Indicators Of Managers' Motivations For Issuing Forecasts Of Revenue And Earnings

Michael Lacina, (Email: lacinamichael@yahoo.com), University of Houston, Clear Lake

ABSTRACT

This paper examines potential motivations for managers to include a revenue forecast with their earnings forecast by studying the characteristics of firms that make an earnings forecast with or without a revenue forecast and the news of the earnings forecasts. The main test is a multivariate logit regression analysis that is performed on a large sample of firms that issue earnings forecasts, some of which are accompanied by a revenue forecast. In accordance with hypotheses, firms that forecast both earnings and revenue are smaller, have more external financing needs, are more likely to be from a high technology industry, and disclose earnings forecasts with better news than firms that forecast earnings only. On the other hand, in contrast to what is hypothesized, there is no significant difference between those two groups of firms with respect to industry concentration. Initially, firms that forecast both earnings and revenue are found to be younger and have higher earnings volatility. However, further analysis shows these potential determinants to be subsumed by other firm characteristics.

INTRODUCTION

Management earnings forecasts have been found to reduce the information asymmetry between a firm and its investors. Sometimes a management earnings forecast is packaged with a revenue forecast and at other times a revenue forecast is withheld. This paper provides evidence on why a firm would choose to disclose an earnings forecast alone or an earnings forecast and a revenue forecast simultaneously.[1] The potential motivations for the issuance of a management earnings forecast have been extensively explored in previous research. However, little research has examined potential motivations for the issuance of a management revenue forecast, which is the most common type of disclosure attached to a management earnings forecast.[2]

Under the "expectations adjustment" hypothesis advanced by Ajinkya and Gift (1984), managers disclose earnings forecasts so that investors can revise their expectations of future earnings to be in alignment with those of management. Prior research has shown management earnings forecasts to convey information to investors. But sometimes a firm chooses to issue a revenue forecast with an earnings forecast. However, the inclusion of a revenue forecast gives additional information to competitors because competing firms are provided with expected revenue and implicitly expected cost before the release of actual financial statement results. Furthermore, the failure to meet a management earnings forecast could bring legal liability to a firm (Francis, Philbrick, and Schipper; 1994). Disclosing a revenue forecast with an earnings forecast may increase this potential of legal liability because there are now two explicit forecasts the firm may not meet. Thus, since the inclusion of a revenue forecast with an earnings forecast is not costless, it is not done by management without thought. Therefore, in accordance with the "expectations adjustment" hypothesis, a firm would disclose a revenue forecast in situations where the revenue

[1] The issuance of a revenue forecast alone is not examined because forecasts of only quarterly, semi-annual, or annual revenue for the entire firm are uncommon.

[2] Hutton, Miller, and Skinner (2003) examine the association between management earnings forecast news and the propensity to supplement the forecast with a 'verifiable forward-looking statement', which encompasses forecasts of cash flows, margins, revenue, effective tax rates, etc.

forecast provides information to investors about a firm's prospects that is incremental to that provided by the earnings forecast. The benefits of the revenue forecast to investors should exceed the cost of its disclosure. Han and Wild (1991) find that management revenue forecasts have information content in explaining stock returns that is incremental to that contained in management earnings forecasts when both types of forecasts are disclosed together. Therefore, management revenue forecasts have been shown to revise investors' expectations.

Cox (1985), Waymire (1985), and Kross, Lewellen, and Ro (1994) examine factors that influence managers to issue earnings forecasts. Together, those papers show that firms which disclose earnings forecasts more frequently are characterized by longer forecast horizons before fiscal year end, less earnings volatility, larger firm size, higher leverage, and lower growth relative to firms that disclose earnings forecasts less frequently. My research studies factors that cause a firm's management to issue an earnings forecast alone versus an earnings forecast and a revenue forecast simultaneously. I utilize an extensive sample of firms' earnings and revenue forecasts. To test potential motivations to forecast both earnings and revenue versus earnings alone, a multivariate logit model is employed, where the independent variables are expected to measure the likelihood of a firm including a revenue forecast with its earnings forecast. I hypothesize that firms which issue a revenue forecast with an earnings forecast have higher earnings volatility, have more external financing needs, are in less concentrated industries, are smaller, are younger, and are more likely to be from a high technology industry than firms which issue an earnings forecast alone. In addition, I hypothesize that firms which issue good news earnings forecasts are more likely to include an accompanying revenue forecast.

The results show clear differences between firms that attach a revenue forecast on to their earnings forecast and those that do not. In accordance with hypotheses, firms that forecast both earnings and revenue have more external financing needs, are smaller, are more likely to be from a high technology industry, and disclose earnings forecasts with better news than firms that issue earnings forecasts alone. On the other hand, in contrast to the hypothesis, there is no significant difference between earnings and revenue forecasters and earnings only forecasters in terms of industry concentration. Initial tests show that firms which forecast earnings and revenue have more earnings volatility and are younger than firms which forecast earnings alone. However, a further analysis conveys that the influence of firm age is subsumed by firm size and the influence of earnings volatility is subsumed by firm size and membership in a high technology industry.

This paper's results contribute to the body of literature on voluntary disclosure by showing researchers that the characteristics of a firm and its earnings forecast influence its propensity to issue a revenue forecast with its earnings forecast. Therefore, a researcher studying management earnings forecasts may need to take into consideration the differences between firms issuing earnings forecasts with revenue forecasts versus firms issuing earnings forecasts alone. In addition, this paper can give a stakeholder in a company possible explanations for the company including or not including a revenue forecast with its earnings forecast.

