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# MEASURING THE COST OF REGULATION: A TEXT-BASED APPROACH

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## ABSTRACT

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# Measuring the Cost of Regulation: A Text-Based Approach

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**Abstract**

We derive a measure of firm-level regulatory costs from the text of corporate earnings calls. We then use this measure to study the effect of regulation on companies' operating fundamentals and cost of capital. We find that higher regulatory cost results in slower sales growth, an effect which is mitigated for large firms. Furthermore, we find a one-standard deviation increase in our preferred measure of regulatory cost is associated with an increase in firms' cost of capital of close to 3% per year. These findings suggest that regulatory risk is a major cost to firms, but the largest firms are able to manage that risk better.

## 1. Introduction

Regulation is often justified by the gains to the public that come from outcomes such as cleaner water and air, safer travel, less dangerous products, and more honest advertising. The costs of regulation are borne by the firms that must comply with them. Costs can be roughly categorized into two sets: operational costs and compliance risks. In the former category are the

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direct costs related to regulation's mandated changes (relative to what firms would otherwise do) in production, distribution or sales practices. In the latter category are the indirect costs of bearing the uncertainties related to the way regulation is created and enforced. For example, since the 1970s, a broad trend in regulation has been for regulators to increasingly rely on "guidance" rather than formal rulemaking in setting regulatory standards (DeMuth 2016, Epstein 2016, Calomiris 2018), which has increased regulatory compliance risk. Guidance is attractive to regulators because the absence of formal rules gives them greater flexibility in implementing regulation, but of course, that same flexibility implies greater uncertainties for firms about how regulation will evolve and precisely what they will be held accountable for doing or not doing. Such uncertainty may in turn prevent firms from undertaking attractive investments due to the fear of an unforeseen regulatory response.

Although many observers often express the belief that regulation is costly to the firms subject to regulation both through its operational burdens and its compliance risks, research has not made much progress in measuring those costs. For example, although there is substantial evidence that President Trump's first two years in office have resulted in a reduction in the flow of new regulation and some deregulation (a summary is provided in Chapter 2 of the March 2019 Annual Report of the Council of Economic Advisers), precise measures of these changes remain elusive. The Administration claims that deregulation has been an important contributor to the acceleration of growth in the years since Trump's election, but there is no hard evidence to quantify whether that is true, or if so, how much of that growth should be attributed to deregulation. Furthermore, it is unclear whether whatever gains have come from less regulation are a consequence of lower operational costs or of reduced compliance risks. The distinction is important because, to the extent compliance risk is costly, important implications for regulatory

reform may follow – for example, the need to restore the importance of formal rulemaking in the regulatory process.

While regulation often has substantial benefits that can justify the costs borne by regulated firms, compliance risk can be mitigated substantially at little cost to society by reducing the unpredictability of regulation. From that perspective, intentional unpredictability can be seen as the result of an agency problem. Regulators, like all humans, prefer the latitude that comes from avoiding predictable behavior in accordance with adherence to clear rules, so they may choose not to bind themselves to formal rules. But unpredictability may have major net economic costs to society and to the nation as a whole if unfettered regulatory discretion reduces growth. Furthermore, excessive regulatory discretion also erodes the rule of law and the ability of the electorate to determine the laws under which they are governed, so excessive reliance on guidance may impose social costs beyond reductions in growth. To understand the impact of regulation on growth and on society more broadly, it is important to measure how much regulation economic agents face, and to do so in a way that permits one to measure regulatory risks, taking into account the effects of both formal rule making and guidance.

Several recent studies have employed natural language processing (NLP) to measure the flow of regulation. Some of those studies make use of the data produced by the Mercatus Center at George Mason University (GMU), which tracks the word flow of the federal government's formal rule making, and has devised a means of attributing the relevance of that word flow to at the sectoral level in the economy.[1] This approach results in a panel dataset, defined for each

[1] Al-Ubaydli and McLaughlin (2017) have examined regulation (at the industry-year level) through the lens of the amount of words published in the Code of Federal Regulations (CFR).

sector and each year, that measures regulatory flow, which can be used in empirical studies to gauge how differences in the amount of regulation over time and across sectors affect firms.

Although these data may be useful for many purposes, there are three major problems with them as measures of regulatory costs to firms. First, the widespread use of regulatory guidance as a tool is a major problem for this approach because guidance is not included in the Code of Federal Regulation (CFR). Second, state-level regulation is not included in this measure. Third, counting words ignores differences in the importance of regulatory word flow. This is especially a problem for gauging changes over time related to attempts at regulatory reform. For example, in the first year of the Trump Administration, the total growth in the amount of word flow as measured by the GMU data was identical to the average for each year of the Obama Administration. This may reflect a "bureaucrats-at-keyboards" phenomenon: a given number of federal employees hired to write regulations will produce a constant amount of typed words per year, irrespective of whether those words are important. In times of deregulation, but with a constant growth of the bureaucratic workforce, the importance of regulatory word flow (on a per-word basis) diminishes, and measures based on calculating the number of words will miss that diminution.

Measures that attempt to capture the importance of regulation – for example, the number of regulations passed with high estimated compliance costs, compiled by George Washington University, and reported as an aggregate time series – show a precipitous decline in regulation in the first year of the Trump Administration. That suggests that the GMU method is particularly prone to understate changes in importance that are due to sudden changes in Administration philosophy. Clearly, measures of the total flow of regulation words and of the total number of important regulations provide dramatically different pictures of regulatory change in 2017.

Simkovic and Zhang (2019) quantify regulation at the industry-year level by tallying up the number of employees whose work has to do with regulatory compliance. Data limitations from the Bureau of Labor Statistics restrict their measure to a three-year moving average, which smooths away much of the variation across time. Davis (2017) is the most closely related study to our paper. He uses mentions of "regulation" in firms' 10-Ks. But he does not construct a measure analogous to ours that captures increases and decreases in regulation, rather than simply its mention. Furthermore, 10-Ks are presentations of information by firms. If management wishes to avoid inconvenient discussions relating to compliance problems, then those discussions may be absent from 10-Ks.

In this study, we take a new approach that uses NLP methods but applies them to a corpus that inherently filters the word flow related to regulation on the basis of its importance. Specifically, we undertake an NLP analysis of the transcripts of the Earnings Calls of publicly traded corporations. Earnings Calls are the quarterly opportunities for stockholders to hear from and question management about all the important influences on the values of companies. Earnings Calls also permit investors to question management, which means that important aspects of regulatory compliance costs that may be neglected in management's presentation can be raised by investors in their questions. Given the limited duration of the Earnings Calls, if management and investors use the scarce resource of time to discuss regulation, that is a reliable indicator of its importance.

We find that the flow of words related to regulation that appears in Earnings Calls – which we measure using both an original approach and one that follows prior research – has important implications for the future growth of firms, and for their future stock prices. These findings indicate that more regulation has major negative implications for the growth of firms, and that

compliance risk is likely an important channel through which regulation affects growth. We also find that regulation has less negative consequences for large firms than for small ones (see also Davis 2017). This result is consistent with a large literature on the political economy of regulation that sees regulation as less harmful to large firms because of economies of scale in managing the operating costs and compliance risks associated with regulation, which imply consequent competitive advantages of large firms over small firms that arise from greater regulation.[2]

We organize the remainder of our paper as follows. Section 2 reviews our data sources. Section 3 describes our methodology for measuring regulation using the transcripts of Earnings Calls. For each Earnings Call, we construct separate measures for the presentation given by management, and for the question-and-answer (Q&A) part of the transcript. Our preferred measure of regulation is labeled *NetReg*, which captures both mentions of regulation and the direction of regulation. We also construct measures that capture the sentiment score of the transcript, either in the sentence in which regulation is discussed (*RegSent*) or in the call as a whole (*AllSent*). In Section 3, we provide plots of these measures over time and compare them to one another. Section 4 presents our empirical findings, which connect our measures of regulation for the two parts of the Earnings Call with firm performance measures, and stock returns. We also consider the importance of firm size differences for regulatory costs and the potential relevance of topical context for our NLP-related measures. In Section 4, we also devote attention to the question of causality in explaining the association between regulation and firm performance. We note that *NetReg* Granger causes the measures of firm performance we

[2] The literature is vast. Some important early contributions include Olson (1965), Stigler (1971), and Krueger (1974). For a collection of some of the most influential essays on the political economy of regulation, see Stigler (1988). For an example of a discussion specifically of the advantaged role of large firms in the U.S. regulatory process in banking, see Calomiris and Haber (2014), Chapters 7-8.

examine, and is not Granger caused by them. The same cannot be said for sentiment-related measures of regulation, which display more complex intertemporal mutual dependency with measures of firm performance. Section 5 concludes by summarizing our results and pointing to their implications.

All our regulatory text measures can be downloaded at *www.measuringregulation.com*.

## 2. Data

Our measures of regulation are derived from textual analyses of all the available quarterly Earnings Calls of publicly traded firms from S&P Global's Transcripts Data for the period 2009-2018. To examine the effects of regulation on firms, we merge these conference call data with pricing and accounting information for U.S. firms from CRSP and Compustat for the period 2008-2018.[3] Here, we require that observations found in S&P Global have valid CRSP *PERMNO* and Compustat *gvkey* identifiers. From CRSP, we collect daily stock returns, daily number of shares outstanding, and daily trading volume for firms publicly traded on the NYSE, Nasdaq, and Amex. From Compustat, we obtain quarterly information on various accounting characteristics and firm growth. We exclude the financial services industry as indicated by SIC codes that begin with 6, because performance measures, such as sales growth, for financial services firms tend to be non-comparable to other firms. The following table summarizes our data sample:

| | |
|---|---|
| Firm-quarter observations from Compustat and SP Global | 75,350 |
| Firm-quarter observations with an Earnings Call that mentions regulation | 27,893 |
| % firm-quarters for firms without any Earnings Call that mentions regulations | 9.9% |

[3] We use a mapping provided by SP Global which associates an earning call's company identifier, *ciqCompanyID*, to Compustat's company identifier, *gvkey*. While there are instances where a *gvkey* is associated with multiple *ciqCompanyId*'s (this happens for 4% of all *gvkey*'s), the *gvkey-date* to *ciqCompanyId-date* mapping is unique (except for 4 firm-quarter observations which do not impact our results).

Our primary measure of firm growth is annual sales growth, which is defined as the percentage change of sales from the current quarter relative to sales from four quarters ago. We also consider alternative measures. These include asset growth (i.e., the percentage change in total assets) and operating income growth (i.e., the percentage change in operating income after depreciation). To measure the size of the firm, we use log sales over the prior three months, with sales measured in millions of dollars. Excluded from all of these firm performance regressions are firm-quarters with missing values for total assets and missing or negative values for sales and operating income. Industry-adjusted measures of regulation for the firm for a given quarter are obtained by subtracting out its 2-digit SIC industry equally-weighted average in that quarter. Because not all Earnings Calls discuss regulation, we introduce a *NoRegulat* dummy variable that equals one for firms that have mentioned regulations in some Earnings Call in our sample, but not in the present one, and is zero otherwise. Some firms in our sample never mention regulations in any of their Earnings Calls; for such firms we introduce a dummy variable *NeverRegulat* which is set to one for all of their firm-quarters. Our core analysis is a panel regression with firm-quarter observations, where we study how future firm growth depends on the discussion of regulation in the Earnings Call. These regressions control for numerous potential influences on future growth, including lagged firm growth, size, industry-level measures of firm regulation, and industry fixed effects.

To study the implications of regulation for stock prices, we examine returns, both excess of the risk-free rate (measured as the 1-month T-bill) and risk-adjusted (using the Fama-French 5-factor plus momentum), over 1-, 5- , and 22-trading-day horizons following the Earnings Call. These returns are measured from the closing price of day *t* (i.e., the date of the conference call) for calls occurring prior to 4 PM U.S. Eastern Time and from the closing price of day *t+1* (i.e.

the following trading day) for calls occurring at 4 PM U.S. Eastern Time or afterwards. The loadings used to calculate risk-adjusted, or abnormal, returns and alphas are estimated over the [-30, -252] trading day window. For our analysis of stock returns, we control for the log of market equity (in millions), the log of the book-to-market (BM) ratio (i.e., the log of book equity over market equity), standardized unexpected earnings (SUE) defined similarly to Bernard and Thomas (1989) and Tetlock, Saar-Tsechansky and Macskassy (2008), and log of share turnover, defined as shares traded on the day of the event divided by shares outstanding. To mitigate the influence of outliers, we winsorize SUE, log BM, and log turnover, as well as our measures of firm growth, at the two percent level (which affects 4 percent of the observations).

Table 4 summarizes the definitions of the above variables, and Table 5 provides summary statistics.

## 3. Measuring regulation

Our text analysis is performed on the Earnings Call data set obtained from S&P Global. Before analyzing the calls we perform the following cleaning steps: convert all words to lowercase; take out whitespace; remove stop words; tokenize and stem all words. For the sentiment analysis described below, we also performed word negation, following the algorithm suggested by Das and Chen (2007), which appends the string "_NEG" to all words in a sentence which follow an English language negation word, such as "don't" or "not". Word negation was performed prior to all other cleaning steps.

In our NLP analysis of Earnings Call transcripts, we employ two measures of regulation. Our primary measure is our original construct, which measures net regulation. This variable, which we label *NetReg*, can be positive or negative. Negative values indicate reduced regulation

(deregulation) and positive values indicate more regulation. To construct this measure, we begin by separately searching the presentation (Pres) part and the Q&A part of each quarterly transcript for the word root "*regulat*," which identifies the words that indicate the presence of a discussion of regulation (regulate, regulated, regulation, regulator, deregulate, etc.).

To ensure that the context we are identifying is one in which regulation is being discussed in the economic sense (as opposed to, for example, an engineering usage of the word, such as in a discussion of an electricity or water flow regulator system) we identify a list of "Concept" words. We only count an occurrence of *regulat* if one of those Concept words is also present in the same sentence as *regulat*. In Table 1 we report the number of occurrences of *regulat* that coincide with Concept words or not. The vast majority of occurrences coincide with Concept words. The list of Concept words is provided in Table 2, in order of their frequency of occurrence. We identified the words included in this list by examining all the words that co-occur with *regulat* in sentences and using our judgment (prior to running any regressions) to identify words (based on our reading of the sentences in which *regulat* is mentioned) that are associated with economic usages of *regulat*. We refer to sentences containing *regulat* and a Concept word as *regulatory sentences*. We restrict our regulatory tone analysis to sections of calls containing regulatory sentences.[4]

To gauge whether the discussion is one of increasing or decreasing regulation, we use the same approach to identify "Increasing" or "Decreasing" words that co-occur in the same sentence as *regulat* and convey a sense of increasing or decreasing regulatory exposure, respectively. These words are also listed in Table 2 in order of their frequency of occurrence. Examples of sentences in which *regulat* is accompanied by Increasing or Decreasing words are

[4] The concept word filter applies to only *NetReg* and *RegSent* measures. That is, for a given section of a call, these regulatory measures are set to missing if there are no concept words in that section of the call, even if there is a mention of *regulat*. *AllSent* measures are unaffected because *AllSent* represents the overall sentiment of a section.

provided in Table 3. It was from reading the context of these, and many other, sentences that we were able to judge whether words convey a sense of Increasing or Decreasing regulatory exposure. For example, it is not clear on an a priori basis whether the word "adapt" should be considered an Increasing word, a Decreasing word, or neither. By reading the transcripts one discovers, however, that "adapts" is often used in sentences that include *regulat* to indicate the need for a firm to adapt to an increase in regulation. Here are some of the examples that illustrate the point:

- "We are well prepared to adapt to the changing legislative, regulatory and economic environment."
- "Because of our steady and consistent performance, we are well positioned to adapt to the coming industry changes required by financial reform legislation and regulators."
- "Sales in India continue to be impacted as the marketplace adapts to the sweeping September 1 regulatory changes to unit-linked product."
- "Of course we're adapting our business model to the reality of regulation as it exists through the FDA." (Note that FDA refers to the Food and Drug Administration.)
- "On a global kind of view, are you seeing any change or starting to hear any changes on any regulatory front in terms of maybe the local regulators starting to adapt strategies for, not just changing cash-to-cash but anything, cash-to-mobile or any of those type solutions."

We emphasize that the choice of words indicating increasing or decreasing regulation was made by us independently of the regression analysis that is described in Section 4. Our choice of these words captures our subjective judgement of how the regulatory environment faced by firms should best be codified algorithmically.

Our *NetReg* measure takes all regulatory sentences in the Pres and Q&A sections, calculates the difference between the number of Increasing and Decreasing regulatory words occurring in those sentences, and divides by the total number of words in these sentences (after stop words have been removed), i.e.

$$NetReg = \frac{Increasing - Decreasing}{Total\ number\ of\ words}.$$

Our filter isn't perfect: not all regulatory sentences that contain the word "adapt" are indicative of increasing regulation from the firm's point of view, as the last sentence in the above list demonstrates. Table 3 shows the *NetReg* measure associated with an alternative set of sample sentences. But as these above sentences and those of Table 3 show, our simple filter does a remarkable job of (a) identifying meaningful regulatory references in Earnings Calls, as well as (b) identifying the directionality of the reference.

We regard the use of subjective judgment in constructing the lists of Concept, Increasing, and Decreasing words as unavoidable for a simple reason: in the context of measuring regulation's impact, it is not possible to use alternative, machine-learning techniques to identify Concept, Increasing or Decreasing words. For example, one such technique would be to infer Concept, Increasing and Decreasing words by identifying combinations of words that tend to result in positive or negative stock returns at the time of the Earnings Call. The problem with this approach, however, is that there are many important high-frequency news influences on stock prices other than regulation that are revealed in the Earnings Call, and regulation news is generally a low-frequency phenomenon. Thus, the ability to discern relevant word combinations from stock price reactions is not feasible for our purposes.

