# Investor Sentiment, Expectations, and Corporate Disclosure*

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**Abstract**

This paper investigates how firms react strategically to investor sentiment via their disclosure policies in an attempt to influence the sentiment-induced biases in expectations. Proxying for sentiment using the Michigan Consumer Confidence Index, we first show that analysts' estimates of future earnings are relatively more optimistic when the consumer confidence index is high, and that this effect is concentrated amongst long-horizon earnings estimates. Analyzing the reaction of management disclosure policy to sentiment, we then show that during periods of low sentiment managers issue more long-horizon earnings forecasts, and that these forecasts tend to walk up analyst estimates. In contrast, during periods of high sentiment, managers reduce the number of long-horizon forecasts. We propose that, over the *long horizon*, the association between firm disclosure policies and sentiment reflects firms' desire to maintain optimistic earnings valuations. In contrast, over the *short horizon*, when imminent earnings announcements serve as a disciplining mechanism, we provide evidence showing that managers' forecasts guide sentiment-driven analyst estimates towards realized earnings.

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## 1. Introduction

A central feature of the literature in behavioral finance is the existence of investor sentiment – a phenomenon which biases expectations of future firm performance. This literature has studied how corporate policies respond to investor sentiment, and its possible influence on market prices (see Baker, Ruback, and Wurgler 2004 for a recent survey). In this paper, we investigate how firms react strategically to sentiment via their disclosure policies in an attempt to *influence* expectations.

We hypothesize that when investor sentiment is high and expectations of future earnings are relatively more optimistic, managers will reduce voluntary disclosure and remain silent in an attempt to maintain these more optimistic valuations. In contrast, when consumer confidence is low and expectations are less optimistic, managers will increase voluntary disclosure to the market, attempting to adjust expectations upwards. We therefore hypothesize that disclosure policy will adjust in response to sentiment with the objective of sustaining optimistic expectations of future earnings.

Importantly, we expect the adjustment in disclosure policy to be particularly prominent amongst management disclosures regarding long-horizon earnings. Over shorter horizons, the incentive to adjust disclosure policy to maintain market optimism is less clear because of the disciplining effect of imminent earnings announcements. Indeed, a large number of studies have discussed the incentives of managers to walk analyst estimates *down* as the earnings announcement date approaches to avoid reporting negative earnings surprises (see e.g. Skinner 1994, Soffer, Thiagarajan and Walther 2000, Matsumoto 2002 and Richardson, Teoh and Wysocki 2004).

Throughout the analysis, our main measure of investor sentiment is the Michigan Consumer Confidence Index. This monthly index is calculated by the Michigan Consumer Research Center and is based on survey responses to queries about current and expected financial and economic well-being. As a first step in testing our hypotheses, we provide evidence supporting the use of the Michigan Consumer Confidence Index as a proxy for investor sentiment in our main analysis involving firm disclosure. Specifically, we document a positive association between the confidence index and the difference between analyst earnings estimates and realized earnings. Further, stratifying our sample based on the horizon of analyst earnings estimates, we show that the positive relation between the consumer confidence index and the error in analyst earnings estimates is concentrated amongst long-horizon earnings estimates. Thus, when the consumer confidence index rises, the degree of over-optimism in analyst earnings estimates increases, particularly over longer horizons.[1,2]

We next analyze the relation between corporate disclosure and investor sentiment, as proxied by the consumer confidence index. To measure corporate disclosure we use management earnings forecasts. These forecasts are voluntary and their issuance is not subject to regulation. We find that during periods of low sentiment, when analysts are less optimistic, managers increase the frequency of *long-horizon* forecasts. Further, the increased forecasts during low sentiment periods tend to walk-up analyst estimates in that they are, on average, greater than prevailing consensus analyst estimates of future earnings. In contrast, during periods of high sentiment, managers reduce the frequency of

[1] Analyst forecasts of future earnings are consistently referred to in our paper as analyst estimates, to distinguish them from management earnings forecasts.

[2] Qiu and Welch (2005) validate the Consumer Confidence index as a measure of sentiment by showing that it is correlated with the UBS/Gallup survey of investor's expectation of future market performance. See Section 2 for further discussion.

long-horizon forecasts, in an apparent attempt to maintain optimistic analyst earnings estimates.

Over the short horizon, when earnings announcements are imminent, and hence serve as a disciplining mechanism, managers' forecasts appear to guide sentiment-driven analyst estimates towards realized earnings. We find that during periods of high sentiment, firms increase the frequency of short-horizon *walk-down* forecasts, while during periods of low sentiment, firms increase the frequency of short-horizon *walk-up* forecasts. In robustness tests we repeat the analysis using an alternate measure of investor sentiment proposed by Baker and Wurgler (2006, 2007).[3] We find that the association of investor sentiment with both the optimism in analyst estimates and firm disclosure policies are robust to the use of this alternate proxy.

The collective evidence is thus consistent with firms strategically responding to sentiment via their disclosure choices. Over the long horizon, the association between firm disclosure policies and sentiment reflects firms' desire to maintain optimistic earnings valuations.[4] Over the short horizon, when imminent earnings announcements serve as a disciplining device, the association between firm disclosure policies and sentiment reflects firms' desire to guide analyst earnings estimates towards realized earnings.

The rest of the paper is organized as follows. Section 2 discusses related literature. Sections 3 and 4 discuss our empirical proxies and research design respectively. In Section 5, we present our main results on the association between sentiment and the optimism in analyst estimates. Section 6 presents the results on the

[3] We thank Malcolm Baker and Jeffrey Wurgler for making their investor sentiment data available to us.

[4] Clearly, the strategic disclosure of an individual firm should not be viewed as directly aimed at influencing the consumer confidence index itself, but rather at influencing expectations of the firm's own future performance.

association between sentiment and management disclosure. Section 7 presents further robustness analysis and Section 8 concludes.

## 2. Related Literature

This paper investigates how managers react strategically to sentiment via their disclosure policies in an attempt to influence the sentiment-induced bias in expectations. As such, it is related to literature that examines the link between investor sentiment and corporate policies such as those involving acquisitions, financing and investments (see, for example, Shleifer and Vishny 2003, Baker and Wurgler 2000 and Baker, Stein and Wurgler 2003).

Our study is also related to the large body of research investigating the role of corporate disclosure and its attendant reduction of information asymmetries between managers and investors (see for example, Lang and Lundholm 1996, Healy and Palepu 2001 and more recently, Ang and Cheng 2007). Strategic disclosure by managers is investigated in Kothari, Shu and Wysocki (2006) who argue that managers have incentives to disclose good news early and delay disclosure of bad news. Miller (2002) documents that managers strategically vary the horizon of their disclosures depending on their private information about future earnings changes. Previous work has also shown that managers are averse to negative surprises at earnings announcements, walking down analyst estimates to beatable targets (see, e.g., Skinner 1994 and Matsumoto 2002). Our results are linked to these findings in that management's response to sentiment depends on the disclosure horizon, with firms walking up long horizon forecasts during periods of low sentiment, and walking down short horizon forecasts during periods of high sentiment.

While clearly not purporting to exhibit a violation of market efficiency, our work is also related to numerous previous studies in behavioral finance. These studies employ measures of sentiment to capture the degree of investor optimism, examining the relation between sentiment and future market returns, small-firm return-spreads and return spreads across stocks with varying institutional ownership (see, for example, Lee, Shleifer and Taylor 1991, Baker and Wurgler 2006, Qui and Welch 2005, Lemmon and Portniaguina 2006, and Fisher and Statmen 2002).

Our main proxy for investor sentiment is the Michigan Consumer Confidence Index. Qiu and Welch (2005) examine a number of measures of investor sentiment, including the Michigan Consumer Confidence Index, and relate them to a measure of investor optimism published by UBS/Gallup. Supporting the use of the Michigan Consumer Confidence Index as a proxy for sentiment, they find that over the sample period 1999 – 2002, it correlates well with investors' optimism of future market-wide performance as measured by responses rating future market performance on a scale of 1 to 5.

Finally, the notion that analyst errors are correlated positively with investor sentiment examined in our paper is consistent with La Porta (1996) who documents a negative association between analysts' long-term growth estimates and future risk-adjusted returns. Consistent with equity overvaluation, La Porta finds that high analyst expectations of future earnings growth are associated with poor future equity returns. These results are further corroborated in Dechow and Sloan (1997).

## 3. Data Sources and Variable Definitions

This section describes our measures of sentiment, analyst estimates, and corporate disclosure.

***Sentiment***

Our proxy for investor sentiment is based on the monthly consumer confidence index constructed by the Michigan Consumer Research Center. This measure is based on a survey that grades respondents' perceptions of financial well-being, state of the economy and general consumer spending on a scale of 1 to 5 and generates a monthly score based on a linear combination of the responses. We construct a quarterly measure of sentiment, *SENT*, by averaging the consumer confidence index across the three months in every quarter.[5]

***Analyst Estimates***

Analyst estimates of future earnings per share are taken from IBES over the 76 quarters between 01/01/1986 and 12/31/2004.[6] For each firm and quarter, we construct a measure of the median analyst earnings estimate error in IBES. Every analyst estimate issued in a quarter is matched to the corresponding actual earnings declared by the firm. The error in each analyst's estimate is then defined as the difference between the earnings estimate and the corresponding actual earnings scaled by the absolute value of the actual earnings. Thus, a positive analyst error corresponds to an optimistic earnings estimate.[7] For each firm and each quarter we then compute the median error across all analyst

[5] For ease of presentation, the published confidence index is divided by 100.

[6] We exclude analyst estimates prior to 1986, since the coverage in IBES during this period is limited. Since our focus is on analyst estimates of future earnings, we also exclude estimates of earnings that are issued after the end of the estimate period end date.

[7] We exclude firms and estimate periods with actual earnings exactly equal to zero. The resultant reduction in sample size is very small (less than 0.6% of the original sample).

estimates issued for that firm in that quarter.[8] This quarterly, firm-specific measure of analyst error is denoted *AE*.

***Disclosure***

We analyze voluntary disclosure using data on management forecasts of future earnings available on the *First Call* database. Such forecasts represent a completely voluntary form of disclosure to the market in that there are no regulations governing their issuance or structure. Prior studies – e.g., Ajinkya and Gift (1984), Waymire (1984) and Baginski, Conrad and Hassell (1993) – have documented the role of management forecasts in conveying information, reducing uncertainty and inducing homogeneity in market expectations about future earnings.[9]

For every quarter we calculate the number of management earnings forecasts issued by each firm. This quarterly forecast frequency measure is denoted *FREQ*. Our sample period begins in 1996, due to the widespread availability of management forecasts on the First Call database starting from that year, and extends over 36 quarters to the end of 2004.

During any given year, managers issue forecasts for quarterly as well as annual earnings. Since our objective is to measure overall disclosure in any given quarter, both quarterly and annual management EPS forecasts are included in the sample. Finally, forecasts issued after the end of the fiscal period are excluded from our sample, since they generally tend to be earnings warnings and are more likely to be motivated by a desire to reduce litigation risk.

[8] All regressions are repeated using mean, rather than median, firm-quarter analyst estimate errors; using the mean estimate errors only strengthens the main conclusions we draw from our tests.

