjusted  $R^2 = 1.95\%$ , which is comparable with the adjusted  $R^2$  in Koch and Park (2011) study. Both coefficients of ERN and MBE are positive and significant (ERN coefficient = 0.010,  $p < 0.01$  and MBE coefficient = 0.013,  $p < 0.01$ ), suggesting that prior earnings performance trends convey some information that makes investors have confidence in the firm's future performance. The coefficient of ERN\*MBE is positive and significant (coefficient = 0.017,  $p < 0.01$ ), suggesting that investors use both earnings performance trends in an additive way. Both coefficients of NEWS\*GOOD and NEWS\*BAD are positive and significant (NEWS\*GOOD coefficient = 0.196,  $p < 0.05$  and NEWS\*BAD coefficient = 0.242,  $p < 0.05$ ), which is consistent with prior research that management earnings forecasts, on average, are credible and that investors positively react to firms' good news forecasts and negatively react to firms' bad news forecasts (Patell 1976).

**TABLE 2**  
**ANALYSIS OF THE MARKET REACTIONS TO THE FORECASTS BY DUMMY VARIABLES**

Variable	Expected Sign	Coefficient	t-statistics
ERN	?	0.010	2.67 ***
MBE	?	0.013	3.53 ***
ERN *MBE	?	0.017	5.33 ***
NEWS*GOOD	+	0.196	2.4 **
NEWS*BAD	+	0.242	2.39 **
ERN *NEWS*GOOD	H1: +	0.602	2.47 **
MBE*NEWS*GOOD	H2: +	0.755	2.04 **
ERN *MBE *NEWS*GOOD	H3: +	1.181	2.47 **
ERN *NEWS*BAD	?	0.042	1.92 *
MBE *NEWS*BAD	?	1.313	5.61 ***
ERN*MBE*NEWS*BAD	?	2.370	3.59 ***
POINT*NEWS	+	-0.017	-1.07
ROA*NEWS	+	0.007	0.02
SIZE*NEWS	-	-0.006	-2.89 ***
MB*NEWS	-	-0.006	-2.01 **
FCF*NEWS	-	-0.111	-0.29
LEV*NEWS	-	-0.118	-1.68 *

HORIZON*NEWS	-	-0.011	-1.34
MFA <sub>t-1</sub> *NEWS	-	0.001	0.14
Intercept		-0.015	-7.65 ***
<hr/>			
N		7,104	
<hr/>			
Adj. R-Square (%)		1.95%	
<hr/>			

Notes:

- a. The t values are based on standard errors adjusted for heteroskedasticity. Significance at the 10%, 5% and 1% level is indicated by \*, \*\* and \*\*\* respectively.

The coefficient of ERN interacted with NEWS\*GOOD equals 0.602 ( $p = 0.0136$ ), which is consistent with the Koch and Park (2011) study and supports H1. Investors are more responsive to good news forecasts for firms with a long string of earnings increases than they are for firms that do not exhibit a long string of earnings increases. This suggests that investors use prior earnings increases trend to assess the credibility of good news forecasts and positively react to management forecasts from firms with a long string of earnings increases.

The coefficient of MBE interacted with NEWS\*GOOD equals 0.755 ( $p = 0.041$ ) and is consistent with prior research and supports H2. Investors are more responsive to good news forecasts for firms with a long string of MBE than for firms without a long string of MBE. This suggests that investors also use prior earnings MBE benchmark performance to assess the credibility of good news forecasts and positively react to management forecasts from firms with a long string of MBE.

For firms that exhibit both a long string of earnings increases and MBE, the coefficient of their interactions with good news forecasts is positive and significant (ERN\*MBE\*NEWS \*GOOD coefficient = 1.181,  $p = 0.0134$ ). The interaction coefficient for firms with both strings is greater than the coefficient for firms with only a long string of earnings increases or an MBE, which supports H3 and suggests that investors use both measures in an additive way to assess the credibility of good news forecasts. This is consistent with the Koonce and Lipe (2010) experimental study which concludes that investors use both strings to assess the credibility of management forecasts and that firms with both long strings incur higher abnormal returns than firms without long strings or firms with only one long string. It could be that investors think that the two earnings performance measures include different information about the firm's future performance. It also could be that firms with both the earnings increases trend and the MBE trend have superior predictability of future performance. Therefore, investors have confidence in good news forecasts from firms with both long strings.