In addition to our original measure of regulation, *NetReg*, we also construct two measures based on the sentiment of the text in the Earnings Call. We use the Loughran and McDonald (2011) sentiment dictionary to identify positive and negative sentiment words in the Earnings Calls. We define two sentiment-related measures for each part (Pres and Q&A) of each call. The first of these, *RegSent* measures the sentiment score for each sentence in which *regulat* appears. We construct this as a possible alternative measure of the effect of regulation. The second sentiment-related measure, *AllSent*, calculates the sentiment score for the entire Pres or Q&A discussion in the Earnings Call. This does not capture the effect of regulation, but rather is useful as a benchmark for the effects of sentiment in general, against which to compare the effects of regulation captured in *RegSent*. The sentiment score is calculated as the difference between the number of positive and negative sentiment words, divided by the total number of words (after removal of stop words) that appear either in regulatory sentences (for *RegSent*) or in all sentences (for *AllSent*) of the Pres or Q&A sections of each call.

### *3.1. Regulatory trends*

The upper panel of Figure 1 plots the time series paths of the *NetRegP* and *NetRegQA*, which measure the value of *NetReg* for the Pres and Q&A segments of the Earnings Calls, respectively. Each series is an equally-weighted average of individual call measures aggregated at the quarterly level. It is interesting that the two time-series aggregate measures plotted in Figure 1 are not highly correlated (with a correlation of only 0.09). They do not even display common low-frequency movements: *NetRegP* seems to trend down since 2010, while *NetRegQA* appears to trend upward from 2010 to 2016, and then declines abruptly at the end of 2016. Apparently, the circumstances that give rise to management discussion of regulatory issues in their formal presentations are not the same as the circumstances that motivate investors to ask questions about

regulation. This highlights the advantage of considering their content separately. Presumably, management may not have an incentive to highlight all problems or risks, including those related to regulation, while investors' questions may be directed precisely at topics about problems or risks that management seeks to avoid.

The lower panel of Figure 1 displays the proportion of Earnings Calls in which *regulat* is mentioned in an economically meaningful context (that is, along with a Concept word in the same sentence). Here we see a clear, albeit small, upward trend. From 2010 to 2018 the proportion of Earnings Calls in which regulation is discussed rises from about 37% of the Calls to about 40% of them. The series has a large spike in 1Q2017, the quarter following the Trump election.

Figure 2 plots the four sentiment-related measures, which differ according to (a) whether sentiment is measured only within the sentence in which regulation is discussed or in the entire Earnings Call, and (b) whether they are constructed from the formal management presentations (Pres) or the question and answer (Q&A) portion of the Earnings Calls. Some highly interesting patterns emerge, which we believe are intuitively appealing, and which help to validate these measures. First, note that sentiment scores for the presentation portions are higher than the comparable sentiment scores for the Q&A portions (that is, *AllSentP* > *AllSentQA*, and *RegSentP* > *RegSentQA*). Unsurprisingly, management tends to be more sanguine in its tone than are investors during Earnings Calls. Second, the sentiment scores of sentences in which regulation is the topic tend to be lower than the Earnings Calls as a whole (that is, *AllSentP* > *RegSentP*, and *AllSentQA* > *RegSentQA*). In other words, compared with other topics discussed in Earnings Calls, discussions of regulation, not surprisingly, tend to have more negative sentiment, whether it is discussed by management or investors. Third, sentiment scores are rising over time (which

makes sense if improvements in economic activity are reflected in more positive sentiment), and similarly, there is some evidence that sentiment scores rose at the end of 2016 (the beginning of an acceleration in economic growth) for all four measures.

Figure 3 compares our two approaches to measuring regulation. The measures are negatively correlated, as expected (*NetRegP* and *RegSentP* are correlated -0.62, and *NetRegQA* and *RegSentQA* are correlated -0.31). Within the presentation section, the measures also follow opposite trends (*NetRegP* trends downward while *RegSentP* trends upward), but for the Q&A section, a somewhat different picture is visible. While *NetRegQA* is flat from 2010-2016 and then falls dramatically at the end of 2016, *RegSentQA* begins to rise in 2013, and then rises dramatically at the end of 2016. We summarize the definition of the text variables in Table 6, and report summary statistics for all the variables in Table 7.

### *3.2. Topics of regulation*

We also investigated whether the importance of NLP measures of regulation varied according to the specific regulatory topic being discussed, where specific topics are identified as clusters of associated words. For example, it may be that when regulation is discussed in the context of some topics (e.g., mergers and acquisitions) it may have more or less importance than in the context of other topics (e.g., FDA approval of the company's experimental drug). After all, management references to regulation can mean many different things: passing or repealing a new regulation, beginning or ending an investigation or an enforcement action, approving or denying a merger, approving or denying a drug's use, to name only a few. It is quite conceivable that some of these topical contexts may be more important than others. In previous work, it has been found that sentiment scores can have very different meaning depending on topical context (Calomiris and Mamaysky 2019).

In the social sciences, there have been two frequently used methods for identifying document topics: word-network-based approaches (such as the Louvain method of finding co-occurring words) and generative topic models (such as Latent Dirichlet Allocation, or LDA). A key difference between the two methods is that in the Louvain method a word is affiliated with only one of many clusters, so that each cluster consists of a list of words that only appear in that cluster. In the LDA method (see Steyvers and Griffiths 2007 for a good primer), a word can appear in multiple clusters, but with different probabilities. Each of the two clustering methods has strengths and weaknesses. When the range of topics is broad (e.g., including topics as different as news about government policy versus news about commodities markets, or news about corporate prospects, or news about macroeconomic conditions) it has been found (e.g., Calomiris and Mamaysky 2019) that the results from using the Louvain method can be quite similar to those from using the LDA method, and that the Louvain method can have distinct advantages (including clearer interpretations of topical categories, and faster computational speed). However, when the overall subject range is narrow (i.e., in the current study of regulation), and the topics have substantial overlap in the words that naturally define each topical category, the flexibility inherent in LDA can be quite useful. For that reason, we use the LDA method to define topical categories, which we label based on our own subjective judgment of how to think about each of the topical word clusters.

We display and label the LDA topics in the Appendix in Tables A1 and A2. We estimate the LDA model using document term matrixes obtained from 41-word windows centered on the occurrences of *regulat* in either the Pres or Q&A sections of the Calls. We use these longer windows (rather than confine windows to the sentence level) in order to have more context for the LDA topic estimation. Table A3 gives a sense of how our topical categories are related to our

*NetReg* measure. For the Pres and Q&A sections of each call (the top and bottom panels of the table respectively) for each topic category we find all calls whose topic allocation to that category was above 50%.[5] For such calls, we then calculate the average value of *NetReg*. For example, calls whose presentation sections discuss regulation in the context of the FDA have a very low *NetReg* score of -0.017, indicating a favorable regulatory environment. Whereas calls that discuss regulation in in the Q&A section in the context of profit margins have a relatively high *NetReg* score of 0.007, indicating an adverse regulatory environment. Interestingly discussions of M&A in the context of regulation are associated with a very favorable regulatory environment, as indicated by extremely low *NetReg* scores.

In our empirical work, in addition to our findings for sentiment scores in general, we also report results that consider the effect of three different topical areas on the importance of NLP measures: (1) Mergers and Acquisitions (M&A), (2) FDA Approval (FDA), and (3) Regulatory topics related to China (China). We find that these three topics displayed the greatest importance of topical contexts as conditioning variables.

## 4. Empirical findings

In this section, we divide our discussion into five parts. First, we present our baseline results, which examine the effect of *NetReg* on sales growth and other measures of firm financial performance, using a variety of control variables, and explore differences in those results for large and small firms. Second, we show that *NetReg* is not forecasted by lagged measures of firm performance (other than lagged sales growth) or by lagged stock returns. Third, we repeat the

[5] LDA assigns to each call's Pres and Q&A sections a *topic* distribution, which determines the probability that any given word in the section belongs to a particular topic. We assign the Pres or Q&A section of a given call to topic *i* if that section's topic distribution has more than 50% probability assigned to topic *i*,

analysis in the first two sub-sections using our sentiment-based measures (*AllSent* and *RegSent*) rather than *NetReg*, and explore differences between the sentiment-based (*RegSent*) measure and the use of *NetReg* to measure regulation. Fourth, we extend our analysis to take into account the potential importance of topical context for our NLP measures. Fifth, we examine the effects of all of our NLP measures of regulation on stock returns.

In all specifications that interact firm size (measured as log sales in the prior three months) with our regulatory sentiment measures, we demean log sales. In specifications that involve one-year ahead firm performance measures, we cluster residuals by 2-digit SIC code to control for potential serial correlation. We cannot cluster by firm because there are not sufficient firm-level observations in many cases. For the return regressions, where the time-horizon of returns is one-month ahead or less, we cluster by event dates to control for cross-sectional correlations.

### *4.1. Effects of regulatory tone on sales growth*

Table 8 shows that, in both the presentation and Q&A sections, the two *NetReg* variables are associated with large and highly statistically significant effects on one year-ahead sales growth. The effect is robust to the inclusion of various controls. We begin with a discussion of the specifications that do not allow the effects of *NetReg* to vary by firm size, and that do not normalize for cross-industry differences. All the specifications include a *NoRegulat* and a *NeverRegulat* dummy variable (see Table 6), which control for any selection bias associated with the presence of any mention of regulation in the Earnings Call (in columns 7 and 8 we also include the lagged value of the *NoRegulat* variable, which controls for the absence of *regulat* in

the Earnings Call from a year before, and also for the one-year lagged value of *NetReg*[6]). Using the column (1) coefficient value of -0.30, a one standard deviation increase in *NetRegP* forecasts a 1.5% reduction in sales (*NetRegP* has a standard deviation of 0.05, as shown in Table 7). The comparable reduction in sales using the coefficient value for *NetRegQA* in column (2) is a 10.9% reduction in sales. Note that the standard deviations used in these calculations are obtained only from the sample of observations for which regulation is mentioned together with a regulatory Concept word. We also control for the selectivity related to the absence of the mention of regulation. As the negative coefficients on the *No Regulat Dummy* and the *Never Regulat Dummy* indicate, companies whose Earnings Calls do not mention regulation tend to have lower sales growth.

Columns (3) and (4) explore differences in the sales growth consequences of *NetReg* that are associated with firm size. In both the presentation and Q&A sections of the Earnings Calls, there are significant positive coefficients on the interaction of firm size and *NetReg*. Using both the simple coefficient values for *NetReg* and their interactions with size, at the mean of size, a one standard deviation increase in *NetRegP* is associated with a 1.84% decline in sales growth, but at the 75$^{th}$ percentile of size, the effect is a 1.45% decline in sales growth. For the largest firm in our sample (with log sales of 11.8, which is 6.4 above the mean), there is a roughly zero effect of a change in *NetRegP* on sales growth. At the 25$^{th}$ percentile of size the effect is a 2.2% decline in sales growth. The comparable computation for *NetRegQA* results in a 1.1% decrease in sales growth at the mean (in column 4). At the 75$^{th}$ percentile of size, the effect is a decline of 0.8%. At the 25$^{th}$ percentile of size, the effect is a decline of 1.4%. As in the case of *NetRegP*, for the

[6] We control for *NetReg* from a year ago to see the extent to which the effect of *NetReg* in the present quarter on future sales growth is a manifestation of regulation already found in the past. In Columns 7 and 8 of Table 8 (and similarly in Tables 11 and 12), we find that past measures of *NetReg* have little bearing with respect to this effect as our estimates remain largely the same.

largest firm in the sample, the effect of *NetRegQA* on sales growth is roughly zero. This confirms the common view in the regulation literature that large firms enjoy an economy of scale in dealing with the costs of regulation.

Columns (5) and (6) measure *NetReg* in a way that adjusts for any cross-industry differences at the two-digit SIC level, while also allowing its effect to vary by firm size. When one adjusts for cross-industry differences in *NetReg*, the coefficient values on *IndAdjNetRegP* and *IndAdjNetRegQA* (see Table 6) remain negative and highly statistically significant, and their magnitudes are similar. For an average size firm, after taking out the industry-specific mean of regulation, the implied reduction in sales from standard deviation increases in *IndAdjNetRegP* and *IndAdjNetRegQA* are 1.6% and 0.9%, respectively. The industry average effects (*Ind. NetRegP* and *Ind. NetRegQA*) are also very large and negative, but of lower statistical significance. A standard deviation increase in *Ind. NetRegP*, (which is 0.014) reduces sales growth for the firms in the industry, on average, by 0.8%. This industry effect is in addition to any effects of firm-specific deviations from the industry mean (which are captured by *Ind. Adj. NetRegP* and *Ind. Adj. NetRegQA*).

In Table 9, we also report results for the effects of *NetReg* on the operating income margin (operating income/sales). Additional measures of firm performance, including asset growth and operating income growth are examined in the Appendix. We present comparable tables to Table 8 for each of those variables. Interestingly, results for the operating income margin tend to be small and statistically insignificant. The same is true for operating income growth. Operating income margin and operating income growth responses should reflect expense-related consequences of regulation.

The relative absence of effects on these variables from *NetReg* indicates that the costs of regulation that are captured by our measures are less related to operational costs than to reductions in growth related to compliance risk. We return to this point in our discussion of stock returns. In the case where we employ asset growth as the dependent variable, results are similar to those for sales growth, but impacts on asset growth are sometimes less significant statistically. This may reflect more protracted lags in the response of capital accumulation. Sales growth can slow simply by holding off the expansion of operations, even if investment in plant, property and equipment does not adjust immediately.

It seems natural that conversations between firms and their stockholders that revolve around questions of firms' strategies and prospects should focus on compliance risk rather than operational costs. Operational costs tend to change at low frequency and may have limited strategic implications. In contrast, compliance risk can be a major high-frequency strategic consideration potentially affecting investment decisions, the introduction of new products or other decisions likely to be discussed by firms at Earnings Calls. It may be that operational costs are better measured by an approach that focuses on the allocation of resources to compliance staff and other physical operational costs, as in Simkovic and Zhang (2019).

### *4.2. Are regulatory effects on sales growth persistent?*

Our empirical findings focus on one-year-ahead forecasts of sales growth. Does an increase in *NetReg* produce further declines in growth in the next year, or perhaps a leveling off of the growth effect on sales, or perhaps reversion in the second year? To address that question, we use the local projections method of Jorda (2005) to calculate the impulse response of cumulative sales growth to a one standard deviation shock in *NetReg*. This method offers the benefit of robustness to data generating process misspecification and accommodation of potential

nonlinearities. As the graph in Figure 4 shows, after two to three years the effect on sales growth flattens. We conclude that *NetReg* has a one-time effect on the level of sales rather than a continuing negative effect on growth. In a set of unreported results, we also examine the persistence of the effects of *RegSent* and *AllSent* on sales growth. For these sentiment-based measures, their positive effects on sales growth also level off, but much earlier (after year one).

*4.3. Is regulatory tone forecastable by other variables?*

Next, we examine the question of whether *NetReg* itself is forecasted by other variables. These results are presented in Table 10. The adjusted R-squareds in all the specifications are between eight and nine percent for *NetRegP* and about three percent for *NetRegQA*. The regulatory tone from the presentation section is much more forecastable than the unscripted regulatory tone from the Q&A section. *NetRegP* and *NetRegQA* are predicted positively by their own lagged values, and *NetRetP* is predicted negatively by firm size, which is a control in all our specifications. The lagged one-month abnormal return has no forecasting power for *NetReg*. This is an important finding because it addresses the concern that discussion about regulation may be influenced by recent performance in the stock market leading up to the conference call (e.g., poor stock market performance prompting shareholders to talk more about regulation).

Generally, the firm operating performance measures do not forecast *NetRegP* or *NetRegQA*. The exception is lagged asset growth in column (2) although the effect disappears in column (4) once other operating characteristics, such as sales and operating income growth, are introduced as controls. The specification in column (4) also controls for one- and two-year lags of all the other performance variables, none of which enters significantly. One-year-lagged sales growth does not forecast *NetRegQA*, although two-year lagged sales growth does. Note that *NetReg* negatively predicts sales growth, but is positively predicted by sales growth. Therefore, the

negative prediction of *NetReg* for sales growth cannot be attributed to the possibility that *NetReg* simply proxies for an autoregressive sales growth factor. Again, once all controls are included, the effect loses significance in column (8).

In summary, *NetRegQA* and *NetRegP* are mainly forecastable by their own past and *NetRegP* is also forecastable by firm size. Adjusted R-squareds are small. Other variables related to firm income measures or past stock returns have little forecasting power for *NetRegP* or *NetRegQA*. However, *NetRegP* and *NetRegQA* forecast sales growth (Table 8) and asset growth (Table A4) even in the presence of all controls. In this sense, *NetReg* Granger causes (some) firm fundamentals, but is not Granger caused by them.

### *4.4. Effects of sentiment on sales growth*

How does our sentiment-based measure of regulation (*RegSent*) compare with *NetReg* in its usefulness for forecasting sales growth and other measures? And to what extent is this sentiment-based measures forecastable by lagged firm performance?

Table 11 reports results for *RegSent*'s effects on sales growth. *RegSentQA* displays a positive and statistically significant effect only in column (4). Other coefficient estimates in Table 11 are small and statistically insignificantly positive or negative. Firm size interactions are not statistically significant. In column (4), a one standard deviation decrease in *RegSentQA* produces a 0.5% decline in sales growth.

We examine *AllSent* as a means of differentiating sentiment effects that are specific to the regulatory context from general sentiment effects. Table 12 displays large positive effects on sales growth for both *AllSentP* and *AllSentQA*. Adjusting for firm size, however, results in a positive size effect (when the size interaction is statistically significant), which indicates that the

effect of positive sentiment on sales growth is larger for larger firms. This is contrary to what we observed for *NetReg* (where large firms saw mitigated effects) and *RegSent* (where there was no significant size interaction). Size adjustment and industry adjustment matter for *AllSentQA,* but not for *AllSentP*.