[9] Also see Pownall, Wasley and Waymire (1993), Jennings (1987) and Coller and Yohn (1997). Recent evidence suggests that, although the market reacts to the information in management forecasts, it under-reacts, particularly to forecasts conveying good news (see Ng, Tuna and Verdi 2007).

## 4. Research Design

### 4.1 Sentiment and Analyst Earnings Estimate Errors

As a first step in testing the relation between sentiment and firm disclosure we verify the use of the Michigan Consumer Confidence Index as a proxy for investor sentiment by relating it to errors in earnings estimates of financial analysts. The relation between consumer confidence and the degree of optimism embedded in analyst earnings estimates is measured using the following linear regression:

$$AE_{it} = \alpha + \beta * SENT_{t-1} + \gamma * X_{t-1} + \delta * Z_{i\,t-1} + \varepsilon_{it} . \quad \text{(A)}$$

The dependent variable, $AE_{it}$, is the median analyst earnings estimate error for firm $i$ in quarter $t$, and $SENT_{t-1}$ is the average consumer confidence index during quarter $t$-$1$.[10] $X_{t-1,}$ represents a vector of quarterly control variables and $Z_{it-1}$ represent a vector of firm-quarter control variables to be described below. All control variables are lagged by one quarter to avoid spurious correlations in measuring the abnormal earnings estimate. Regression (A) is estimated over the 76 quarters in our sample between 1986 and 2004, which comprises 139,379 firm-quarters and 7,810 distinct firms. Due to the panel nature of our data, all regressions are run employing firm fixed-effects with standard errors calculated using the Newey-West estimator. Section 7 provides robustness tests employing alternate specifications.

We include a number of variables to control for systematic effects of macroeconomic factors on analyst earnings estimates and estimate errors. For each quarter $t$, we include as controls the seasonally-adjusted percentage change in gross domestic product in quarter $t$-$1$ (*GDPCHG)*, gross returns on the value-weighted market

[10] Because end-of-quarter increases in firm earnings may be correlated with end-of-quarter increases in sentiment, the errors in analyst estimates issued at the beginning of a quarter may be negatively related to the average quarterly sentiment, $SENT_t$. To avoid this spurious correlation, we use lagged average quarterly sentiment, $SENT_{t-1}$, as a dependant variable in our specifications.

index over the twelve months prior to the beginning of quarter *t* (*PASTMARKET*), and the volatility of gross market returns during the twelve months prior to the beginning of quarter *t* (*MARKETVOL*). All return data is taken from CRSP, while data on GDP growth is taken from the Bureau of Labor Statistics.

In addition, we employ a number of firm-specific controls in our regressions which potentially are related to analyst errors – either because of behavioral biases or due to their affect on analyst incentives when issuing earnings estimates. These include firms' market value of equity (*SIZE*), their book-to-market ratio (*BTM*), the gross market return of each firm over the past twelve months (*RET*), as well as each firm's standard deviation of monthly returns over the past twelve months (*RETVOL*). We also include as control variables lagged capital expenditures as a percentage of assets (*CAPEX*), lagged return on assets (*ROA*) and a binary indicator variable for firms reporting losses in any of the previous four quarters (*LOSS*). In addition, we include an indicator variable (*ISSUE*) which equals one in quarters during which firms issued equity since these periods potentially affect analyst earnings estimates. For consistency with previous literature, we include in some specifications the number of analysts following each firm (*ANALYSTN*) and firms' institutional ownership (*INSTOWN*). Analyst following for a firm in a given quarter is defined as the number of analysts that have one-quarter-ahead earnings estimates outstanding for that quarter's earnings, while institutional ownership is taken from Thomson Financial's *13f* filings database. Finally, we include as controls a linear time-trend variable (*TREND*) as well as an indicator variable (*REG_FD)* that is set equal

to one for all quarters after and including the fourth quarter of 2000, when Regulation FD was introduced.[11]

### 4.2 Sentiment and Firm Disclosure Policy

In our main analysis investigating the relation between corporate disclosure and sentiment we examine the association between firms' earnings forecasts and the consumer confidence index using the following base-line specification:

$$FREQ_{it} = \alpha + \beta * SENT_{t-1} + \gamma * X_{t-1} + \delta * Z_{it-1} + \varepsilon_{it} . \quad \text{(B)}$$

The dependent variable, $FREQ_{it}$, is the firm quarterly earnings forecast frequency – that is, the number of management forecasts issued by firm *i* in quarter *t*. As in Regression (A), $SENT_{t-1}$ is the average consumer confidence index during quarter *t-1*. Since managerial earnings forecasts are potentially affected by similar factors which affect analyst earnings estimates, all control variables discussed above are included in Regression (B) as well. This has the added advantage of maintaining consistency between the two specifications. Regression (B) is estimated over the 36 quarters in our sample between 1996 and 2004, which comprises 59,344 firm-quarters and 2,978 distinct firms that have issued a management forecast at least once over the sample period.

## 5. Sentiment and Analyst Errors

### 5.1 Descriptive statistics

Table 1 presents descriptive statistics for the analyst-estimate sample. Consistent with previous literature, analyst estimates are, on average, optimistic: mean analyst error scaled by absolute value of actual earnings per share is 0.38. The distribution of analyst

[11] Regulation FD became effective in the last quarter of 2000 and forbade any private release of information by managers to selected members of the investment community such as financial analysts. It has been argued that this regulation has affected both the accuracy of analyst estimates and the frequency of public management forecasts.

errors is clearly skewed, with the median scaled analyst error much lower, at 0.04. The mean firm size in the analyst sample is $2.2 billion, with the median at $406 million. The mean book-to-market ratio is 0.55, while mean ROA is 1%. Twenty-one percent of the sample firm-quarters reports losses, and 2.3% have equity issues. The mean institutional ownership of the firms in this sample is 47%.

Table 2, Panel A presents the correlations between the macroeconomic factors and other quarterly variables over the 76 quarters in the sample. As would be expected, the consumer confidence index, *SENT*, is significantly positively associated with lagged GDP change and past market returns. In addition, it appears that the index has, in general, been increasing over the time period, as its positive correlation with *TREND* indicates. Panel B of Table 2 reports the correlations between the firm-quarter control variables used in the analysis.

**5.2 Analyst errors: regression analysis**

Table 3 presents the results of estimating regression (A) under various specifications in which we test the association between median analyst earnings-estimate error, *AE,* and our measure of sentiment, *SENT.* In all regressions, standard errors are calculated controlling for heteroskedasticity and autocorrelation in firm-level errors using the Newey-West estimator. As a robustness test, Section 7 repeats the analysis using a specification in first-differences as well as a specification without firm-fixed effects.

As can be seen in Table 3, the coefficient on *SENT* is significantly positive, indicating that when consumer confidence is high, analyst errors increase, so that analyst earnings estimates become overly optimistic. The statistical significance of the coefficient on *SENT* is robust to the addition of further firm-specific controls in Models 2 and 3. Focusing on Model 3, the coefficient on *SENT* implies that a standard deviation

increase in investor sentiment is associated with a 2.83 percentage point increase in analyst error. This effect is economically significant, as it represents 7.5 percent of the mean analyst error of 37.86%.

The results in Table 3 thus demonstrate a positive association between consumer confidence and the optimism in analyst earnings estimates. To the extent that the optimism in analyst earnings estimates is reflective of the general sentiment prevailing amongst market investors during periods of high consumer confidence, the evidence provides support for using consumer confidence as a proxy for investor sentiment in our main analysis involving firm disclosure.

Alternatively, it is possible that analyst incentives change during periods of high consumer confidence, leading them to issue more optimistic estimates. Nevertheless, to the extent that analyst earnings estimates affect expectations among other market participants, firms would still have incentives to react to consumer confidence in an attempt to influence the bias in analyst estimates.

While not the main focus of the paper, the control variables in the regressions in Table 3 are also of some interest. First, analyst errors are negatively associated with GDP growth in the previous quarter suggesting that analysts are under-reacting to the information embodied in past GDP growth. In addition, we find that analyst errors are positively associated with market returns over the past twelve months, implying that positive market returns sustained over a longer horizon lead to greater optimism in earnings estimates.

Further, we find that the optimism in analyst earnings estimates has in general declined over time, though it witnessed a discontinuous increase post Regulation FD. The coefficients on the firm-specific controls indicate that analyst errors are more positive for

firms with larger size, book-to-market and ROA. The positive coefficient on book-to-market is somewhat puzzling given previous work suggesting that value firms display higher returns – a fact interpreted by the behavioral finance literature as representing their undervaluation (see e.g. Lakonishok et. al 1994).[12] Analyst optimism in earnings estimates is also positively associated with capital expenditures and negatively associated with issuance of equity. Consistent with short-horizon under-reaction and momentum effects as in Jegadeesh and Titman (1993) we find that higher firm-specific equity returns over the past year are associated with more negative analyst errors, and hence with greater underestimates of earnings. Finally, we find that greater return volatility in a firm's previous year equity return is associated with more positive analyst errors.

### *5.2.1 Analyst errors at varying horizons*

In this section, we investigate whether the effect of sentiment on the degree of optimism in analyst estimates depends on the estimate's horizon. Due to the greater uncertainty regarding the realization of long-horizon earnings estimates, we hypothesize that the relation between sentiment and analyst estimate errors will be larger for long- rather than short- horizon estimates. To test this, we classify analyst estimates made within 90 days of the estimate period end date as short horizon estimates. All other estimates are classified as long-horizon estimates.[13] The mean difference between the

[12] The greater optimism in analyst estimates associated with value firms could be explained by the fact that these firms report more asset write-offs in earnings when experiencing negative returns (see Roychowdhury and Watts 2007). In contrast, since GAAP does not record growth options, growth firms have relatively fewer assets-in-place available for write-downs. To the extent that such one-time write-offs in operating income are more difficult to predict, analyst earnings estimates for value firms will appear to be more optimistic.

[13] As an example, consider an analyst quarterly earnings estimate issued on 01/15/2006 for the quarter ended 06/30/2006. Because the estimate period end date is 06/30/2006, the estimate is classified as long-horizon since it was provided more than 90 days prior to the estimate period end date. The sample of long-horizon and short-horizon estimates consists of 134,555 firm-quarters and 135,364 firm-quarters, respectively. Since analysts are likely to issue both short-horizon and long-horizon forecasts for a firm in a particular quarter, the sum of the two sub-samples can exceed the total sample of 139,379 firm-quarters for which analysts estimates are available.

estimate period end date and the date of analyst estimate issuance for the long-horizon analyst estimates is 339 days, while the mean difference for the short-horizon estimate is 44 days. The mean (median) value of long horizon analyst errors, *AE_LH*, is 0.58 (0.08) while that of short horizon errors, *AE_SH*, is 0.17 (0.00). On average, therefore, the optimism in analyst estimates appears to be more pronounced over longer horizons than shorter horizons.

