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Positive and Negative Information Transfers from Management Forecasts

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Positive and Negative Information Transfers from Management Forecasts

ABSTRACT

We examine positive and negative information transfers associated with management earnings and revenue forecasts. Positive information transfers are due to industry commonalities whereas negative information transfers are caused by competitive shifts. We argue that positive and negative intra-industry information transfers offset each other and lead to an overall finding of no information transfers even though they exist. We also conjecture that the type of information transfers from the same management forecast can be positive or negative based on the characteristics of the information receiver. We hypothesize positive information transfers to non-rival firms and negative information transfers to rivals. Consistent with our prediction, we find negative (positive) information transfers between forecasting firms and non-forecasting rival (non-rival) firms in the same industry. Through analyses using competitors identified by *Hoover's* and 10-K reports, we show more general evidence of negative information transfers to rival firms.

Keywords: Information transfer, management earnings forecast, management revenue forecast, rival

Positive and Negative Information Transfers from Management Forecasts

1. Introduction

This study provides evidence of negative information transfers from management forecasts to rival firms. Prior literature on information transfers from management forecasts (Baginski, 1987; Han, Wild, and Ramesh, 1989; Pyo and Lustgarten, 1990) focuses on positive intra-industry information transfers, where good (bad) news from a forecasting firm causes on-average a positive (negative) stock market reaction from non-forecasting firms in the same industry. We argue that the information transfer from the same management forecast can be positive or negative based on the degree of competitiveness between the forecaster and the information receiver. Positive information transfers are due to industry commonalities whereas negative information transfers are caused by competitive shifts between rival firms. Hence, we hypothesize negative information transfers to rivals, and positive information transfers to non-rival firms in the same industry. A negative information transfer occurs when a good (bad) news announcement made by a firm conveys market share taken away from (given to) the competition, thereby causing a negative (positive) stock market reaction from rival firms.

Although prior studies (Foster, 1981; Baginski, 1987; Pownall and Waymire, 1989; Dietrich, 1989; Schipper, 1990) recognize the potential existence of information transfers from competitive shifts, little research has empirically examined negative information transfers. Two notable exceptions can be found in the finance literature. Lang and Stulz (1992) investigate contagion and competitive intra-industry effects with respect to bankruptcy announcements, and Laux, Starks, and Yoon (1998) examine the relative importance of these two different intra-industry effects in relation to large dividend revisions.

This study is different from previous research (e.g., Lang and Stulz, 1992; Laux, Starks, and Yoon, 1998) in several ways. First, unlike earlier studies that do not separate rival firms from other firms, we classify the information receivers as rival firms and non-rival firms. From this partitioning, we are able to show both positive and negative information transfers from the same set of management forecasts, which would not have been revealed without sample partitioning. Second, we examine not only negative "intra-industry" information transfers, but also the more general case of negative information transfers to all rival firms that are identified through searching *Hoover's* or a forecasting firm's 10-K report. Finally, by documenting negative information transfers from management forecasts to rival firms in the same industry, we attempt to reconcile statistically insignificant (or marginally significant at best) evidence of intra-industry information transfers from directional tests and statistically significant results from non-directional tests documented in earlier literature.[1] Our study attempts to distinguish between positive (due to industry commonalities) and negative (due to the competitive shifts) information transfers associated with management forecasts, and thus shed light on the issue of intra-industry information transfers.

In this study, we define firms that are listed as rivals in *Hoover's* or in the forecasting firm's 10-K report as rivals of the forecaster. Firms classified as non-rivals of the forecaster are firms that share the same four-digit primary SIC code as the forecaster but are not listed as rivals in *Hoover's* or the forecaster's 10-K report.

The majority of our results support the existence of negative information transfers to rival firms. The results from industry information transfer analyses show negative (positive) intra-

[1] Foster (1981) and others use non-directional tests to increase the power of their empirical tests since directional tests may conclude no information transfers even though they exist. Prior research (e.g., Han, Wild, and Ramesh, 1989) fails to find meaningful results for information transfers from directional tests while finding statistically significant results from non-directional tests.

industry information transfers between forecasting firms and non-forecasting firms identified as rivals (non-rivals) with the same four-digit primary SIC code. Furthermore, negative intra-industry information transfers from revenue forecasts are more evident than those from earnings forecasts. We also present evidence on the more general case of negative information transfers. When we examine information transfers to all rivals identified in *Hoover's* or 10-K reports, regardless of industry classification, negative information transfers are evident from management revenue forecasts and this result is mainly due to strong negative information transfers from bad news forecasts. Analyses of rival firms that are identified in *Hoover's* or 10-K reports and share the same two-digit primary SIC codes with forecasting firms generate similar results.

The next section formulates our hypothesis. This is followed by a discussion of the research design. Section 4 discusses the empirical results. The final section concludes.

2. Hypothesis Development

Since Firth (1976) and Foster (1981) found co-movement between stock returns of firms releasing earnings and stock returns of other firms in the same industry, researchers have turned their attention to intra-industry information transfers from management forecasts due to externalities created by voluntary disclosures. Pownall and Waymire (1989) show that firms issuing management earnings forecasts receive a lower magnitude of earnings information transfer at the time of other industry members' earnings announcements than do firms that do not issue management earnings forecasts. Baginski (1987) shows a positive relation between earnings forecast information and market-adjusted abnormal returns of non-forecasting firms. Han, Wild, and Ramesh (1989) attempt to separate announcement-induced information transfers

from general index movements. When returns are adjusted for industry index movements as well as market movements, they find that intra-industry information transfer is very weak at best.

If one group of non-forecasting firms receives positive information transfers and another group of non-forecasting firms receives negative information transfers from the same set of management forecasts, the overall result may be interpreted as indicating no information transfer due to the offsetting effects of the two types of information transfers. In a study closely related to our research, Lang and Lundholm (1996) show that after controlling for a firm's own earnings, the relation between its stock returns and industry counterpart firms' earnings is negative. They interpret the result as meaning that other firms' earnings announcements provide primarily a competitive component of information. The empirical setting of Lang and Lundholm (1996) is different from the event study design used in other information transfer studies. Lang and Lundholm (1996) focus on whether earnings of other firms in the same industry have incremental information content once a firm discloses its own earnings. In this setting, though other firms' earnings announcements transfer industry information in general, they may not be reflected in a firm's own returns because the firm's own earnings are already disclosed. Also, it is difficult to reconcile their findings of overall competitive information provided by other firms' earnings with the overall positive information transfers appearing in intra-industry information transfer studies.

Determining whether positive or negative information transfer dominates likely depends on the competitive relationship between the forecasting firm and the firm that is the recipient of the forecast information. If a firm forecasts good (bad) news, this may convey good (bad) prospects for its industry, thereby leading to a positive information transfer. However, it could also mean market share taken away from (given to) rivals, leading to a negative information

transfer. Thus, if a firm makes a forecast, a positive information transfer caused by industry commonalities is likely to prevail with respect to industry counterpart firms that are not the forecasting firm's rivals. In contrast, a negative information transfer due to a competitive shift may prevail for firms that are the forecasting firm's rivals. Therefore, we propose and test the following hypothesis, stated in the alternative form:

The information transfer from a firm's management forecast to rival (non-rival) firms is negative (positive).

3. Research Design

3.1. FORECASTER SAMPLE SELECTION

The sample of management earnings and revenue forecasts 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.[2] Both annual and interim forecasts are included. A management forecast must be attributed to a company official. In addition, the forecast must have been made on or before the last day of the fiscal period to which the forecast applies. Management 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, management earnings forecasts containing only non-operating or extraordinary gain or loss components are not included in the sample. Also, the firms to which

[2] 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).

the forecasts belong must be on the *Compustat* database. The aforementioned requirements lead to an initial sample of 1,188 forecasts issued by 890 firms over 1987 to 1993.