With respect to the predictability of *RegSent*, Table 13 shows that *RegSentP* is forecasted positively by recent sales growth, and *RegSentQA* is forecasted positively by operating income growth. As with *NetReg*, *RegSent* is more forecastable from the presentation section (R-squareds in the 16% range) than in the Q&A section (R-squareds in the 2-3% range). *AllSent* is much more forecastable than *RegSent*, as shown in Table 14. The adjusted R-squared is much higher for *AllSent* and many more variables are statistically significant for forecasting it, though again, the forecastability of *AllSent* in the presentation section (in the 33% range) is much higher than in the Q&A section (13% range). This shows that sentiment related to regulation is much less (and even less so for *NetReg*) a predictable consequence of firm performance than is sentiment in general.

### *4.5. Effects of topical context on sales growth*

Using the LDA method for identifying topics related to regulation, we explore whether sentiment effects on sales growth are different across topical categories. A summary of the topics we identified, the labels we attached to them, and the variation in their presence over time are provided in the Appendix (see Figures A1 and A2, and Tables A1 and A2). The three topical categories that proved to have value for conditioning the informational content of sentiment were M&A, FDA, and China. In our topic-specific specifications for each of these we add the section-topic probability, a measure of the amount to which the topical category is present in a given section of the Earnings Call, as an explanatory variable. For example, in Table 15, we add the

probabilities that a word in the Pres and Q&A sections belongs to the M&A topic as a right-hand side variable (labeled "M&A (Pres)" and "M&A (QA)" in the table). We then check how the topic frequency measure, as well as its interaction with sentiment, affect forecasted sales growth.

In the case of M&A (where, most of the time, the news is favorable, as most mergers are not opposed by regulators), the effect of the topic's appearance in the presentation section is positive for sales growth. *NetReg* interactions with the M&A topic in both the presentation and Q&A sections are particularly negative for sales growth. The *RegSent* coefficients are positive in the presence of the M&A indicator variable, but the interaction between M&A and *RegSent* is negative, and marginally significant for *RegSentP*. It is surprising that positive sentiment in the part of the call that discusses M&A-related regulations forecasts sales growth negatively.

In the case of the FDA topic area, the interaction of *RegSentQA* and the FDA topic in Table 16 is positive, indicating that positive sentiment is particularly positive for sales growth when the topic is related to the FDA. The sign remains the same (negative) for *NetRegP* and *NetRegQA* and their interactions with the FDA topic are insignificant.

In the case of the China topic, in Table 17, interactions of the topic with *NetReg* are positive, and with *RegSentQA* are negative. In other words, in contrast with the other topical categories, when the topical context is China, the average effects of *NetRegP, NetRegQA* and *RegSentQA* are typically lessened by the topical interaction term.

### *4.6. Effects of regulatory tone on excess stock returns*

We now turn to an examination of the role of our NLP measures as forecasters of stock returns. We explored results for three different time intervals around the date of the Earnings Call: the abnormal return on the day following the call (or the day after, if the call begins after 4

PM), the cumulative abnormal return over a five trading day window (ending five or six trading days after the call depending on whether it starts pre- or post-4PM), or the cumulative abnormal return over a twenty two trading day window (ending 22 or 23 trading days after the call). However, we found that the effects of our Earnings Call measures were most-pronounced for the 22-day period, and these results are reported in Table 18.[7] We analyze returns in excess of the risk-free rate (*Excess Ret)*, as well as abnormal returns relative to the Fama-French five-factor model augmented with the momentum factor (*FF6 Ret*).

We find that all our NLP measures contain information that is useful for forecasting future stock returns and excess returns. As the table shows, all three -- *NetReg*, *RegSent* and *AllSent* -- have positive coefficients. Interestingly, for *NetReg* and *RegSent* it is only the information from the Q&A portions of the Earnings Calls that elicit statistically significant return reactions in the market. The more muted response from the market with regards to measures based on the presentation section of the Earnings Call can be attributed to the relatively sanitized nature of the presentation section, which is less likely to produce information that is interesting or isn't already baked into prices.[8] With regard to excess returns, the effect of a one standard deviation increase in *NetRegQA* is 2.9% per year ($0.045 \times 0.053 \times 12$), a very large effect.[9]

There are two ways to interpret any of these coefficients: either as a delayed market price response to value-relevant news contained in the Earnings Call, or as compensation for a risk that the text-based measure helps forecast. In the lagged-response-to-news case, we would expect

[7] The one- and five-day results are available from the authors. The full results of the 22-day regressions are shown in the Appendix.
[8] Much of the information from the presentation section is released in firms' 10-Qs and 10-Ks, which also helps to explain the muted response. See Price, Doran, Peterson, and Bliss (2012).
[9] We also considered size interactions to test whether there are significant size-related differences in excess returns responses to our measures. Given the noisiness of the returns data, we were not able to find robust significant results relating to size differences.

positive coefficients on *RegSent* and *AllSent* but negative coefficients on *NetReg*. In the proxy-for-future-risk case, we would expect the opposite: negative coefficients for *RegSent* and *AllSent* – as these potentially proxy for lower future risks – but positive coefficients on *NetReg,* which potentially forecasts higher future compliance risks. In the case of *AllSent*, its positive coefficient can be seen as indicative of a generally positive relationship between sentiment scores in Earnings Calls and earnings news (see Price, Doran, Peterson, and Bliss 2012). The positive coefficient on *RegSent* has a similar interpretation, although it is possible that in the context of a regulatory discussion, positive sentiment could signal reduced risk and, therefore, reduced expected returns (especially when examining the 22-day window).

One piece of evidence consistent with the interpretation of the positive coefficient of 22-day ahead returns on *AllSent* as indicating an underreaction to value-relevant information is the fact that *AllSent* is a strong positive predictor of sales growth over the ensuing 12-months (Table 12). Similarly, the fact that *NetReg* negatively predicts sales growth (Table 8) but positively forecasts 22-day ahead returns supports the interpretation of this effect as a compensation for risk.

These findings that *NetReg* matters positively for expected returns suggest that regulatory news positively affects market perceptions of risk, confirming the evidence from sales growth and operating margins regressions that compliance risk (because *NetReg* depresses growth), rather than operational costs related to regulation (because *NetReg* does not impact margins), is the more important aspect of regulatory cost. The difference in the future return outcomes for *NetReg* versus *RegSent* and *AllSent* indicates that the information about regulatory risk contained in *NetReg* elicits a risk premium from the market, whereas and the information content of *RegSent* and *AllSent* appears to enter prices with a lag, potentially reflecting informational or microstructure effects (see Glasserman, Li, and Mamaysky 2020).

## 5. Conclusions

We study new ways to measure regulation and its effects on firm performance, and stock returns. We construct two measures of regulation, one (*NetReg*) using "tone" (defined by contexts that indicate increasing or decreasing regulation), and another (*RegSent*) using more standard sentiment-based measures of regulatory context. We compare these to *AllSent* which measures the tone of the entire presentation and Q&A section of Earnings Calls.

Our preferred measure (*NetReg*) implies substantial negative effects on sales growth from regulation in both the presentation and Q&A sections of Earnings Calls, while the more traditional, sentiment-based measure is only relevant for the Q&A sections, and represents a weaker effect. We do not find that any measure of regulation affects operating cost margins. That suggests that regulatory costs that are identified in Earnings Calls mainly reflect compliance risks, and not operational costs that would depress margins. Our interpretation is that regulatory risk, in contrast to regulatory operational costs, tends to have more high-frequency strategic implications, which makes regulatory risk more relevant for Earnings Call discussions.

Effects of regulation (using *NetReg* as the measure of regulation) are smaller for large firms, indicating substantial economies of scale in managing the costs of regulation. Sentiment effects in general (i.e. *AllSent,* which is not specific to the regulatory context), have opposite size-related effects, and are larger for large firms. There is no size-related interaction effect for *RegSent*.

Evidence of regulatory effects on excess stock returns confirm the view that the regulatory costs we capture are related to risk, but provides a somewhat mixed picture on how regulatory risk is priced in the market, depending on which measure of regulation is used. For our preferred

measure, *NetReg*, its effect on excess returns is positive and large, indicating that the news contained in this measure is a priced risk. For *RegSent*, we find positive effects on future excess returns, indicating that good news contained in positive sentiment in the context of regulation predicts positive expected returns. One possible explanation is that *RegSent* is capturing a delayed market reaction rather than a priced risk. That interpretation is consistent with other findings related to sentiment, both from other studies (e.g., Calomiris and Mamaysky 2019), and from the effect we find for *AllSent,* which displays much larger effects on excess expected returns.

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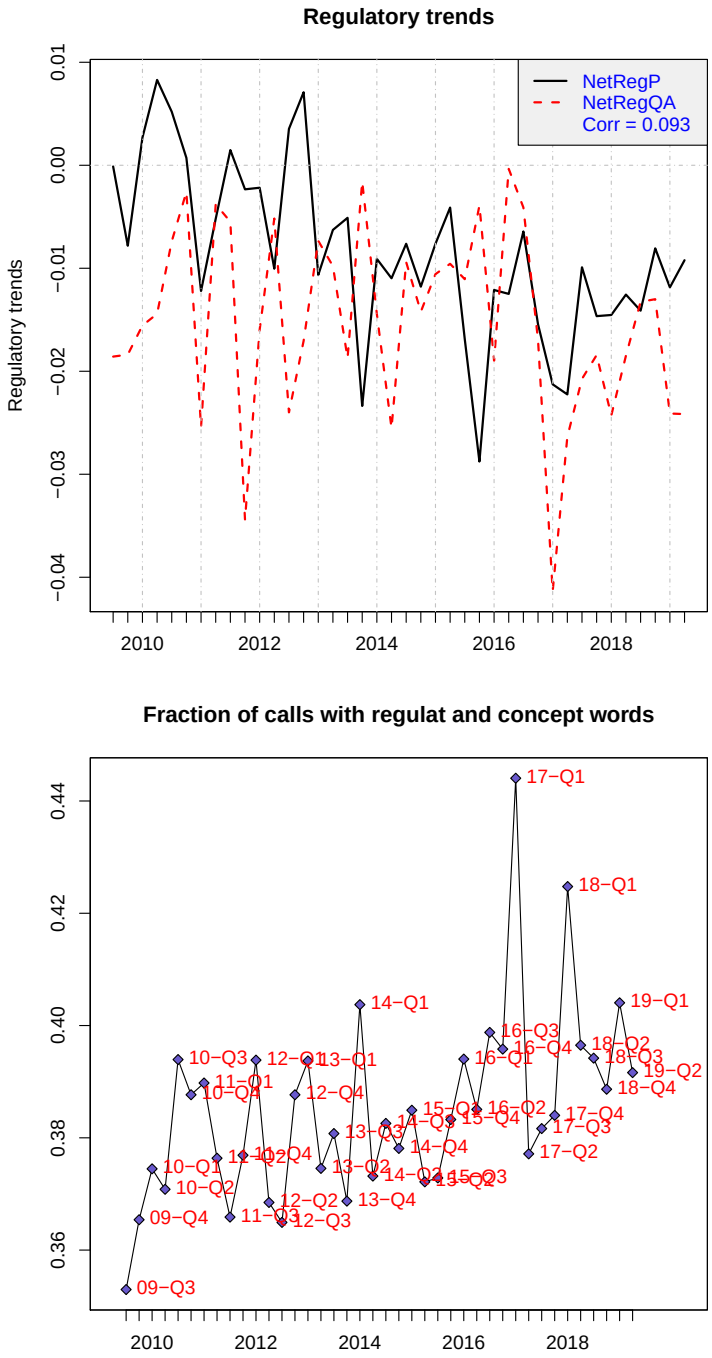


Figure 1: The top panel shows our net regulatory trends measure in earnings call sentences that match our regulatory filter in the presentation ($RegSentP$) and Q&A ($RegSentQA$) portions of earnings calls. The bottom panel shows the percentage of all earnings calls in the SP Global data set which contain at least one sentence in either the presentation or the Q&A portion of the call that satisfies our regulatory filter.

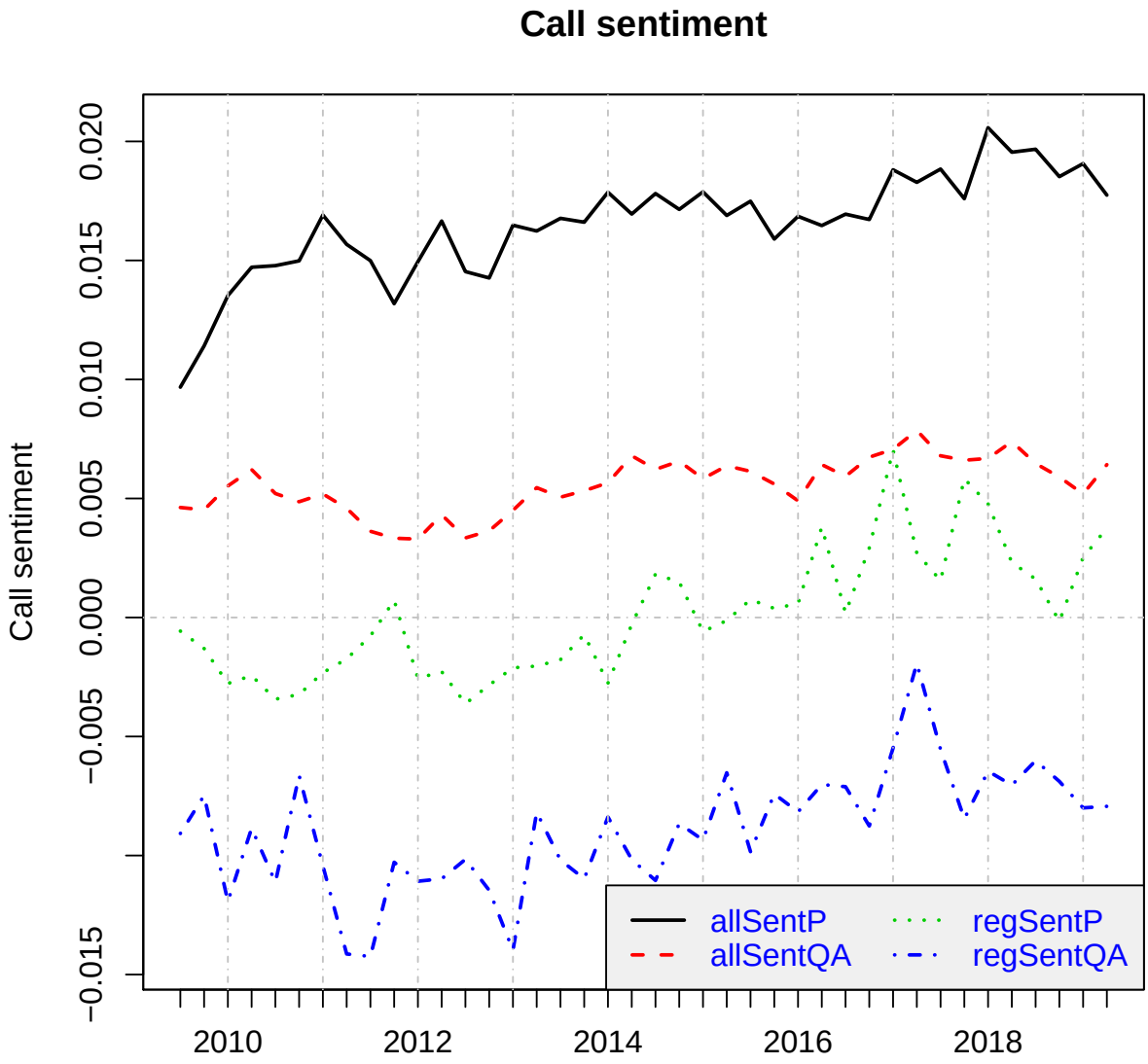


Figure 2: Sentiment series using the Loughran-McDonald dictionary in sentences matching our regulatory filter in the presentation ($RegSentP$) and Q&A ($RegSentQA$) portions of the earnings calls. Also shown are the Loughran-McDonald sentiment in the entire presentation ($AllSentP$) and Q&A ($AllSentQA$) portions of the earnings call. Date shown at a quarterly frequency.

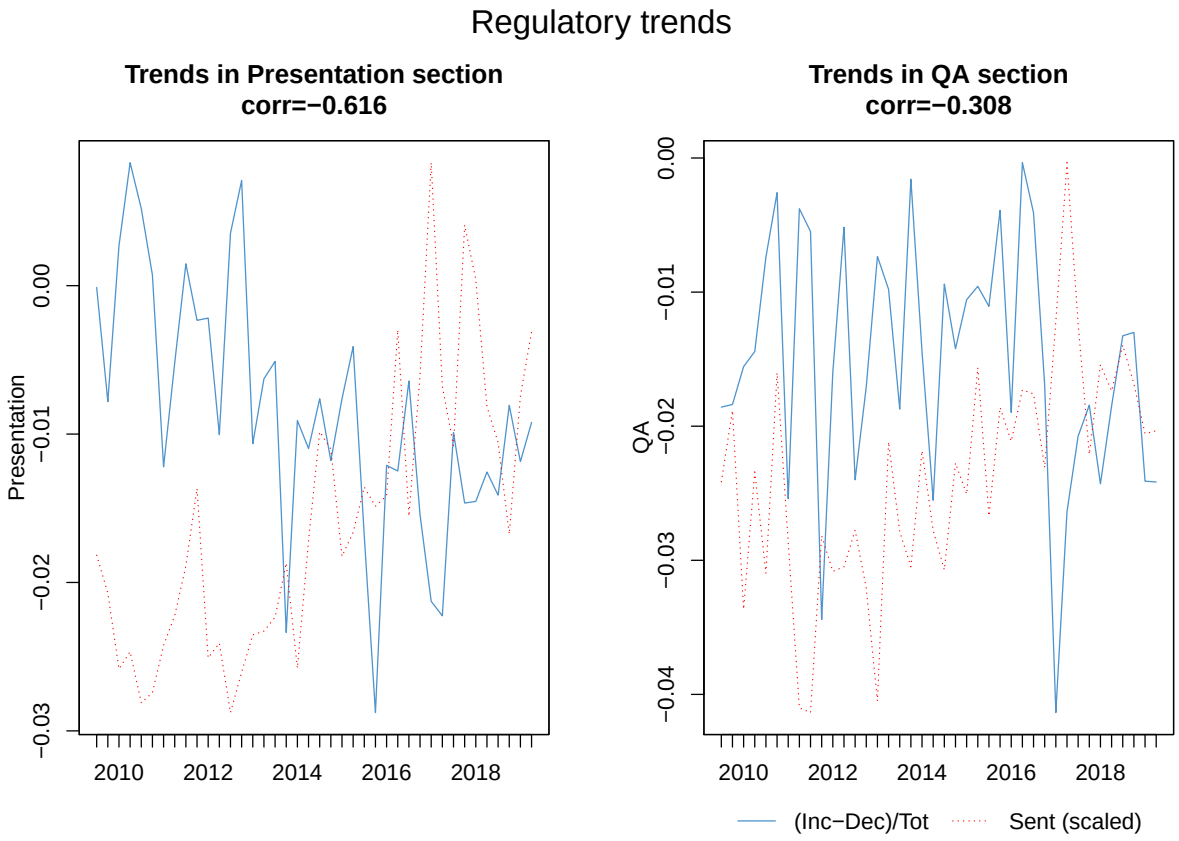


Figure 3: For the presentation portion of earnings call, the left panel shows the net regulatory trends measure $NetRegP$ (in blue) against a scaled version of the Loughran-McDonald sentiment in sentences matching our regulatory filter $RegSentP$ (dotted, red line). The right panel shows $NetRegQA$ and $RegSentQA$ for the Q&A portion of the earnings calls. The correlation between the regulatory trends series and the sentence-level sentiment series is shown at the top of each panel.

