

Research Report

The Value of Verbal Information

TO MAKE PROFITABLE INVESTMENT DECISIONS, INVESTORS NEED TO ASSESS THE FINANCIAL FUTURE OF FIRMS. DUE TO INVESTORS' LACK OF INTERNAL INFORMATION ABOUT THE FIRMS' FUTURE PROSPECTS, THEY OFTEN HAVE TO RELY ON MANAGERS' VERBAL STATEMENTS FOR THIS TASK. HOWEVER, AS MANAGERS MIGHT HAVE AN INCENTIVE TO PRESENT POSITIVELY BIASED INFORMATION, THE VALUE OF THEIR STATEMENTS FOR INVESTORS IS NOT CLEAR.

IN THIS REPORT, WE SHOW HOW TEXTUAL ANALYSIS TOOLS CAN BE USED TO ASSESS THE VALUE OF MANAGERS' VERBAL STATEMENTS DURING EARNINGS CONFERENCE CALLS FOR INVESTORS. WE FIND THAT IN PARTICULAR MANAGERS' NEGATIVE STATEMENTS SIGNIFICANTLY PREDICT LOWER FUTURE EARNINGS.

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Introduction

There are different ways to present similar news:

"In conclusion, we are disappointed in our 2008 performance.", "We all recognize that stocks [...] are not currently in favor.", "Our near-term priority is to return to profitability as soon as possible." (Integra Bank, 2008Q4 call, earnings surprise: -2.7 USD/share, negative word share: 2.26%)

"I want to be clear – we're not giving up on the possibility that we can show both top and bottom line growth [...].", "Looking ahead, we have a number of opportunities for growth." (Playboy Enterprises, 2008Q4 call, earnings

surprise: -2.6 USD/share, negative word share: 1.19%)

Although the context of both statements is comparable (results are significantly lower than expected), the way in which results are communicated is very different. Our idea is to explore whether such statements by managers provide additional value beyond the reported results for investors.

By "verbal information" we refer to all information from managers' statements. Thus, verbal information comprises not only what managers say, but also how they say it (e.g., the negativity or vagueness of their statements).

We conduct our analysis in the context of quarterly earnings conference calls. Earnings conference calls are a popular platform, especially in the US, where a firm's executive board presents and discusses information with analysts and investors. Together with prepared press releases, conference calls accompany the quarterly earnings announcements and are hosted around the report date. Earnings conference calls typically consist of two parts: (i) a prepared presentation by the firm's management and (ii) a – to some degree – spontaneous questions and answers (Q&A) section.

There is reason to believe that verbal information in earnings conference calls is valuable: Managers have more information about their firm's threats and opportunities than investors. Given that, managers' verbal information could bring insights that are valuable for predicting the firm's financial future. However, as investors cannot verify managers' information, managers may also have an incentive to provide only positive news or present negative news in a positively biased way.

To explore the value of verbal information from earnings conference calls empirically, we use a large sample of transcripts which firms have to make available for regulatory reasons since 2000. Since this data is present in textual, unstructured form, whereas econometric techniques require numerical, structured data, we first need to apply textual analysis to quantify the information within these transcripts.

Textual Analysis in Finance

In financial economics, textual analysis was first applied to media content. For example, Tetlock et al. (2008) analyze firm-specific news stories from financial newspapers and demonstrate that their linguistic tone predicts both future firm fundamentals and persistent stock market reactions. These findings suggest that verbal information can provide additional value-relevant information beyond traditional "hard" information sources, such as earnings figures.

Earnings conference calls differ from media content in a fundamental aspect: Whereas media articles typically reflect public information, speech expressed by conference call participants are likely to include private information as well. Thus, conference calls could have an even higher potential of containing valuable verbal information.

If verbal information is valuable, it should be related to a firm's financial future. Therefore, we analyze the following research question: *Does verbal information from earnings conference calls predict future firm performance?*

Empirical Study

To empirically analyze the value of verbal information in earnings conference calls, we rely on a hand-collected sample of more than 10,000 firm-quarter observations covering the period between 2000 and 2016. We start to gather this data by drawing a random sample of 1,000 firms listed on one of the three major

US stock exchanges (NYSE, NASDAQ, AMEX) in the beginning of 2000. We then supplement the sample with data from three additional sources: (i) we obtain data about firm performance, measured as quarterly reported earnings per share, and corresponding forecasts from the International Broker Estimate System (I/B/E/S), (ii) fundamental firm characteristics from Compustat, and (iii) market-related variables, including daily market and stock returns, from the Center for Research in Security Prices (CRSP).