For bad news forecasts, both the coefficients of the ERN string and the MBE string are positive and significant (ERN coefficient = 0.042,  $p = 0.0545$  and MBE coefficient = 1.313,  $p < 0.0001$ ). The same result is obtained for firms that exhibit both a long string of earnings increases trend and an MBE trend. The coefficient of ERN\*MBE and the bad news forecast is positive and significant (coefficient = 2.37,  $p = 0.0003$ ). The results suggest that prior earnings performance trends cannot mediate the negative effect of bad news forecasts and that investors negatively react to bad news forecasts. Moreover, bad news forecasts can hurt reputations of firms with good prior earnings performance trends. The coefficients of bad news forecasts are greater than the coefficients of good news forecasts, which is also consistent with prior research that bad news forecasts are perceived to be more credible than good news forecasts and that stock price response to bad news forecasts is greater than the response to good news forecasts (Skinner, 1994; Williams, 1996).

For the control variables, SIZE is negative and significantly associated with market reactions with the coefficient = -0.006,  $p < 0.01$ , which is consistent with prior research that there is a negative relationship between market reactions to earnings news and firm size, due to other alternative information sources reduce the usefulness of earnings reports for these big firms (Atiase, 1985; Koch and Park, 2011). The coefficient of MB is negative and significant (- 0.006,  $p < 0.05$ ) indicating that higher growth firms attract more attention and reduce information asymmetry. The coefficient of LEV is negative and significant (-

0.118,  $p < 0.10$ ) and is consistent with prior research, suggesting that management forecasts made by firms with financial distress are less credible (Rogers and Stocken, 2005). The other control variables are not significantly associated with market reactions.

Overall, the results presented in this paper are consistent with the Hutton and Stocken (2009) study that concludes that the market is more responsive to both good and bad news forecasts from firms with good reputations than from firms without good reputations. Therefore, the results suggest that both long strings of ERN and MBE can help firms build good reputations and that investors are more responsive to the forecast from firms' with the earnings increases trend and the MBE trend than from firms' without the earning performance trends.

### Alternative Measure of Earnings Performance Trend

In the main analysis, in order to link to the prior research (Bath et al, 1999), Dichotomous variables are used to proxy for the firm's consecutive earnings performance trend and to divide firms into long and short strings. If the results hold, the same results should be obtained by using a continuous number of years of earnings strings. To confirm the results, the number of years is used as a test variable to re-examine the market reaction model. The results are reported in table 3. As shown in table 3, the H1 hypothesis is supported (ERN coefficient = 0.08,  $p < 0.10$ ). For the H2 hypothesis, a significant relationship between market reactions and an MBE trend cannot be found. The H3 hypothesis is supported and the interaction coefficient of ERN\*MBE\* NEWS\*GOOD equals 0.05,  $p < 0.10$ . It suggests that the market is more responsive to good news forecasts from firms with both an earnings increases trend and an MBE trend than it is for firms without good earnings performance trends. The results for bad news are consistent with the main results. The market negatively reacts to bad news forecasts from firms with an earnings increases trend or from firms with both an earnings increases trend and an MBE trend. Therefore, most of the results are consistent with the main analysis.

**TABLE 3**  
**ANALYSIS OF THE MARKET REACTIONS TO THE FORECASTS BY INTERVAL**  
**VARIABLES**

Variable	Expected Sign	Coefficient	t-statistics
ERN	?	0.003	4.18 ***
MBE	?	0.002	3.3 ***
ERN *MBE	?	0.000	-2.04 **
NEWS*GOOD	+	0.177	2.17 **
NEWS*BAD	+	0.233	2.32 **
ERN *NEWS*GOOD	H1: +	0.080	1.62 *
MBE *NEWS*GOOD	H2: +	0.036	1.03
ERN*MBE *NEWS*GOOD	H3: +	0.050	1.75 *
ERN *NEWS*BAD	?	0.023	2.55 **
MBE *NEWS*BAD	?	-0.002	-0.17
ERN *MBE *NEWS*BAD	?	0.011	1.91 *
POINT*NEWS	+	-0.031	-1.83 *
ROA*NEWS	+	-0.661	-1.99 **
SIZE*NEWS	-	-0.004	-2.3 **
MB*NEWS	-	-0.006	-1.89 *
FCF*NEWS	-	0.838	2.17 **

LEV*NEWS	-	-0.139	-1.92	*
HORIZON*NEWS	-	-0.004	-0.53	
MFA <sub>t-1</sub> *NEWS	-	-0.006	-1.22	
Intercept		-0.018	-8.36	***
<hr/>				
N		7,104		
Adj. R-Square (%)		1.81%		

Notes:

- a. The t values are based on standard errors adjusted for heteroskedasticity. Significance at the 10%, 5% and 1% level is indicated by \*, \*\* and \*\*\* respectively.