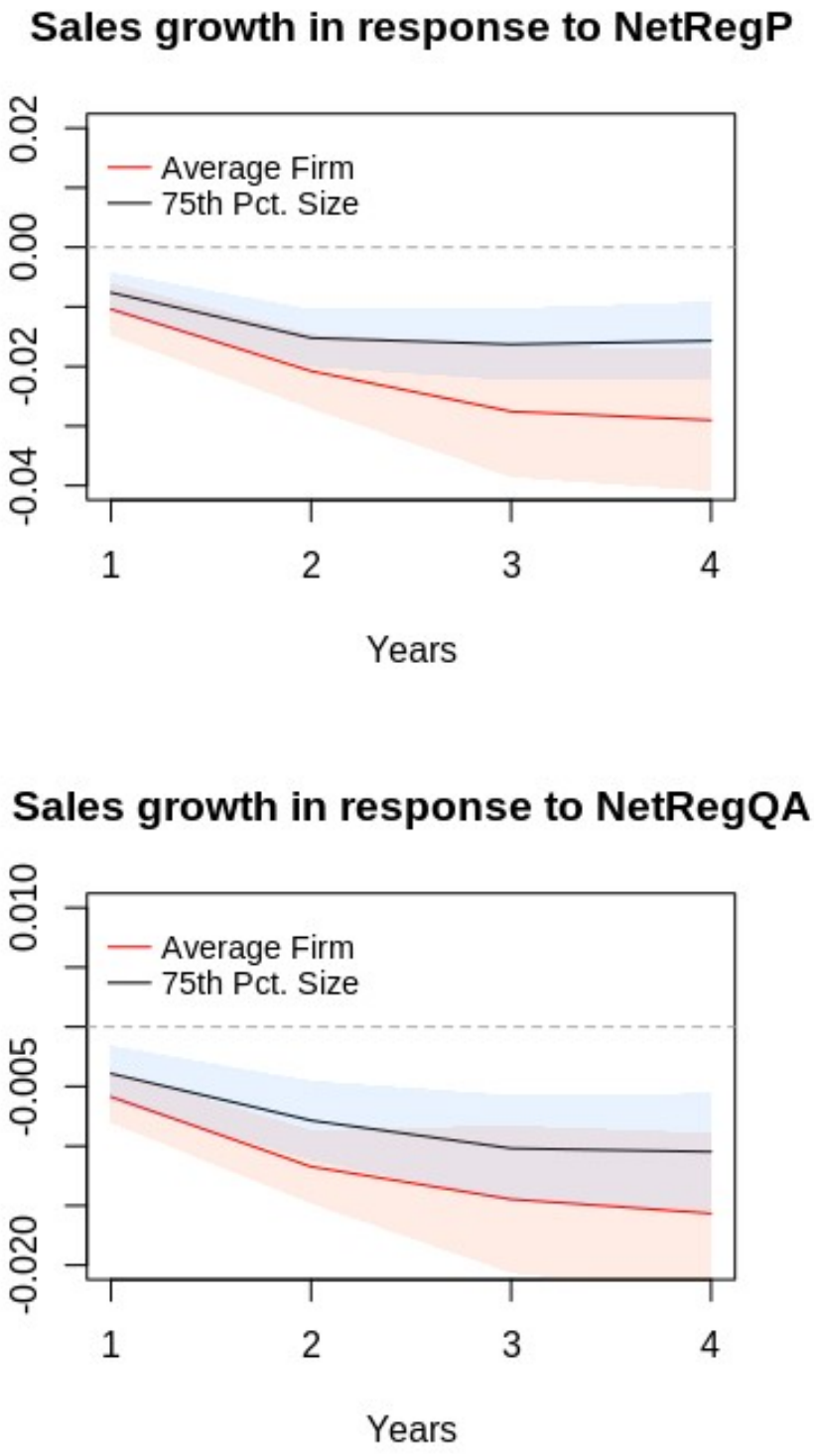


Figure 4: The response of sales growth to the measures of regulation in the presentation section (*NetRegP*) and Q&A section (*NetRegQA*). We use the local projection methods of Jorda (2005) to calculate these impulse response. The impulse responses assume that the *NetReg* shock is orthogonal to all other influences.

Table 1: For a sentence that mentions "regulat" to pass our regulatory filter, we require that one of the *concept* words listed in Table 2 is also present. For example, a sentence referring to "regulatory compliance" would count while the sentence "We do not expect this trial to materially affect the overall timing of the regulatory submission process for SPN-810" would not. Applying this filter to our data results in the following numbers of calls which pass our regulatory filter in their presentation and Q&A sections respectively. The column labeled "No concept" is the number of sentences mentioning "regulat" but that do not contain a concept word from Tab;e 2 and hence do not pass our regulatory filter.

**Number of earnings calls passing regulatory filter**

| | Concept | No concept |
|---|---|---|
| Pres | 48,136 | 1,770 |
| QA | 37,070 | 3,399 |

Table 2: Shown are stemmed modifying (concept, increasing, or decreasing) words. The number of times each stemmed word occurs in the presentation and Q&A portion of the calls is shown next to each word. Words are arranged in decreasing order of occurrence. Stemmed *Concept* words also include their negated versions, e.g. "adjust" and "adjust_NEG".

**Regulatory concept and directionality word lists**

| Category |
|---|
| **Concept** |
| regulatori 128165, market 24012, approv 21109, chang 20204, busi 20036, capit 16205, requir 14343, cost 13757, financi 12454, impact 11811, risk 11247, develop 10847, environ 10746, regulatori_NEG 10474, file 8686, issu 7430, measur 7394, state 7099, complianc 6059, effect 5953, govern 5868, tax 5862, author 5589, expens 5560, review 5200, uncertainti 5085, secur 4786, ratio 4711, condit 4496, side 4330, initi 4232, demand 4036, strategi 3963, progress 3938, rule 3794, fda 3779, agenc 3689, sec 3614, decis 3413, acquisit 3351, challeng 3263, chang_NEG 3113, direct 3098, legal 3080, propos 2991, adjust 2898, pressur 2766, standard 2697, environment 2661, perspect 2520, feder 2504, legisl 2435, limit 2413, law 2316, fee 2289, spend 2280, structur 2225, peopl 2156, market_NEG 2084, leverag 1873, approv_NEG 1831, delay 1818, financ 1800, loss 1798, busi_NEG 1754, submit 1733, impact_NEG 1731, tariff 1685, sector 1655, unregul 1594, item 1546, requir_NEG 1537, limit_NEG 1510, capit_NEG 1503, commit 1484, polit 1454, deregul 1448, standpoint 1396, institut 1270, litig 1249, minimum 1240, nonregul 1232, administr 1195, risk_NEG 1169, headwind 1157, jurisdict 1099, clearanc 1081, issu_NEG 1065, restrict 1035, regim 995, entiti 994, cost_NEG 991, settlement 932, financi_NEG 890, environ_NEG 869, epa 848, guidelin 843, develop_NEG 777, hurdl 777, enforc 771, compliant 753, mandat 718, govern_NEG 684, file_NEG 678, effect_NEG 675, constraint 672, condit_NEG 669, burden 667, state_NEG 611, scrutini 600, oversight 570, tax_NEG 527, wind 513, author_NEG 486, rule_NEG 449, law_NEG 422, secur_NEG 413, demand_NEG 409, side_NEG 383, complianc_NEG 369, agenc_NEG 367, uncertainti_NEG 361, decis_NEG 358, barrier 355, review_NEG 333, legal_NEG 329, sensit 313, fda_NEG 311, complic 310, pressur_NEG 298, direct_NEG 297, standard_NEG 294, perspect_NEG 293, consent 282, antitrust 278, ratio_NEG 277, acquisit_NEG 274, peopl_NEG 274, cms 269, strategi_NEG 269, expens_NEG 250, structur_NEG 249, initi_NEG 245, legisl_NEG 245, privaci 230, propos_NEG 226, provinci 222, feder_NEG 222, cfpb 217, spend_NEG 214, sec_NEG 208, penalti 207, environment_NEG 206, delay_NEG 203, challeng_NEG 196, loss_NEG 191, standpoint_NEG 189, politician 188, litig_NEG 179, progress_NEG 175, policymak 174, financ_NEG 174, adjust_NEG 171, prohibit 168, upregul 168, pollut 164, promulg 161, reregul 159, polit_NEG 158, restrict_NEG 158, minist 154, tariff_NEG 150, measur_NEG 148, supervis 145, enforc_NEG 142, fee_NEG 142, item_NEG 138, notifi 136, permiss 136, leverag_NEG 134, parliament 133, sector_NEG 133, institut_NEG 131, discret 128, hurdl_NEG 127, constraint_NEG 123, usda 121, regim_NEG 120, deregul_NEG 118, docket 117, disallow 114, compliant_NEG 112, commit_NEG 111, entiti_NEG 107, finra 105, ftc 100, disposit 99, mandat_NEG 98, jurisdict_NEG 95, administr_NEG 94, clearanc_NEG 93, unregul_NEG 91, unintend 88, supervisori 85, settlement_NEG 84, submit_NEG 84, supervisor 79, legislatur 78, cftc 77, monopoli 75, burden_NEG 75, dysregul 73, rulemak 72, minimum_NEG 72, headwind_NEG 72, sox 70, guidelin_NEG 66, resubmiss 64, naic 64, oversight_NEG 56, scrutini_NEG 55, repeal 50, nonregul_NEG 50, epa_NEG 49, accreditor 48, superintend 48, congression 47, burdensom 44, lawmak 43, esma 41, barrier_NEG 40, downregul 38, complic_NEG 38, osha 35, sensit_NEG 35, overregul 35, deregulatori 34, crime 32, wind_NEG 32, politician_NEG 31, licensur 30, penalti_NEG 30, reregul_NEG 29, permiss_NEG 28, overturn 28, resubmit 26, fsoc 26, cfpb_NEG 25, prohibit_NEG 25, ministeri 24, upheld 24, autoregul 24, consent_NEG 21, bureaucrat 21, privaci_NEG 19, unintend_NEG 19, antitrust_NEG 19, promulg_NEG 19, preapprov 18, provinci_NEG 18, disposit_NEG 17, pollut_NEG 17, supervisor_NEG 17, iosco 16, redress 15, parliament_NEG 15, discret_NEG 15, cms_NEG 15, minist_NEG 15, supervis_NEG 14, monopoli_NEG 14, codifi 14, usda_NEG 13, icc 11, disallow_NEG 11, crackdown 11, parliamentari 10, upregul_NEG 10, notifi_NEG 9, litigi 9, legislatur_NEG 9, supervisori_NEG 7, ftc_NEG 7, overregul_NEG 7, finra_NEG 7, esma_NEG 7, cftc_NEG 6, sox_NEG 5, accreditor_NEG 5, resubmiss_NEG 4, resubmit_NEG 4, congression_NEG 4, docket_NEG 4, fsoc_NEG 4, licensur_NEG 3, rulemak_NEG 3, naic_NEG 3, repeal_NEG 3, lawmak_NEG 3, redress_NEG 3, bureaucrat_NEG 3, dysregul_NEG 3, upheld_NEG 2, burdensom_NEG 2, deregulatori_NEG 2, ministeri_NEG 2, downregul_NEG 2, crime_NEG 1, autoregul_NEG 1, overturn_NEG 1, boatload 1, policymak_NEG 1, iosco_NEG 1, litigi_NEG 1, preapprov_NEG 1, osha_NEG 1 |
| **Increasing** |
| increas 15229, growth 10282, addit 8280, uncertainti 5085, higher 4839, high 4228, grow 3158, pressur 2766, concern 2651, negat 1746, difficult 1365, add 1229, ad 1178, restrict 1035, hard 973, strengthen 811, hurdl 777, adapt 721, strength 717, burden 667, stringent 652, stress 638, rise 563, incur 562, aggress 486, uncertain 479, strict 441, heavili 367, complic 310, heavi 303, bad 275, penalti 207, caution 200, adher 196, poor 108, violat 80, fear 76, penal 73, wors 71, prolifer 64, disproportion 35, litigi 9 |
| **Decreasing** |
| approv 21109, posit 7835, improv 4768, clear 4435, good 4045, benefit 3995, progress 3938, lower 3799, reduc 2966, construct 2421, better 2189, reduct 2006, declin 1975, low 1859, less 1811, decreas 1749, unregul 1594, deregul 1448, favor 1402, nonregul 1232, stabl 1172, clariti 1115, permit 1112, attract 833, stabil 777, flexibl 745, optim 722, fall 536, relief 456, optimist 400, happi 358, friend 185, overcom 174, permiss 136, fewer 131, fell 106, shrink 77, diminish 62, congratul 38, deregulatori 34, happili 5, congrat 5 |

Table 3: Sample sentences that satisfy our regulatory filter from the presentation and Q&A portions of earnings calls. Each sentence is shown along with its Increasing, Decreasing and Concept words.

**Sample sentences**

| | Sentences |
|---|---|
| 1 | Market's been deregulated. [dec: deregul 1] [inc: ] [concept: deregul 1, market 1] |
| 2 | And we have less regulatory measures there and also more attractive margins, which is good. [dec: good 1, less 1, attract 1] [inc: ] [concept: measur 1, regulatori 1] |
| 3 | The regulatory approval process is progressing very well. [dec: approv 1, progress 1] [inc: ] [concept: regulatori 1, approv 1, progress 1] |
| 4 | We continue to work on regulatory approvals and permitting. [dec: approv 1, permit 1] [inc: ] [concept: regulatori 1, approv 1] |
| 5 | As a result of deregulation of petrol and diesel, this is very attractive. [dec: attract 1, deregul 1] [inc: ] [concept: deregul 1] |
| 6 | There are regulatory pressures as you grow and as an industry matures, that's absolutely normal and we have to adapt to it. [dec: ] [inc: pressur 1, adapt 1, grow 1] [concept: regulatori 1, pressur 1] |
| 7 | Competition, pricing and regulatory pressure have increased and are increasingly having an impact on our revenue. [dec: ] [inc: pressur 1, increas 2] [concept: impact 1, regulatori 1, pressur 1] |
| 8 | There could well be an increased regulatory burden. [dec: ] [inc: increas 1, burden 1] [concept: regulatori 1, burden 1] |
| 9 | We did this to serve a highly stressed industry pressured by increased regulatory burdens, growing transactional volumes and emerging payment technologies. [dec: ] [inc: stress 1, high 1, pressur 1, burden 1, increas 1, grow 1] [concept: regulatori 1, pressur 1, burden 1] |
| 10 | This continues to be of particular importance as the regulatory burden grows disproportionately. [dec: ] [inc: disproportion 1, burden 1, grow 1] [concept: regulatori 1, burden 1] |
| 11 | _A_ We have all regulatory approvals for construction. [dec: approv 1, construct 1] [inc: ] [concept: regulatori 1, approv 1] |
| 12 | _Q_ Congrats on the regulatory progress. [dec: progress 1, congrat 1] [inc: ] [concept: regulatori 1, progress 1] |
| 13 | _A_ And those are very friendly, deregulated markets. [dec: deregul 1, friend 1] [inc: ] [concept: market 1, deregul 1] |
| 14 | _A_ And again, it's just regulatory approvals. [dec: approv 1] [inc: ] [concept: regulatori 1, approv 1] |
| 15 | _A_ And only about 1/3 of those were for regulatory approvals. [dec: approv 1] [inc: ] [concept: regulatori 1, approv 1] |
| 16 | _A_ It's highly regulated, so the barriers to entry are high. [dec: ] [inc: high 2] [concept: barrier 1] |
| 17 | _A_ And what are the regulatory hurdles? [dec: ] [inc: hurdl 1] [concept: regulatori 1, hurdl 1] |
| 18 | _Q_ Is this because of regulatory pressure? [dec: ] [inc: pressur 1] [concept: regulatori 1, pressur 1] |
| 19 | _A_ Now we're being faced with some of the additional regulatory pressures. [dec: ] [inc: addit 1, pressur 1] [concept: regulatori 1, pressur 1] |
| 20 | _Q_ Is it regulatory hurdles? [dec: ] [inc: hurdl 1] [concept: regulatori 1, hurdl 1] |

Table 4: This tables describes the data series involving firm fundamental characteristics, and market returns.