Additional restrictions are applied. The management forecast must be in a quantitative (point, range, minimum, or maximum) format[3] to permit comparison with analyst forecasts, and the firm must have the necessary daily stock returns available on the *CRSP* daily returns file. Those two additional criteria reduce the sample to 522 forecasts. Finally, a forecasting firm must have the necessary analyst forecast information available from the *Value Line Estimates & Projections File*. This final requirement reduces the sample to 256 management forecasts: 152 forecasts of earnings alone and 104 forecasts of earnings and revenue simultaneously.

3.2. IDENTIFICATION OF NON-FORECASTING RIVAL AND NON-RIVAL FIRMS

For the purpose of testing industry commonalities versus competitive shifts, we partition non-forecasting firms as rivals with the forecaster and as non-rivals. Rivals are defined to be all non-forecasting firms that are listed as rivals of the forecasting firm in either *Hoover's* or the forecasting firm's 10-K report. However, when a company operates in several business areas, rivals identified by *Hoover's* or 10-K reports can have different four-digit primary SIC industry classifications. For example, in *Hoover's*, one of the top rivals of Intel is IBM, which has a different four-digit primary SIC code in *Compustat*. We identify all rivals regardless of their four-digit industry membership and run the tests with (a) the full sample of rivals regardless of SIC code, (b) rivals that share the same two-digit SIC code with forecasting firms, and (c) rivals that share the same four-digit SIC code. Tests with rival firms that share the same four-digit

[3] An example of a point forecast is 'earnings are expected to be $2.00 per share for this period (or an upcoming period)' whereas an example of a range forecast is 'revenue is expected to be between $500 million and $550 million.' An example of a maximum (minimum) forecast is 'earnings are expected to be no more than $3.00 per share' ('earnings are expected to be at least $1.50 per share').

primary SIC code provide insights on intra-industry information transfers, and tests with the full sample of rivals regardless of their industry membership provide more general evidence on negative information transfers to rival firms.

We hand-collect the forecasting firms' rivals from *Hoover's* or 10-Ks. *Hoover's* offers a wide range of company information, including a list of rivals. We search the following *Hoover's* handbooks to find the forecasting firm and its rivals: *Hoover's Handbook of American Business 1996, Hoover's Handbook of Emerging Companies 1996,* and *Hoover's Handbook of World Business 1995/96.* The *Hoover's* handbooks began publication in 1991. The rivals listed in the earliest issues of *Hoover's* were drawn only from the set of firms included in the *Hoover's* handbooks. Thus, we collect rivals from the earliest obtainable issues of *Hoover's* that contain a firm's rivals drawn from the universe of firms. Rivals for issuers of 127 management forecasts are identified through searching *Hoover's*. For the remaining forecasting firms, which are not in any of the *Hoover's* handbooks we searched, we examine their 10-K reports filed for the period from 1994 through 1998. For this task, we search the Securities and Exchange Commission's (SEC's) EDGAR database. We take rivals listed in the earliest 10-K report (between 1994 and 1998) we can obtain for the firm. Through the 10-K search, we identify rivals for issuers of 33 additional management forecasts. Together, we have rivals for 160 management forecasts. After eliminating firms with daily stock returns not available on the *CRSP* daily returns file or with extreme abnormal returns[4], we have 1,926 rivals for 154 management forecasts: 1,182 observations that are matched with 92 forecasts of earnings alone and 744 observations that are matched with 62 forecasts of earnings and revenue.

Firms classified as non-rivals of the forecaster are non-forecasters that share the same four-

[4] We eliminate firms that have abnormal returns of more than 100% or less than -100% on the day of the management forecast.

digit primary SIC code as the forecaster but are not listed as rivals in *Hoover's* or the 10-K report.[5] Non-rival firms must have the necessary information from the *CRSP* daily returns file and the *Compustat* database. The final sample of non-rivals with the same four-digit SIC code includes 4,540 observations: 2,994 observations that are matched with forecasts of earnings alone and 1,546 observations that are matched with forecasts of earnings and revenue.[6]

In addition, we partition the sample by forecast news based on abnormal stock returns of forecasting firms around the time of the forecast; with positive abnormal returns implying good news and negative abnormal returns implying bad news. Since management earnings and revenue forecast surprises are often of different signs,[7] the abnormal return is a better surrogate for the news of the forecasts in this study than are earnings or revenue surprises.

3.3. SINGLE-INDEX AND TWO-INDEX PRICING MODELS

In determining abnormal returns, following Han, Wild, and Ramesh (1989), we employ both single-index and two-index pricing models as follows:

$$u_{i,t} = R_{i,t} - (\alpha_i + \beta_i^M \cdot R_{M,t}) \quad (1)$$

$$e_{i,t} = R_{i,t} - (\alpha_i + \beta_i^M \cdot R_{M,t} + \beta_i^I \cdot R_{I,t}) \quad (2)$$

[5] We identified rivals for 154 management forecasts through the search of *Hoover's* or the 10-K. For the remaining 102 management forecasts, no rival is identified and all non-forecasting firms in the same four-digit SIC code industry are defined as non-rivals.

[6] Of 1,926 rival observations, 501 (893) rivals share the same four- (two-) digit SIC code with the forecasting firms. Since there are 4,540 non-rival observations, the total number of non-forecasting observations used in the analyses is 5,041 (5,433) for four- (two-) digit SIC matching and 6,466 without industry matching. Of 744 rival observations matched with firms issuing both earnings and revenue forecasts, 186 (338) rivals share the same four- (two-) digit SIC code with the forecasting firms. Since there are 1,546 non-forecasting, non-rival observations, the total number of non-forecasting observations used in the analyses is 1,732 (1,884) for four- (two-) digit SIC matching and 2,290 without industry matching.

[7] A total of 27 out of 104 joint management forecasts of earnings and revenue have earnings and revenue forecast surprises of different signs.

where $R_{i,t}$ is the daily stock return for firm i on day t, $R_{M,t}$ is the return on a value-weighted market portfolio for day t, and $R_{I,t}$ is the return on an equally-weighted four-digit SIC code industry portfolio (not including firm i) for day t. Day $t = 0$ is the day of the management forecast and the parameters in equations (1) and (2) are estimated using ordinary least squares regressions with stock returns from days -220 to -21 relative to the date of the management forecast. Equation (1) is the abnormal return from the standard market model. Equation (2) is the abnormal return after controlling for both market and industry returns. Han, Wild, and Ramesh (1989) show that controlling for the industry cross-sectional covariation in returns is important in tests of intra-industry information transfer from management earnings forecasts.[8]

3.4. UNEXPECTED FORECASTS AND CUMULATIVE ABNORMAL RETURNS

We measure earnings and revenue forecast surprises using the unexpected management forecast for firm i:

$$UMEF_{i,t} = \left(MEF_{i,t} - AEF_{i,t}\right) \Big/ \left|AEF_{i,t}\right| \tag{3}$$

$$UMRF_{i,t} = \left(MRF_{i,t} - ARF_{i,t}\right) \Big/ \left|ARF_{i,t}\right| \tag{4}$$

where $UMEF_{i,t}$ ($UMRF_{i,t}$) is the unexpected management earnings (revenue) forecast, $MEF_{i,t}$ ($MRF_{i,t}$) is the management earnings (revenue) forecast, and $AEF_{i,t}$ ($ARF_{i,t}$) is the *Value Line* database's most recent analyst earnings (revenue) forecast before the management earnings (revenue) forecast. Hereafter, the subscripts on the variables are not included except when the variables appear in equations. Analysts' forecasts are collected from the *Value Line Estimates &*

[8] However, we do not apply the two-index pricing model for the analyses that include rivals with different industry membership because it is not sensible to control for industry returns in this sample. When rivals do not have the same four-digit SIC codes as the forecasters, the control for common industry return shocks implicit in the two-index model fails to remove the common elements for these rivals.