The next section formulates the hypotheses. This is followed by the research design, which defines earnings only forecasters and earnings and revenue forecasters, describes the sample selection process, defines the test and control variables, and describes the logit regression. After this, the results are discussed, including sample characteristics, summary statistics, Spearman rank correlation coefficients, and findings from logit regression analyses. The paper then concludes.

HYPOTHESES FORMULATION

First, the influence of firm characteristics on the propensity to issue a revenue forecast with an earnings forecast is discussed. The following firm characteristics are expected to influence the decision to include a revenue forecast: the firm's earnings volatility, the firm's external financing needs, the concentration of the firm's industry, the firm's size, the firm's age, and whether or not the firm is in a high technology industry.

Earnings Volatility

When a firm has less stable earnings, earnings are more difficult to forecast. Forecasts with less ex ante accuracy are on average less useful to investors. Therefore, investors in firms with higher earnings volatility may demand information additional to an earnings forecast. Hence, it is hypothesized that the more volatility in earnings, the more likely a firm is to issue a revenue forecast with its earnings forecast.

External Financing Needs

Managers who have more need for debt or equity financing have incentives to provide increased voluntary disclosure to reduce the information asymmetry between the firm and its current or potential investors. This in turn reduces the firm's cost of capital (Healy and Palepu, 2001). Thus, it is hypothesized that the need for external financing is positively associated with the propensity to include a revenue forecast with an earnings forecast.

Industry Concentration

A firm that forecasts revenue with earnings is also implicitly forecasting cost. Thus, a firm that forecasts both revenue and earnings will reveal more information to current and potential competition than a firm that forecasts earnings alone. Concentrated industries result from some firms achieving a competitive advantage (Demsetz, 1973; Liebeler, 1978). The disclosure of proprietary information in these industries could erode this competitive advantage (Bamber and Cheon, 1998). Indeed, Dontoh (1989) shows that earlier and more accurate disclosure of outcomes can allow competitors to improve their competitive positions at the expense of the forecasting firm. Hence, firms in highly concentrated industries may wish to put off the revelation of revenue and cost until the release of actual financial statement results. Therefore, it is hypothesized that firms in more concentrated industries are less likely to attach a revenue forecast to an earnings forecast.

Firm Size

Prior research and anecdotal evidence indicate that there tends to be more publicly available information from outside sources (e.g., news releases, analysts' earnings forecasts, analysts' revenue forecasts) for large firms. Indeed, Atiase (1985) finds that size is inversely related to the degree of unexpected returns in response to earnings announcements. This indicates more pre-disclosure information available to investors in larger firms. Therefore, due to more pre-forecast disclosure information, a larger firm may find it less useful to add a revenue forecast to its earnings forecast than would a smaller firm. Hence, the benefits to investors of disclosing a revenue forecast are more likely to exceed the costs (e.g., proprietary costs, increased potential of legal liability) of disclosure for smaller firms compared to larger firms. Furthermore, Botosan (1997) finds that firms with low analyst following, which tend to be smaller firms, can reduce their cost of equity capital by increasing the extent of their disclosures. This is possibly because analysts play less of a role in communicating information for these firms. Therefore, for smaller firms, issuing a revenue forecast with an earnings forecast may result in a lower cost of capital than issuing an earnings forecast alone.

Lang and Lundholm (1993) suggest that there is a fixed component in disclosure preparation costs, leading to a higher disclosure cost per unit of size for smaller firms. On the other hand, if a firm is already forecasting earnings, the addition of a revenue forecast adds very little to the total preparation cost regardless of size. Therefore, by adding a revenue forecast on to its earnings forecast, a smaller firm has a way to disclose information and reduce information asymmetry between itself and its investors without incurring much in terms of preparation costs. Based on what has been discussed, I hypothesize a negative association between firm size and the propensity to include a revenue forecast with an earnings forecast.

Firm Age

Discussion in Lang (1991) suggests that there is greater uncertainty about future earnings for younger firms because they have a shorter earnings history. Also, since young firms are usually in a high growth phase, past and

current earnings may not be representative of future earnings. Thus, for younger firms, the earnings that are forecast for the current period are less likely to be indicative of future earnings. Furthermore, Anthony and Ramesh (1992) find that unexpected sales growth is more highly valued by the stock market for young firms compared to older firms. Therefore, the issuance of a revenue forecast with an earnings forecast is likely to yield greater benefits for investors in younger firms relative to investors in older firms. Based on what has been discussed, I hypothesize a negative association between a firm's age and its propensity to issue a revenue forecast with its earnings forecast.

High Technology Firms

Firms in high technology industries tend to invest heavily in research and development and other intangibles that do not appear in the balance sheet under Generally Accepted Accounting Principles. This tends to reduce the informativeness of financial statement information, including earnings (Lev and Zarowin, 1999). Also, most high technology firms operate in a highly dynamic environment that makes their future earnings less certain relative to non-high technology firms' future earnings (Chen, DeFond, and Park; 2002). Since less value relevance and less certainty are associated with high technology firms' earnings, investors in those firms are likely to receive greater benefits from management issuing a revenue forecast with its earnings forecast. As a result, I predict that management issuing a revenue forecast with its earnings forecast is more common for high technology firms than for non-high technology firms.

In addition to firm characteristics, the news of the management earnings forecast may have an influence on the propensity to issue a revenue forecast with an earnings forecast.