**Description of firm-level fundamental and market data**

| Variable Name | Description |
|---|---|
| Sales growth | Percentage growth in sales (e.g. from quarter t-4 to quarter t); expressed in decimals not % points |
| Asset growth | Percentage growth in total assets (e.g. from quarter t-4 to quarter t; expressed in decimals not % points) |
| Operating income growth | Percentage growth in operating income after depreciation (e.g. from quarter t-4 to quarter t; expressed in decimals not % points) |
| Operating income over sales | Operating income after depreciation divided by sales |
| Excess Ret | Stock return in excess of the risk-free rate; expressed in decimals not (%). Note: Returns are measured from the close of day t (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close) of day t + 1 (the next business day) for calls occurringe after 4PM New York time. |
| FF6 Ret | Excess stock return with respect to the Fama-French (2015) 5-factor model augmented with the momentum factor; expressed in decimals not % points Note: Returns are measured from the close of day t (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close) of day t + 1 (the next business day) for calls occurring after 4PM New York time. |
| FF6 Alpha | The alpha estimated from the FF6 model over the window [-252,-31] |
| Vol. Excess Return | Std. dev. of Excess Ret |
| Vol. FF6 return | Std. dev. of FF6 Ret |
| Size | log sales over the prior three months |
| log(ME) | log(closing price times shares outstanding) |
| log(BM) | log(book value of common equity divided by market equity) |
| SUE | Standardized unexpected earnings (SUE) follow the construction in Bernard and Thomas (1989) and Tetlock, Saar-Tsechansky, Macskassy (2008). SUE is equal to unexpected earnings (UE) minus mean of UE across the previous 20 quarters divided the std. dev. of UE across the previous 20 quarters. UE is defined as earnings (i.e. income before extraordinary items) in quarter $t$ minus earnings in quarter $t-4$. We set the mean of UE to zero if firms have fewer than 16 quarters of earnings data. For the std. dev., firms must have at least 5 quarters of earnings data; otherwise we treat the std. dev. as missing. |
| log(share turnover) | log(share turnover) is defined as log of shares traded divided by shares outstanding |

Table 5: Summary statistics for firm-level operating characteristics and returns.

**Summary statistics for operating characteristics and returns**

| Statistic | N | Mean | St. Dev. | Min | Pctl(25) | Pctl(75) | Max |
|---|---|---|---|---|---|---|---|
| Sales Growth | 73,780 | 0.113 | 0.360 | −0.688 | −0.031 | 0.179 | 2.004 |
| Investment Growth | 74,751 | 0.134 | 0.392 | −0.438 | −0.028 | 0.155 | 2.428 |
| Operating Income Growth | 53,667 | 0.284 | 0.964 | −0.833 | −0.114 | 0.327 | 5.348 |
| Operating Margin | 58,021 | 0.132 | 0.099 | 0.007 | 0.059 | 0.179 | 0.458 |
| Size (Log Sales) | 75,303 | 5.410 | 2.005 | 0.000 | 4.204 | 6.723 | 11.822 |
| Excess Ret (22-day) | 68,074 | 0.015 | 0.137 | −0.932 | −0.053 | 0.072 | 3.955 |
| FF6 Ret (22-day) | 65,702 | 0.002 | 0.124 | −0.929 | −0.056 | 0.050 | 4.381 |
| Vol. Excess Ret (22-day) | 68,074 | 0.025 | 0.017 | 0.001 | 0.015 | 0.030 | 0.746 |
| Vol. FF6 Ret (22-day) | 65,701 | 0.021 | 0.016 | 0.003 | 0.012 | 0.026 | 0.745 |
| Downside Vol. Excess Ret (22-day) | 68,074 | 0.015 | 0.011 | 0.00000 | 0.008 | 0.018 | 0.253 |
| Downside Vol. FF6 Ret (22-day) | 65,677 | 0.013 | 0.011 | 0.0002 | 0.006 | 0.016 | 0.254 |
| Drawdown Excess Ret (22-day) | 68,074 | 0.068 | 0.078 | 0.000 | 0.009 | 0.098 | 0.932 |
| Drawdown FF6 Ret (22-day) | 65,701 | 0.063 | 0.073 | 0.000 | 0.010 | 0.089 | 0.929 |
| Excess Ret (Call Day) | 65,591 | 0.015 | 0.151 | −0.801 | −0.062 | 0.084 | 6.459 |
| FF6 Ret (Call Day) | 65,591 | 0.001 | 0.078 | −0.723 | −0.033 | 0.035 | 3.430 |
| Log Share Turnover | 68,293 | −4.341 | 1.094 | −7.131 | −4.995 | −3.596 | −2.148 |
| SUE | 40,341 | −2.920 | 2.675 | −10.521 | −4.229 | −1.115 | 2.464 |
| Log Book-to-Market | 68,396 | −0.993 | 0.831 | −3.192 | −1.479 | −0.410 | 0.754 |
| Log Market Equity | 72,049 | 7.113 | 1.891 | 0.317 | 5.835 | 8.319 | 13.886 |

Table 6: This table describes the data series derived from the SP Global earnings calls data.

**Description of firm-level earnings call data**

| Variable Name | Description |
|---|---|
| NetRegP | Net difference of increasing words and decreasing words within the vicinity of 'regulat' scaled by total words within that window for the presentation section |
| NetRegQA | Net difference of increasing words and decreasing words within the vicinity of 'regulat' scaled by total words within that window for the Q&A section |
| RegSentP | Net difference of positive tone words and negative words, based on Loughran and Mcdonald (2011), within the vicinity of 'regulat' scaled by total words within that window for the presentation section |
| RegSentQA | Net difference of positive tone words and negative words, based on Loughran and Mcdonald (2011), within the vicinity of 'regulat' scaled by total words within that window for the Q&A section |
| AllSentP | Net difference of positive tone words and negative words, based on Loughran and Mcdonald (2011), scaled by total words for the presentation section |
| AllSentQA | Net difference of positive tone words and negative words, based on Loughran and Mcdonald (2011), scaled by total words for the Q&A section |
| Ind. NetRegP | 2-digit SIC yearly industry average of NetRegP |
| Ind. NetRegQA | 2-digit SIC yearly industry average of NetRegQA |
| Ind. RegSentP | 2-digit SIC yearly industry average of RegSentP |
| Ind. RegSentQA | 2-digit SIC yearly industry average of RegSentQA |
| Ind. AllSentP | 2-digit SIC yearly industry average of AllSentP |
| Ind. AllSentQA | 2-digit SIC yearly industry average of AllSentQA |
| Ind. Adj. NetRegP | NetRegP minus Ind. NetRegP |
| Ind. Adj. NetRegQA | NetRegQA minus Ind. NetRegQA |
| Ind. Adj. RegSentP | RegSentP minus Ind. RegSentP |
| Ind. Adj. RegSentQA | RegSentQA minus Ind. RegSentQA |
| Ind. Adj. AllSentP | AllSentP minus Ind. AllSentP |
| Ind. Adj. AllSentQA | AllSentQA minus Ind. AllSentQA |
| FDA (Pres.) | The fraction of the presentation section discussing regulation in context of FDA |
| FDA (Q&A) | The fraction of the Q&A section discussing regulation in context of FDA |
| M&A (Pres.) | The fraction of the presentation section discussing regulation in context of M&A |
| M&A (Q&A) | The fraction of the Q&A section discussing regulation in context of M&A |
| China (Pres.) | The fraction of the presentation section discussing regulation in context of China |
| China (Q&A) | The fraction of the Q&A section discussing regulation in context of China |
| *NoRegulat* Dummy | No Regulat Dummy (e.g. for quarter t-4) equals to 1 if the conference call (e.g. from 4 quarters ago) had no mention of "regulat" but if some earning call for this company has mentioned "regulat", and equals to 0 otherwise. |
| *NeverRegulat* Dummy | Set to one for companies that have never mentioned "regulat" in any of their conference calls. |

Table 7: Summary statistics for regulatory and sentiment measures.

**Summary statistics for call regulatory tone and sentiment**

| Statistic | N | Mean | St. Dev. | Min | Pctl(25) | Pctl(75) | Max |
|---|---|---|---|---|---|---|---|
| IncP | 21,488 | 0.978 | 1.724 | 0.000 | 0.000 | 1.000 | 50.000 |
| DecP | 21,488 | 1.111 | 1.903 | 0.000 | 0.000 | 1.000 | 37.000 |
| TotP | 21,488 | 45.568 | 48.251 | 2.000 | 17.000 | 55.000 | 897.000 |
| NetRegP | 21,488 | −0.004 | 0.050 | −0.333 | −0.021 | 0.011 | 0.429 |
| IncQA | 15,250 | 0.431 | 0.872 | 0.000 | 0.000 | 1.000 | 15.000 |
| DecQA | 15,250 | 0.652 | 1.201 | 0.000 | 0.000 | 1.000 | 42.000 |
| TotQA | 15,250 | 32.188 | 33.506 | 1.000 | 12.000 | 40.000 | 947.000 |
| NetRegQA | 15,250 | −0.007 | 0.053 | −0.667 | −0.020 | 0.000 | 0.500 |
| RegSentP | 20,709 | 0.002 | 0.062 | −0.500 | −0.024 | 0.034 | 0.375 |
| RegSentQA | 14,029 | −0.005 | 0.059 | −0.500 | −0.026 | 0.010 | 0.500 |
| AllSentP | 27,893 | 0.017 | 0.013 | −0.048 | 0.009 | 0.026 | 0.075 |
| AllSentQA | 27,730 | 0.010 | 0.012 | −0.091 | 0.002 | 0.017 | 0.143 |
| Legalese (Pres.) | 21,488 | 0.137 | 0.293 | 0.0001 | 0.002 | 0.052 | 0.986 |
| FDA (Pres.) | 21,488 | 0.172 | 0.298 | 0.0001 | 0.003 | 0.195 | 0.996 |
| Fins (Pres.) | 21,488 | 0.024 | 0.074 | 0.0001 | 0.002 | 0.004 | 0.971 |
| Client (Pres.) | 21,488 | 0.148 | 0.259 | 0.0001 | 0.003 | 0.175 | 0.991 |
| Margins (Pres.) | 21,488 | 0.086 | 0.174 | 0.0001 | 0.003 | 0.072 | 0.986 |
| Euro (Pres.) | 21,488 | 0.027 | 0.080 | 0.0001 | 0.002 | 0.004 | 0.981 |
| Utilities (Pres.) | 21,488 | 0.098 | 0.216 | 0.0002 | 0.002 | 0.040 | 0.999 |
| Legalese2 (Pres.) | 21,488 | 0.096 | 0.215 | 0.0001 | 0.002 | 0.046 | 0.979 |
| M&A (Pres.) | 21,488 | 0.087 | 0.186 | 0.0001 | 0.002 | 0.054 | 0.985 |
| China (Pres.) | 21,488 | 0.126 | 0.238 | 0.0001 | 0.002 | 0.115 | 0.992 |
| FDA (QA) | 15,250 | 0.176 | 0.298 | 0.0001 | 0.003 | 0.217 | 0.995 |
| Client (QA) | 15,250 | 0.160 | 0.255 | 0.0001 | 0.003 | 0.243 | 0.992 |
| EuroCompetition (QA) | 15,250 | 0.042 | 0.105 | 0.0001 | 0.002 | 0.011 | 0.962 |
| M&A (QA) | 15,250 | 0.111 | 0.204 | 0.0002 | 0.003 | 0.119 | 0.974 |
| China (QA) | 15,250 | 0.144 | 0.240 | 0.0002 | 0.003 | 0.197 | 0.983 |
| CorpFin (QA) | 15,250 | 0.054 | 0.132 | 0.0002 | 0.002 | 0.022 | 0.971 |
| Fins (QA) | 15,250 | 0.025 | 0.073 | 0.0001 | 0.002 | 0.006 | 0.969 |
| Utilities (QA) | 15,250 | 0.126 | 0.230 | 0.0002 | 0.003 | 0.127 | 0.993 |
| Margins (QA) | 15,250 | 0.082 | 0.164 | 0.0001 | 0.002 | 0.071 | 0.985 |
| Neg (QA) | 15,250 | 0.080 | 0.145 | 0.0002 | 0.003 | 0.100 | 0.961 |
| Ind. NetRegP | 27,861 | −0.004 | 0.014 | −0.140 | −0.012 | 0.004 | 0.143 |
| Ind. RegSentP | 27,853 | 0.001 | 0.018 | −0.261 | −0.006 | 0.014 | 0.167 |
| Ind. AllSentP | 27,894 | 0.018 | 0.004 | −0.004 | 0.016 | 0.020 | 0.053 |
| Ind. Adj. NetRegP | 21,488 | −0.000 | 0.049 | −0.341 | −0.018 | 0.019 | 0.417 |
| Ind. Adj. RegSentP | 20,709 | −0.000 | 0.059 | −0.373 | −0.023 | 0.029 | 0.365 |
| Ind. Adj. AllSentP | 27,893 | −0.001 | 0.013 | −0.065 | −0.009 | 0.008 | 0.055 |
| Ind. NetRegQA | 27,832 | −0.007 | 0.014 | −0.167 | −0.013 | 0.000 | 0.118 |
| Ind. RegSentQA | 27,777 | −0.005 | 0.015 | −0.182 | −0.011 | 0.003 | 0.167 |
| Ind. AllSentQA | 27,894 | 0.010 | 0.004 | −0.005 | 0.008 | 0.013 | 0.034 |
| Ind. Adj. NetRegQA | 15,250 | −0.000 | 0.051 | −0.646 | −0.014 | 0.015 | 0.496 |
| Ind. Adj. RegSentQA | 14,029 | −0.000 | 0.058 | −0.426 | −0.020 | 0.022 | 0.495 |
| Ind. Adj. AllSentQA | 27,730 | −0.001 | 0.011 | −0.101 | −0.007 | 0.006 | 0.132 |
| No Regulat | 75,350 | 0.531 | 0.499 | 0 | 0 | 1 | 1 |
| Never Regulat | 75,350 | 0.099 | 0.298 | 0 | 0 | 0 | 1 |

Table 8: This table shows the results of regressing four-quarter-ahead sales growth on our net regulatory trends, as well as other control variables. Control variables include company size (log sales), a dummy variable to indicate whether the respective section of a given call had a regulatory mention, a decomposition of sales growth into a company-specific and industry-specific (2 digit SIC code) component, as well as lags and interactions of the above variables. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of $NetReg$ on sales growth**

| | Sales Growth$^i_{t+4}$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| NetRegP$^i_t$ | −0.301*** | | −0.368*** | | | | −0.244*** | |
| | (0.065) | | (0.081) | | | | (0.068) | |
| NetRegQA$^i_t$ | | −0.173*** | | −0.224*** | | | | −0.164*** |
| | | (0.042) | | (0.043) | | | | (0.062) |
| Ind. Adj. NetRegP$^i_t$ | | | | | −0.336*** | | | |
| | | | | | (0.083) | | | |
| Ind. Adj. NetRegQA$^i_t$ | | | | | | −0.177*** | | |
| | | | | | | (0.045) | | |
| NetRegP$^i_{t-4}$ | | | | | | | −0.237 | |
| | | | | | | | (0.162) | |
| NetRegQA$^i_{t-4}$ | | | | | | | | 0.059 |
| | | | | | | | | (0.050) |
| Size$^i_t$ | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.026*** | −0.025*** |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.004) |
| Ind. NetRegP$^i_t$ | | | | | −0.606 | | | |
| | | | | | (0.370) | | | |
| Ind. NetRegQA$^i_t$ | | | | | | −0.698* | | |
| | | | | | | (0.358) | | |
| Sales Growth$^i_t$ | 0.035 | 0.042 | 0.035 | 0.042 | 0.035 | 0.042 | 0.037 | 0.052* |
| | (0.029) | (0.028) | (0.029) | (0.028) | (0.029) | (0.028) | (0.026) | (0.029) |
| No Regulat Dummy$^i_t$ | −0.005 | −0.019** | −0.005 | −0.019** | −0.005 | −0.016** | −0.011* | −0.025*** |
| | (0.007) | (0.008) | (0.007) | (0.008) | (0.007) | (0.007) | (0.006) | (0.008) |
| No Regulat Dummy$^i_{t-4}$ | | | | | | | 0.008 | 0.006 |
| | | | | | | | (0.011) | (0.011) |
| Never Regulat Dummy$^i_t$ | −0.039*** | −0.053*** | −0.039*** | −0.052*** | −0.038*** | −0.050*** | −0.035** | −0.050** |
| | (0.013) | (0.014) | (0.013) | (0.014) | (0.012) | (0.012) | (0.016) | (0.020) |
| NetRegP$^i_t$*Size$^i_t$ | | | 0.060* | | | | | |
| | | | (0.032) | | | | | |
| NetRegQA$^i_t$*Size$^i_t$ | | | | 0.045** | | | | |
| | | | | (0.020) | | | | |
| Ind. Adj. NetRegP$^i_t$*Size$^i_t$ | | | | | 0.050 | | | |
| | | | | | (0.032) | | | |
| Ind. Adj. NetRegQA$^i_t$*Size$^i_t$ | | | | | | 0.029* | | |
| | | | | | | (0.017) | | |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 56,979 | 52,196 | 56,979 | 52,196 | 56,979 | 52,196 | 40,337 | 35,996 |
| $R^2$ | 0.045 | 0.047 | 0.045 | 0.047 | 0.045 | 0.047 | 0.042 | 0.043 |
| Adjusted $R^2$ | 0.044 | 0.046 | 0.044 | 0.046 | 0.044 | 0.046 | 0.040 | 0.041 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table 9: This table shows the results of regressing four-quarter-ahead operating margin levelss on our net regulatory measures, as well as other control variables. Control variables include company size (log sales), a dummy variable to indicate whether the respective section of a given call had a regulatory mention, a decomposition of operating margin levelss into a company-specific and industry-specific (2 digit SIC code) component, as well as lags and interactions of the above variables. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of $NetReg$ on operating margins**