Projections File because it is the only database that systematically includes *both* earnings *and* revenue forecasts. Data in this database correspond to the estimates in the most recently published paper copy of the *Value Line Investment Survey*. Unlike the *Institutional Brokers Estimate System* (*IBES*) database, no subsequent adjustments for stock splits and stock dividends are made to the data in the *Value Line* database.

Management forecasts appear in different forms. In order to fully utilize the sample forecasts, we use all available quantitative management forecasts. In measuring the forecast errors in equations (3) and (4), the management point estimate of earnings (revenue) is used to proxy for *MEF* (*MRF*) when management issues a point forecast. When management issues a range forecast, the midpoint of the range is used and when management issues a minimum (maximum) forecast, the lower (upper) bound is used. In addition, to make it comparable to the *Value Line* forecast, a management earnings forecast is converted to a per share amount if it is not in the form of earnings per share. A management revenue forecast is converted to a total sales amount and compared to the *Value Line* forecast if it is forecasted on a per share basis.

Two cumulative abnormal returns are calculated for forecasting and non-forecasting firms. The first utilizes abnormal returns from the single-index model in equation (1). The second is cumulative abnormal returns based on the two-index model in equation (2). The following is our measure:

$$CAR_{i,t} = \sum_{t=-2}^{t=+1} \xi_{i,t} \tag{5}$$

where the event period is day -2 to day +1 relative to the forecast day and ξ is either u or e from model (1) or (2). Also, for the remainder of this paper, *CAR* based on the single-index model will be denoted by *MCAR* and *CAR* based on the two-index model will be denoted by *IMCAR*.

4. Empirical Results

4.1. DESCRIPTIVE STATISTICS

Table 1 shows descriptive statistics. $MCAR^{FC}$ ($MCAR^{NF}$) is *CAR* for forecasting (non-forecasting) firms, where *CAR* is computed for days {-2, +1} using the single-index pricing model. $IMCAR^{FC}$ ($IMCAR^{NF}$) is *CAR* for forecasting (non-forecasting) firms, where *CAR* is computed for days {-2, +1} using the two-index pricing model.

Panel A presents descriptive statistics for forecasting firms. The forecasting firm full sample median value of $MCAR^{FC}$ ($IMCAR^{FC}$) is -0.32% (-0.29%), indicating that the sample forecasts are on average bad news. This is supported by a full sample median value for *UMEF* of -2.81% and a full sample median value for *UMRF* of -0.37%. Another interesting finding is that the median *UMEF* value is -5.74% when earnings forecasts are issued alone but -2.50% when earnings and revenue forecasts are issued together. This implies the possibility that when the management earnings forecast surprise is better, management is more likely to include supporting information in the form of a revenue forecast to enhance the believability of the management earnings forecast (Dye, 1986; Jennings, 1987; Hutton, Miller, and Skinner, 2003). Also, as expected, average *UMEF* and *UMRF* are higher for firms with positive *CAR* (good news) than for firms with negative *CAR* (bad news). Panel B of Table 1 shows the summary statistics for non-forecasting firms that share the same four-digit primary SIC code industry with forecasting firms. $MCAR^{NF}$ and $IMCAR^{NF}$ are slightly higher when forecasting firms have positive *CAR* than when forecasting firms have negative *CAR*.

Overall, the magnitudes of non-forecasting firms' returns are much smaller than those of forecasting firms. For example, when the forecasting firms release good news (i.e., positive $MCAR^{FC}$), the median value of non-forecasting firms' abnormal returns is -0.13% while the

corresponding median value for forecasting firms is 2.88%. Similarly, when the forecasting firms issue bad news (i.e., negative $MCAR^{FC}$), the median value of non-forecasting firms' abnormal returns is -0.32% while the corresponding median value for forecasting firms is –5.84%.

[Insert Table 1 about here]

4.2. RANK CORRELATION ANALYSES

Table 2 presents Spearman correlations among selected variables for firms that issue earnings and revenue forecasts together and their non-forecasting industry counterparts. Overall, the results under the single-index pricing model are similar to those under the two-index pricing model. Panel A shows the correlations for the entire sample of non-forecasting firms with the same four-digit primary SIC code. As expected, there are strong positive correlations between $MCAR^{FC}$ ($IMCAR^{FC}$) and both *UMEF* and *UMRF*. Also, the correlation between $MCAR^{NF}$ ($IMCAR^{NF}$) and $MCAR^{FC}$ ($IMCAR^{FC}$) is positive and significant at the one percent level. The relation between *UMEF* and $MCAR^{NF}$ ($IMCAR^{NF}$) is positive and significant (insignificant).[9] In sum, the full sample results give some indication of positive intra-industry information transfer.

Panel B reports correlations between variables for forecasting firms and non-forecasting firms that are identified as rivals through the *Hoover's* and 10-K search and share the same four-digit primary SIC codes as the forecasters. The results reveal a positive association between $MCAR^{FC}$ and $MCAR^{NF}$ that is significant at the five percent level. However, the correlation between $IMCAR^{FC}$ and $IMCAR^{NF}$ is statistically insignificant. Interestingly, the correlations

[9] The correlation between $MCAR^{FC}$ ($IMCAR^{FC}$) and $MCAR^{NF}$ ($IMCAR^{NF}$) is calculated based on non-forecaster observations by matching $MCAR^{FC}$ ($IMCAR^{FC}$) of a forecaster with $MCAR^{NF}$ ($IMCAR^{NF}$) of each non-forecaster in the same four-digit SIC code. Other correlations are calculated based on forecaster observations. We also calculate the correlation between $MCAR^{FC}$ ($IMCAR^{FC}$) and $MCAR^{NF}$ ($IMCAR^{NF}$) based on forecaster observations by matching median $MCAR^{NF}$ ($IMCAR^{NF}$) of non-forecasters with forecaster $MCAR^{FC}$ ($IMCAR^{FC}$) and obtain similar results (untabulated).

between *UMRF* and both $MCAR^{NF}$ and $IMCAR^{NF}$ are negative. Therefore, the results suggest that negative intra-industry information transfers to rival firms may stem from competitive shifts conveyed by management revenue forecasts.

Panel C presents correlations among variables for forecasting firms and non-rival non-forecasting firms. There is a strong positive association between *UMEF* (*UMRF*) and both $MCAR^{NF}$ and $IMCAR^{NF}$. Also, the relation between $MCAR^{FC}$ ($IMCAR^{FC}$) and $MCAR^{NF}$ ($IMCAR^{NF}$) is positive and significant at one percent level. Overall, the results in Panel C show a positive intra-industry information transfer (industry commonalities) to non-forecasting industry counterpart firms that are not rivals of the forecasting firm.

[Insert Table 2 about here]

4.3 INFORMATION TRANSFERS FROM EARNINGS FORECASTS

To gain initial insights on the intra-industry information transfers from management forecasts, we first consider only management earnings forecasts and run the following regression using the full sample of non-forecasting firms in the same four-digit SIC code industry:

$$MCAR_{i,t}^{NF} \,(or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 UMEF_{i,t} + \varepsilon_{i,t} \tag{6}$$

where $MCAR^{NF}$ $\left(IMCAR^{NF}\right)$ is *CAR* for non-forecasting firms when *CAR* is computed for days {-2, +1} using the single-index (two-index) pricing model and *UMEF* is the unexpected management earnings forecast. Regression model (6) serves as the baseline model. To capture the effect of the information transfer from a forecasting firm to its rival firms and non-rival firms separately, we run the following regression with rival dummies:

$$MCAR_{i,t}^{NF}\,(or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 D_{RIVAL} + \alpha_2 UMEF_{i,t} + \alpha_3 UMEF_{i,t} * D_{RIVAL} + \varepsilon_{i,t} \tag{7}$$

where D_{RIVAL} is an indicator variable that takes on a value of one if the non-forecaster is a competitor identified through *Hoover's* and 10-Ks, and zero otherwise.