In Table 4, we separately examine the association of consumer confidence (*SENT)* with the errors in long-horizon analyst estimates (*AE_LH*) and those in short-horizon estimates (*AE_SH*). Models 1 and 2 in Table 4 present the results of regressing long-horizon analyst errors, *AE_LH*, on our measure of sentiment, *SENT*, along with our standard control variables. Models 3 and 4 in Table 4 present the results using short-horizon analyst errors, *AE_SH,* as the dependent variable. The results confirm that the positive association between analyst errors and sentiment is concentrated in long-horizon estimates. There is a significant positive association between *AE_LH* and *SENT*, while the association between *AE_SH* and *SENT* is statistically insignificant, though positive. The coefficient on *SENT* in Model 2 of Table 4 implies that a single standard-deviation increase in *SENT* is associated with an increase in *AE_LH* of 5.7 percentage points, representing approximately 10 percent of the mean long-horizon analyst error of 58.3%. The evidence thus suggests that sentiment, as proxied by the consumer confidence index, appears to be primarily related to analysts' long-run estimates of firm prospects.

## 6. Sentiment and Voluntary Disclosure

We continue our analysis by examining whether management reacts to prevailing sentiment and the biases in analyst estimates via corporate disclosure choices. When consumer confidence is high and long-horizon analyst estimates are overly optimistic, we expect management to reduce voluntary disclosure and remain silent in an attempt to maintain the optimism. In contrast, when sentiment is low and long-horizon estimates are less optimistic, management will increase disclosure in an attempt to walk up long-horizon expectations. We thus expect the frequency of management forecasts of earnings over long-horizons to be associated negatively with sentiment; further, this association should primarily be driven by management forecasts that walk-up analyst estimates.

The expected relation between sentiment and disclosure regarding short-horizon earnings is less clear. Numerous studies have documented that managers are averse to announcing negative earnings surprises, and tend to walk down analyst estimates as the earning announcement date approaches (see e.g. Skinner 1994, Soffer, Thiagarajan and Walther 2000, and Richardson, Teoh and Wysocki 2004). Thus, contrary to the relation between long-horizon forecasts and sentiment, the relation between the number of short-horizon earnings forecasts and sentiment would tend to be positive as firms issue more short-horizon walk-down forecasts during periods of high sentiment.

In the next sections we provide summary statistics for our management forecast sample and subsequently test the relation of sentiment and firm disclosure policy.

### 6.1 Descriptive statistics

Our tests of sentiment and disclosure policy are performed over two samples. We begin with a sample that consists of all firms in IBES with available data on the control variables described above. Firms which the First Call database does not report as having

issued a managerial earnings forecast in a particular quarter are assigned a zero forecast frequency for that quarter. This sample consists of 85,391 firm-quarters, with 6,342 distinct firms over the period 1996-2004. However, due to concerns regarding First Call coverage, our primary sample is a subset of the full sample that includes only firms that have issued at least one management forecast over the entire sample period and are thus known to be covered by First Call. This disclosing-firm sample consists of 59,344 firm-quarters, with 2,978 distinct firms over the period 1996-2004. For robustness, we repeat all tests for both the disclosing and the full samples.

Descriptive statistics for the firm level variables are presented in Table 5 for both samples. The mean frequency of long-horizon forecasts in the disclosing (full) sample is 0.32 (0.22), which is slightly greater than the mean short horizon forecast frequency of 0.30 (0.21). The long- and short- horizon management forecasts have mean horizons respectively of 260 days and 46 days. Mean and median firms in the disclosing sample are larger than those in the full sample, which in turn are greater than those in the analyst sample used in Section 5. Firms in the disclosing sample are larger and more profitable on average and also have greater analyst following and institutional ownership than firms in the full sample. The correlations among the firm characteristics for both management forecast samples are similar to those presented in Panels A and B of Table 2 for the analyst sample, and hence are not tabulated.[14]

[14] One exception is that the correlation between *SENT* and *Trend* over the period 1996-2004 is significantly negative, indicating that sentiment has been generally declining over these 36 quarters.

## 6.2 Results on voluntary disclosure

### *6.2.1 Voluntary disclosure at varying horizons*

In Table 6, we examine whether managers issue earnings forecasts in a way which is systematically related to the consumer confidence index, as hypothesized above. Models 1 of Table 6 presents the results of regressing the number of quarterly long-horizon management earnings forecasts, *FREQ_LH*, on our measure of sentiment, *SENT*, and our standard control variables for the disclosing sample. As Model 1 demonstrates, consumer confidence (*SENT*) is significantly negatively related to long-horizon forecast frequency. This is consistent with our hypothesis that managers increase long-horizon forecast frequency during periods of relatively low sentiment and reduce forecast frequency during periods of relatively high sentiment. The coefficient on *SENT* in Model 1 implies that a one-standard-deviation decrease in *SENT* is associated with an increase of 0.04 in the number of quarterly long-horizon forecasts. This effect is economically significant as it represents an 11.5% increase from the mean quarterly long-horizon forecast frequency of 0.32.

Model 2 of Table 6 demonstrates that the association between consumer confidence (*SENT*) and short-horizon management earnings forecast frequency, *FREQ_SH,* is positive but statistically insignificant. As will be shown in the next section, this insignificant association reflects the net effect of managers walking up short-horizon earnings estimates during periods of low sentiment while walking them down during periods of high sentiment. In Models 3 and 4 in Table 6, we repeat the analysis using the full sample, rather than the sample of disclosing firms. As can be seen, the results are similar to those in Models 1 and 2, with the number of long horizon managerial forecasts

significantly negatively related to *SENT* and the number of short horizon forecasts positively, but insignificantly, related to *SENT*.

While not the main focus of the paper, the control variables indicate that forecast frequencies are generally increasing in recent GDP change. Past market volatility has a significantly positive effect on the frequency of long-horizon forecasts. Further, forecast frequencies over both horizons have increased through time, particularly after the passage of Regulation FD, as the positive coefficients on Trend and REG_FD demonstrate. Among the firm-level variables, analyst following is positively related to forecast frequency, while size has a positive effect on long-horizon forecast frequency. Profitable firms are more likely to issue management forecasts, as the negative coefficient on *LOSS* indicates. Finally capital expenditures affect short-horizon forecast frequency positively, but do not affect long-horizon forecast frequency significantly.

#### *6.2.2 Walk-up versus walk-down voluntary disclosure*

As discussed in the beginning of Section 6, we expect that over the long horizon, management disclosure policy reflects a desire to strategically maintain optimism in analyst estimates. Thus, we predict that the negative association between long-horizon forecast frequency and sentiment displayed in Table 6 to be primarily a result of variation in the frequency of long-horizon forecasts *that walk analyst estimates up*. On the other hand, over the short horizon, when earnings announcements are imminent and serve as a disciplining device, managers' disclosure policy is more likely to reflect their desire to guide analysts to realized earnings. In particular, during periods of high sentiment managers will walk down analyst estimates, while, conversely, during periods of low sentiment they will walk analyst estimates upwards.

To test these hypotheses, we define managerial walk-up forecasts as those that are greater than prevailing consensus analyst estimates, and similarly walk-down forecasts as those that are lower than prevailing consensus analyst estimates. We then examine the association between sentiment and the following: (a) the number of long-horizon forecasts that walk up analyst estimates, *LH_WU*, (b) the number of long-horizon forecasts that walk down analyst estimates, *LH_WD*, (c) the number of short-horizon forecasts that walk up analyst estimates, *SH_WU*, and (d) the number of short-horizon forecasts that walk down analyst estimates, *SH_WD*. Table 7 presents descriptive statistics for each of these dependent variables. As can be seen from the table, walk-down management earnings forecasts are generally more prevalent than walk-up forecasts: the mean number of long horizon walk downs (*LH_WD*) exceeds the mean number of long horizon walk ups (*LH_WU*) in both the disclosing and full samples. The same is true for short horizon walk downs (*SH_WD*) versus short horizon walk ups (*SH_WU*). The statistics further reveal that on average, the number of long horizon walk ups exceed the number of short horizon walkups, indicating that managers walk up analysts more over longer horizons.

Table 8 presents the results of the regression analysis for the disclosing sample, and reveals results consistent with our hypotheses. Models 1 and 2 reveal that the negative relation between sentiment and long-horizon forecast frequency exhibited in Table 6 is due to variation in the frequency of *walk-up* forecasts. The coefficient on *SENT* indicates that sentiment is significantly negatively related to the frequency of long-horizon walk-up forecasts, *LH_WU*, and implies that a standard-deviation decrease in *SENT* is associated with a 0.04 increase in *LH_WU*. This is economically significant as it represents 36% of the mean long-horizon walk-up forecast frequency of 0.11. In contrast,

we do not find a statistically significant association between *SENT* and the number of long-horizon *walk-down* forecasts.

Models 3 and 4 in Table 8 reveal that over the short-horizon, walk-up and walk-down forecast frequencies have relations of opposite sign with investor sentiment. The coefficient on *SENT* indicates a negative and significant relation with the frequency of short-horizon walk-up forecasts, *SH_WU*, and implies that a single standard-deviation decrease in *SENT* is associated with an increase in *SH_WU* of 0.01. This is an economically significant amount, representing 16% of the mean short-horizon walk-up frequency of 0.07. In contrast, the coefficient on *SENT* indicates a positive and significant relation with the frequency of short-horizon walk-down forecasts, *SH_WD*, and implies that a single standard-deviation increase in *SENT* is associated with an increase in *SH_WD* of 0.03. This is economically significant, as it represents 14% of the mean short-horizon walk-down forecast frequency of 0.21. Thus, during high sentiment periods when analysts are more optimistic, managers appear to walk down short horizon analyst estimates. On the other hand, managers increase the frequency of walk-up forecasts when sentiment is low.

Taken together, consistent with our hypotheses, our results suggest that management disclosure over longer horizons is affected by their incentives to maintain optimistic valuations. In contrast, their disclosure choices over shorter horizons appear to be affected by incentives to guide analysts closer towards the realized earnings number by issuing either walk-up or walk-down forecasts, depending on prevailing sentiment.

Table 9 confirms our results in Table 8 using the full rather than the disclosing sample. We again find evidence of a statistically robust negative association between long-horizon walk-up forecasts (*LH_WU)* and sentiment, while there is no relation

between long-horizon walk-down forecasts (*LH_WD)* and sentiment. Further, as in Table 8, we find a positive association between short-horizon walk-down forecasts (*SH_WD*) and sentiment, and a negative association between short-horizon walk-up forecasts (*SH_WU*) and sentiment.

While not the main focus of the paper, the coefficients on the control variables in Tables 8 and 9 reveal some insights as well. Past market returns have a positive effect on the number of long-horizon walk-up forecasts, which appears consistent with a tendency of managers to be optimistic about the future when past market returns have been high over sustained periods. In contrast, lagged quarterly GDP change is associated with more long-horizon walk-down forecasts as well as more short-horizon forecasts. Finally, consistent with previous literature, we find that disclosure has generally increased through time, particularly after the imposition of Regulation FD.

Turning to firm-specific variables, firm size appears to have a positive effect on walk-down forecast frequencies over both long and short horizons. This is consistent with size proxying for litigation risk of the firm (Shu 2000). High firm returns in the past are also associated with greater issuance of all types of forecasts. Thus, managers in general appear to voluntarily disclose more after a period of high equity returns. Similarly, analyst following is associated positively with forecasts of every type. In contrast, the incidence of negative earnings is associated negatively with the issuance of forecasts. Finally, recent capital expenditures are associated with the issuance of short-horizon walk-downs in both samples, indicating that firms are likely to disclose more when they are investing.