| | Sales Growth$^i_{t+4}$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| NetRegP$^i_t$ | −0.006 | | 0.001 | | | | −0.005 | |
| | (0.014) | | (0.020) | | | | (0.011) | |
| NetRegQA$^i_t$ | | −0.006 | | −0.014 | | | | −0.001 |
| | | (0.016) | | (0.024) | | | | (0.018) |
| Ind. Adj. NetRegP$^i_t$ | | | | | 0.002 | | | |
| | | | | | (0.020) | | | |
| Ind. Adj. NetRegQA$^i_t$ | | | | | | −0.019 | | |
| | | | | | | (0.025) | | |
| NetRegP$^i_{t-4}$ | | | | | | | −0.012 | |
| | | | | | | | (0.016) | |
| NetRegQA$^i_{t-4}$ | | | | | | | | −0.023** |
| | | | | | | | | (0.011) |
| Size$^i_t$ | 0.001** | 0.001** | 0.001** | 0.001** | 0.001** | 0.001** | 0.002*** | 0.002*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| Ind. NetRegP$^i_t$ | | | | | −0.028 | | | |
| | | | | | (0.077) | | | |
| Ind. NetRegQA$^i_t$ | | | | | | 0.014 | | |
| | | | | | | (0.061) | | |
| Sales Growth$^i_t$ | 0.761*** | 0.755*** | 0.761*** | 0.755*** | 0.761*** | 0.755*** | 0.786*** | 0.776*** |
| | (0.035) | (0.037) | (0.035) | (0.037) | (0.035) | (0.037) | (0.032) | (0.036) |
| No Regulat Dummy$^i_t$ | −0.002 | −0.003 | −0.002 | −0.003 | −0.002 | −0.003 | −0.002 | −0.001 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| No Regulat Dummy$^i_{t-4}$ | | | | | | | 0.0003 | −0.002 |
| | | | | | | | (0.001) | (0.001) |
| Never Regulat Dummy$^i_t$ | −0.003* | −0.004** | −0.003* | −0.004** | −0.003* | −0.004** | −0.002 | −0.004 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.003) |
| NetRegP$^i_t$*Size$^i_t$ | | | −0.004 | | | | | |
| | | | (0.005) | | | | | |
| NetRegQA$^i_t$*Size$^i_t$ | | | | 0.005 | | | | |
| | | | | (0.007) | | | | |
| Ind. Adj. NetRegP$^i_t$*Size$^i_t$ | | | | | −0.004 | | | |
| | | | | | (0.005) | | | |
| Ind. Adj. NetRegQA$^i_t$*Size$^i_t$ | | | | | | 0.007 | | |
| | | | | | | (0.008) | | |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 42,137 | 39,202 | 42,137 | 39,202 | 42,137 | 39,202 | 30,359 | 27,714 |
| $R^2$ | 0.748 | 0.750 | 0.748 | 0.750 | 0.748 | 0.750 | 0.765 | 0.769 |
| Adjusted $R^2$ | 0.747 | 0.749 | 0.747 | 0.749 | 0.747 | 0.749 | 0.764 | 0.769 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table 10: This table shows the results of regressing four-quarter-ahead $NetReg$ on our firm-level operating fundamentals, as well as on lagged $NetReg$. Other control variables include lagged abnormal returns and company size (log sales). Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Dependence of $NetReg$ on lagged $NetReg$ and other drivers**

| | $\text{NetRegP}_t^i$ | | | | $\text{NetRegQA}_t^i$ | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| $\text{NetRegP}_{t-4}^i$ | 0.207*** | 0.209*** | 0.191*** | 0.191*** | | | | |
| | (0.027) | (0.026) | (0.031) | (0.031) | | | | |
| $\text{NetRegQA}_{t-4}^i$ | | | | | 0.039** | 0.037** | 0.024 | 0.023 |
| | | | | | (0.017) | (0.017) | (0.016) | (0.016) |
| Lag Month FF6 Ret | −0.003 | −0.003 | −0.0003 | −0.001 | −0.0003 | −0.002 | −0.005 | −0.005 |
| | (0.004) | (0.004) | (0.009) | (0.009) | (0.005) | (0.005) | (0.013) | (0.013) |
| $\text{Size}_t^i$ | −0.0004** | −0.0003 | −0.001* | −0.001* | 0.0003 | 0.0004 | −0.001 | −0.002 |
| | (0.0002) | (0.0002) | (0.001) | (0.001) | (0.0004) | (0.0004) | (0.001) | (0.001) |
| $\text{Sales Growth}_{t-4;t}^i$ | 0.001 | | | 0.003 | −0.001 | | | 0.007 |
| | (0.001) | | | (0.003) | (0.003) | | | (0.009) |
| $\text{Sales Growth}_{t-8;t-4}^i$ | −0.001 | | | 0.003 | 0.002** | | | 0.005 |
| | (0.001) | | | (0.003) | (0.001) | | | (0.005) |
| $\text{Asset Growth}_{t-4;t}^i$ | | 0.003*** | | −0.003 | | −0.001 | | −0.006 |
| | | (0.001) | | (0.003) | | (0.002) | | (0.004) |
| $\text{Asset Growth}_{t-8;t-4}^i$ | | −0.0003 | | −0.001 | | −0.001 | | −0.003 |
| | | (0.001) | | (0.002) | | (0.001) | | (0.003) |
| $\text{Op. Inc. Growth}_{t-4;t}^i$ | | | 0.001 | 0.0003 | | | −0.002 | −0.003 |
| | | | (0.001) | (0.001) | | | (0.002) | (0.003) |
| $\text{Op. Inc. Growth}_{t-8;t-4}^i$ | | | 0.0001 | −0.0002 | | | 0.001 | 0.001 |
| | | | (0.001) | (0.001) | | | (0.001) | (0.001) |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 8,231 | 8,577 | 5,192 | 5,192 | 3,937 | 4,111 | 2,665 | 2,665 |
| $R^2$ | 0.096 | 0.098 | 0.092 | 0.093 | 0.039 | 0.039 | 0.050 | 0.051 |
| Adjusted $R^2$ | 0.089 | 0.091 | 0.082 | 0.081 | 0.025 | 0.025 | 0.029 | 0.028 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table 11: This table shows the results of regressing four-quarter-ahead sales growth on our Loughran-McDonald regulatory sentence sentiment, as well as other control variables. Control variables include company size (log sales), a dummy variable to indicate whether the respective section of a given call had a regulatory mention, a decomposition of sales growth into a company-specific and industry-specific (2 digit SIC code) component, as well as lags and interactions of the above variables. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of *RegSent* on sales growth**

| | Sales Growth$^i_{t+4}$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| RegSentP$^i_t$ | −0.042 | | −0.003 | | | | −0.070 | |
| | (0.052) | | (0.064) | | | | (0.053) | |
| RegSentQA$^i_t$ | | 0.067 | | 0.086** | | | | 0.036 |
| | | (0.044) | | (0.044) | | | | (0.053) |
| Ind. Adj. RegSentP$^i_t$ | | | | | −0.024 | | | |
| | | | | | (0.065) | | | |
| Ind. Adj. RegSentQA$^i_t$ | | | | | | 0.062 | | |
| | | | | | | (0.045) | | |
| RegSentP$^i_{t-4}$ | | | | | | | 0.108 | |
| | | | | | | | (0.143) | |
| RegSentQA$^i_{t-4}$ | | | | | | | | 0.075** |
| | | | | | | | | (0.036) |
| Size$^i_t$ | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.026*** | −0.025*** |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.004) |
| Ind. RegSentP$^i_t$ | | | | | 0.037 | | | |
| | | | | | (0.293) | | | |
| Ind. RegSentQA$^i_t$ | | | | | | 0.304 | | |
| | | | | | | (0.267) | | |
| Sales Growth$^i_t$ | 0.037 | 0.042 | 0.037 | 0.042 | 0.037 | 0.042 | 0.038 | 0.053* |
| | (0.028) | (0.028) | (0.028) | (0.028) | (0.028) | (0.028) | (0.026) | (0.029) |
| No Regulat Dummy$^i_t$ | −0.006 | −0.022** | −0.006 | −0.021** | −0.006 | −0.023*** | −0.010 | −0.027*** |
| | (0.008) | (0.008) | (0.008) | (0.008) | (0.008) | (0.008) | (0.007) | (0.008) |
| No Regulat Dummy$^i_{t-4}$ | | | | | | | 0.008 | 0.005 |
| | | | | | | | (0.013) | (0.012) |
| Never Regulat Dummy$^i_t$ | −0.039*** | −0.056*** | −0.039*** | −0.056*** | −0.039*** | −0.057*** | −0.034** | −0.054*** |
| | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.017) | (0.021) |
| RegSentP$^i_t$*Size$^i_t$ | | | −0.036 | | | | | |
| | | | (0.024) | | | | | |
| RegSentQA$^i_t$*Size$^i_t$ | | | | −0.018 | | | | |
| | | | | (0.012) | | | | |
| Ind. Adj. RegSentP$^i_t$*Size$^i_t$ | | | | | −0.022 | | | |
| | | | | | (0.022) | | | |
| Ind. Adj. RegSentQA$^i_t$*Size$^i_t$ | | | | | | −0.008 | | |
| | | | | | | (0.009) | | |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 56,366 | 51,182 | 56,366 | 51,182 | 56,366 | 51,182 | 39,621 | 34,759 |
| $R^2$ | 0.044 | 0.047 | 0.045 | 0.047 | 0.045 | 0.047 | 0.041 | 0.042 |
| Adjusted $R^2$ | 0.043 | 0.046 | 0.043 | 0.046 | 0.043 | 0.046 | 0.040 | 0.041 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table 12: This table shows the results of regressing four-quarter-ahead sales growth on our Loughran-McDonald earnings call sentiment, as well as other control variables. Control variables include company size (log sales), a dummy variable to indicate whether the respective section of a given call had a regulatory mention, a decomposition of sales growth into a company-specific and industry-specific (2 digit SIC code) component, as well as lags and interactions of the above variables. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of *AllSent* on sales growth**

| | Sales Growth$^i_{t+4}$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| AllSentP$^i_t$ | 0.975*** | | 1.179** | | | | 1.194*** | |
| | (0.354) | | (0.545) | | | | (0.396) | |
| AllSentQA$^i_t$ | | 0.706** | | 0.595** | | | | 0.845*** |
| | | (0.295) | | (0.266) | | | | (0.228) |
| Ind. Adj. AllSentP$^i_t$ | | | | | 0.987* | | | |
| | | | | | (0.596) | | | |
| Ind. Adj. AllSentQA$^i_t$ | | | | | | 0.443 | | |
| | | | | | | (0.285) | | |
| AllSentP$^i_{t-4}$ | | | | | | | 0.068 | |
| | | | | | | | (0.212) | |
| AllSentQA$^i_{t-4}$ | | | | | | | | −0.216 |
| | | | | | | | | (0.474) |
| Size$^i_t$ | −0.030*** | −0.030*** | −0.029*** | −0.031*** | −0.030*** | −0.030*** | −0.026*** | −0.025*** |
| | (0.005) | (0.005) | (0.004) | (0.005) | (0.006) | (0.005) | (0.005) | (0.005) |
| Ind. AllSentP$^i_t$ | | | | | 3.065*** | | | |
| | | | | | (1.053) | | | |
| Ind. AllSentQA$^i_t$ | | | | | | 2.961** | | |
| | | | | | | (1.467) | | |
| Sales Growth$^i_t$ | 0.035 | 0.037 | 0.035 | 0.037 | 0.034 | 0.037 | 0.039 | 0.041 |
| | (0.029) | (0.028) | (0.029) | (0.028) | (0.029) | (0.028) | (0.028) | (0.027) |
| No Regulat Dummy$^i_t$ | 0.008 | −0.002 | 0.009 | −0.001 | 0.046** | 0.022 | 0.007 | −0.006 |
| | (0.008) | (0.009) | (0.008) | (0.009) | (0.020) | (0.018) | (0.008) | (0.006) |
| No Regulat Dummy$^i_{t-4}$ | | | | | | | 0.011 | 0.008 |
| | | | | | | | (0.011) | (0.013) |
| Never Regulat Dummy$^i_t$ | −0.025** | −0.035** | −0.024** | −0.035** | 0.013 | −0.010 | −0.014 | −0.029 |
| | (0.012) | (0.015) | (0.012) | (0.015) | (0.022) | (0.021) | (0.013) | (0.020) |
| AllSentP$^i_t$*Size$^i_t$ | | | −0.155 | | | | | |
| | | | (0.204) | | | | | |
| AllSentQA$^i_t$*Size$^i_t$ | | | | 0.191** | | | | |
| | | | | (0.095) | | | | |
| Ind. Adj. AllSentP$^i_t$*Size$^i_t$ | | | | | −0.150 | | | |
| | | | | | (0.274) | | | |
| Ind. Adj. AllSentQA$^i_t$*Size$^i_t$ | | | | | | 0.245*** | | |
| | | | | | | (0.089) | | |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 62,317 | 62,204 | 62,317 | 62,204 | 62,317 | 62,204 | 47,978 | 47,849 |
| $R^2$ | 0.044 | 0.044 | 0.045 | 0.044 | 0.045 | 0.045 | 0.041 | 0.040 |
| Adjusted $R^2$ | 0.043 | 0.043 | 0.044 | 0.043 | 0.044 | 0.044 | 0.039 | 0.039 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table 13: This table shows the results of regressing four-quarter-ahead *RegSent* on our firm-level operating fundamentals, as well as on lagged *RegSent*. Other control variables include lagged abnormal returns and company size (log sales). Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Dependence of *RegSent* on lagged *RegSent* and other drivers**

| | $\text{RegSentP}_t^i$ | | | | $\text{RegSentQA}_t^i$ | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| $\text{RegSentP}_{t-4}^i$ | 0.330*** | 0.328*** | 0.323*** | 0.323*** | | | | |
| | (0.029) | (0.029) | (0.026) | (0.026) | | | | |
| $\text{RegSentQA}_{t-4}^i$ | | | | | −0.002 | 0.004 | −0.011 | −0.011 |
| | | | | | (0.012) | (0.013) | (0.021) | (0.021) |
| Lag Month FF6 Ret | −0.0003 | 0.001 | 0.003 | 0.003 | −0.011 | −0.008 | −0.024 | −0.025 |
| | (0.002) | (0.001) | (0.010) | (0.010) | (0.008) | (0.007) | (0.019) | (0.018) |
| $\text{Size}_t^i$ | −0.0001 | −0.00001 | −0.0003 | −0.0003 | −0.0004 | −0.0005 | 0.0002 | 0.0002 |
| | (0.0004) | (0.0004) | (0.001) | (0.001) | (0.0003) | (0.0003) | (0.001) | (0.001) |
| $\text{Sales Growth}_{t-4;t}^i$ | 0.002* | | | −0.0003 | 0.001 | | | −0.002 |
| | (0.001) | | | (0.008) | (0.001) | | | (0.006) |
| $\text{Sales Growth}_{t-8;t-4}^i$ | 0.001 | | | 0.003 | −0.001 | | | −0.006 |
| | (0.001) | | | (0.004) | (0.001) | | | (0.008) |
| $\text{Asset Growth}_{t-4;t}^i$ | | 0.001 | | 0.001 | | 0.001 | | 0.001 |
| | | (0.002) | | (0.005) | | (0.001) | | (0.004) |
| $\text{Asset Growth}_{t-8;t-4}^i$ | | 0.0002 | | −0.003 | | −0.002 | | −0.0005 |
| | | (0.001) | | (0.002) | | (0.001) | | (0.006) |
| $\text{Op. Inc. Growth}_{t-4;t}^i$ | | | −0.0004 | −0.0004 | | | 0.005*** | 0.005*** |
| | | | (0.002) | (0.001) | | | (0.001) | (0.001) |
| $\text{Op. Inc. Growth}_{t-8;t-4}^i$ | | | 0.001 | 0.001 | | | −0.00005 | 0.001 |
| | | | (0.001) | (0.001) | | | (0.001) | (0.002) |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 7,779 | 8,120 | 4,885 | 4,885 | 3,435 | 3,595 | 2,316 | 2,316 |
| $R^2$ | 0.169 | 0.166 | 0.174 | 0.174 | 0.040 | 0.040 | 0.057 | 0.057 |
| Adjusted $R^2$ | 0.163 | 0.160 | 0.163 | 0.163 | 0.023 | 0.023 | 0.032 | 0.031 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table 14: This table shows the results of regressing four-quarter-ahead *AllSent* on our firm-level operating fundamentals, as well as on lagged *AllSent*. Other control variables include lagged abnormal returns and company size (log sales). Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Dependence of *AllSent* on lagged *AllSent* and other drivers**

| | $\text{AllSentP}_t^i$ | | | | $\text{AllSentQA}_t^i$ | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| $\text{AllSentP}_{t-4}^i$ | $0.502^{***}$ | $0.500^{***}$ | $0.523^{***}$ | $0.525^{***}$ | | | | |
| | (0.011) | (0.011) | (0.011) | (0.012) | | | | |
| $\text{AllSentQA}_{t-4}^i$ | | | | | $0.292^{***}$ | $0.290^{***}$ | $0.305^{***}$ | $0.305^{***}$ |
| | | | | | (0.008) | (0.008) | (0.013) | (0.013) |
| Lag Month FF6 Ret | $0.006^{***}$ | $0.006^{***}$ | $0.009^{***}$ | $0.008^{***}$ | $0.005^{***}$ | $0.005^{***}$ | $0.008^{***}$ | $0.008^{***}$ |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.002) | (0.001) | (0.001) |
| $\text{Size}_t^i$ | $0.001^{***}$ | $0.001^{***}$ | $0.001^{***}$ | $0.001^{***}$ | $0.0003^{***}$ | $0.0003^{***}$ | $0.0004^{***}$ | $0.0004^{***}$ |
| | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| $\text{Sales Growth}_{t-4;t}^i$ | $0.003^{***}$ | | | $0.005^{***}$ | $0.001^{*}$ | | | $0.002^{***}$ |
| | (0.001) | | | (0.001) | (0.001) | | | (0.001) |
| $\text{Sales Growth}_{t-8;t-4}^i$ | $-0.002^{***}$ | | | $-0.002^{***}$ | $-0.001^{***}$ | | | $-0.002^{***}$ |
| | (0.001) | | | (0.001) | (0.0003) | | | (0.0005) |
| $\text{Asset Growth}_{t-4;t}^i$ | | $0.0005^{**}$ | | $-0.003^{***}$ | | $-0.0001$ | | $-0.001^{***}$ |
| | | (0.0002) | | (0.001) | | (0.0002) | | (0.0002) |
| $\text{Asset Growth}_{t-8;t-4}^i$ | | $-0.001^{***}$ | | $-0.001^{***}$ | | $-0.001^{***}$ | | $-0.0003$ |
| | | (0.0003) | | (0.0003) | | (0.0002) | | (0.0002) |
| $\text{Op. Inc. Growth}_{t-4;t}^i$ | | | $0.002^{***}$ | $0.002^{***}$ | | | $0.001^{***}$ | $0.001^{***}$ |
| | | | (0.0002) | (0.0002) | | | (0.0001) | (0.0001) |
| $\text{Op. Inc. Growth}_{t-8;t-4}^i$ | | | $-0.001^{***}$ | $-0.0004^{***}$ | | | $-0.0005^{***}$ | $-0.0003^{***}$ |
| | | | (0.0001) | (0.0001) | | | (0.0001) | (0.0001) |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 51,681 | 52,276 | 36,600 | 36,600 | 51,142 | 51,733 | 36,297 | 36,297 |
| $R^2$ | 0.318 | 0.316 | 0.336 | 0.341 | 0.126 | 0.127 | 0.139 | 0.141 |
| Adjusted $R^2$ | 0.318 | 0.315 | 0.335 | 0.340 | 0.125 | 0.126 | 0.138 | 0.140 |