Management Earnings Forecast News

Lang and Lundholm (1993) find that firms with the highest disclosure ratings on average have the best earnings performance. However, firms may disclose more when they are performing well (Healy and Palepu, 2001). For example, a firm that is performing poorly in terms of earnings may not wish to disclose whether low revenue and/or high cost are causing the poor earnings performance. Also, Dye (1986) argues that the believability of management's private information disclosed to the public can be enhanced by the release of supporting information. Since the issue of believability is more important to investors when management forecasts of good earnings news are issued (Jennings, 1987; Hutton, Miller, and Skinner, 2003), this implies that the public's response to a forecast of good earnings news can be enhanced by including a revenue forecast. This is because the firm would need to meet an earnings forecast, a revenue forecast, and implicitly a cost forecast. This in turn reduces the degrees of freedom available for the firm to manage earnings to achieve the earnings forecast. Based on what has been discussed, I expect firms with better earnings news to be more likely to forecast revenue with earnings

In summary, I hypothesize that the following factors are positively associated with the issuance of a revenue forecast with an earnings forecast: more earnings volatility, more external financing needs, less industry concentration, smaller firm size, younger firm age, membership in a high technology industry, and better earnings forecast news.

RESEARCH DESIGN

Earnings Forecasts And Revenue Forecasts

I classify forecasts into two categories: Earnings forecasts alone (E forecasts) and earnings forecasts made with revenue forecasts (ER forecasts). If the firm forecasts only earnings on a particular day, that observation is included in the E forecast category. On the other hand, if a firm forecasts both earnings and revenue on a single day, then the observation is included in the ER forecast category.

Sample Selection

The forecast sample is from *Wall Street Journal* articles for the years 1987 to 1993 and is collected from the *Dow Jones News Retrieval Service* through use of a key word search.[3] The firms to which the forecasts belong must be on the *Research Insight Compustat* database. Both annual and interim *predictions* are included. A forecast can include one or more predictions. For example, on a given day, a firm may predict earnings for both the second quarter and the entire year. Thus, there are two earnings predictions in the earnings forecast. Also, quantitative (point, range, minimum, and maximum)[4] predictions and qualitative statements about a firm's revenue and/or earnings prospects (e.g., it is expected to be a bad year for earnings) are included. A forecast must be attributable to the company itself or an upper level manager within the company. Also, the forecast must have been made on or before the last day of the fiscal period(s) to which the forecast applies. Forecasts made after the end of the fiscal period are often in effect preliminary announcements of earnings or revenue. In addition, a management forecast must be for the entire firm. Furthermore, an earnings forecast containing only non-operating or extraordinary gain or loss components is not included in the sample.

A sample firm must have *Research Insight Compustat* information available for the fiscal year of the forecast. Also, long range predictions, which are predictions for periods ending greater than 365 days from the forecast date, are eliminated. Therefore, if a forecast contains only long range predictions, then the forecast is eliminated. Also, if either all earnings or all revenue predictions in an ER forecast are long range, then that observation is eliminated. Table 1, Panel A shows the sample selection process. The initial sample, which includes forecasts for firms that belong to the *Compustat* database, contains 523 ER forecasts and 773 E forecasts. The sample loses 26 ER forecasts and 34 E forecasts because information is not available on *Compustat* for the fiscal year of the forecast. A total of 11 (19) observations are dropped from the ER (E) sample because all the predictions in the forecast are long range. Also, in the case of ER forecasts, 18 observations are dropped because either all the earnings or all the revenue predictions in the forecast are long range. The final sample includes 468 (39.4%) ER forecasts and 720 (60.6%) E forecasts. The percentages are almost identical to those in Han and Wild (1991), who examine annual forecasts. Table 1, Panel B shows that for both samples, most firms made only one forecast. However, a large number of firms made multiple forecasts during the sample period.

The appendix shows the industry composition by two-digit SIC code of firms making ER forecasts and firms making E forecasts. Machinery, Computers (SIC code 35); Electronic and Electrical Equipment (SIC code 36); Instruments (SIC code 38); and Toys, Jewelry, and Recreation (SIC code 39) disclose a much higher proportion of the total ER forecasts than they do of the total E forecasts. The findings for Machinery, Computers and Electronic and Electrical Equipment are not surprising since there are many high technology firms in these industry classifications. Financial Institutions (SIC codes 60 to 64) made 83 E forecasts but only 12 ER forecasts. Financial institutions are not likely to issue a revenue forecast along with an earnings forecast because the nature of revenue (e.g., interest income) for many firms in this classification is different than that of non-financial firms.

Logit Model And Variable Definitions

The full logit model used to test the hypotheses is as follows:

$$\begin{aligned} ER_i = {} & b_0 + b_1 SDROA_i + b_2 GRDE_i + b_3 IC_i + b_4 lnA_i + b_5 AGE_i + b_6 HT_i \\ & + b_7 ENEWS_i + b_8 FHOR_i + b_9 FINT_i + b_{10} FI_i + b_{11} FYEAR_i + e_i, \end{aligned} \tag{1}$$

[3] The phrases used include two sets of keywords: (1) see(s), expect(s), forecast(s), project(s), estimate(s), higher, and lower; and (2) net, earnings, income, results, loss, gain, profit(s), improvement, better, performance, revenue(s), and sales. All keywords, except revenue(s) and sales, were used in Bamber and Cheon (1998).

[4] A point prediction is a prediction of a specific number (e.g., earnings are expected to be $2.00 per share). A range prediction includes a lower and upper bound (e.g., revenue is expected to be between $200 million and $250 million). A minimum prediction includes a lower bound but no upper bound (e.g., earnings are expected to be at least $1.25 per share) whereas a maximum prediction includes an upper bound but no lower bound.

where $ER_i = 1$ if forecast i is a revenue forecast with an earnings forecast and $ER_i = 0$ if the forecast includes only earnings. Variations on this model that use subsets of the independent variables are also run. The independent variables are described below (forecast subscripts suppressed). Financial statement variables are taken from the *Research Insight Compustat* database.