We run three versions of regression equation (7). To examine the intra-industry information transfers to rival firms and non-rival firms separately, we estimate the regression models with only non-forecasting firms that share the same four-digit primary SIC codes. Next, to provide more general evidence of negative information transfers to rival firms, we run two versions of the regression with more observations. Specifically, we run the regression including rival firms that share the same two-digit primary SIC codes with the forecasters to see if negative information transfers can be extended to rival firms outside of the four-digit SIC industry. We also run the regression including all rival firms identified through *Hoover's* and 10-Ks regardless of industry membership.

The results are reported in Table 3. In Panel A, the results from regression equation (6) using the single-index and the two-index models confirm the findings of Han, Wild, and Ramesh (1989). The coefficient on *UMEF* from the single index model is positive and significant at the five percent level (t-value = 2.19), while the coefficient from the two-index model is statistically insignificant. Thus, when returns are adjusted for industry index movements as well as market movements, positive intra-industry information transfer disappears. We argue that positive and negative intra-industry information transfers may offset each other and lead to an overall finding of no information transfer. The results from regression equation (7) provide evidence that is consistent with our conjecture.

In Panel B of Table 3, the first regression is estimated with only non-forecasting firms that share the same four-digit primary SIC code with forecasters. The coefficient α_2 is for non-rival firms and the coefficient on the interaction, α_3, captures the difference in information

transfer to rival and non-rival firms. Therefore, $\alpha_2 + \alpha_3$ is the coefficient for rival firms. We also run the regression models with the same set of non-forecasting firms using the two-index pricing model and the results are reported in Panel C. The coefficients on *UMEF* for non-rival firms are positive and statistically significant from the single-index model (t-value = 2.32 in Panel B) and the two-index model (t-value = 2.37 in Panel C). However, this is not case for the rival firms. The coefficients on $UMEF*D_{RIVAL}$ are negative for both the single-index and the two-index models, though the coefficient is statistically significant only for the two-index model (t-value = -2.95). Also, the coefficient on *UMEF* for rival firms, $\alpha_2 + \alpha_3$, is negative and statistically significant for the two-index model (t-value = -2.28). These results indicate that when an earnings forecast is released, an unexpected management earnings forecast leads to a negative intra-industry information transfer to rival firms but a positive intra-industry information transfer to non-rival firms.

The stronger negative information transfer in the two-index model can help explain the findings in Han, Wild, and Ramesh (1989). They find a positive intra-industry information transfer from management earnings forecasts in the single-index model, which disappears in the two-index model. A prevalent negative information transfer to rival firms captured in the two-index model may have caused an overall finding of no information transfers in Panel A, as in Han, Wild, and Ramesh (1989).[10]

[10] We employ the two-index model to control for general industry index movements. Abnormal returns from the two-index model separate announcement-induced information transfers from not only market-wide shocks, but also common industry shocks. Negative intra-industry information transfer should be more pronounced in the two-index model because industry-wide shocks may neutralize the effect of negative information transfer when the single-index model is used. The evidence reported in Tables 3 to 5 is generally consistent with this prediction. For this reason, when the results from the single-index and two-index models do not agree, we should emphasize the results from the two-index model.

Some of the forecasters' rivals identified from *Hoover's* and 10-K reports do not share the same four-digit primary SIC codes with forecasters. Although examining rival firms in the same four-digit SIC industry provides insights on intra-industry information transfers and enables us to reconcile our results with those in the prior literature, investigation of information transfers to rivals regardless of whether they are in the same four-digit SIC industry could provide more general evidence of negative information transfers to rival firms. Therefore, we run regression equation (7) with additional rivals outside of the forecaster's four-digit SIC industry. However, for samples that include rivals that do not share the same four-digit industry membership with the forecaster, we do not apply the two-index pricing model because it is not sensible to control for industry returns in those samples. When rivals do not share the same four-digit SIC industry code, the control for the forecaster's industry cross-sectional covariation through the two-index model does not remove the industry-wide shock for these rivals. Panel B of Table 3 reports the results. We estimate the second regression including rivals that share the same two-digit SIC code and the third regression with all rivals regardless of industry membership. The results are qualitatively similar to those that utilize rivals with the same four-digit SIC code. In both regressions, the coefficient on *UMEF* for non-rival firms, α_2, is positive and statistically significant. However, the coefficient for rival firms, $\alpha_2 + \alpha_3$, is negative but insignificant when rival firms share the same two-digit or four-digit SIC code. The coefficient α_3 is negative and marginally significant in the second regression.

[Insert Table 3 about here]

4.4 INFORMATION TRANSFERS FROM EARNINGS AND REVENUE FORECASTS

If negative information transfers mean competitive shifts between rival firms, information about revenue as well as earnings would be valuable to investors of rival firms. Therefore, to delve into this, we focus on the sample of management forecasts with both earnings and revenue and attempt to separate out positive and negative information transfers.

We first confirm the results reported in Table 3 using the forecasting firms that issue both earnings and revenue forecasts and matched non-forecasting firms. Table 4 reports the results. Overall, the results are quite similar to those reported in Table 3. As shown in Table 4, Panel A, the baseline regression results using the single-index and two-index models show that the explanatory powers of the regression models are greater for firms issuing both earnings and revenue forecasts together than those reported in Panel A of Table 3. In the two-index model, the coefficient on *UMEF* is marginally significant for forecasting firms issuing both earnings and revenues together, which is different from insignificant coefficients reported in Panel A of Table 3 and in Han, Wild, and Ramesh (1989). In panels B and C, information transfers to non-rival firms (α_2) are positive and significant in all regressions. Information transfers to rival firms ($\alpha_2 + \alpha_3$) are mostly negative although they are only marginally significant for rivals with the same four-digit SIC code as the forecaster. The coefficient that shows the difference between rival and non-rival firms (α_3) is negative and significant at conventional levels. The latter result is more evident than that reported in Table 3.

[Insert Table 4 about here]

Next, using the sample of non-forecasting firms in the same four-digit SIC code industry as firms that issue both earnings and revenue forecasts, we estimate the following base model with both unexpected management earnings and revenue forecasts:

$$MCAR_{i,t}^{NF}\ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 UMEF_{i,t} + \alpha_2 UMRF_{i,t} + \varepsilon_{i,t} \quad (8)$$

where *UMRF* is the unexpected management revenue forecast.

To capture the effects of information transfers to rival firms and non-rival firms separately, we also run the following regression:

$$MCAR_{i,t}^{NF}\ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 D_{RIVAL} + \alpha_2 UMEF_{i,t} + \alpha_3 UMEF * D_{RIVAL} + \alpha_4 UMRF_{i,t} + \alpha_5 UMRF * D_{RIVAL} + \varepsilon_{i,t} \quad (9)$$

where D_{RIVAL} is an indicator variable that takes on a value of one if the non-forecaster is a rival firm, and zero otherwise. We further refine the sample based on the types of forecast news: good and bad news forecasts.

Table 5 presents the results. In Panel A, we report the results from baseline equation (8) and find no evidence of intra-industry information transfers from *UMEF* or *UMRF* using both the single-index and two-index models. This could be due to the offsetting effects of positive information transfers to one group of non-forecasting firms and negative information transfers to another group of non-forecasting firms.

Thus, to further investigate this issue, we run three versions of regression equation (9): (1) the first model including non-rival firms and rival firms identified through *Hoover's* and 10-Ks that share the same four-digit primary SIC codes; (2) the second model including non-rival firms and rival firms that share the same two-digit primary SIC codes with the forecasters; and (3) the third model including non-rival firms and all rival firms identified through *Hoover's* and 10-Ks regardless of industry membership. Again, we estimate the first model to investigate different intra-industry information transfers, and the second and third models to find more general evidence of negative information transfer to rival firms.