For each firm and quarter, we subsequently gather conference call transcripts from the database LexisNexis. As LexisNexis does not share a common identifier with the other data sources, large parts of the data processing have to be conducted manually. The final dataset consists of 10,258 transcripts covering 429 different firms. The sample period includes 64 consecutive quarters between 2001Q1 and 2016Q4. As some stocks disappear (e.g., through bankruptcies or mergers) during the sample period, the number of firms per quarter decreases over time.

To quantify verbal information from textual data, we follow a dictionary based (bag-of-words) approach. Within this class of methods, text documents are simply represented as a matrix of word counts, i.e., the total number of appearances for each word in each document. Empirical measures of linguistic tone can be derived by classifying individual words into groups designed to represent a common theme (such as “optimism”, or

“uncertainty”). Word appearances are then counted for each category – optionally under different weighting schemes.

Although some previous studies used machine learning techniques for this categorization (examples include Naïve Bayes Classifiers or Support Vector Machines), their usage requires previous labeling of a study-specific training sample, which reduces both reproducibility and comparability. Therefore, we follow the more common approach and use external, well-tested dictionaries to classify words into categories.

While many early studies in finance and accounting research relied on the word categorization from a psychological dictionary – prominent examples include Tetlock (2007) or Tetlock et al. (2008) –, Loughran and McDonald (2011) show that in a business context, almost three-fourth of negative-tagged words of this general-purpose

dictionary are misclassified (e.g., “liability” or “cost”). To overcome this problem, the authors develop a finance-specific dictionary, which is based on word appearances in firms’ annual reports.

The misclassification of context-specific words represents a substantial challenge for researchers since word frequencies are far from being uniformly distributed. In our sample, the top 34 words account for 50% of all word appearances within the negative category. This phenomenon, also referred to as Zipf’s Law, is common in quantitative linguistics. Thus, the approach is highly sensitive to erroneous classification. If one of these high-frequency words is misclassified, a small measurement error has the potential to severely bias the results.

To account for this, we manually screen the frequency distributions for each category to spot any obvious misclassification and sub-

sequently make the following adjustments: We exclude the words “question” and “questions” from the negative list, as they are often used to moderate the discussion (e.g., “the next question comes from...”). Positive words are not counted when appearing in common opening phrases (“good morning | afternoon | evening | question”). Lastly, we correct for negation by not counting positive words if one of the three preceding words in the same sentence matches a term of negation (“not”, “no”, “none”, “never”, “neither”, “nobody”) or ends with “n’t”.

The dictionaries feature five categories of interest: positive, negative, uncertain, weak modal, and strong modal, where modal words reflect degrees of confidence. Examples of frequent words for each category in our sample are shown in Table 1. For each category, we then calculate its relative share within a call. Moreover, we measure negativity as the ratio of negative to positive words.

Negative		Positive		Uncertain		Weak		Strong	
Word	Share	Word	Share	Word	Share	Word	Share	Word	Share
LOSS	5.05%	GOOD	8.78%	COULD	12.15%	COULD	28.68%	BEST	24.50%
DECLINE	4.59%	STRONG	6.81%	MAY	8.99%	MAY	21.23%	ALWAYS	5.29%
RESTRUCTURING	2.66%	GREAT	5.85%	BELIEVE	8.58%	MAYBE	15.86%	CLEARLY	4.46%
DIFFICULT	2.60%	BETTER	4.52%	APPROXIMATELY	7.69%	MIGHT	9.61%	DEFINTELY	1.64%
NEGATIVE	2.33%	OPPORTUNITIES	3.49%	PROBABLY	6.75%	ALWAYS	4.46%	NEVER	1.53%

Table 1: Top-Five Words of Each Tone Category Ranked by Within-Category Share of Appearance

To investigate the effect of verbal information on future financial firm performance, we apply panel regressions. All models include control variables for current and past economic conditions, stock market performance, and firm characteristics. Furthermore, to control for unobserved heterogeneity of firms, we include firm fixed effects.