## 7. Robustness Tests

In this section we provide a number of robustness tests using alternate specifications to those presented above. First, to address concerns regarding serial correlation in our observations, we repeat the analysis regarding analyst estimate errors in Table 4 using a specification in first-differences rather than a Newey-West standard error specification. Table 10 presents the results, with all dependent and independent variables first-differenced using the previous quarter's observation. T-statistics are calculated using heteroskedasticity-robust standard errors which allow for clustering at the firm level.

As can be seen in Table 10, the results remain qualitatively unchanged; Changes in analyst earning estimates errors are positively related to changes in investor sentiment as proxied by the consumer confidence index. As in previous results, this effect is concentrated amongst long-horizon earnings estimates, although in the first-differenced specification, short-horizon estimate errors are also positively related to investor sentiment in a statistically significant manner.

We also re–estimate the regressions involving firm disclosure policy in Tables 8 and 9, using instead a first-differenced specification, where we subtract from all dependent and independent variables the prior quarter's observation. Results for the first-differenced specification employing the disclosing sample of firms are reported in Table 11. As can be seen, the results remain qualitatively unchanged. First, the frequency of long horizon walk-up earnings forecasts is negatively related to sentiment, while the frequency of long-horizon walk-downs is unrelated to sentiment. Thus, when sentiment is high, managers appear to strategically reduce the frequency of long-horizon earnings estimates, while when sentiment is low, they attempt to walk-up long-horizon earnings estimates. In contrast, over the short horizon, when imminent earnings announcements

serve as a disciplining device, management disclosure choices appear to be governed by a desire to guide analyst earnings estimates towards realized earnings: when sentiment is high, managers increase the frequency of their short-horizon walk-down forecasts, while when sentiment is low, managers increase the frequency of their short-horizon walk-up forecasts.[15] In unreported analysis, to further test the robustness of our results, we rerun the regressions in Tables 4, 8, and 9 without employing firm fixed effects calculating standard errors with the Newey-West estimator. Our results are robust to this alternate specification.

As an additional robustness check, we repeat our analysis using an alternate measure of investor sentiment proposed in Baker and Wurgler (2006, 2007). The measure, which is constructed at the monthly level, is based on a first principal component analysis of six macro variables: a measure of the premium for dividend paying stocks, IPO volume, IPO returns, the average closed-end fund discount, the equity share in new issues, and share turnover. To measure sentiment at the quarterly level, we average the monthly sentiment measure over each quarter. Over the sample period 1986-2004, the correlation between our previous measure of sentiment – the mean quarterly Michigan Consumer Confidence Index – and the quarterly Baker and Wurgler sentiment measure is significantly positive at 0.47.

Table 12 repeats our analysis regarding the association between analyst estimate errors and (lagged) investor sentiment – this time using the Baker and Wurgler measure. As can be seen, similar to previous results, we find that investor sentiment proxied by the Baker and Wurgler measure is positively related to analyst errors, with greater sentiment associated with larger optimism in analyst earnings estimates, particularly over longer

[15] We repeat the analysis in Table 11 for the full sample rather than the disclosing sample. The results, which are available from the authors, remain unchanged.

horizons. Similarly, Table 13 repeats our analysis in Table 8, by examining the relation between the Baker and Wurgler sentiment measure and firm disclosure policy over both long and short forecast horizons. Again, we find that the main results are robust to this alternate measure of sentiment: firms tend to walk up long-horizon analyst estimates during periods of low sentiment, and elect to reduce long-horizon disclosure during periods of high sentiment. In contrast, over the short horizon, firms tend to guide analysts towards actual earnings, in particular walking their estimates downwards when sentiment is high.

## 8. Conclusion

In this paper we analyze the relation between investor sentiment and firm disclosure policy. As a first step, we show that the Michigan Consumer Confidence Index – a commonly-used measure of investor sentiment – is positively associated with the bias in the earnings estimates of financial analysts. When sentiment is high, analyst earnings estimates, particularly for the long horizon, tend to be more optimistic as compared to actual earnings realizations.

We continue by showing that firms respond to prevailing sentiment by strategically varying their disclosure choices. During periods of low sentiment, managers increase the frequency of long-horizon earnings forecasts which walk-up analyst consensus estimates. Thus, forecasting over longer horizons appears to be affected by managers' desire to maintain optimistic valuations. In contrast, over the short horizon, we find that during periods of high sentiment, firms increase the frequency of *walk-down* forecasts, while during periods of low sentiment they increase the frequency of *walk-up* forecasts. Thus, over the short horizon, when earnings announcements are imminent and

hence serve as a disciplining device, the association between firm disclosure policies and sentiment reflects firms' desire to guide analyst earnings estimates towards realized earnings.

**References**


Abarbanell, J., and Bernard, V., "Tests of analysts' overreaction/underreaction to earnings information as an explanation for anomalous stock price behavior," *Journal of Finance*, Vol. 47, 1992

Admati, A., and Pfleiderer, P., "Forcing Firms to Talk: Financial Regulation and Externalities," *The Review of Financial Studies*, Vol. 12, 2000

Ajinkya, B., Bhojraj, S. and Sengupta, P., "The Association Between Outside Directors, Institutional Investors and the Properties of Management Earnings Forecasts", *Journal of Accounting Research*, Vol. 43, 2005

Ajinkya, B., and Gift, M., "Corporate Managers' Earnings Forecasts and Symmetrical Adjustments of Market Expectations", *Journal of Accounting Research*, Vol. 22, 1984

Anilowski, C., Feng, M., and Skinner, D., "Is Guidance a Macro Factor? The Nature and Information Content of Aggregate Earnings Guidance", *Journal of Accounting and Economics*, forthcoming, 2006

Asquith, P., Pathak, P., and Ritter J., "Short Interest, Institutional Ownership, and Stock Returns", *Journal of Financial Economics*, forthcoming, 2005

Ang, J., and Cheng, Y., The endogeneity of information asymmetry and corporate financing decisions, working paper, 2007

Baginski, S. Conrad, E., and Hassell, J., "The Effects of Management Forecast Precision on Equity Pricing and on the Assessment of Earnings Uncertainty", *Accounting Review*, Vol. 65, 1993

Baker, M., Ruback, R. and Wurgler, J., "Behavioral Corporate Finance: A Survey", Mimeo, October, 2004, http://ssrn.com/abstract=602902

Baker, M., Stein, J.C. and Wurgler, J., "When does the Market Matter? Stock Prices and the Investment of Equity-Dependent Firms", *The Quarterly Journal of Economics*, August 2003.

Baker, M. and Wurgler, J., "Investor Sentiment and The Cross-Section of Stock Returns", *Journal of Finance*, Vol. 61, 2006

Baker and Wurgler, "Investor Sentiment in the Stock Market," *Journal of Economic Perspectives*, forthcoming, 2007.

Botosan, C., , "Disclosure Level and the Cost of Equity Capital," *The Accounting Review*, Vol. 72, 1997

Brennan, M.J., Jegadeesh N., and Swaminathan, B., "Investor Analysis and the Adjustment of Stock prices to Common Information", *Review of Financial Studies*, Vol. 6, 799-824, 1993

Dechow, P.M., and Sloan, R.G., "Return to contrarian investment strategies: tests of naïve expectations hypotheses," *Journal of Financial Economics*, Vol. 43, 1997

Chen, J., Hong, H., and Stein, J., "Breadth of Ownership and Stock Returns," *Journal of Financial Economics*, Vol. 66, 2002

Coller, M., and Yohn, T., "Management Forecasts and Information Asymmetry: An Examination of Bid-Ask Spreads", *Journal of Accounting Research,* Vol. 35, 1997

Dye, R., "An Evaluation of 'Essays on Disclosure' and the Disclosure Literature in Accounting," *Journal of Accounting and Economics*, Vol. 32, 2001

Fisher, K.L. and Statmen, M., "Consumer Confidence and Stock Returns" *Journal of Portfolio Management,* 2002.

Frankel, R., McNichols, M. and Wilson, P.G. "Discretionary Dislcosure and External Financing", *Accounting Review*, Vol 70, 1995

Healy, P., Hutton, A. and Palepu, K., "Stock Performance and Intermediation Changes Surrounding Sustained Increases in Disclosure," *Contemporary Accounting Research*, Vol. 16, 1999

Healy, P., and Palepu, K, "Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature," *Journal of Accounting and Economics*, Vol. 31, 2001

Hirshleifer, D.,. and Teoh, H., "Limited Attention, Information Disclosure, and Financial Reporting," Mimeo, September 2003, http://ssrn.com/abstract=334940

Hutton, A. and Stocken P., "Effect of Reputation on the Credibility of Management Forecasts," working paper

Jennings, R., "Unsystematic Security Price Movements, Management Earnings Forecasts and Revisions in Consensus Analyst Earnings Forecasts," *Journal of Accounting Research*, Vol. 24, 1987

Kothari, S.P., Shu, S., and Wysocki, P., "Do Managers Withhold Bad News?", working paper, MIT

J. Lakonishok, Shleifer, A., and Vishny, R., "Contrarian Investment, Extrapolation, and Risk", *Journal of Finance*, Vol. 49, 1994

La Porta, R. (1996), "Expectations and the Cross-Section of Stock Returns," *Journal of Finance*, Vol. 51, 1996

Lanen, W., and Verrecchia, R. "Operating Decisions and the Disclosure of Management Accounting Information," *Journal of Accounting Research*, Vol. 25, 1987

Lang, M., and Lundholm, R. J. "Corporate Disclosure Policy and Analyst Behavior," *The Accounting Review*, Vol. 71, 1996

Lee, C.M.C., Shleifer, A. and Thaler, R.H., "Investor Sentiment and the Closed-End Fund Puzzle", *Journal of Finance*, Vol. 46, 1991.

Lemmon, M. and Portniaguina, E., "Consumer Confidence and Asset Prices: Some Empirical Evidence", *Review of Financial Studies*, forthcoming 2006.

Lev, B., and Penman, S., "Voluntary Forecast Disclosure, Non-disclosure and Stock Prices", *Journal of Accounting Research*, Vol. 28, 1990

Levitt, A., "The Numbers Game," Speech at the NYU Center for Law and Business, September 28, 1998

Matsumoto, D.A., "Management's incentives to avoid negative earnings surprises", *Accounting Review*, Vol. 77, 2002

Miller, G., "Earnings Performances and Discretionary Disclosure," *Journal of Accounting Research*, Vol. 40, 2002

Milgrom, P., "Good News and Bad News: Representation Theorems and Applications," *Bell Journal of Economics*, Vol. 12, 1981

Ng, J., Tuna, I., and Verdi, R., "Management forecasts, disclosure quality and market efficiency", working paper, 2007.

O'Brien, P.C., "Analysts' Forecasts as Earnings Expectations", *Journal of Accounting and Economics*, Vol 10, 1988.