Panel B of Table 5 reports the results from the single-index model with non-forecasting firms that share the same four-digit primary SIC code with forecasters. In the first regression using the full sample, the coefficient on *UMEF*, α_2, is positive and significant and the coefficient on *UMRF*, α_4, is positive but insignificant. In contrast, for rival firms, the sum of the coefficients on *UMEF*, $\alpha_2 + \alpha_3$, is positive but insignificant while the sum of the coefficients on *UMRF*, $\alpha_4 + \alpha_5$, is negative and significant (t-value = -1.97). These results suggest a positive information transfer from earnings forecasts to non-rival firms and a negative information transfer from revenue forecasts to rival firms. It is also interesting to note that negative information transfers from earnings forecasts that are reported in Table 4 (i.e., results before controlling for revenue forecast information) disappear when revenue forecast information is included in the regressions.

We further refine the analyses by partitioning the sample based on the types of management forecast news. As shown in the second regression in Panel B, for cases in which the news in the revenue and earnings forecasts are on average good (i.e., positive forecasting firm's *CAR*), the coefficient on *UMEF* is positive and significant for non-rival firms, but the coefficient on *UMRF* is insignificant. For rival firms, the sum of the coefficients on both *UMEF*, $\alpha_2 + \alpha_3$, and *UMRF*, $\alpha_4 + \alpha_5$, are insignificant. For bad news forecasts (i.e., negative forecasting firm's *CAR*), the coefficient sum on *UMEF*, $\alpha_2 + \alpha_3$, is positive and significant (t-value = 2.01) but the coefficient sum on *UMRF*, $\alpha_4 + \alpha_5$, is negative and significant (t-value = -2.01). These results indicate that for cases in which the news in the revenue and earnings forecasts are on average bad, negative intra-industry information transfer to rival firms is delivered through revenue information.

Panels C and D of Table 5 show the results of regression equation (9) including rivals outside of the forecaster's four-digit SIC industry. This analysis provides more general evidence of negative information transfers from revenue forecasts. Again, within this framework, it is not sensible to apply the two-index pricing model. The results are qualitatively similar to those reported in Panel B. Overall, the findings in Panels C and D confirm the previous findings of negative information transfers to rival firms from management revenue forecasts, where the negative information transfers are more prevalent in the bad news forecasts. Thus, the evidence of negative information transfer to rival firms can be generalized beyond the forecaster's four-digit SIC industry.

Finally, we run regression equation (9) using the two-index pricing model with rival and non-rival firms that share the same four-digit primary SIC code. Panel E of Table 5 reports the results. The results are similar to those presented in Panel B. However, the negative information transfer from revenue forecasts to rival firms is marginally significant for both good and bad news forecasts.

In sum, we find positive intra-industry information transfers, which indicate industry commonalities, to non-rivals in the same industry. However, when the non-forecasters are rivals, we find a combination of positive and negative intra-industry information transfers from management forecasts; more prevalent negative information transfers from revenue forecasts and weaker positive information transfers conveyed by earnings forecasts. Such negative information transfer from "revenue" forecasts rather than from "earnings" forecasts is in line with the common belief that market share change is more likely to be reflected in revenue forecasts than in earnings forecasts. On the other hand, we find that a positive (negative) information transfer from earnings (revenue) forecasts is more evident in the rival firm sample when a forecasting firm issues bad news. We interpret these results to mean that when a firm releases both earnings

and revenue forecasts, and the news are on average bad, earnings forecasts are associated with industry commonalities and revenue forecasts are associated with a competitive shift in the information transfer to rival firms.[11]

[Insert Table 5 about here]

4.5. ANALYSES WITH ADDITIONAL INFORMATION PROVIDED IN THE MANAGEMENT FORECASTS

To check the robustness of the results reported in the earlier sections, we have read management forecast announcements shown in the *Wall Street Journal* articles to check if the announcements include any information that helps investors form expectations about changes in competitive positions in an industry. For example, when Dell Computer made a bleak management forecast in the July 15, 1993 edition of the *Wall Street Journal*, the following was written elsewhere in the article:

"The company, for instance, says it is continuing to pay for a serious stumble in notebook computers that has kept Dell out of the fastest-growing segment of the computer business. Chairman Michael S. Dell said his company doesn't expect to have a competitive notebook computer on the market until the end of the year." **(***Wall Street Journal,* July 15, 1993*)*

The aforementioned statement implies that Dell's poor management forecast is at least in part due to its poor competitive position, which may mean good news to its rivals.

An indicator variable is created and set to one if a management forecast announcement includes any information that helps investors form expectations about changes in competitive position in the industry and zero otherwise. This additional information dummy variable is

[11] We also conduct a test with firms that release earnings forecasts only and find that when the earnings forecast is bad news, information transfer to rival firms is negative and statistically insignificant in the single index model but negative and marginally significant in the two index model. This evidence is generally consistent with the results reported in Table 3.

interacted with both $UMEF*D_{RIVAL}$ and $UMRF*D_{RIVAL}$ in regression equation (9). We expect that negative information transfers to rival firms are stronger when additional information about industry competition is provided with the management forecasts. The untabulated results are consistent with this conjecture and are qualitatively similar regardless of the choice of pricing model.

5. Conclusions

In this paper, we examine the two different types of information transfers: positive information transfers stemming from industry commonalities and negative information transfers due to competitive shifts. Also, we study information transfers from management revenue forecasts as well as management earnings forecasts. Though prior literature (e.g., Foster, 1981; Baginski, 1987; Pownall and Waymire, 1989; Dietrich, 1989; Schipper, 1990) recognizes potential negative information transfers from competitive shifts, little research has focused on negative information transfers or separately investigated positive and negative information transfers. In this study, we attempt to distinguish between positive (due to industry commonalities) and negative (due to the competitive shifts) information transfers associated with management forecasts. Using the forecasting firm's rivals identified by *Hoover's* and 10-K reports, we document negative (positive) information transfers to rival (non-rival) firms. The results of this study help one understand how information transfers operate.

Through the analysis of intra-industry information transfers, we show positive intra-industry information transfers to non-rival firms and negative intra-industry information transfers to rivals. We also present evidence that is consistent with positive and negative intra-industry information transfers offsetting each other, and thereby leading to an overall finding of no information transfers even though they exist.

Our evidence from earnings forecasts shows that the effects of negative intra-industry information transfers from earnings forecasts are more pronounced when industry returns are controlled using the two-index model. Further, negative information transfers to rival firms are more evident when forecasting firms predict revenues and earnings together than when they predict earnings alone.

Examination of both revenue forecasts and earnings forecasts and partitioning management forecasts based on good and bad news forecasts reveal additional insights on information transfers. When firms forecast both earnings and revenues, and the overall information is viewed as good news for the forecasting firms, we find that negative intra-industry information transfers are marginal. In contrast, when firms forecast bad news, we find a combination of positive and negative intra-industry information transfers to rival firms with the same four-digit primary SIC code; positive information transfers (industry commonalities) appearing in earnings forecasts and negative transfers (competitive shifts) carried by revenue forecasts.

Through an analysis using all rivals identified by *Hoover's* and 10-K reports, regardless of their industry membership, we present more general evidence of negative information transfers to rival firms. We also provide evidence that negative information transfers are conveyed by revenue forecasts in the case of bad news forecasts, which is consistent with the results for rival firms in the intra-industry analysis.

According to the principles of modern portfolio theory, optimal investment decisions take into account the effect of buying or selling a firm on portfolio risk, and individual firms matter insofar as their characteristics combine to determine portfolio characteristics. Therefore, it is important for investors to estimate and evaluate the covariance of returns in a portfolio. By documenting different directions of return interdependencies among different firms, created from

management forecasts, this study sheds light on this issue. Externalities created by this voluntary disclosure should also be of interest to policymakers.