Table 1
Sample Selection And Sample Characteristics

Panel A: Sample Selection

	ER Forecasts	E Forecasts
Firm on *Research Insight Compustat* database	523	773
No information on *Compustat* for fiscal year of forecast	(26)	(34)
Forecast contains only long-range (> 365 days) predictions	(11)	(19)
All revenue or earnings predictions in forecast long-range	(18)	----
Final sample	468	720

Panel B: Number Of Forecasts Per Firm

	ER Forecasts		E Forecasts	
	Firms	Forecasts	Firms	Forecasts
One forecast	320	320	450	450
Two forecasts	42	84	75	150
Three forecasts	15	45	23	69
Four of more forecasts	4	19	11	51
Total	381	468	559	720

Panel C: Sample Characteristics

	ER Forecasts		E Forecasts	
	Total	%	Total	%
Earnings Forecast News (ENEWS):				
Good (= 2)	308	65.81	366	50.83
Neutral (= 1)	50	10.68	91	12.64
Bad (= 0)	110	23.51	263	36.53
Earnings Forecast Interval (FINT):				
Annual (= 2)	230	49.15	350	48.61
Mixed (= 1)	94	20.08	105	14.58
Interim (= 0)	144	30.77	265	36.81
Calendar Year of Forecast				
1987	84	17.95	108	15.00
1988	92	19.66	114	15.83
1989	60	12.82	104	14.44
1990	62	13.25	103	14.31
1991	50	10.68	87	12.08
1992	64	13.68	109	15.14
1993	56	11.97	95	13.19

ER forecasts include both an earnings forecast and a revenue forecast whereas E forecasts include only an earnings forecast.

In Panel C, the percentages are out of the total number of forecasts in the applicable forecast category (ER or E). A forecast is considered good (bad) news if there is at least one earnings prediction in the forecast that is good (bad) news with no accompanying bad (good) news prediction. The forecast is considered neutral news if there is a mixture of good and bad news earnings predictions or if there is no news for all of the earnings predictions. The earnings forecast interval is annual (interim) when all earnings predictions in the forecast are annual (interim). If there is a combination of earnings predictions for annual and interim periods, then the earnings forecast interval is mixed.

To measure a firm's earnings volatility (SDROA), I use the standard deviation of return-on-assets over the five years –2 to +2 in relation to the fiscal year in which the forecast is made. This is similar to methodology that Kross, Lewellen, and Ro (1994) use to measure earnings volatility. Return-on-assets is defined as actual income before extraordinary items and discontinued operations for the fiscal year divided by total assets as of the end of the fiscal year.[5]

External financing needs (GRDE) are measured as the annual least squares growth in the sum of debt plus equity (excluding retained earnings) for the three years from the end of the fiscal year in which the forecast is made to the end of the second fiscal year after the forecast is made, where debt plus equity (excluding retained earnings) is measured as the sum of debt in current liabilities, long-term debt, preferred stock, common stock, and capital surplus.[6]

Industry concentration (IC), which is a proxy for proprietary costs, is defined as the sum of net sales of the top five net sales firms in the forecasting firm's two-digit SIC code divided by the sum of net sales for all firms in the same two-digit SIC code. Therefore, it is a measure of the combined market share of the five largest firms in the industry classification. This concentration ratio is calculated for the fiscal year in which the forecast is made and is used in Bamber and Cheon (1998).

Firm size (lnA) is measured as the as the natural log of total assets as of the end of the fiscal year in which the forecast is made.

The firm's age (AGE) is measured as the number of trading days between the firm's initial date on the *CRSP* daily return database and the date of the management earnings forecast.

The classification scheme of Kasznik and Lev (1995) is followed in determining high technology firms (HT) according to four-digit SIC code. A firm is considered as high technology if it belongs to the Pharmaceuticals (2833-2836), Computers (3570-3577), Electronics (3600-3674), Programming (7370-7379), or R&D Services (8731-8734) industry classification.

To determine a firm's earnings forecast news (ENEWS), I assume a random walk in which an earnings prediction is compared with the actual earnings for the same time period in the prior fiscal year. The use of prior year earnings as the expectation is necessary in order to include forecasts that contain qualitative, non-numerical predictions. For point (range) predictions, the earnings news is determined as FEPS - PEPS, where FEPS is (the midpoint of) the firm's earnings prediction and PEPS is the firm's prior period basic earnings per share before extraordinary items and discontinued operations.[7] If the difference is greater than (less than or equal to) zero, then the prediction is considered to be good (bad) news.[8] Most point and range management earnings predictions are in a per share format, thereby permitting comparison with the prior period's actual earnings per share.[9] However, a few management earnings predictions are expressed in a dollar amount format or as a percentage change from the actual earnings in a prior period. In the former case, the dollar amount is converted to a per share amount using the common shares of stock outstanding as of the end of the fiscal year of the forecast. In the latter situation, the prior period's basic earnings per share before extraordinary items and discontinued operations amount is adjusted by the forecast percentage change. In this paper, minimum (maximum) predictions are considered good (bad) news because the firm forecasts a lower (upper) bound with no upper (lower) bound. Judgment is used in determining the news of a qualitative prediction. The wording of a qualitative prediction often gives its news (e.g., earnings are expected to be higher than last year). If a management earnings forecast contains at least one good (bad) news prediction with no bad (good) news prediction, then the earnings forecast is considered to be good (bad) news and ENEWS =2 (ENEWS=0).