Qiu, L., and Welch, I., "Investor Sentiment Measures," working paper, 2005

Pownall, G., Wasley, C., and Waymire, G., "The Stock Price Effects of Alternative Types of Management Forecasts", *Accounting Review*, Vol. 68, 1993

Richardson, S., Teoh, S.H., and Wysocki P., The Walkdown to Beatable Analyst Forecasts: the Roles of Equity Issuance and Insider Trading Incentives, *Contemporary Accounting Research*, Vol. 21, 2004

Roychowdhury, S., and Watts, R., Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting, *Journal of Accounting & Economics*, forthcoming, 2007.

Shleifer, A., "Inefficient Markets, An Introduction to Behavioral Finance," *Oxford University Press*, 2000

Shleifer, A. and Vishny, R.W., "Stock Market Driven Acquisitions", *Journal of Financial Economics*, Vol 70, 2003.

Shu, S.Z, "Auditor resignations: clientele effects and legal liability," *Journal of Accounting and Economics*, Vol. 29, 2000

Soffer, L. C., Thiagarajan, S. R and Walther, B. R.. "Earnings Preannouncement Strategies," *Review of Accounting Studies*, Vol. 5, 2000

Skinner, D., "Why Firms Voluntarily Disclose Bad News," *Journal of Accounting Research*, Vol. 32, 1994

Waymire, G., "Additional Evidence on the Information Content of Management Earnings Forecasts," *Journal of Accounting Research*, Vol. 22, 1984

## Table 1: Descriptive Statistics for Firm-Quarter Variables Used in the Analyst Sample

**Panel A: Descriptive Statistics**

This table provides pooled descriptive statistics for the sample of 139,379 firm-quarters over the period 1986-2004 that are used in the analysis of analyst errors. *AE* is the quarterly median analyst earnings estimate error scaled by the absolute value of realized earnings. *RET* is the gross firm stock return over the prior 12 months, while *RETVOL* is the volatility of the gross return over the same period. *MKTCAP* is the beginning of quarter market value of firm equity, *BTM* is the beginning of quarter firm book to market ratio, *CAPEX* is lagged capital expenditures as a percentage of assets, *ROA* is the lagged return on assets, and *LOSS* is an indicator variable set to one for firms reporting losses in any of the previous four quarters. *ISSUE* is an indicator variable which is set to one for firms which issued equity in the contemporaneous quarter. *ANALYSTN* is the number of analysts following a firm, and *INSTOWN* is the percentage of firm shares owned by institutions.

| | Mean | Median | Standard Deviation |
|---|---|---|---|
| ***AE*** | 0.38 | 0.04 | 1.16 |
| ***MKTCAP*** | 2206.15 | 406.71 | 5798.47 |
| ***BTM*** | 0.55 | 0.46 | 0.41 |
| ***ROA*** | 0.01 | 0.01 | 0.04 |
| ***RET*** | 1.21 | 1.10 | 0.66 |
| ***RETVOL*** | 0.14 | 0.12 | 0.08 |
| ***ISSUE*** | 0.02 | 0.00 | 0.15 |
| ***ANALYSTN*** | 5.37 | 4.00 | 5.26 |
| ***INSTOWN*** | 0.47 | 0.48 | 0.23 |
| ***LOSS*** | 0.21 | 0.00 | 0.41 |
| ***CAPEX*** | 0.04 | 0.03 | 0.06 |

## Table 2: Correlations among the Quarterly Variables for the Analyst Sample

### Panel A

This table presents correlations among the quarterly variables over the 76 quarters between 1986-2004 used in the analysis of analyst errors. *SENT* is the quarterly average Michigan Consumer Sentiment Index. For every quarter, *Trend* equals the number of quarters elapsed since the beginning of the sample, inclusive of the current quarter. *REG_FD* is an indicator variable set equal to one for all quarters after and including the fourth quarter of 2000. *GDPCHG* is the lagged seasonally-adjusted percentage change in gross domestic product. *PASTMARKET* is the gross value-weighted market index return over the prior twelve months, and *MARKETVOL* is the volatility of the gross market returns in the prior twelve months. The correlations marked in bold are significant at the 5% level.

| | ***SENT*** | ***GDPCHG*** | ***PASTMARKET*** | ***MARKETVOL*** | ***Trend*** | ***REGFD*** |
|---|---|---|---|---|---|---|
| ***SENT*** | **1.00** | | | | | |
| ***GDPCHG*** | **0.34** | **1.00** | | | | |
| ***PASTMARKET*** | **0.27** | **0.29** | **1.00** | | | |
| ***MARKETVOL*** | 0.06 | -0.03 | **-0.40** | **1.00** | | |
| ***Trend*** | **0.30** | 0.03 | **-0.22** | -0.16 | **1.00** | |
| ***REGFD*** | **-0.01** | **-0.22** | **-0.37** | 0.03 | **0.73** | **1.00** |

### Panel B

This table provides pooled correlations for the sample of 139,379 firm-quarters over the period 1986-2004 that are used in the analysis of analyst errors. *RET* is the gross firm stock return over the prior 12 months, while *RETVOL* is the volatility of the gross return over the same period. *SIZE* is the natural logarithm of the beginning-of-quarter market value of firm equity, *BTM* is the beginning of quarter firm book to market ratio, *CAPEX* is lagged capital expenditures as a percentage of assets, *ROA* is the lagged return on assets, and *LOSS* is an indicator variable set to one for firms reporting losses in any of the previous four quarters. *ISSUE* is an indicator variable which is set to one for firms which issued equity in the contemporaneous quarter. *ANALYSTN* is the number of analysts following a firm, and *INSTOWN* is the percentage of firm shares owned by institutions. The correlations marked in bold are significant at the 5% level.

| | ***SIZE*** | ***BTM*** | ***ROA*** | ***RET*** | ***RETVOL*** | ***ISSUE*** | ***ANALYSTN*** | ***INSTOWN*** | ***LOSS*** | ***CAPEX*** |
|---|---|---|---|---|---|---|---|---|---|---|
| ***SIZE*** | **1.00** | | | | | | | | | |
| ***BTM*** | **-0.36** | **1.00** | | | | | | | | |
| ***ROA*** | **0.21** | **-0.12** | **1.00** | | | | | | | |
| ***RET*** | **0.14** | **-0.36** | **0.18** | **1.00** | | | | | | |
| ***RETVOL*** | **-0.28** | **0.01** | **-0.33** | **0.10** | **1.00** | | | | | |
| ***ISSUE*** | **0.01** | **-0.07** | **-0.01** | **0.14** | **0.03** | **1.00** | | | | |
| ***ANALYSTN*** | **0.67** | **-0.17** | **0.10** | 0.00 | **-0.09** | 0.00 | **1.00** | | | |
| ***INSTOWN*** | **0.47** | **-0.12** | **0.16** | **0.09** | **-0.16** | -0.01 | **0.36** | **1.00** | | |
| ***LOSS*** | **-0.21** | **0.13** | **-0.68** | **-0.16** | **0.36** | 0.00 | **-0.08** | **-0.15** | **1.00** | |
| ***CAPEX*** | **-0.02** | **-0.08** | **0.06** | **0.01** | 0.00 | **0.01** | **0.04** | **-0.06** | **-0.03** | **1.00** |

**Table 3. Regressions of median analyst earnings estimate errors on the Michigan Consumer Confidence Index.** The regressions are estimated over the time period 1986-2004. *AE* is the quarterly median analyst earnings estimate error scaled by the absolute value of realized earnings. *SENT* is the quarterly average Michigan Consumer Sentiment Index. For every quarter, Trend equals the number of quarters elapsed since the beginning of the sample, inclusive of the current quarter. *REG_FD* is an indicator variable set equal to one for all quarters after and including the fourth quarter of 2000. GDPCHG is the lagged seasonally-adjusted percentage change in gross domestic product. *PASTMARKET* is the gross value-weighted market index return over the prior twelve months, and *MARKETVOL* is the volatility of the gross market returns in the prior twelve months. *RET* is the gross firm stock return over the prior 12 months, while *RETVOL* is the volatility of the gross return over the same period. *SIZE* is the natural logarithm of the beginning-of-quarter market value of firm equity, *BTM* is the beginning of quarter firm book to market ratio, *CAPEX* is lagged capital expenditures as a percentage of assets, *ROA* is the lagged return on assets, and *LOSS* is an indicator variable set to one for firms reporting losses in any of the previous four quarters. *ISSUE* is an indicator variable which is set to one for firms which issued equity in the contemporaneous quarter. *ANALYSTN* is the number of analysts following a firm, and *INSTOWN* is the percentage of firm shares owned by institutions. Standard errors are calculated using the Newey-West procedure with a lag length of two quarters.

| | ***Model 1: AE*** | ***Model 2: AE*** | ***Model 3: AE*** |
|---|---|---|---|
| ***SENT*** | **0.387** | **0.290** | **0.299** |
| | (6.28)** | (4.73)** | (4.87)** |
| ***GDPCHG*** | **-0.024** | **-0.023** | **-0.023** |
| | (13.10)** | (12.38)** | (12.68)** |
| ***PASTMARKET*** | **-0.011** | **0.129** | **0.134** |
| | 0.40 | (4.52)** | (4.67)** |
| ***MARKETVOL*** | **0.036** | **-0.557** | **-0.530** |
| | 0.11 | (1.72)* | 1.63 |
| ***REG_FD*** | **0.102** | **0.115** | **0.120** |
| | (5.99)** | (6.77)** | (7.04)** |
| ***Trend*** | **-0.010** | **-0.010** | **-0.010** |
| | (19.55)** | (20.70)** | (19.85)** |
| ***SIZE*** | **0.210** | **0.231** | **0.220** |
| | (23.84)** | (25.72)** | (23.50)** |
| ***BTM*** | **0.236** | **0.156** | **0.163** |
| | (13.68)** | (8.72)** | (9.11)** |
| ***ROA*** | **0.127** | **0.530** | **0.450** |
| | 1.07 | (4.42)** | (3.24)** |
| ***RET*** | | **-0.126** | **-0.121** |
| | | (19.09)** | (18.30)** |
| ***RETVOL*** | | **0.567** | **0.575** |
| | | (6.87)** | (6.91)** |
| ***ISSUE*** | | **-0.070** | **-0.072** |
| | | (4.59)** | (4.64)** |
| ***ANALYSTN*** | | | **0.002** |
| | | | (1.75)* |
| ***INSTOWN*** | | | **0.015** |
| | | | 0.43 |
| ***LOSS*** | | | **-0.009** |
| | | | 0.63 |
| ***CAPEX*** | | | **0.901** |
| | | | (9.52)** |
| ***Firm fixed effects*** | **Y** | **Y** | **Y** |
| **Adjusted $R^2$** | **20%** | **20%** | **20%** |
| **Observations** | **139,379** | **139,379** | **139,379** |

*significant at the 10% level
**significant at the 5% level

**Table 4. Regressions of median analyst earnings estimate errors on the Michigan Consumer Confidence Index, by time horizon.** The regressions are estimated over the time period 1986-2004. *AE_SH* is the median of all short horizon analyst earnings estimates error scaled by the absolute value of realized earnings. *AE_LH* is the median of all long horizon analyst earnings estimates error scaled by the absolute value of realized earnings. Short horizon estimates are those made within 90 days of the estimate period end date. All other estimates are defined as long horizon estimates. All independent variables are defined as in Table 3. Standard errors are calculated using the Newey-West procedure with a lag length of two quarters.