Our results should be interpreted with caution because of the low adjusted R^2. As seen from our results, information transfers account for less than two percent of the three-day abnormal returns of non-forecasters. Although the effects uncovered in our study are statistically significant and interesting, their economic importance might be relatively small. Therefore, investors may not be able to earn large profits by exploiting a rival's forecast information.

Future research could examine negative information transfers for required disclosures such as earnings and sales announcements. In addition, since management and analyst cash flow forecasts have become more prevalent, it would be interesting to investigate the information transfers from such forecasts.

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TABLE 1
Descriptive Statistics

Panel A: Forecasting firms

		Mean	Median	Std. Deviation	Maximum	Minimum
$MCAR^{FC}$						
	Full Sample	-0.0204	-0.0032	0.0807	0.2056	-0.3216
	Forecasting firms with positive CAR	0.0392	0.0288	0.0398	0.2056	0.0007
	Forecasting firms with negative CAR	-0.0724	-0.0584	0.0707	-0.0005	-0.3216
	Earnings forecast only	-0.0323	-0.0092	0.0795	0.1816	-0.3216
	Earnings and revenue forecasts	-0.0051	0.0050	0.0800	0.2056	-0.3083
$IMCAR^{FC}$						
	Full Sample	-0.0205	-0.0029	0.0802	0.2077	-0.3412
	Forecasting firms with positive CAR	0.0379	0.0280	0.0383	0.2077	0.0001
	Forecasting firms with negative CAR	-0.0731	-0.0599	0.0711	-0.0001	-0.3412
	Earnings forecast only	-0.0329	-0.0079	0.0786	0.1297	-0.3412
	Earnings and revenue forecasts	-0.0046	0.0029	0.0797	0.2077	-0.3057
UMEF						
	Full Sample	-0.1668	-0.0281	0.9394	3.0000	-10.0000
	Forecasting firms with positive CAR	-0.0029	0.0031	0.5350	3.0000	-1.9583
	Forecasting firms with negative CAR	-0.3096	-0.0958	1.1680	3.0000	-10.0000
	Earnings forecast only	-0.2495	-0.0574	1.1299	3.0000	-10.0000
	Earnings and revenue forecasts	-0.0597	-0.0250	0.5986	3.0000	-3.3333
UMRF						
	Full Sample	-0.0028	-0.0037	0.2862	2.3253	-0.6998
	Forecasting firms with positive CAR	0.0504	0.0090	0.3553	2.3253	-0.6998
	Forecasting firms with negative CAR	-0.0563	-0.0230	0.1406	0.1366	-0.6796
	Earnings forecast only	N/A	N/A	N/A	N/A	N/A
	Earnings and revenue forecasts	-0.0028	-0.0037	0.2862	2.3253	-0.6998

TABLE 1: Continued

Panel B: Non-forecasting firms in the same (four-digit SIC code) industry

		Mean	Median	Std. Deviation	Maximum	Minimum
$MCAR^{NF}$						
	Full Sample	-0.0011	-0.0022	0.0563	0.2593	-0.2211
	Forecasting firms with positive CAR	0.0008	-0.0013	0.0569	0.2593	-0.2122
	Forecasting firms with negative CAR	-0.0028	-0.0032	0.0557	0.2575	-0.2211
	Earnings forecast only	-0.0040	-0.0036	0.0521	0.2593	-0.2211
	Earnings and revenue forecasts	-0.0008	-0.0021	0.0612	0.2543	-0.2209
$IMCAR^{NF}$						
	Full Sample	-0.0015	-0.0030	0.0565	0.2643	-0.2195
	Forecasting firms with positive CAR	-0.0003	-0.0020	0.0580	0.2579	-0.2195
	Forecasting firms with negative CAR	-0.0027	-0.0045	0.0548	0.2643	-0.2188
	Earnings forecast only	-0.0029	-0.0040	0.0490	0.2591	-0.2195
	Earnings and revenue forecasts	-0.0022	-0.0043	0.0628	0.2643	-0.2160

$MCAR^{FC}$ ($MCAR^{NF}$) = Cumulative abnormal return (*CAR*) for forecasting (non-forecasting) firms, where *CA*R is computed for days {-2, +1} using the single-index pricing model.

$IMCAR^{FC}$ ($IMCAR^{NF}$) = Cumulative abnormal return (*CAR*) for forecasting (non-forecasting) firms, where *CAR* is computed for days {-2, +1} using the two-index pricing model.

UMEF (*UMRF*) = Unexpected management earnings (revenue) forecast, measured by $UMEF_{i,t} = \left(MEF_{i,t} - AEF_{i,t}\right) \Big/ \left|AEF_{i,t}\right|$ and $UMRF_{i,t} = \left(MRF_{i,t} - ARF_{i,t}\right) \Big/ \left|ARF_{i,t}\right|$, where *MEF* (*MRF*) is the management earnings (revenue) forecast and *AEF* (*ARF*) is the analyst earnings (revenue) forecast.

TABLE 2
Spearman Correlations

Single-index Pricing Model

Panel A: Full sample of non-forecasters that share the same four-digit SIC codes with forecasting firms

	$MCAR^{FC}$	$MCAR^{NF}$	*UMEF*	*UMRF*
$MCAR^{FC}$	1.0000			
$MCAR^{NF}$	0.0674***	1.0000		
UMEF	0.4283***	0.0340***	1.0000	
UMRF	0.3976***	0.0236	0.5396***	1.0000

Panel B: Rival firms identified through *Hoover's* and SEC 10-Ks that share the same four-digit SIC codes with forecasting firms

	$MCAR^{FC}$	$MCAR^{NF}$	*UMEF*	*UMRF*
$MCAR^{FC}$	1.0000			
$MCAR^{NF}$	0.1139**	1.0000		
UMEF	0.2910***	0.0132	1.0000	
UMRF	0.1759**	-0.1822**	0.4328***	1.0000

Panel C: Non-rival firms

	$MCAR^{FC}$	$MCAR^{NF}$	*UMEF*	*UMRF*
$MCAR^{FC}$	1.0000			
$MCAR^{NF}$	0.0583***	1.0000		
UMEF	0.4528***	0.0450***	1.0000	
UMRF	0.3684***	0.0598**	0.6031***	1.0000

Two-index Pricing Model

	$IMCAR^{FC}$	$IMCAR^{NF}$	*UMEF*	*UMRF*
$IMCAR^{FC}$	1.0000			
$IMCAR^{NF}$	0.0409***	1.0000		
UMEF	0.3625***	0.0152	1.0000	
UMRF	0.3674***	0.0271	0.5396***	1.0000

	$IMCAR^{FC}$	$IMCAR^{NF}$	*UMEF*	*UMRF*
$IMCAR^{FC}$	1.0000			
$IMCAR^{NF}$	0.0389	1.0000		
UMEF	0.2786***	0.0478	1.0000	
UMRF	0.1662*	-0.1618*	0.4328***	1.0000

	$IMCAR^{FC}$	$IMCAR^{NF}$	*UMEF*	*UMRF*
$IMCAR^{FC}$	1.0000			
$IMCAR^{NF}$	0.0873***	1.0000		
UMEF	0.4702***	0.0491***	1.0000	
UMRF	0.4225***	0.0817***	0.6031***	1.0000

TABLE 2: continued

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tail tests.

$MCAR^{FC}$ ($MCAR^{NF}$) = Cumulative abnormal return (*CAR*) for forecasting (non-forecasting) firms, where *CAR* is computed for days {-2, +1} using the single-index pricing model.

$IMCAR^{FC}$ ($IMCAR^{NF}$) = Cumulative abnormal return (*CAR*) for forecasting (non-forecasting) firms, where *CAR* is computed for days {-2, +1} using the two-index pricing model.