[5] To prevent excessive influence from outliers, the highest and lowest one percent of SDROA observations are winsorized at the 99 percent and 1 percent levels, respectively, for all tests in this paper.
[6] To prevent excessive influence from outliers, the highest and lowest one percent of GRDE observations are winsorized at the 99 percent and 1 percent levels, respectively, for all tests in this paper.
[7] Large one-time items are normally excluded from management earnings forecasts.
[8] A forecast of no earnings change is considered to be bad news because earnings are expected to on average increase during inflationary time periods.
[9] Appropriate adjustments are made for stock splits and stock dividends.

If there is a mixture of good and bad news predictions or if there is no news in any of the predictions,[10] then the news of the management earnings forecast is neutral and ENEWS = 1.

In addition, control variables for forecast horizon (FHOR) and forecast interval (FINT) are utilized in the logit regression analysis. Both of these measures have been shown in previous research to be related to the characteristics of a management earnings forecast. FHOR is measured as the number of calendar days between the forecast date and the end of the fiscal year in which the forecast is made. FINT equals 2 (0) if all earnings predictions in the forecast are for an annual (interim) time period. If the earnings forecast includes a combination of annual and interim predictions, then FINT equals 1.

As previously discussed, financial institutions issue E forecasts much more frequently than ER forecasts because the nature of revenue for many of these firms is different than the nature of revenue of non-financial firms. Therefore, a dummy variable for financial institutions (FI) will equal one if the firm is a financial institution (two-digit SIC code between 60 and 64) and zero otherwise. Also, as will be shown in the next section, the calendar years 1987 and 1988 include a higher proportion of ER forecasts than do the other calendar years. Thus, a dummy variable for forecast year (FYEAR) will be set equal to one if the calendar year in which the forecast is made is 1987 or 1988 and to zero otherwise.

RESULTS

Sample Characteristics And Summary Statistics

Table 1, Panel C gives sample characteristics. An examination of ENEWS clearly shows that ER forecasters tend to issue earnings forecasts that are of better news than earnings forecasts issued by E forecasters. This finding on earnings news concurs with what was hypothesized. FINT appears to be similar between ER forecasts and E forecasts. The calendar year of the forecast indicates a high number of forecasts issued in 1988 and a relatively low number of forecasts issued in 1991 and 1993. Also, in 1987 and 1988, about 44% of the forecasts are ER forecasts. However, the percentage of ER forecasts from 1989 to 1993 is only around 37%.

Table 2 shows summary statistics for the test variables and selected control variables. As hypothesized, the means and medians (or central tendencies) of SDROA, GRDE, and ENEWS are found to be significantly higher for ER forecasts than for E forecasts. The p-values resulting from a paired t-test and a Wilcoxon rank sum test indicate significance at better than two percent for each of those variables and better than one percent for GRDE and ENEWS. Also, as predicted, a paired t-test shows that HT's mean value, which is the proportion of forecasts that are made by high technology firms, is significantly higher for ER forecasts than for E forecasts at less than one percent. Furthermore, a Wilcoxon rank sum test shows that the central tendency of HT is more positive for ER forecasts than for E forecasts at less than one percent. Also, as hypothesized, the means and medians for lnA and AGE indicate that ER forecasters are significantly smaller and younger than E forecasters. The significance levels are much less than one percent. However, the difference in IC between ER forecasts and E forecasts shows little significance. Furthermore, the summary statistics show no significant differences between ER forecasts and E forecasts with respect to the control variables FHOR and FINT.

Correlations

Table 3 shows Pearson and Spearman rank correlation coefficients between the independent variables used in the logit regression analysis. The Pearson correlation coefficients are in the upper right portion and the Spearman rank correlations are in the lower left portion of the table. A correlation is measured using E forecasts and ER forecasts with the necessary data. Although many of the correlations are significant, many of them are small. Only pairs of variables with a Pearson or Spearman rank correlation of twenty percent or greater will be discussed. There is a strongly negative association between SDROA and lnA, which shows that smaller firms have more earnings volatility. Also, as expected, there is an inverse relation between SDROA and AGE and a positive association

[10] An example of a prediction with no news (for purposes of this paper) is a firm which had positive earnings last fiscal year predicting that it will be 'profitable' in the current fiscal year.

between SDROA and HT. Younger firms and high technology firms are often in high-growth phases and tend to be subject to more uncertainty. Thus, their earnings tend to be more volatile. There is a negative relationship between SDROA and FI, with the Spearman rank correlation being of a much higher magnitude than the Pearson correlation (-29% versus -11%). This result shows that financial firms on-average have less volatile earnings than non-financial firms. The strongest correlations are between lnA and AGE, with a Pearson correlation coefficient of 53% and a Spearman rank correlation coefficient of 55%. Hence, not surprisingly, older firms tend to be larger. Also, the significantly positive correlations between lnA and FI show that financial firms are on-average larger than non-financial firms. In addition, the significantly positive correlation between FINT and ENEWS shows that firms tend to forecast better news in annual forecasts than in interim forecasts (see Pastena and Ronen, 1979; Skinner, 1994).