*Note:* $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01

Table 15: This table shows the results of regressing four-quarter-ahead sales growth on our regulatory measures interacted with the call's M&A topic allocation, as well as other control variables. Control variables include company size (log sales) and lagged sales growth. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of M&A-regulatory topic on sales growth**

| | Sales Growth$^i_{t+4}$ | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| M&A (Pres.)$^i_t$ | 0.157*** | | 0.152*** | | 0.127*** | |
| | (0.030) | | (0.035) | | (0.030) | |
| M&A (QA)$^i_t$ | | 0.035 | | 0.038 | | 0.015 |
| | | (0.029) | | (0.030) | | (0.031) |
| RegSentP$^i_t$ | | | 0.112** | | | |
| | | | (0.056) | | | |
| RegSentQA$^i_t$ | | | | 0.113** | | |
| | | | | (0.055) | | |
| NetRegP$^i_t$ | | | | | −0.095 | |
| | | | | | (0.088) | |
| NetRegQA$^i_t$ | | | | | | −0.061 |
| | | | | | | (0.050) |
| Size$^i_t$ | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.030*** | −0.030*** |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Sales Growth$^i_t$ | 0.035 | 0.042 | 0.037 | 0.042 | 0.035 | 0.042 |
| | (0.028) | (0.028) | (0.028) | (0.028) | (0.028) | (0.028) |
| No Regulat Dummy$^i_t$ | 0.009 | −0.016 | 0.010 | −0.017 | 0.008 | −0.016 |
| | (0.009) | (0.010) | (0.009) | (0.010) | (0.009) | (0.010) |
| Never Regulat Dummy$^i_t$ | −0.025* | −0.050*** | −0.025* | −0.051*** | −0.027* | −0.050*** |
| | (0.014) | (0.016) | (0.014) | (0.016) | (0.014) | (0.016) |
| M&A (Pres.)$^i_t$*RegSentP$^i_t$ | | | −0.409* | | | |
| | | | (0.241) | | | |
| M&A (QA)$^i_t$*RegSentQA$^i_t$ | | | | −0.338 | | |
| | | | | (0.355) | | |
| M&A (Pres.)$^i_t$*NetRegP$^i_t$ | | | | | −0.438*** | |
| | | | | | (0.145) | |
| M&A (QA)$^i_t$*NetRegQA$^i_t$ | | | | | | −0.621** |
| | | | | | | (0.310) |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 56,979 | 52,196 | 56,366 | 51,182 | 56,979 | 52,196 |
| $R^2$ | 0.046 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 |
| Adjusted $R^2$ | 0.045 | 0.046 | 0.046 | 0.046 | 0.045 | 0.046 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table 16: This table shows the results of regressing four-quarter-ahead sales growth on our regulatory measures interacted with the call's FDA topic allocation, as well as other control variables. Control variables include company size (log sales) and lagged sales growth. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of FDA-regulatory topic on sales growth**

| | $\text{Sales Growth}^i_{t+4}$ | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $\text{FDA (Pres.)}^i_t$ | $0.077^{***}$ | | $0.079^{***}$ | | $0.071^{***}$ | |
| | (0.011) | | (0.008) | | (0.010) | |
| $\text{FDA (QA)}^i_t$ | | $0.091^{***}$ | | $0.089^{***}$ | | $0.091^{***}$ |
| | | (0.016) | | (0.015) | | (0.016) |
| $\text{RegSentP}^i_t$ | | | $-0.104^{*}$ | | | |
| | | | (0.057) | | | |
| $\text{RegSentQA}^i_t$ | | | | 0.009 | | |
| | | | | (0.045) | | |
| $\text{NetRegP}^i_t$ | | | | | $-0.268^{***}$ | |
| | | | | | (0.075) | |
| $\text{NetRegQA}^i_t$ | | | | | | $-0.164^{***}$ |
| | | | | | | (0.048) |
| $\text{Size}^i_t$ | $-0.029^{***}$ | $-0.029^{***}$ | $-0.029^{***}$ | $-0.029^{***}$ | $-0.029^{***}$ | $-0.029^{***}$ |
| | (0.005) | (0.005) | (0.005) | (0.004) | (0.005) | (0.005) |
| $\text{Sales Growth}^i_t$ | 0.033 | 0.040 | 0.035 | 0.040 | 0.033 | 0.040 |
| | (0.029) | (0.029) | (0.029) | (0.029) | (0.029) | (0.029) |
| $\text{No Regulat Dummy}^i_t$ | 0.003 | −0.008 | 0.004 | −0.009 | 0.003 | −0.007 |
| | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) |
| $\text{Never Regulat Dummy}^i_t$ | $-0.030^{***}$ | $-0.041^{***}$ | $-0.029^{***}$ | $-0.043^{***}$ | $-0.031^{***}$ | $-0.041^{***}$ |
| | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) |
| $\text{FDA (Pres.)}^i_t$*$\text{RegSentP}^i_t$ | | | 0.245 | | | |
| | | | (0.239) | | | |
| $\text{FDA (QA)}^i_t$*$\text{RegSentQA}^i_t$ | | | | $0.272^{**}$ | | |
| | | | | (0.119) | | |
| $\text{FDA (Pres.)}^i_t$*$\text{NetRegP}^i_t$ | | | | | 0.041 | |
| | | | | | (0.179) | |
| $\text{FDA (QA)}^i_t$*$\text{NetRegQA}^i_t$ | | | | | | 0.114 |
| | | | | | | (0.125) |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 56,979 | 52,196 | 56,366 | 51,182 | 56,979 | 52,196 |
| $R^2$ | 0.045 | 0.048 | 0.046 | 0.048 | 0.045 | 0.048 |
| Adjusted $R^2$ | 0.044 | 0.047 | 0.044 | 0.047 | 0.044 | 0.047 |

*Note:* $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01

Table 17: This table shows the results of regressing four-quarter-ahead sales growth on our regulatory measures interacted with the call's China topic allocation, as well as other control variables. Control variables include company size (log sales) and lagged sales growth. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of China-regulatory topic on sales growth**

| | Sales Growth$^i_{t+4}$ | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| China (Pres.)$^i_t$ | −0.050** | | −0.050* | | −0.052** | |
| | (0.025) | | (0.026) | | (0.024) | |
| China (QA)$^i_t$ | | −0.057** | | −0.068** | | −0.055** |
| | | (0.025) | | (0.027) | | (0.024) |
| RegSentP$^i_t$ | | | −0.036 | | | |
| | | | (0.061) | | | |
| RegSentQA$^i_t$ | | | | 0.121*** | | |
| | | | | (0.041) | | |
| NetRegP$^i_t$ | | | | | −0.452*** | |
| | | | | | (0.082) | |
| NetRegQA$^i_t$ | | | | | | −0.229*** |
| | | | | | | (0.054) |
| Size$^i_t$ | −0.029*** | −0.030*** | −0.029*** | −0.030*** | −0.030*** | −0.030*** |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Sales Growth$^i_t$ | 0.035 | 0.042 | 0.037 | 0.042 | 0.035 | 0.042 |
| | (0.029) | (0.028) | (0.029) | (0.028) | (0.029) | (0.028) |
| No Regulat Dummy$^i_t$ | −0.013 | −0.029** | −0.013 | −0.032*** | −0.012 | −0.027** |
| | (0.011) | (0.012) | (0.011) | (0.012) | (0.010) | (0.011) |
| Never Regulat Dummy$^i_t$ | −0.046*** | −0.063*** | −0.046*** | −0.066*** | −0.045*** | −0.061*** |
| | (0.016) | (0.017) | (0.016) | (0.017) | (0.015) | (0.016) |
| China (Pres.)$^i_t$*RegSentP$^i_t$ | | | −0.024 | | | |
| | | | (0.167) | | | |
| China (QA)$^i_t$*RegSentQA$^i_t$ | | | | −0.342*** | | |
| | | | | (0.086) | | |
| China (Pres.)$^i_t$*NetRegP$^i_t$ | | | | | 0.888*** | |
| | | | | | (0.193) | |
| China (QA)$^i_t$*NetRegQA$^i_t$ | | | | | | 0.421** |
| | | | | | | (0.177) |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 56,979 | 52,196 | 56,366 | 51,182 | 56,979 | 52,196 |
| $R^2$ | 0.044 | 0.047 | 0.045 | 0.047 | 0.046 | 0.047 |
| Adjusted $R^2$ | 0.043 | 0.046 | 0.044 | 0.046 | 0.044 | 0.046 |
| *Note:* | | | | | | *p<0.1; **p<0.05; ***p<0.01 |

Table 18: This table shows the results of regressing one-month (i.e. 22-trading day) returns on lagged *NetReg*, *RegSent*, and *AllSent* (for the presentation and the Q&A sections), as well as control variables, which include *SUE*, log market equity, log book-to-market ratio, log share turnover. *SUE* measures the standardized unexpected earnings following the construct found in Bernard and Thomas (1989) and Tetlock, Saar-Tsechansky, Macskassy (2008). Returns are measured from the close of day $t$ (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day $t+1$ (the next business day) for calls occurring after 4PM New York time. Excess returns refer to the stock return in excess of the risk-free rate and *FF*6 *Ret* refers to abnormal excess returns relative to the Fama-French five factor model augmented with the momentum factor. Standard errors, clustered on conference call event dates, are reported in parentheses.

**Effects of regulatory tone and sentiment on returns**

| Returns | | | | | | |
|---|---|---|---|---|---|---|
| | Excess $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | | FF6 $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $\text{NetRegP}^i_{t;t+1}$ | 0.005 | | 0.026 | −0.006 | | 0.003 |
| | (0.019) | | (0.029) | (0.016) | | (0.025) |
| $\text{NetRegQA}^i_{t;t+1}$ | | 0.045** | 0.039 | | 0.031* | 0.021 |
| | | (0.020) | (0.032) | | (0.017) | (0.028) |
| No Regulat | −0.0005 | 0.001 | 0.001 | 0.0001 | −0.0001 | 0.002 |
| | (0.001) | (0.001) | (0.002) | (0.001) | (0.001) | (0.002) |
| Never Regulat | 0.004 | 0.006* | 0.006* | 0.004 | 0.004 | 0.005** |
| | (0.003) | (0.003) | (0.003) | (0.002) | (0.003) | (0.003) |
| Observations | 25,975 | 24,590 | 21,628 | 25,975 | 24,590 | 21,628 |
| $\text{RegSentP}^i_{t;t+1}$ | 0.017 | | 0.052** | 0.002 | | 0.039* |
| | (0.016) | | (0.026) | (0.014) | | (0.022) |
| $\text{RegSentQA}^i_{t;t+1}$ | | 0.050*** | 0.061** | | 0.029* | 0.039 |
| | | (0.019) | (0.029) | | (0.016) | (0.025) |
| No Regulat | −0.001 | 0.0003 | 0.001 | 0.00002 | −0.0003 | 0.002 |
| | (0.001) | (0.001) | (0.002) | (0.001) | (0.001) | (0.002) |
| Never Regulat | 0.004 | 0.005* | 0.006* | 0.004 | 0.003 | 0.006** |
| | (0.003) | (0.003) | (0.003) | (0.002) | (0.003) | (0.003) |
| Observations | 25,677 | 24,097 | 21,348 | 25,677 | 24,097 | 21,348 |
| $\text{AllSentP}^i_{t;t+1}$ | 0.107 | | −0.002 | 0.172*** | | 0.089 |
| | (0.066) | | (0.075) | (0.057) | | (0.063) |
| $\text{AllSentQA}^i_{t;t+1}$ | | 0.335*** | 0.336*** | | 0.299*** | 0.255*** |
| | | (0.088) | (0.099) | | (0.079) | (0.088) |
| No Regulat | 0.002 | 0.003** | 0.003* | 0.003** | 0.003** | 0.004*** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.001) | (0.002) |
| Never Regulat | 0.006** | 0.008*** | 0.008** | 0.007** | 0.006** | 0.008*** |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) |
| Observations | 28,937 | 28,879 | 28,879 | 28,937 | 28,879 | 28,879 |
| *Note:* | | | | | | *p<0.1; **p<0.05; ***p<0.01 |

# APPENDIX

## 1 Notes

We note that the alpha coefficients in the return regressions for 22-day ahead returns in Tables A6, A7, and A8 are roughly between -1 and -2 and are all statistically significant. The average alpha in our factor model regressions is 1.5 basis points, with a standard deviation of 17.7 basis points. The average 22-day FF6 abnormal (excess) return is 17 (150) basis points with a standard deviation of 1,240 (1,370) basis points (see Table 5). So the economic effect of lagged alphas on future 22-day returns is very small despite the significant coefficient estimates.

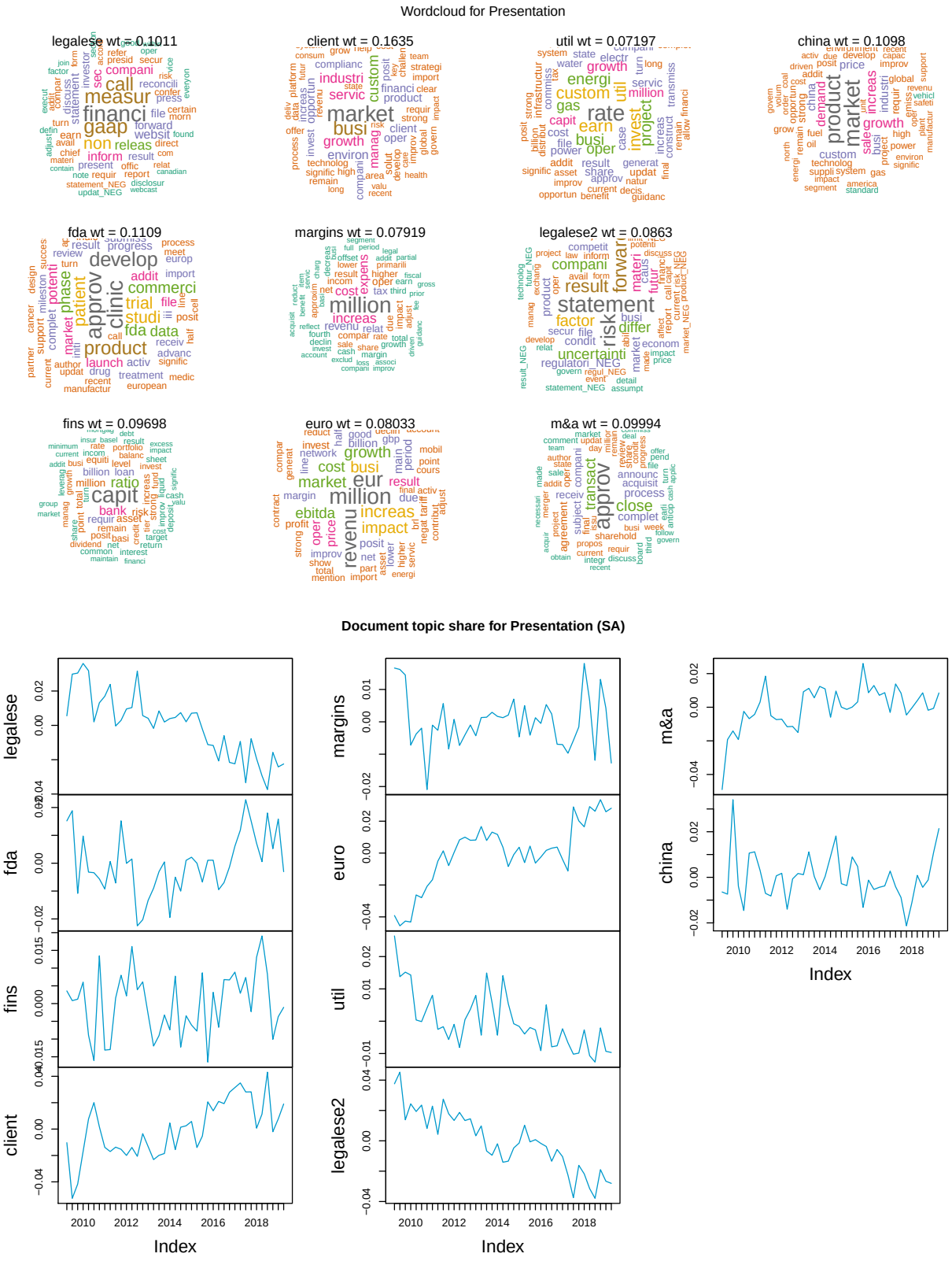


Figure A1: Presentation topics from LDA with 2000 iterations Gibbs sampling. Seasonally adjusted topic frequencies shown in second panel.


Figure A2: Q&A topics from LDA with 2000 iterations Gibbs sampling. Seasonally adjusted topic frequencies shown in second panel.