| | ***Model 1: AE_LH*** | ***Model 2: AE_LH*** | ***Model 3: AE_SH*** | ***Model 4: AE_SH*** |
|---|---|---|---|---|
| ***SENT*** | **0.579** | **0.599** | **0.008** | **0.036** |
| | (5.87)** | (6.06)** | 0.21 | 0.94 |
| ***GDPCHG*** | **-0.038** | **-0.040** | **-0.012** | **-0.012** |
| | (13.31)** | (13.75)** | (9.03)** | (9.37)** |
| ***PASTMARKET*** | **0.166** | **0.178** | **0.143** | **0.145** |
| | (3.72)** | (4.01)** | (6.98)** | (7.09)** |
| ***MARKETVOL*** | **-0.538** | **-0.471** | **-0.706** | **-0.722** |
| | 1.11 | 0.97 | (3.25)** | (3.32)** |
| ***REG_FD*** | **0.146** | **0.161** | **0.070** | **0.067** |
| | (5.40)** | (5.89)** | (6.60)** | (6.26)** |
| ***Trend*** | **-0.014** | **-0.013** | **-0.006** | **-0.006** |
| | (18.42)** | (17.12)** | (18.21)** | (17.97)** |
| ***SIZE*** | **0.320** | **0.294** | **0.079** | **0.057** |
| | (23.40)** | (20.30)** | (13.79)** | (9.22)** |
| ***BTM*** | **0.217** | **0.242** | **0.131** | **0.130** |
| | (7.39)** | (8.23)** | (9.69)** | (9.47)** |
| ***ROA*** | **1.452** | **0.786** | **0.214** | **-0.196** |
| | (7.98)** | (3.78)** | (2.27)* | (1.75)* |
| ***RET*** | **-0.161** | **-0.148** | **-0.086** | **-0.082** |
| | (16.25)** | (14.97)** | (19.49)** | (18.30)** |
| ***RETVOL*** | **0.745** | **0.777** | **-0.029** | **0.010** |
| | (5.94)** | (6.16)** | 0.52 | 0.19 |
| ***ISSUE*** | **-0.107** | **-0.113** | **-0.055** | **-0.055** |
| | (4.52)** | (4.74)** | (4.41)** | (4.38)** |
| ***ANALYSTN*** | | **0.008** | | **0.007** |
| | | (4.32)** | | (8.07)** |
| ***INSTOWN*** | | **-0.024** | | **0.062** |
| | | 0.45 | | (2.59)** |
| ***LOSS*** | | **-0.098** | | **-0.064** |
| | | (4.60)** | | (5.46)** |
| ***CAPEX*** | | **2.054** | | **0.121** |
| | | (13.34)** | | (1.93)* |
| ***Firm fixed effects*** | **Y** | **Y** | **Y** | **Y** |
| **Adjusted $R^2$** | **19%** | **19%** | **10%** | **11%** |
| **Observations** | **134555** | **134555** | **135364** | **135364** |

*significant at the 10% level
**significant at the 5% level

## Table 5: Descriptive Statistics for the Management Forecasts Sample

This table provides pooled descriptive statistics for both the disclosing sample and the full sample over the period 1996-2004 that are used in the analysis of management forecasts. *FREQ_LH* and *FREQ_SH* are the number of long horizon and short horizon management earnings forecasts for firm *i* in quarter *t*. Short horizon forecasts are those made within 90 days of the forecast period end date. All other forecasts are defined as long horizon forecasts. *RET* is the gross firm stock return over the prior 12 months, while *RETVOL* is the volatility of the gross return over the same period. *MKTCAP* is the beginning of quarter market value of firm equity, *BTM* is the beginning of quarter firm book to market ratio, *CAPEX* is lagged capital expenditures as a percentage of assets, *ROA* is the lagged return on assets, and *LOSS* is an indicator variable set to one for firms reporting losses in any of the previous four quarters. *ISSUE* is an indicator variable which is set to one for firms which issued equity in the contemporaneous quarter. *ANALYSTN* is the number of analysts following a firm, and *INSTOWN* is the percentage of firm shares owned by institutions.

| | **Disclosing Sample (N = 59,344)** | | | **Full Sample (N = 85,391)** | | |
|---|---|---|---|---|---|---|
| | **Mean** | **Median** | **Standard Deviation** | **Mean** | **Median** | **Standard Deviation** |
| ***FREQ_LH*** | 0.32 | 0.00 | 1.15 | 0.22 | 0.00 | 0.97 |
| ***FREQ_SH*** | 0.30 | 0.00 | 1.57 | 0.21 | 0.00 | 1.31 |
| ***MKTCAP*** | 3435.03 | 637.69 | 8962.69 | 2952.38 | 515.44 | 8236.98 |
| ***BTM*** | 0.52 | 0.42 | 0.42 | 0.54 | 0.44 | 0.43 |
| ***ROA*** | 0.01 | 0.01 | 0.04 | 0.00 | 0.01 | 0.05 |
| ***RET*** | 1.24 | 1.11 | 0.76 | 1.24 | 1.10 | 0.77 |
| ***RETVOL*** | 0.15 | 0.13 | 0.08 | 0.15 | 0.13 | 0.09 |
| ***ISSUE*** | 0.02 | 0.00 | 0.15 | 0.02 | 0.00 | 0.16 |
| ***ANALYSTN*** | 6.31 | 4.00 | 5.68 | 5.78 | 4.00 | 5.69 |
| ***INSTOWN*** | 0.56 | 0.58 | 0.23 | 0.51 | 0.53 | 0.24 |
| ***LOSS*** | 0.21 | 0.00 | 0.41 | 0.26 | 0.00 | 0.44 |
| ***CAPEX*** | 0.04 | 0.02 | 0.05 | 0.04 | 0.02 | 0.06 |

**Table 6. Regressions of firm earnings-forecast frequency on the Michigan Consumer Confidence Index, by time horizon.** The regressions are estimated over the time period 1996-2004. *FREQ_LH* and *FREQ_SH* is the number of long horizon and short horizon firm earnings forecasts in quarter *t*. Short horizon estimates are those made within 90 days of the estimate period end date. All other estimates are defined as long horizon estimates. The regressions are run on the sample of firms that have at least one disclosure in the sample period (Models 1 and 2) and on the full sample of firms (Models 3 and 4). All independent variables are defined as in Table 3. Standard errors are calculated using the Newey-West procedure with a lag length of two quarters.

| | **Disclosing Sample** | | **Full Sample** | |
|---|---|---|---|---|
| | ***Model 1: FREQ_LH*** | ***Model 2: FREQ_SH*** | ***Model 3: FREQ_LH*** | ***Model 4: FREQ_SH*** |
| ***SENT*** | **-0.387** | **0.159** | **-0.304** | **0.113** |
| | (4.47)** | 1.60 | (4.63)** | 1.49 |
| ***GDPCHG*** | **0.006** | **0.016** | **0.004** | **0.011** |
| | (2.20)** | (2.78)** | (2.31)** | (2.83)** |
| ***PASTMARKET*** | **0.079** | **-0.031** | **0.050** | **-0.031** |
| | 1.47 | 0.54 | 1.29 | 0.74 |
| ***MARKETVOL*** | **1.517** | **-0.303** | **1.187** | **-0.212** |
| | (3.26)** | 0.53 | (3.50)** | 0.51 |
| ***REG_FD*** | **0.198** | **0.282** | **0.160** | **0.222** |
| | (7.68)** | (8.46)** | (8.19)** | (8.88)** |
| ***Trend*** | **0.011** | **0.004** | **0.008** | **0.003** |
| | (8.00)** | (3.27)** | (8.52)** | (3.64)** |
| ***SIZE*** | **0.089** | **0.013** | **0.068** | **0.011** |
| | (8.32)** | 0.84 | (8.56)** | 1.22 |
| ***BTM*** | **-0.007** | **0.006** | **0.001** | **0.009** |
| | 0.39 | 0.25 | 0.03 | 0.51 |
| ***ROA*** | **0.066** | **0.19** | **0.017** | **0.098** |
| | 0.62 | 1.60 | 0.25 | 1.35 |
| ***RET*** | **-0.008** | **-0.011** | **-0.006** | **-0.009** |
| | 1.31 | 1.42 | 1.54 | (1.66)* |
| ***RETVOL*** | **-0.097** | **-0.043** | **-0.066** | **-0.012** |
| | 0.88 | 0.25 | 0.85 | 0.11 |
| ***ISSUE*** | **0.013** | **0.019** | **0.008** | **0.012** |
| | 0.20 | 0.36 | 0.18 | 0.34 |
| ***ANALYSTN*** | **0.011** | **0.023** | **0.007** | **0.016** |
| | (6.48)** | (11.64)** | (5.87)** | (11.21)** |
| ***INSTOWN*** | **0.075** | **0.189** | **0.08** | **0.155** |
| | 1.15 | (2.35)* | 1.64 | (2.53)* |
| ***LOSS*** | **-0.044** | **-0.048** | **-0.033** | **-0.035** |
| | (3.87)** | (3.47)** | (4.19)** | (3.68)** |
| ***CAPEX*** | **0.075** | **0.296** | **0.038** | **0.192** |
| | 0.94 | (3.40)** | 0.71 | (3.34)** |
| ***Firm fixed effects*** | **Y** | **Y** | **Y** | **Y** |
| **Adjusted $R^2$** | **27%** | **16%** | **26%** | **14%** |
| **Observations** | **59344** | **59344** | **85391** | **85391** |

*significant at the 10% level
**significant at the 5% level

## Table 7: Descriptive Statistics for Management Forecast Sample

The regressions are estimated over the time period 1996-2004. This table provides pooled descriptive statistics for both the disclosing sample and the full sample over the period 1996-2004 that are used in the analysis of management forecasts. *LH_WU* is the number of long horizon, walk-up earnings forecasts issued in quarter *t*. *LH_WD* is the number of long horizon, walk-down earnings forecasts issued in quarter *t*. *SH_WU* is the number of short horizon, walk-up earnings forecasts issued in quarter *t*. *SH_WD* is the number of short horizon, walk-down earnings forecasts issued in *quarter t*. Short horizon forecasts are those made within 90 days of the forecast period end date. All other forecasts are defined as long horizon forecasts.

| | **Disclosing Sample (N = 59,344)** | | | **Full Sample (N = 85,391)** | | |
|---|---|---|---|---|---|---|
| | **Mean** | **Median** | **Standard Deviation** | **Mean** | **Median** | **Standard Deviation** |
| ***LH_WU*** | 0.11 | 0 | 0.57 | 0.08 | 0 | 0.48 |
| ***LH_WD*** | 0.20 | 0 | 0.90 | 0.14 | 0 | 0.76 |
| ***SH_WU*** | 0.07 | 0 | 0.47 | 0.05 | 0 | 0.39 |
| ***SH_WD*** | 0.21 | 0 | 1.33 | 0.15 | 0 | 1.12 |