Table 2
Summary Statistics For Test And Selected Control Variables

	ER Forecasts		E Forecasts		
Variable	**Number of observations**	**Mean Median**	**Number of Observations**	**Mean Median**	**p-Value of Difference***
SDROA	458	0.059 0.026	693	0.045 0.024	0.0154 0.0105
GRDE	429	0.129 0.072	641	0.077 0.034	0.0003 0.0002
IC	467	0.509 0.499	715	0.498 0.494	0.1781 0.0728
lnA (in millions)	459	5.728 5.492	693	6.795 6.838	<0.0001 <0.0001
AGE	429	4897.6 4664.0	652	5690.3 6149.5	0.0005 0.0008
HT	468	0.235 0	720	0.165 0	0.0038 0.0029
ENEWS	468	1.423 2.000	720	1.143 2.000	<0.0001 <0.0001
FHOR (in days	468	176.680 188.000	720	182.420 187.500	0.3405 0.3172
FINT	468	1.184 1.000	720	1.118 1.000	0.2152 0.2733

* p-values are for two-tail tests. Paired t-test (Wilcoxon rank sum test) used to test whether mean (median or central tendency) difference between forecast categories is significantly different than zero.

SDROA = standard deviation of return-on-assets for fiscal years -2 to +2 relative to the fiscal year in which the forecast is made;
GRDE = annual least squares growth in the sum of debt plus equity (excluding retained earnings) from end of fiscal year in which forecast is made to end of second fiscal year following fiscal year in which forecast is made;
IC = sum of net sales of top five firms in forecasting firm's two-digit SIC code divided by sum of net sales for all firms in the same two-digit SIC code, for fiscal year in which forecast is made;
lnA = natural log of total assets as of end of fiscal year in which forecast is made;
AGE = number of trading days between date in which firm was initially included on the *CRSP* database and date of forecast;
HT = 1 if firm's four digit SIC code is between either 2833 and 2836, 3570 and 3577, 3600 and 3674, 7370 and 7379, or 8731 and 8734; = 0 otherwise;
ENEWS = 2 for good earnings forecast news, 1 for neutral news, 0 for bad news;
FHOR = number of calendar days between date of forecast and fiscal year end; and
FINT = 2 if all earnings predictions in the earnings forecast are for annual time periods, = 1 if earnings predictions are for both annual and interim time periods, = 0 if all earnings predictions are for interim time periods.

For SDROA and GRDE, the highest and lowest one percent observations are winsorized at the 99 and 1 percent levels, respectively.

As previously discussed, upcoming tests will utilize the logit regression approach. As a rule of thumb, multicollinearity among the independent variables may be a problem when using logit if a correlation is greater than or equal to eighty percent. Therefore, the correlations in Table 3 show that multicollinearity is likely not a problem in this paper's logit analyses.

Logit Regression Analyses - Main Tests

The logit regression results are shown in Table 4, Panel A. To examine the influence of certain variables on the propensity to include a revenue forecast with an earnings forecast, I run both the full equation (1) model and the equation (1) model with only subsets of all the independent variables. In Panel A, regressions 1 through 5 include various subsets of independent variables and regression 6 is the complete equation (1) model. For the six regressions, a total of between 394 and 428 ER forecasts and between 576 and 635 E forecasts are included depending on which independent variables in the equation (1) regression are used. This reduction in sample size is due to insufficient information on the *Research Insight Compustat* database or the *CRSP* database for some of the independent variables.

Regression 1 does not include lnA, AGE, or HT. The coefficient on SDROA is found to be significantly positive at the five percent level. This finding agrees with what was hypothesized and the summary statistics in Table 2. However, regressions 2 through 4 show that SDROA becomes insignificant when either lnA, AGE or HT is added as an independent variable. Thus, the increased propensity for firms with higher earnings volatility to include a revenue forecast with an earnings forecast is subsumed by firm size, firm age, and membership in a high technology industry. The strong correlations between 1) SDROA and 2) lnA, AGE, and HT shown in Table 3 support this inference.

The coefficient on GRDE is found to be positively associated with ER in all regressions. For regressions 1 and 4, it is significant at the one percent level. Although the significance of GRDE in explaining the propensity to issue a revenue forecast decreases as more independent variables are added in regressions 5 and 6, it is still significant at almost the five percent level (p-value = 0.0587) for the complete model in regression 6. These findings are in compliance with what was hypothesized. Thus, firms that are in more need of external financing are more likely to include a revenue forecast with their earnings forecast. This implies that firms may include a revenue forecast with an earnings forecast in order to reduce their cost of capital when seeking external funding.

Contrary to hypothesis, the coefficient on IC is insignificant in all versions of the regression, implying that proprietary costs indicated through industry concentration do not influence firms' propensity to include a revenue forecast with an earnings forecast.

The coefficient on lnA is strongly negative, which is in accordance with what was hypothesized. The significance of the coefficient is at the one percent level. Therefore, larger firms are less likely to include a revenue forecast with their earnings forecast than are smaller firms. As previously discussed, potential explanations are more pre-forecast information available to investors in large firms, the incentive of small firms to reduce their cost of capital by increasing disclosure, and low revenue forecast disclosure preparation costs appealing to smaller firms.

In regressions 3 and 5, the coefficient on AGE is negative and significant at the one percent level. Thus, as hypothesized, the propensity to issue a revenue forecast with an earnings forecast is inversely related to a firm's age. However, lnA is not included in either of these regressions. Once lnA is included in the full model (regression 6), the coefficient on AGE is rendered insignificant. Therefore, younger firms being more likely to include a revenue forecast with an earnings forecast is explained by the fact they tend to be of smaller size. This is supported by Pearson and Spearman rank correlations of over fifty percent between AGE and lnA, as shown in Table 3.

The coefficient on HT is significantly positive at either the one or five percent level, depending on the regression. Therefore, as hypothesized, firms in high technology industries are more likely to include a revenue forecast with their earnings forecast than are firms in non-high technology industries. This result is consistent with Chen, DeFond, and Park (2002), who find that firms in high technology industries are more likely to disclose balance sheet information with quarterly earnings announcements. In accordance with what was previously discussed, high

technology firms' increased propensity to include a revenue forecast with an earnings forecast is likely due to earnings being less value relevant and future earnings being less certain.