UMEF (*UMRF*) = Unexpected management earnings (revenue) forecast, measured by $UMEF_{i,t} = \left(MEF_{i,t} - AEF_{i,t}\right) \Big/ \left|AEF_{i,t}\right|$ and $UMRF_{i,t} = \left(MRF_{i,t} - ARF_{i,t}\right) \Big/ \left|ARF_{i,t}\right|$, where *MEF (MRF*) is the management earnings (revenue) forecast and *AEF (ARF)* is the analyst earnings (revenue) forecast.

Rivals are defined to be all non-forecasting firms that are listed as rivals of the forecasting firm in either *Hoover's* or the forecasting firm's 10-K report. Non-rivals of the forecaster are those that share the same four-digit SIC code as the forecaster but are not listed as rivals in *Hoover's* or the 10-K report.

TABLE 3
Information Transfers from Management Earnings Forecasts:
Non-Forecasting Firms Matched against Sample Forecasting Firms that Issue Earnings Forecasts

$$MCAR_{i,t}^{NF} \ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 UMEF_{i,t} + \varepsilon_{i,t}$$

$$MCAR_{i,t}^{NF} \ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 D_{RIVAL} + \alpha_2 UMEF_{i,t} + \alpha_3 UMEF_{i,t} * D_{RIVAL} + \varepsilon_{i,t}$$

Panel A: Intra-industry information transfer associated with unexpected management earnings forecasts – Base model

	Single-index Pricing Model			Two-index Pricing Model		
N	α_0	α_1	Adj R^2	α_0	α_1	Adj R^2
Non-forecasting firms in the same four-digit SIC industry						
5,041	-0.0010	0.0050	0.0007	-0.0016	0.0023	-0.0000
	(-1.31)	(2.19) **		(-2.12) **	(0.99)	

Panel B: Pooled sample including rivals identified through *Hoover's* and SEC 10-Ks: Using the single-index model

N	α_0	α_1	α_2	α_3	Adj R^2	$\alpha_2 + \alpha_3$
1. Pooled sample including rivals identified through Hoover's and SEC 10-Ks that share the same four-digit SIC codes with forecasting firms						
5,041	-0.0026	-0.0004	0.0017	-0.0042		-0.0025
	(-3.79) ***	(-0.20)	(2.32) **	(-1.70)	0.0006	(-1.05)
2. Pooled sample including rivals identified through Hoover's and SEC 10-Ks that share the same two-digit SIC codes with forecasting firms						
5,433	-0.0026	-0.0013	0.0017	-0.0034		-0.0017
	(-3.84) ***	(0.72)	(2.35) **	(-1.86) *	0.0008	(-1.01)
3. Pooled sample including all rivals identified through Hoover's and SEC 10-Ks						
6,466	-0.0026	0.0003	0.0017	-0.0003		0.0014
	(-3.93) ***	(0.22)	(2.41) **	(-0.25)	0.0006	(1.12)

TABLE 3: continued

Panel C: Pooled sample including rivals identified through *Hoover's* and SEC 10-Ks that share the same four-digit SIC codes with forecasting firms: Using the two-index model

N	α_0		α_1	α_2		α_3		Adj R^2	$\alpha_2 + \alpha_3$	
5,041	-0.0016		-0.0002	0.0030		-0.0110			-0.0080	
	(-1.70)	*	(-0.07)	(2.37)	**	(-2.95)	***	0.0014	(-2.28)	**

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tail tests. N is the number of non-forecasting firm observations. t-values are in parentheses.

$MCAR^{NF}$ ($IMCAR^{NF}$) = Cumulative abnormal return (*CAR*) for non-forecasting firms, where *CAR* is computed for days {-2, +1} using the single-index (two-index) pricing model.

UMEF = Unexpected management earnings forecast, measured by $UMEF_{i,t} = \left(MEF_{i,t} - AEF_{i,t}\right) \Big/ \left|AEF_{i,t}\right|$, where *MEF* is the management earnings forecast and *AEF* is the analyst earnings forecast.

D_{RIVAL} = an indicator variable that takes on a value of 1 if the non-forecasting firm is defined as a rival identified through *Hoover's* or the forecasting firm's 10-K, 0 otherwise.

In Panel C, we do not apply the two-index pricing model for the analyses using rivals outside of the forecasters' four-digit SIC industries because it is not sensible to control for industry returns in those samples.

TABLE 4
Information Transfers from Management Earnings Forecasts:
Non-Forecasting Firms Matched against Sample Forecasting Firms that Issue Both Earnings and Revenue Forecasts

$$MCAR_{i,t}^{NF} \ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 UMEF_{i,t} + \varepsilon_{i,t}$$

$$MCAR_{i,t}^{NF} \ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 D_{RIVAL} + \alpha_2 UMEF_{i,t} + \alpha_3 UMEF_{i,t} * D_{RIVAL} + \varepsilon_{i,t}$$

Panel A: Intra-industry information transfer associated with unexpected management earnings forecasts – Base model

	Single-index Pricing Model			Two-index Pricing Model		
N	α_0	α_1	Adj R^2	α_0	α_1	Adj R^2
Non-forecasting firms in the same four-digit SIC industry						
1,732	-0.0004	0.0037	0.0021	-0.0033	0.0048	0.0013
	(-0.25)	(2.26) **		(-2.29) **	(1.89) *	

Panel B: Pooled sample including rivals identified through *Hoover's* and SEC 10-Ks: Using the single-index model

N	α_0	α_1	α_2	α_3	Adj R^2	$\alpha_2 + \alpha_3$
1. Pooled sample including rivals identified through Hoover's and SEC 10-Ks that share the same four-digit SIC codes with forecasting firms						
1,732	-0.0032	0.0002	0.0055	-0.0097		-0.0042
	(-2.99) ***	(0.07)	(2.58) ***	(-2.92) ***	0.0038	(-1.66) *
2. Pooled sample including rivals identified through Hoover's and SEC 10-Ks that share the same two-digit SIC codes with forecasting firms						
1,884	-0.0032	0.0005	0.0055	-0.0076		-0.0021
	(-3.01) ***	(0.19)	(2.60) ***	(-2.44) **	0.0027	(-0.93)
3. Pooled sample including all rivals identified through Hoover's and SEC 10-Ks						
2,290	-0.0032	0.0022	0.0055	-0.0048		0.0007
	(-3.11) ***	(1.24)	(2.68) ***	(-1.85) *	0.0034	(0.40)

TABLE 4: continued

Panel C: Pooled sample including rivals identified through *Hoover's* and SEC 10-Ks that share the same four-digit SIC codes with forecasting firms: Using the two-index model

N	α_0		α_1	α_2		α_3		Adj R^2	$\alpha_2 + \alpha_3$	
1,732	-0.0051		0.0024	0.0101		-0.0169			-0.0068	
	(-3.26)	***	(0.49)	(3.29)	***	(-3.38)	***	0.0059	(-1.73)	*

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tail tests. N is the number of non-forecasting firm observations. t-values are in parentheses.

$MCAR^{NF}$ ($IMCAR^{NF}$) = Cumulative abnormal return (*CAR*) for non-forecasting firms, where *CAR* is computed for days {-2, +1} using the single-index (two-index) pricing model.

UMEF = Unexpected management earnings forecast, measured by $UMEF_{i,t} = \left(MEF_{i,t} - AEF_{i,t}\right) \Big/ \left|AEF_{i,t}\right|$, where *MEF* is the management earnings forecast and *AEF* is the analyst earnings forecast.

D_{RIVAL} = an indicator variable that takes on a value of 1 if the non-forecasting firm is defined as a rival identified through *Hoover's* or the forecasting firm's 10-K, 0 otherwise.

In Panel C, we do not apply the two-index pricing model for the analyses using rivals outside of the forecasters' four-digit SIC industries because it is not sensible to control for industry returns in those samples.