**Table 8. Regressions of firm walk-up and walk-down earnings-forecast frequency on the Michigan Consumer Confidence Index, by time horizon, for the disclosing sample.** The regressions are estimated over the time period 1996-2004. *LH_WU* is the number of long horizon, walk-up earnings forecasts issued in quarter *t*. *LH_WD* is the number of long horizon, walk-down earnings forecasts issued in quarter *t*. *SH_WU* is the number of short horizon, walk-up earnings forecasts issued in quarter *t*. *SH_WD* is the number of short horizon, walk-down earnings forecasts issued in *quarter t*. Short horizon forecasts are those made within 90 days of the forecast period end date. All other forecasts are defined as long horizon forecasts. All independent variables are defined as in Table 3. Standard errors are calculated using the Newey-West procedure with a lag length of two quarters.

| | ***Model 1: LH_WU*** | ***Model 2: LH_WD*** | ***Model 3: SH_WU*** | ***Model 4: SH_WD*** |
|---|---|---|---|---|
| ***SENT*** | **-0.411** | **0.096** | **-0.128** | **0.324** |
| | (9.03)** | 1.30 | (3.31)** | (3.90)** |
| ***GDPCHG*** | **0.001** | **0.005** | **0.007** | **0.009** |
| | 0.67 | (2.51)** | (5.19)** | (1.89)* |
| ***PASTMARKET*** | **0.086** | **-0.03** | **0.026** | **-0.074** |
| | (4.38)** | 0.62 | (1.75)* | 1.41 |
| ***MARKETVOL*** | **1.287** | **0.134** | **0.118** | **-0.327** |
| | (5.80)** | 0.33 | 0.70 | 0.62 |
| ***REG_FD*** | **0.079** | **0.119** | **0.074** | **0.204** |
| | (5.74)** | (5.28)** | (5.97)** | (7.33)** |
| ***Trend*** | **0.004** | **0.005** | **0.002** | **0.001** |
| | (6.72)** | (4.36)** | (4.88)** | 0.67 |
| ***SIZE*** | **0.008** | **0.076** | **-0.011** | **0.018** |
| | 1.38 | (8.90)** | (2.28)** | (1.78)* |
| ***BTM*** | **-0.019** | **0.016** | **-0.001** | **0.006** |
| | (2.19)** | 1.11 | 0.08 | 0.28 |
| ***ROA*** | **0.129** | **-0.051** | **0.075** | **0.132** |
| | (2.29)** | 0.60 | (1.69)* | 1.28 |
| ***RET*** | **0.013** | **-0.018** | **0.014** | **-0.018** |
| | (3.93)** | (3.93)** | (3.64)** | (2.78)** |
| ***RETVOL*** | **-0.042** | **-0.026** | **-0.045** | **0.033** |
| | 0.98 | 0.29 | 1.18 | 0.23 |
| ***ISSUE*** | **-0.018** | **0.033** | **-0.007** | **0.028** |
| | (1.75)* | 0.49 | 0.73 | 0.52 |
| ***ANALYSTN*** | **0.004** | **0.008** | **0.003** | **0.021** |
| | (4.67)** | (5.51)** | (4.29)** | (12.18)** |
| ***INSTOWN*** | **0.039** | **0.039** | **0.048** | **0.134** |
| | 1.54 | 0.67 | (2.32)* | (1.89)* |
| ***LOSS*** | **-0.016** | **-0.025** | **-0.019** | **-0.026** |
| | (2.50)** | (2.87)** | (3.49)** | (2.08)** |
| ***CAPEX*** | **-0.018** | **0.107** | **0.044** | **0.236** |
| | 0.45 | (1.67)* | 0.99 | (3.65)** |
| ***Firm fixed effects*** | **Y** | **Y** | **Y** | **Y** |
| **Adjusted $R^2$** | **22%** | **19%** | **13%** | **15%** |
| **Observations** | **59344** | **59344** | **59344** | **59344** |

*significant at the 10% level
**significant at the 5% level

**Table 9. Regressions of firm walk-up and walk-down earnings-forecast frequency on the Michigan Consumer Confidence Index, by time horizon, for the full sample.**
The regressions are estimated over the time period 1996-2004. *LH_WU* is the number of long horizon, walk-up earnings forecasts issued in quarter *t*. *LH_WD* is the number of long horizon, walk-down earnings forecasts issued in quarter *t*. *SH_WU* is the number of short horizon, walk-up earnings forecasts issued in quarter *t*. *SH_WD* is the number of short horizon, walk-down earnings forecasts issued in *quarter t*. Short horizon forecasts are those made within 90 days of the forecast period end date. All other forecasts are defined as long horizon forecasts. All independent variables are defined as in Table 3. Standard errors are calculated using the Newey-West procedure with a lag length of two quarters.

| | ***Model 1: LH_WU*** | ***Model 2: LH_WD*** | ***Model 3: SH_WU*** | ***Model 4: SH_WD*** |
|---|---|---|---|---|
| ***SENT*** | **-0.315** | **0.068** | **-0.103** | **0.246** |
| | (9.13)** | 1.22 | (3.50)** | (3.90)** |
| ***GDPCHG*** | **0.001** | **0.004** | **0.005** | **0.007** |
| | 0.71 | (2.64)** | (5.24)** | (1.93)* |
| ***PASTMARKET*** | **0.061** | **-0.028** | **0.018** | **-0.061** |
| | (4.25)** | 0.81 | (1.68)* | 1.63 |
| ***MARKETVOL*** | **0.966** | **0.144** | **0.089** | **-0.236** |
| | (5.96)** | 0.48 | 0.72 | 0.62 |
| ***REG_FD*** | **0.064** | **0.095** | **0.058** | **0.161** |
| | (6.19)** | (5.61)** | (6.11)** | (7.74)** |
| ***Trend*** | **0.003** | **0.004** | **0.002** | **0.001** |
| | (7.23)** | (4.68)** | (5.34)** | 0.85 |
| ***SIZE*** | **0.006** | **0.058** | **-0.007** | **0.017** |
| | 1.52 | (9.12)** | (2.16)** | (2.18)** |
| ***BTM*** | **-0.012** | **0.016** | **0.001** | **0.008** |
| | (1.98)** | 1.48 | 0.03 | 0.51 |
| ***ROA*** | **0.077** | **-0.052** | **0.047** | **0.062** |
| | (2.14)** | 0.98 | (1.67)* | 0.99 |
| ***RET*** | **0.009** | **-0.014** | **0.007** | **-0.014** |
| | (3.87)** | (4.18)** | (3.56)** | (3.07)** |
| ***RETVOL*** | **-0.031** | **-0.014** | **-0.032** | **0.039** |
| | 1.05 | 0.21 | 1.17 | 0.40 |
| ***ISSUE*** | **-0.012** | **0.022** | **-0.004** | **0.018** |
| | (1.79)* | 0.48 | 0.72 | 0.51 |
| ***ANALYSTN*** | **0.002** | **0.006** | **0.002** | **0.015** |
| | (3.90)** | (5.36)** | (3.66)** | (12.07)** |
| ***INSTOWN*** | **0.041** | **0.040** | **0.043** | **0.106** |
| | (2.16)** | 0.91 | (2.76)** | (1.96)** |
| ***LOSS*** | **-0.013** | **-0.019** | **-0.014** | **-0.019** |
| | (2.77)** | (3.08)** | (3.67)** | (2.20)** |
| ***CAPEX*** | **-0.017** | **0.065** | **0.026** | **0.157** |
| | 0.62 | 1.54 | 0.91 | (3.67)** |
| ***Firm fixed effects*** | **Y** | **Y** | **Y** | **Y** |
| **Adjusted $R^2$** | **21%** | **18%** | **11%** | **14%** |
| **Observations** | **85391** | **85391** | **85391** | **85391** |

*significant at the 10% level
**significant at the 5% level

**Table 10. First-differenced regressions of median analyst earnings estimate errors on the Michigan Consumer Confidence Index, by time horizon.** The regressions are estimated over the time period 1986-2004. *AE_SH* is the median of all short horizon analyst earnings estimates error scaled by the absolute value of realized earnings. *AE_LH* is the median of all long horizon analyst earnings estimates error scaled by the absolute value of realized earnings. Short horizon estimates are those made within 90 days of the estimate period end date. All other estimates are defined as long horizon estimates. All independent variables are defined as in Table 3, and are first-differenced using the previous quarterly observation. T-statistics employ heteroskedasticity-robust standard errors and allow for clustering at the firm level.

| | ***Model 1: AE_LH*** | ***Model 2: AE_LH*** | ***Model 3: AE_SH*** | ***Model 4: AE_SH*** |
|---|---|---|---|---|
| ***D_SENT*** | **0.228** | **0.306** | **0.156** | **0.133** |
| | (2.30)** | (3.08)** | (1.93)* | (1.66)* |
| ***D_GDPCHG*** | **-0.001** | **-0.003** | **-0.005** | **-0.005** |
| | 0.73 | 1.64 | (3.25)** | (3.42)** |
| ***D_PASTMARKET*** | **-0.187** | **-0.185** | **-0.211** | **-0.194** |
| | (3.84)** | (3.82)** | (5.84)** | (5.43)** |
| ***D_MARKETVOL*** | **-0.718** | **-0.761** | **-1.722** | **-1.682** |
| | 1.42 | 1.51 | (4.01)** | (3.96)** |
| ***D_REG_FD*** | **0.472** | **0.454** | **0.041** | **0.039** |
| | (6.75)** | (6.49)** | 1.41 | 1.38 |
| ***D_SIZE*** | **0.396** | **0.385** | **0.272** | **0.248** |
| | (15.41)** | (14.99)** | (14.23)** | (12.91)** |
| ***D_BTM*** | **0.105** | **0.105** | **-0.007** | **-0.001** |
| | (2.68)** | (2.68)** | 0.24 | 0.04 |
| ***D_ROA*** | **1.732** | **0.735** | **3.001** | **1.096** |
| | (11.55)** | (4.51)** | (19.79)** | (6.62)** |
| ***D_RET*** | **0.002** | **0.001** | **-0.040** | **-0.041** |
| | 0.15 | 0.05 | (5.02)** | (5.30)** |
| ***D_RETVOL*** | **-0.144** | **-0.102** | **-0.172** | **-0.101** |
| | 0.97 | 0.69 | 1.50 | 0.89 |
| ***D_ISSUE*** | **0.014** | **0.023** | **0.013** | **0.012** |
| | 0.76 | 1.08 | 0.01 | 0.76 |
| ***D_ANALYSTN*** | | **0.002** | | **0.009** |
| | | 1.62 | | (6.66)** |
| ***D_INSTOWN*** | | **0.069** | | **0.241** |
| | | 1.13 | | (4.70)** |
| ***D_LOSS*** | | **-0.170** | | **-0.319** |
| | | (9.06)** | | (18.87)** |
| ***D_CAPEX*** | | **0.887** | | **0.050** |
| | | (6.64)** | | 0.56 |
| ***Observations*** | **114395** | **114395** | **113963** | **113963** |