There is a strong positive relationship between ENEWS and ER in all regressions, conveying that firms which are performing well are more likely to give details of their expected earnings performance through the issuance of a revenue forecast than are firms that are performing poorly. Also, this suggests that firms with good earnings news attempt to increase the believability of their earnings forecasts by including a supporting disclosure.

The control variables FHOR and FINT are found to have no association with the propensity to issue an ER forecast. As expected, the coefficient on FI is found to be strongly negative. The appendix showed that financial institutions are much more likely to issue an earnings forecast alone than an earnings forecast with a revenue forecast.[11] Interestingly, FYEAR is positive in all regressions but only significant at the ten percent level in regressions 1 and 4. Thus, the increased propensity to issue a revenue forecast with an earnings forecast in 1987 and 1988 appears to be at least partially explained by other factors that are represented by independent variables in the regression. Table 3 showed positive correlations between FYEAR and both GRDE and ENEWS that are significant at the one percent level.

The likelihood ratio chi-square, which corresponds to an ordinary least squares regression F-statistic, is not shown in Table 4, Panel A. Depending on the regression, it ranges from 67.24 and 107.44. Thus, it is significant at almost zero in each regression. The inclusion of lnA in a regression results in a large increase in the likelihood ratio chi-square, indicating the importance of firm size in the decision to issue a revenue forecast with an earnings forecast.

Additional Test: Logit Regression Using Only Firms That Made Both An E Forecast And An ER Forecast

Some firms are included in both the E forecast and the ER forecast samples. They made an E forecast at one point in time and an ER forecast at another point in time. I run the full equation (1) regression using forecasts from firms that are included in both the E forecast and the ER forecast samples. For these forecasts, firm characteristics are not expected to have much of an effect on the propensity to make an ER forecast. Some firm characteristics may change dramatically over a few years, influencing a firm to include (exclude) a revenue forecast one year and then exclude (include) a revenue forecast a few years later. However, most of a firm's characteristics (e.g., size, membership in a high technology industry) are likely to remain relatively stable over a period of several years. Therefore, it is expected that only the ENEWS test variable in the equation one regression will be significant.

The results are shown in Table 5, Panel B. A total of 108 ER forecasts and 106 E forecasts qualify for the regression. There is no dummy variable for firms in a financial industry because no financial firms in the sample made both an E forecast and an ER forecast during the sample period. As expected, the only significant test variable is ENEWS, which is positive and significant at the five percent level. Therefore, for sample firms that made both an E forecast and an ER forecast during the sample period, the news of the earnings forecast was a major contributor to the firm's decision.

CONCLUSIONS

This research contributes to the literature by examining potential motivations for management to include a revenue forecast with its earnings forecast through studying characteristics of firms that forecast earnings with and without revenue forecasts and news of the earnings forecasts. The results show that firms which include a revenue forecast with an earnings forecast tend to have more need for external financing, be of smaller size, be from a high technology industry, and issue better news earnings forecasts than firms that issue only an earnings forecast. However, no difference in terms of industry concentration is found between earnings and revenue forecasters and earnings only forecasters. Initially, firms that forecast revenue with earnings are found to have higher earnings volatility and a lower age than firms that forecast earnings alone. However, further analysis shows the effect from earnings volatility to be subsumed by firm size and membership in a high technology industry and the effect from firm

[11] The logit regressions were also run without including financial firms. The conclusions generated from those test results were the same as those generated from the results in Table 4.

age to be subsumed by firm size. An additional test using only forecasts from firms that made both 1) an earnings and revenue forecast and 2) an earnings forecast alone during different points in time in the sample period shows that earnings forecast news and not firm characteristics is a major factor in explaining the propensity to include a revenue forecast for this sub-sample.

Future research could examine the effect, in any, of the Security and Exchange Commission's Regulation Fair Disclosure (FD) on the propensity for management to include a revenue forecast with an earnings forecast. Regulation FD was issued on October 23, 2000 and prohibits corporations from privately disclosing material information to specific individuals without simultaneously disclosing the information to the public. For example, the Regulation FD prohibits the disclosure of management forecasts to analysts through a conference call without allowing the public to listen in on the conference call.

ACKNOWLEDGEMENT

The author acknowledges excellent research assistance from Somit Gupta, Yu Li, and Eric Wiley. Also, comments and suggestions from Erin Moore, Khondkar Karim, Ashok Robin, Meng Yan, two anonymous reviewers, and session participants at the American Accounting Association Northeast Region 2004 Annual Conference are appreciated. In addition, this research has benefited from a Rochester Institute of Technology College of Business Faculty Scholarship Grant.