### Management Forecast Bias

These hypotheses are based on the assumption that investors believe that firms with both consecutive earnings increases and MBE trends may be better able to predict future earnings, which means their management forecasts should be more accurate than those of firms which do not have consecutive MBE or earnings growth trends. Therefore, it is determined whether their management earnings forecasts accuracy is associated with their earnings performance trends. The management forecast accuracy is measured by the difference between actual earnings per share in the fiscal year and the management earnings forecast in the same period; the smaller the difference in magnitude, the more accurate the forecast.

The Koch and Park (2011) model is modified to test whether the management earnings forecast accuracy varies with the firms' actual earnings performance trend. The regression model is:

$$MFA_{it} = \alpha_0 + \beta_1 MBE_{it} + \beta_2 ERN_{it} + \beta_3 MBE_{it} * ERN_{it} + \beta_4 POINT_{it} + \beta_5 ROA_{it} + \beta_6 MB_{it} + \beta_7 FCF_{it} + \beta_8 LEV_{it} + \beta_9 HORIZON_{it} + \varepsilon_{it} \quad (3)$$

The regression results are presented in table 4. From Panel A, the tests of the difference between means and of the difference between medians indicates that there is a significant difference in management earnings forecast accuracy between short and long strings of earnings performance. The mean forecast error for firms with both long strings of earnings performance is 0.0042. The mean forecast error for firms with short strings is 0.0371, which is significantly different from firms with long strings of earnings performance ( $p < 0.001$ ). The regression results are reported in the Panel B table. Both coefficients of ERN and MEB are negatively significant with a coefficient of ERN of -0.012 ( $p < 0.01$ ) and coefficient of MBE of -0.011 ( $p < 0.01$ ). It suggests that firms with a string of ERN or MBE have less earnings prediction errors than firms without a string of ERN or MBE. The coefficient of MBE\* ERN is also negatively significant with a coefficient of -0.011 ( $p = 0.001$ ), which shows that firms with a string of consecutive earnings growth and an MBE string have less earnings prediction errors than firms without the string of earnings performance. Therefore, the results indicate that firms with a long string of earnings performance are able to predict the future earnings and that the market has more confidence in their predicted future earnings and positively reacts to their management forecasts.

**TABLE 4**  
**PANEL A DESCRIPTIVE STATISTICS OF MANAGEMENT EARNINGS FORECAST ACCURACY**

Variable	Short String	Long String		
		ERN	MBE	
MFA	(3,015)	(2,669)	(2,812)	
Mean	0.0371	0.0202	0.0098	
Median	0.0032	0.0011	0.0015	
SD	0.3131	0.3076	0.0639	
t-test		1.34	3.76	***
z-test		11.36	7.94	***

**TABLE 4**  
**PANEL B REGRESSION OF FORECASTS ACCURACY ON EARNINGS STRINGS**

Variable	Expected Sign	Coefficient	t-statistics	
ERN	-	-0.012	-3.15	***
MBE	-	-0.011	-2.96	***
ERN *MBE	-	-0.011	-3.24	***
POINT	-	0.001	0.19	
ROA	-	-0.166	-12.55	***
MB	-	0	-0.43	
FCF	+	0.067	3.62	***
LEV	+	0.027	4.47	***
HORIZON	+	0.01	6.69	***
Intercept		-0.033	-3.5	***
N	7,104			
Adj. R-Square (%)	4.80%			

## CONCLUSIONS

This study examines how investors incorporate both consecutive earnings increases trends and consecutive meeting or beating analysts' forecast information to confirm the credibility of management earnings forecasts. The study finds that the market positively reacts to management earnings forecasts when firms have either an earnings increases string or an MBE string. When firms have both earnings performance trends, investors have more confidence about the credibility of management earnings forecasts and investors are more responsive to management forecasts. The results also find that bad news is perceived to be more credible than good news and the market reaction to bad news forecasts is greater than the market reaction to good news forecasts. Overall the study suggests that both prior earnings increases trend and MBE trends are important to firms. Investors use both performance trends in an additive way to assess the credibility of management forecasts. Firms may signal positive information to the market and build their reputations by maintaining the two consecutive earnings performance trends.

## ENDNOTES

1. Neutral news forecasts is excluded as well as the test samples for which the management forecast is greater than the consensus analyst forecast. It does not change the main results.
2. The model includes the interaction effect of news and control variables rather than the main effect of control variables, which is consistent with the model used by Hutton and Stocken (2009).
3. Thomson Reuters stopped offering the earnings guidance data since 2/29/2012.
4. CAR, NEWS and the number of years of ERN trend and MBE trend are winsorized at the 1 and 99 percent level.

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