*significant at the 10% level
**significant at the 5% level

**Table 11. First-differenced regressions of firm walk-up and walk-down earnings-forecast frequency on the Michigan Consumer Confidence Index, by time horizon, for the disclosing sample.** The regressions are estimated over the time period 1996-2004. *LH_WU* is the number of long horizon, walk-up earnings forecasts issued in quarter *t*. *LH_WD* is the number of long horizon, walk-down earnings forecasts issued in quarter *t*. *SH_WU* is the number of short horizon, walk-up earnings forecasts issued in quarter *t*. *SH_WD* is the number of short horizon, walk-down earnings forecasts issued in *quarter t*. Short horizon forecasts are those made within 90 days of the forecast period end date. All other forecasts are defined as long horizon forecasts. All independent variables are defined as in Table 3, and both dependent and independent variables are first-differenced using the prior quarter observation. T-statistics employ heteroskedasticity-robust standard errors and allow for clustering at the firm level.

| | ***Model 1: LH_WU*** | ***Model 2: LH_WD*** | ***Model 3: SH_WU*** | ***Model 4: SH_WD*** |
|---|---|---|---|---|
| ***D_SENT*** | **-0.315** | **0.030** | **-0.049** | **0.201** |
| | (4.37)** | 0.22 | 0.88 | (1.94)* |
| ***D_GDPCHG*** | **-0.001** | **0.006** | **0.006** | **0.012** |
| | 0.85 | (3.12)** | (4.64)** | (2.11)** |
| ***D_PASTMARKET*** | **0.081** | **-0.062** | **0.058** | **-0.273** |
| | (3.53)** | 1.42 | (2.38)** | (5.46)** |
| ***D_MARKETVOL*** | **0.707** | **0.373** | **0.245** | **-0.968** |
| | (1.98)** | 0.77 | 0.81 | (1.71)* |
| ***D_REG_FD*** | **0.025** | **0.059** | **0.099** | **0.292** |
| | 1.41 | 1.31 | (2.90)** | (5.92)** |
| ***D_SIZE*** | **0.007** | **0.115** | **-0.068** | **0.034** |
| | 0.43 | (4.42)** | (4.46)** | 0.92 |
| ***D_BTM*** | **-0.028** | **-0.005** | **-0.004** | **-0.010** |
| | 1.64 | 0.18 | 0.25 | 0.15 |
| ***D_ROA*** | **0.042** | **-0.139** | **0.018** | **0.506** |
| | 0.42 | 1.24 | 0.25 | (4.13)** |
| ***D_RET*** | **-0.004** | **-0.007** | **0.012** | **0.027** |
| | 0.64 | 0.74 | (2.24)** | 1.55 |
| ***D_RETVOL*** | **0.003** | **-0.221** | **-0.074** | **-0.341** |
| | 0.05 | (1.85)* | 0.93 | (4.06)** |
| ***D_ISSUE*** | **-0.019** | **0.036** | **-0.008** | **0.027** |
| | (1.72)* | 0.76 | 0.81 | 0.57 |
| ***D_ANALYSTN*** | **0.006** | **0.011** | **0.001** | **0.021** |
| | (3.67)** | (4.89)** | 0.41 | (6.66)** |
| ***D_INSTOWN*** | **-0.017** | **0.012** | **0.100** | **0.253** |
| | 0.34 | 0.01 | (1.84)* | 1.23 |
| ***D_LOSS*** | **0.008** | **-0.011** | **0.014** | **-0.030** |
| | 0.85 | 1.02 | 0.05 | 1.53 |
| ***D_CAPEX*** | **0.033** | **0.242** | **0.017** | **0.113** |
| | 0.59 | (2.71)** | 0.42 | 1.61 |
| ***Observations*** | **52359** | **52359** | **52359** | **52359** |

*significant at the 10% level
**significant at the 5% level

**Table 12. Regressions of median analyst earnings estimate errors on the Baker-Wurgler Investor Sentiment Index, by time horizon.** The regressions are estimated over the time period 1986-2004. *BW_SENT* is a quarterly measure of sentiment orthogonalized to a set of macroeconomic indicators as described in Baker and Wurgler, 2007. *AE_SH* is the median of all short horizon analyst earnings estimates error scaled by the absolute value of realized earnings. *AE_LH* is the median of all long horizon analyst earnings estimates error scaled by the absolute value of realized earnings. Short horizon estimates are those made within 90 days of the estimate period end date. All other estimates are defined as long horizon estimates. All independent variables are as defined in Table 3. Standard errors are calculated using the Newey-West procedure with a lag length of two quarters.

| | ***Model 1: AE_LH*** | ***Model 2: AE_LH*** | ***Model 3: AE_SH*** | ***Model 4: AE_SH*** |
|---|---|---|---|---|
| ***BW_SENT*** | **0.089** | **0.087** | **-0.010** | **-0.006** |
| | (8.23)** | (8.05)** | (2.51)** | 1.50 |
| ***GDPCHG*** | **-0.035** | **-0.036** | **-0.012** | **-0.012** |
| | (11.85)** | (12.28)** | (8.96)** | (9.18)** |
| ***PASTMARKET*** | **0.321** | **0.337** | **0.142** | **0.151** |
| | (7.72)** | (8.13)** | (7.44)** | (7.92)** |
| ***MARKETVOL*** | **1.331** | **1.418** | **-0.796** | **-0.725** |
| | (2.81)** | (2.99)** | (3.73)** | (3.39)** |
| ***REG_FD*** | **0.101** | **0.111** | **0.068** | **0.063** |
| | (4.37)** | (4.76)** | (7.24)** | (6.63)** |
| ***Trend*** | **-0.012** | **-0.011** | **-0.006** | **-0.006** |
| | (17.82)** | (16.41)** | (19.98)** | (19.43)** |
| ***SIZE*** | **0.312** | **0.283** | **0.081** | **0.064** |
| | (22.77)** | (19.54)** | (14.11)** | (9.59)** |
| ***BTM*** | **0.208** | **0.231** | **0.132** | **0.131** |
| | (7.05)** | (7.83)** | (9.76)** | (9.53)** |
| ***ROA*** | **1.501** | **0.827** | **0.212** | **-0.197** |
| | (8.21)** | (3.97)** | (2.25)** | (1.76)* |
| ***RET*** | **-0.159** | **-0.147** | **-0.087** | **-0.082** |
| | (16.11)** | (14.83)** | (19.68)** | (18.51)** |
| ***RETVOL*** | **0.543** | **0.589** | **0.004** | **0.033** |
| | (4.30)** | (4.64)** | 0.07 | 0.57 |
| ***ISSUE*** | **-0.111** | **-0.116** | **-0.055** | **-0.056** |
| | (4.67)** | (4.87)** | (4.45)** | (4.44)** |
| ***ANALYSTN*** | | **0.009** | | **0.007** |
| | | (4.83)** | | (7.80)** |
| ***INSTOWN*** | | **-0.005** | | **0.057** |
| | | 0.10 | | (2.34)** |
| ***LOSS*** | | **-0.099** | | **-0.064** |
| | | (4.65)** | | (5.47)** |
| ***CAPEX*** | | **2.001** | | **0.124** |
| | | (12.99)** | | (1.99)* |
| ***Firm fixed effects*** | **Y** | **Y** | **Y** | **Y** |
| ***Adjusted $R^2$*** | **19%** | **20%** | **10%** | **11%** |
| ***Observations*** | **134555** | **134555** | **135364** | **135364** |

*significant at the 10% level
**significant at the 5% level

**Table 13. Regressions of firm walk-up and walk-down earnings-forecast frequency on the Baker-Wurgler Investor Sentiment Index, by time horizon, for the disclosing sample.** The regressions are estimated over the time period 1996-2004. *BW_SENT* is a quarterly measure of sentiment orthogonalized to a set of macroeconomic indicators as described in Baker and Wurgler, 2007. *LH_WU* is the number of long horizon, walk-up earnings forecasts issued in quarter *t*. *LH_WD* is the number of long horizon, walk-down earnings forecasts issued in quarter *t*. *SH_WU* is the number of short horizon, walk-up earnings forecasts issued in quarter *t*. *SH_WD* is the number of short horizon, walk-down earnings forecasts issued in *quarter t*. Short horizon forecasts are those made within 90 days of the forecast period end date. All other forecasts are defined as long horizon forecasts. All independent variables are defined as in Table 3. Standard errors are calculated using the Newey-West procedure with a lag length of two quarters.

| | ***Model 1: LH_WU*** | ***Model 2: LH_WD*** | ***Model 3: SH_WU*** | ***Model 4: SH_WD*** |
|---|---|---|---|---|
| ***BW_SENT*** | **-0.028** | **0.008** | **-0.016** | **0.025** |
| | (7.16)** | 1.32 | (5.67)** | (3.54)** |
| ***GDPCHG*** | **0.002** | **0.005** | **0.007** | **0.008** |
| | 1.54 | (2.42)** | (4.57)** | 1.56 |
| ***PASTMARKET*** | **-0.047** | **0.003** | **-0.023** | **0.034** |
| | (2.60)** | 0.06 | 1.29 | 0.74 |
| ***MARKETVOL*** | **0.049** | **0.459** | **-0.407** | **0.704** |
| | 0.24 | 1.15 | (2.36)** | 1.38 |
| ***REG_FD*** | **0.139** | **0.105** | **0.093** | **0.157** |
| | (11.66)** | (5.00)** | (8.88)** | (5.12)** |
| ***Trend*** | **0.001** | **0.005** | **0.001** | **0.003** |
| | (2.80)** | (5.17)** | (2.97)** | (2.68)** |
| ***SIZE*** | **0.005** | **0.077** | **-0.009** | **0.02** |
| | 0.91 | (9.01)** | (2.00)** | (1.76)* |
| ***BTM*** | **-0.021** | **0.016** | **0.001** | **0.006** |
| | (2.29)** | 1.09 | 0.13 | 0.29 |
| ***ROA*** | **0.129** | **-0.051** | **0.075** | **0.132** |
| | (2.30)** | 0.61 | (1.68)* | 1.28 |
| ***RET*** | **0.013** | **-0.018** | **0.01** | **-0.019** |
| | (4.10)** | (3.95)** | (3.60)** | (2.79)** |
| ***RETVOL*** | **-0.04** | **-0.032** | **-0.024** | **0.023** |
| | 0.93 | 0.35 | 0.64 | 0.17 |
| ***ISSUE*** | **-0.016** | **0.033** | **-0.007** | **0.027** |
| | 1.61 | 0.49 | 0.74 | 0.5 |
| ***ANALYSTN*** | **0.004** | **0.008** | **0.003** | **0.021** |
| | (4.90)** | (5.49)** | (4.25)** | (12.08)** |
| ***INSTOWN*** | **0.043** | **0.039** | **0.045** | **0.133** |
| | (1.71)* | 0.68 | (2.17)** | (1.84)* |
| ***LOSS*** | **-0.016** | **-0.025** | **-0.019** | **-0.026** |
| | (2.42)* | (2.88)** | (3.49)** | (2.13)** |
| ***CAPEX*** | **-0.008** | **0.103** | **0.054** | **0.225** |
| | 0.19 | 1.61 | 1.23 | (3.50)** |
| ***Firm fixed effects*** | **Y** | **Y** | **Y** | **Y** |
| ***Adjusted $R^2$*** | **22%** | **19%** | **13%** | **16%** |
| ***Observations*** | **59344** | **59344** | **59344** | **59344** |

*significant at the 10% level
**significant at the 5% level