REFERENCES

1. B. Ajinkya and M. Gift (1984). Corporate managers' earnings forecasts and symmetrical adjustments of market expectations. *Journal of Accounting Research*, 22, 425-444.
2. J. Anthony and K. Ramesh (1992). Association between accounting performance measures and stock prices: A test of the life cycle hypothesis. *Journal of Accounting and Economics*, 15, 203-227.
3. R. Atiase (1985). Predisclosure information, firm capitalization, and security price behavior around earnings announcements. *Journal of Accounting Research*, 23, 21-36.
4. L. Bamber and Y. Cheon (1998). Discretionary management earnings forecast disclosures: Antecedents and consequences associated with forecast venue and forecast specificity choices. *Journal of Accounting Research*, 36, 167-190.
5. C. Botosan (1997). Disclosure level and the cost of equity capital. *The Accounting Review*, 72, 323-350.
6. M. Brennan and A. Subrahmanyam (1995). Investment analysis and price formation in securities markets. *Journal of Financial Economics*, 38, 361-381.
7. S. Chen, M. DeFond, and C. Park (2002). Voluntary disclosure of balance sheet information in quarterly earnings announcements. *Journal of Accounting and Economics*, 33, 229-251.
8. C. Cox (1985). Further evidence on the representativeness of management earnings forecasts. *The Accounting Review*, 54, 692-701.
9. H. Demsetz (1973). Industry structure, market rivalry, and public policy. *Journal of Law and Economics*, 16, 1-9.
10. Dontoh (1989). Voluntary disclosure. *Journal of Accounting, Auditing, and Finance*, 4, 480-511.
11. R. Dye (1986). Proprietary and nonproprietary disclosures. *Journal of Business*, 59, 331-366.
12. J. Francis, D. Philbrick, and K. Schipper (1994). Shareholder litigation and corporate disclosures. *Journal of Accounting Research*, 32, 137-165.
13. P. Healy and K. Palepu (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31, 405-440.
14. J. Han and J. Wild (1991). Stock price behavior with managers' earnings and revenues forecasts. *Journal of Accounting Research*, 29, 79-95.
15. Hutton, G. Miller, and D. Skinner (2003). The Role of Supplementary Statements with Management Earnings Forecasts. *Journal of Accounting Research*, 41, 867-890.
16. R. Jennings (1987). Unsystematic Security Price Movements, Management Earnings Forecasts, and Revisions in Consensus Analyst Earnings Forecasts. *Journal of Accounting Research*, 25, 90-110.

17. R. Kasznik and B. Lev (1995). To warn or not to warn: Management disclosures in the face of an earnings surprise. *The Accounting Review*, 70, 113-134.
18. W. Kross, W. Lewellen, and B. Ro (1994). Evidence on the motivation for management forecasts of corporate earnings. *Managerial and Decision Economics*, 15, 1-14.
19. M. Lang (1991). Time-varying stock price response to earnings induced by uncertainty about the time-series process of earnings. *Journal of Accounting Research*, 29, 229-257.
20. M. Lang and R. Lundholm (1993). Cross-sectional determinants of analysts ratings of corporate disclosures. *Journal of Accounting Research*, 31, 246-271.
21. B. Lev and P. Zarowin (1999). The boundaries of financial reporting and how to extend them. *Journal of Accounting Research*, 37, 353-386.
22. W. Liebeler (1978). Market power and competitive superiority in concentrated industries. *UCLA Law Review*, 25, 1231-1300.
23. V. Pastena and J. Ronen (1979). Some hypotheses on the pattern of management's informal disclosures. *Journal of Accounting Research*, 17, 550-564.
24. D. Skinner (1994). Why firms voluntarily disclose bad news. *Journal of Accounting Research*, 32, 38-60.
25. G. Waymire (1985). Earnings volatility and voluntary management forecast disclosure. *Journal of Accounting Research*, 23, 268-295.

APPENDIX
Industry Membership Of Firms That Disclose Both An Earnings Forecast And A Revenue Forecast, And Of Firms That Disclose Only An Earnings Forecast

		ER Forecasts		E Forecasts	
Two-Digit SIC Code	**Industry**	**Total**	**%**	**Total**	**%**
01 to 09	Agriculture	1	0.21	4	0.56
10 to 14	Mining, Petroleum Production	4	0.85	19	2.64
15 to 19	Construction	10	2.14	12	1.67
20 to 21	Food, Beverages, Tobacco	10	2.14	27	3.75
22 to 23	Textiles, Carpet	14	2.99	17	2.36
24 to 26	Paper, Lumber	15	3.21	18	2.50
27 only	Printing, Publishing	8	1.71	29	4.03
28 only	Chemicals, Drugs	42	8.97	54	7.50
29 only	Petroleum Refining	1	0.21	11	1.53
30 only	Rubber, Plastics	9	1.92	20	2.78
31 only	Shoes, Leather	1	0.21	2	0.28
32 only	Glass, Cement, Plaster	4	0.85	7	0.97
33 only	Steel, Aluminum	10	2.14	20	2.78
34 only	Metal Fabricating	8	1.71	15	2.08
35 only	Machinery, Computers	59	12.61	57	7.92
36 only	Electronic and Electrical Equipment	48	10.26	45	6.25
37 only	Transport Equipment	31	6.62	44	6.11
38 only	Instruments	43	9.19	28	3.89
39 only	Toys, Jewelry, Recreation	18	3.85	6	0.83
40 to 47	Airlines, Rail, Trucking	10	2.14	23	3.19
48 only	Telecommunications, Broadcasting	3	0.64	17	2.36
49 only	Utilities	13	2.78	16	2.22
50 to 51	Wholesalers	19	4.06	19	2.64
52 to 59	Retailers	30	6.41	62	8.61
60 to 64	Financial Institutions	12	2.56	83	11.53
65 to 71	Real estate, Trusts, Hotels	0	0.00	3	0.42
72 to 89	Services	45	9.62	58	8.06
99 only	Nonclassifiable, including some conglomerates	0	0.00	4	0.56
	Total	468	100.00	720	100.00

The industry classifications in this table are primarily based on those in Kross, Lewellen, and Ro (1994). ER forecasts are forecasts of both earnings and revenue whereas E forecasts are forecasts of earnings only. There is no sample forecast firm in the industry classification 'Public Administration' (SIC code 91 to 97).

NOTES