Summary of Findings

Overall, we find that verbal information in earnings conference calls predict future financial firm performance: More negative (positive) tone within a call significantly predicts lower (higher) future earnings. However, the effect size of positive tone is considerably smaller. Other tone categories, such as uncertainty or confidence, do not show any significant relation with future firm performance.

The observed effect sizes in our sample can be substantial: A one standard deviation increase in negative tone is associated with a 9% decrease in next quarter earnings.

Consider the introductory example of Integra Bank and Playboy Enterprises: The two companies exhibit negative word shares of 2.26% and 1.19% in their calls, respectively. This difference predicts, *ceteris paribus*, a USD -0.11 difference in next quarter's earnings per share according to our model (for comparison, the sample mean for next quarter earnings per share is USD 0.29).

Separating the call into its individual sections

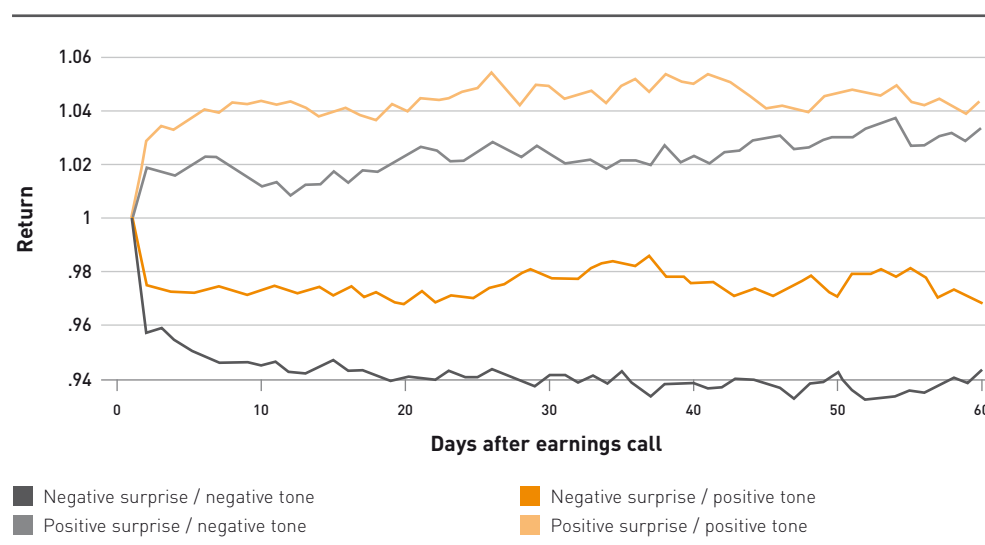


Figure 1: Cumulative Market-Adjusted Returns of Stock Portfolios Sorted by Earnings Surprise and Tone for the 60-Day Period Subsequent to an Earnings Conference Call

and speakers, we observe the following findings: Presentation tone is more predictive of next quarter's earnings than Q&A tone. However, at longer time horizons, the opposite is true. This result suggests that while the content of the presentation is more directed towards current topics, the scope of Q&A discussions is broader and its tone can, thus, be a valuable predictor for long-term future performance.

The effect of negative tone on future financial performance is moderated by the economic conditions faced by a firm. When facing times of high investor uncertainty measured by large stock price volatility, the effect of negative tone increases. Thus, negative statements

by managers are especially predictive for low future earnings when uncertainty about future financial performance is high.

Comparing speakers, we find that the tone of CEOs who receive the highest attention and have more freedom in selecting the topic to talk about is more valuable than CFO tone. However, positive CEO tone has no predictive power at all. Thus, we do not find any credibility for frequently observed, overly optimistic statements by CEOs.

Besides future earnings, we also consider future stock returns as a measure of financial performance. Therefore, we sort stocks into portfolios by earnings and their calls' nega-

tivity. Figure 1 shows average cumulative stock returns during the quarter following the call. As for future earnings, more negative tone also predicts lower future stock returns. Firms with comparable earnings but more negative tone (as Integra Bank and Playboy Enterprises) experience differences in stock returns of up to -2% after 60 days of trading.

Conclusion

Using a manually collected dataset of transcripts of earnings conference calls, we explore the value of verbal information from managers' statements for investors. We find that verbal information, especially negative tone, can be valuable for predicting firms' financial future.

References

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