TABLE 5
Information Transfers from Management Earnings and Revenue Forecasts:
Non-Forecasting Firms Matched against Sample Forecasting Firms that Issue both Earnings and Revenue Forecasts

$$MCAR_{i,t}^{NF}\ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 UMEF_{i,t} + \alpha_2 UMRF_{i,t} + \varepsilon_{i,t}$$

$$MCAR_{i,t}^{NF}\ (or\ IMCAR_{i,t}^{NF}) = \alpha_0 + \alpha_1 D_{RIVAL} + \alpha_2 UMEF_{i,t} + \alpha_3 UMEF_{it} * D_{RIVAL} + \alpha_4 UMRF_{i,t} + \alpha_5 UMRF_{it} * D_{RIVAL} + \varepsilon_{i,t}$$

Panel A: Intra-industry information transfer associated with unexpected management earnings and revenue forecasts – Base model

		Single-index Pricing Model				Two-index Pricing Model			
	N	α_0	α_1	α_2	Adj R^2	α_0	α_1	α_2	Adj R^2
Non-forecasting firms in the same four-digit SIC industry									
	1,732	-0.0007	0.0024	0.0023	-0.0007	-0.0012	0.0002	0.0037	-0.0008
		(-0.49)	(0.55)	(0.32)		(-0.83)	(0.03)	(0.52)	

Panel B: Pooled sample including rivals identified through *Hoover's* and SEC 10-Ks that share the same four-digit SIC codes with forecasting firms: Using the single-index pricing model

	N	α_0		α_1		α_2		α_3	α_4	α_5		Adj R^2	$\alpha_2 + \alpha_3$		$\alpha_4 + \alpha_5$	
1. Full sample																
	1,732	0.0032		-0.0153		0.0050		-0.0011	0.0041	-0.0854			0.0039		-0.0813	
		(2.55)	**	(-3.88)	***	(3.31)	***	(-0.34)	(0.62)	(-2.04)	**	0.0116	(1.33)		(-1.97)	**
2. Sub-sample with positive forecasting firm CAR																
	899	0.0047		-0.0087		0.0147		-0.0133	-0.0054	-0.0455			0.0014		-0.0509	
		(2.92)	***	(-1.62)	*	(2.88)	***	(-0.80)	(-0.80)	(-0.98)		0.0066	(0.10)		(-1.11)	
3. Sub-sample with negative forecasting firm CAR																
	833	0.0008		-0.0254		0.0033		0.0034	0.0049	-0.2116			0.0067		-0.2067	
		(0.37)	***	(-4.00)	***	(1.98)	**	(0.91)	(0.45)	(-2.04)	**	0.0169	(2.01)	**	(-2.01)	**

TABLE 5: continued

Panel C: Pooled sample including rivals identified through *Hoover's* and SEC 10-Ks that share the same two-digit SIC codes with forecasting firms: Using the single-index pricing model

N	α_0		α_1		α_2		α_3	α_4	α_5		Adj R^2	$\alpha_2 + \alpha_3$		$\alpha_4 + \alpha_5$	
1. Full sample															
1,884	0.0032		-0.0145		0.0050		-0.0013	0.0041	-0.0956			0.0037		-0.0915	
	(2.60)	***	(-4.85)	***	(3.38)	**	(-0.44)	(0.63)	(-2.63)	***	0.0151	(1.47)		(-2.56)	**
2. Sub-sample with positive forecasting firm CAR															
994	0.0047		-0.0100		0.0147		-0.0117	-0.0054	-0.0644			0.0030		-0.0698	
	(3.02)	***	(-2.56)	***	(2.99)	***	(-0.90)	(-0.62)	(-1.53)		0.0110	(0.24)		(-1.70)	*
3. Sub-sample with negative forecasting firm CAR															
890	0.0008		-0.0218		0.0033		0.0019	0.0049	-0.1685			0.0052		-0.1636	
	(0.37)		(-4.32)	***	(1.99)	**	(0.57)	(0.45)	(-2.22)	**	0.0188	(1.82)	*	(-2.17)	**

Panel D: Pooled sample including all rivals identified through *Hoover's* and SEC 10-Ks: Using the single-index pricing model

N	α_0		α_1		α_2		α_3	α_4	α_5		Adj R^2	$\alpha_2 + \alpha_3$		$\alpha_4 + \alpha_5$	
1. Full sample															
2,290	0.0032		-0.0054		0.0050		-0.0023	0.0041	-0.0620			0.0027		-0.0579	
	(2.65)	***	(-2.53)	**	(3.45)	***	(-1.01)	(0.65)	(-2.54)	**	0.0071	(1.45)		(-2.45)	**
2. Sub-sample with positive forecasting firm CAR															
1,166	0.0047		0.0016		0.0147		-0.0019	-0.0054	-0.0284			0.0128		-0.0338	
	(3.02)	***	(0.55)		(2.98)	***	(-0.18)	(-0.62)	(-0.88)		0.0052	(1.38)		(-1.08)	
3. Sub-sample with negative forecasting firm CAR															
1,124	0.0008		-0.0114		0.0033		0.0006	0.0049	-0.1254			0.0039		-0.1205	
	(0.39)	***	(-3.49)	***	(2.10)	**	(0.26)	(0.48)	(-3.15)	***	0.0140	(2.08)	**	(-3.13)	***

TABLE 5: continued

Panel E: Pooled sample including rivals identified through *Hoover's* and SEC 10-Ks that share the same four-digit SIC codes with forecasting firms: Using the two-index pricing model

N	α_0		α_1	α_2		α_3	α_4	α_5		Adj R^2	$\alpha_2 + \alpha_3$	$\alpha_4 + \alpha_5$	
1. Full sample													
1,732	0.0018		-0.0058	0.0081		-0.0015	0.0111	-0.1192			0.0066	-0.1080	
	(1.41)		(-1.40)	(2.48)	**	(-0.16)	(1.64)	(-2.32)	**	0.0074	(0.73)	(-2.12)	**
2. Sub-sample with positive forecasting firm CAR													
899	0.0066		-0.0080	0.0106		0.0145	-0.0062	-0.1078			0.0251	-0.1139	
	(3.95)	***	(1.31)	(1.98)	**	(0.80)	(-0.65)	(-1.68)	*	0.0035	(1.44)	(-1.79)	*
3. Sub-sample with negative forecasting firm CAR													
833	-0.0066		0.0089	-0.0028		0.0077	0.0193	-0.1886			0.0049	-0.1693	
	(-3.18)	***	(1.52)	(-0.69)		(0.72)	(1.94)	* (-2.09)	**	0.0033	(0.49)	(-1.89)	*

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tail tests. N is the number of non-forecasting firm observations. t-values are in parentheses.

$MCAR^{NF}$ ($IMCAR^{NF}$) = Cumulative abnormal return (*CAR*) for non-forecasting firms, where *CAR* is computed for days {-2, +1} using the single-index (two-index) pricing model.

UMEF (UMRF) = Unexpected management earnings (revenue) forecast, measured by $UMEF_{i,t} = \left(MEF_{i,t} - AEF_{i,t}\right) \Big/ \left|AEF_{i,t}\right|$ and $UMRF_{i,t} = \left(MRF_{i,t} - ARF_{i,t}\right) \Big/ \left|ARF_{i,t}\right|$, where *MEF (MRF)* is the management earnings (revenue) forecast and *AEF (ARF)* is the analyst earnings (revenue) forecast.

D_{RIVAL} = an indicator variable that takes on a value of 1 if the non-forecasting firm is defined as a rival identified through *Hoover's* or the forecasting firm's 10-K, 0 otherwise.

Sample observations are classified into two categories based on the sign of forecasting firms' *CAR*s, where *CAR* is cumulative abnormal returns computed for days {-2, +1}. We do not apply the two-index pricing model for the analyses using rivals outside of the forecasters' four-digit SIC industries because it is not sensible to control for industry returns in those samples.