Table A1: Topic-word distributions for the presentation section. The top 20 words in each topic is shown, along with the topic-word distribution. The LDA is estimated using Gibbs sampling with 2000 iterations.

| Topic | Words |
|---|---|
| legalese | financi 0.045, measur 0.04, gaap 0.039, call 0.038, non 0.03, releas 0.023, sec 0.019, inform 0.018, compani 0.018, websit 0.017, statement 0.016, forward 0.015, file 0.014, discuss 0.013, reconcili 0.013, result 0.013, present 0.013, press 0.013, investor 0.012, earn 0.011 |
| fda | clinic 0.02, approv 0.02, develop 0.018, product 0.016, studi 0.014, trial 0.014, patient 0.013, phase 0.012, commerci 0.012, fda 0.012, data 0.011, potenti 0.009, addit 0.008, market 0.008, file 0.008, launch 0.007, progress 0.007, submiss 0.007, result 0.006, iii 0.006 |
| fins | capit 0.048, ratio 0.025, bank 0.018, loan 0.014, requir 0.012, billion 0.012, asset 0.012, million 0.012, risk 0.011, increas 0.011, remain 0.01, level 0.009, total 0.009, strong 0.009, equiti 0.008, posit 0.008, basi 0.008, point 0.008, credit 0.008, invest 0.007 |
| client | market 0.02, busi 0.016, custom 0.011, servic 0.01, growth 0.009, industri 0.009, manag 0.008, environ 0.007, product 0.007, oper 0.007, opportun 0.007, client 0.007, financi 0.006, posit 0.006, increas 0.006, complianc 0.006, invest 0.006, compani 0.005, solut 0.005, technolog 0.005 |
| margins | million 0.072, increas 0.032, expens 0.03, cost 0.027, revenu 0.023, relat 0.019, tax 0.018, oper 0.017, result 0.015, due 0.015, incom 0.013, compar 0.013, higher 0.013, impact 0.013, net 0.013, rate 0.011, lower 0.01, approxim 0.01, sale 0.01, share 0.01 |
| euro | million 0.021, eur 0.02, revenu 0.018, increas 0.014, busi 0.013, impact 0.013, market 0.012, growth 0.012, cost 0.011, ebitda 0.011, result 0.009, price 0.008, oper 0.008, posit 0.007, main 0.007, period 0.006, billion 0.006, due 0.006, network 0.006, half 0.006 |
| util | rate 0.019, earn 0.014, util 0.013, custom 0.013, invest 0.013, busi 0.012, energi 0.012, project 0.012, oper 0.011, gas 0.011, growth 0.009, million 0.007, capit 0.007, result 0.007, case 0.007, servic 0.007, electr 0.007, cost 0.007, file 0.007, power 0.006 |
| legalese2 | statement 0.035, risk 0.033, forward 0.028, result 0.027, factor 0.023, compani 0.019, differ 0.019, uncertainti 0.018, materi 0.018, futur 0.014, busi 0.012, file 0.011, caus 0.011, market 0.011, product 0.011, regulatori_NEG 0.011, condit 0.011, competit 0.01, secur 0.01, econom 0.009 |
| m&a | approv 0.037, close 0.021, transact 0.019, process 0.013, complet 0.012, acquisit 0.01, receiv 0.01, compani 0.01, subject 0.01, announc 0.01, agreement 0.008, final 0.008, sharehold 0.008, share 0.007, review 0.007, oper 0.006, progress 0.006, busi 0.006, remain 0.006, propos 0.006 |
| china | market 0.026, product 0.024, growth 0.013, increas 0.013, demand 0.01, sale 0.01, industri 0.009, busi 0.009, custom 0.008, china 0.008, price 0.008, requir 0.006, strong 0.006, fuel 0.006, technolog 0.006, project 0.005, develop 0.005, oil 0.005, high 0.005, system 0.005 |

Table A2: Topic-word distributions for the Q&A section. The top 20 words in each topic is shown, along with the topic-word distribution. The LDA is estimated using Gibbs sampling with 2000 iterations.

| Topic | Words |
|---|---|
| fda | data 0.02, studi 0.017, approv 0.014, patient 0.014, fda 0.013, trial 0.013, discuss 0.011, product 0.01, clinic 0.01, phase 0.01, file 0.008, develop 0.007, potenti 0.006, process 0.006, europ 0.006, drug 0.006, differ 0.006, point 0.006, forward 0.005, agenc 0.005 |
| client | busi 0.02, market 0.017, custom 0.009, industri 0.009, environ 0.009, servic 0.008, opportun 0.008, product 0.008, good 0.008, client 0.008, compani 0.007, peopl 0.007, area 0.006, differ 0.006, manag 0.006, sort 0.006, help 0.005, invest 0.005, posit 0.005, complianc 0.005 |
| euro-competit | market 0.021, price 0.014, impact 0.008, cours 0.007, eur 0.007, govern 0.007, cost 0.006, invest 0.006, increas 0.006, competit 0.006, oper 0.006, indiscern 0.006, network 0.005, tariff 0.005, discuss 0.005, regul_NEG 0.005, revenu 0.005, clear 0.005, posit 0.005, busi 0.005 |
| m&a | approv 0.028, process 0.026, close 0.011, issu 0.009, deal 0.008, transact 0.007, done 0.006, point 0.006, hope 0.006, review 0.006, file 0.006, state 0.006, call 0.005, final 0.005, complet 0.005, discuss 0.005, requir 0.005, compani 0.005, updat 0.005, littl 0.005 |
| china | market 0.033, product 0.026, china 0.014, busi 0.011, growth 0.008, price 0.007, custom 0.007, countri 0.007, europ 0.007, good 0.007, littl 0.007, industri 0.006, demand 0.006, opportun 0.006, requir 0.005, certain 0.005, differ 0.005, increas 0.005, sale 0.005, impact 0.005 |
| corpfin | bank 0.019, capit 0.016, loan 0.01, market 0.008, littl 0.008, good 0.007, environ 0.007, busi 0.007, credit 0.007, balanc 0.006, rate 0.006, growth 0.006, compani 0.006, level 0.006, risk 0.005, point 0.005, opportun 0.005, certain 0.005, asset 0.005, portfolio 0.005 |
| fins | capit 0.034, bank 0.014, risk 0.012, ratio 0.011, requir 0.009, asset 0.009, point 0.008, level 0.008, dividend 0.007, impact 0.007, billion 0.007, busi 0.006, increas 0.006, manag 0.006, rate 0.006, basi 0.005, clear 0.005, cours 0.005, indiscern 0.005, discuss 0.005 |
| util | rate 0.016, project 0.012, busi 0.011, util 0.01, gas 0.009, invest 0.009, state 0.009, cost 0.008, case 0.007, custom 0.007, power 0.006, energi 0.006, asset 0.006, opportun 0.006, plant 0.006, forward 0.006, capit 0.006, littl 0.005, return 0.005, earn 0.005 |
| margins | cost 0.032, million 0.028, impact 0.017, busi 0.015, revenu 0.015, rate 0.014, growth 0.014, increas 0.013, expens 0.013, tax 0.011, relat 0.011, margin 0.011, littl 0.01, guidanc 0.009, half 0.008, line 0.007, sort 0.007, higher 0.007, fee 0.006, mention 0.006 |
| neg | regul_NEG 0.031, regulatori_NEG 0.026, market_NEG 0.01, busi_NEG 0.009, ca 0.008, impact_NEG 0.007, anyth_NEG 0.007, issu_NEG 0.006, point_NEG 0.006, yet_NEG 0.005, product_NEG 0.005, point 0.005, sure_NEG 0.005, compani_NEG 0.005, specif_NEG 0.005, requir_NEG 0.005, sort_NEG 0.005, market 0.005, abl_NEG 0.004, happen_NEG 0.004 |

Table A3: We collect all earnings calls whose presentation section's topic distribution is above 50% for a given topic. We then report the mean $NetRegP$ and its standard error (assuming independence across calls) for this set of earnings calls for a given topic. The top panel of the tables show these results. The bottom panel shows the analogous results for the Q&A portions of the calls.

**Regulatory trends within topical contexts in the Presentation section**

| Topic | Mean | SE |
|---|---|---|
| legalese | 0.0093 | 0.0004 |
| fda | -0.0174 | 0.0005 |
| fins | -0.0011 | 0.0008 |
| client | 0.0061 | 0.0007 |
| margins | 0.0083 | 0.0016 |
| euro | -0.0040 | 0.0011 |
| util | -0.0162 | 0.0009 |
| legalese2 | 0.0136 | 0.0005 |
| m&a | -0.0535 | 0.0011 |
| china | 0.0079 | 0.0010 |

**Regulatory trends within topical contexts in the Q&A section**

| Topic | Mean | SE |
|---|---|---|
| fda | -0.0147 | 0.0007 |
| client | 0.0010 | 0.0008 |
| euro-competit | -0.0057 | 0.0009 |
| m&a | -0.0327 | 0.0013 |
| china | 0.0003 | 0.0009 |
| corpfin | 0.0023 | 0.0010 |
| fins | -0.0001 | 0.0009 |
| util | -0.0114 | 0.0009 |
| margins | 0.0068 | 0.0016 |
| neg | -0.0027 | 0.0009 |

Table A4: This table shows the results of regressing four-quarter-ahead investment growth on our net regulatory measures, as well as other control variables. Control variables include company size (log sales), a dummy variable to indicate whether the respective section of a given call had a regulatory mention, a decomposition of investment growth into a company-specific and industry-specific (2 digit SIC code) component, as well as lags and interactions of the above variables. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of $NetReg$ on asset growth**

| | Asset Growth$^i_{t+4}$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| NetRegP$^i_t$ | −0.302*** | | −0.312*** | | | | −0.329*** | |
| | (0.065) | | (0.062) | | | | (0.072) | |
| NetRegQA$^i_t$ | | −0.145* | | −0.162 | | | | −0.233*** |
| | | (0.078) | | (0.105) | | | | (0.090) |
| Ind. Adj. NetRegP$^i_t$ | | | | | −0.260*** | | | |
| | | | | | (0.062) | | | |
| Ind. Adj. NetRegQA$^i_t$ | | | | | | −0.148 | | |
| | | | | | | (0.106) | | |
| NetRegP$^i_{t-4}$ | | | | | | | 0.007 | |
| | | | | | | | (0.064) | |
| NetRegQA$^i_{t-4}$ | | | | | | | | 0.179*** |
| | | | | | | | | (0.066) |
| Size$^i_t$ | −0.010*** | −0.011*** | −0.010*** | −0.011*** | −0.010*** | −0.011*** | −0.008*** | −0.009*** |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) |
| Ind. NetRegP$^i_t$ | | | | | −0.972** | | | |
| | | | | | (0.380) | | | |
| Ind. NetRegQA$^i_t$ | | | | | | −0.142 | | |
| | | | | | | (0.336) | | |
| Sales Growth$^i_t$ | 0.092*** | 0.094*** | 0.092*** | 0.094*** | 0.092*** | 0.094*** | 0.084** | 0.094*** |
| | (0.029) | (0.027) | (0.029) | (0.027) | (0.029) | (0.027) | (0.034) | (0.026) |
| No Regulat Dummy$^i_t$ | −0.009 | −0.025*** | −0.009 | −0.025*** | −0.008 | −0.025*** | −0.014* | −0.034*** |
| | (0.007) | (0.007) | (0.007) | (0.007) | (0.006) | (0.006) | (0.007) | (0.007) |
| No Regulat Dummy$^i_{t-4}$ | | | | | | | 0.015** | 0.010** |
| | | | | | | | (0.007) | (0.005) |
| Never Regulat Dummy$^i_t$ | −0.035*** | −0.053*** | −0.035*** | −0.053*** | −0.034*** | −0.053*** | −0.022 | −0.049*** |
| | (0.011) | (0.010) | (0.011) | (0.010) | (0.010) | (0.010) | (0.017) | (0.014) |
| NetRegP$^i_t$*Size$^i_t$ | | | 0.009 | | | | | |
| | | | (0.026) | | | | | |
| NetRegQA$^i_t$*Size$^i_t$ | | | | 0.016 | | | | |
| | | | | (0.031) | | | | |
| Ind. Adj. NetRegP$^i_t$*Size$^i_t$ | | | | | −0.0001 | | | |
| | | | | | (0.027) | | | |
| Ind. Adj. NetRegQA$^i_t$*Size$^i_t$ | | | | | | 0.003 | | |
| | | | | | | (0.032) | | |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 57,745 | 52,775 | 57,745 | 52,775 | 57,745 | 52,775 | 40,686 | 36,215 |
| $R^2$ | 0.034 | 0.037 | 0.034 | 0.037 | 0.034 | 0.037 | 0.028 | 0.032 |
| Adjusted $R^2$ | 0.033 | 0.035 | 0.033 | 0.035 | 0.033 | 0.035 | 0.026 | 0.030 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table A5: This table shows the results of regressing four-quarter-ahead operating income growth on our net regulatory measures, as well as other control variables. Control variables include company size (log sales), a dummy variable to indicate whether the respective section of a given call had a regulatory mention, a decomposition of operating income growth into a company-specific and industry-specific (2 digit SIC code) component, as well as lags and interactions of the above variables. Standard errors, clustered by 2-digit SIC, are reported in parentheses.

**Effects of $NetReg$ on operating income growth**

| | Operating Income Growth$^i_{t+4}$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| NetRegP$^i_t$ | −0.235* | | −0.100 | | | | −0.181 | |
| | (0.135) | | (0.257) | | | | (0.129) | |
| NetRegQA$^i_t$ | | −0.127 | | −0.139 | | | | −0.167 |
| | | (0.140) | | (0.333) | | | | (0.143) |
| Ind. Adj. NetRegP$^i_t$ | | | | | −0.055 | | | |
| | | | | | (0.241) | | | |
| Ind. Adj. NetRegQA$^i_t$ | | | | | | −0.165 | | |
| | | | | | | (0.308) | | |
| NetRegP$^i_{t-4}$ | | | | | | | −0.328** | |
| | | | | | | | (0.158) | |
| NetRegQA$^i_{t-4}$ | | | | | | | | −0.259 |
| | | | | | | | | (0.278) |
| Size$^i_t$ | −0.069*** | −0.065*** | −0.069*** | −0.065*** | −0.069*** | −0.065*** | −0.057*** | −0.055*** |
| | (0.008) | (0.007) | (0.008) | (0.007) | (0.008) | (0.007) | (0.008) | (0.008) |
| Ind. NetRegP$^i_t$ | | | | | −1.433* | | | |
| | | | | | (0.811) | | | |
| Ind. NetRegQA$^i_t$ | | | | | | −0.172 | | |
| | | | | | | (0.788) | | |
| Sales Growth$^i_t$ | −0.116*** | −0.106*** | −0.116*** | −0.106*** | −0.116*** | −0.106*** | −0.105*** | −0.098*** |
| | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.010) |
| No Regulat Dummy$^i_t$ | 0.012 | 0.024 | 0.012 | 0.023 | 0.014 | 0.024 | 0.007 | 0.022 |
| | (0.017) | (0.019) | (0.017) | (0.019) | (0.015) | (0.018) | (0.018) | (0.017) |
| No Regulat Dummy$^i_{t-4}$ | | | | | | | 0.011 | 0.018 |
| | | | | | | | (0.019) | (0.017) |
| Never Regulat Dummy$^i_t$ | −0.005 | 0.008 | −0.005 | 0.008 | −0.003 | 0.008 | −0.0004 | 0.022 |
| | (0.024) | (0.027) | (0.024) | (0.027) | (0.023) | (0.027) | (0.031) | (0.033) |
| NetRegP$^i_t$*Size$^i_t$ | | | −0.076 | | | | | |
| | | | (0.096) | | | | | |
| NetRegQA$^i_t$*Size$^i_t$ | | | | 0.007 | | | | |
| | | | | (0.140) | | | | |
| Ind. Adj. NetRegP$^i_t$*Size$^i_t$ | | | | | −0.058 | | | |
| | | | | | (0.093) | | | |
| Ind. Adj. NetRegQA$^i_t$*Size$^i_t$ | | | | | | 0.023 | | |
| | | | | | | (0.126) | | |
| 2-digit SIC Ind. FE? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 39,662 | 36,940 | 39,662 | 36,940 | 39,662 | 36,940 | 28,873 | 26,388 |
| $R^2$ | 0.039 | 0.036 | 0.039 | 0.036 | 0.039 | 0.036 | 0.033 | 0.032 |
| Adjusted $R^2$ | 0.037 | 0.034 | 0.037 | 0.034 | 0.037 | 0.034 | 0.031 | 0.030 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table A6: This table shows the results of regressing returns on lagged *NetReg* (for the presentation and the Q&A sections), as well as control variables. *SUE* measures the standardized unexpected earnings following the construct found in Bernard and Thomas (1989) and Tetlock, Saar-Tsechansky, Macskassy (2008). Returns are measured from the close of day $t$ (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day $t+1$ (the next business day) for calls occurring after 4PM New York time. Excess returns refer to the stock return in excess of the risk-free rate and *FF6 Ret* refers to abnormal excess returns relative to the Fama-French five factor model augmented with the momentum factor. Standard errors, clustered on conference call event dates, are reported in parentheses.

**Effects of *NetReg* on returns**

| | Excess $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | | FF6 $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| FF6 $\text{Ret}^i_{t-1,t;t,t+1}$ | 0.026** | 0.027** | 0.028** | 0.008 | 0.006 | 0.010 |
| | (0.012) | (0.012) | (0.013) | (0.010) | (0.010) | (0.011) |
| FF6 $\text{Ret}^i_{t-22,t-1;t-21,t}$ | −0.009 | −0.008 | −0.006 | −0.017 | −0.014 | −0.015 |
| | (0.013) | (0.013) | (0.014) | (0.012) | (0.012) | (0.013) |
| FF6 Alpha | −1.674** | −1.239* | −1.633** | −2.098*** | −1.528** | −1.912*** |
| | (0.738) | (0.744) | (0.791) | (0.655) | (0.667) | (0.709) |
| $\text{NetRegP}^i_{t;t+1}$ | 0.005 | | 0.026 | −0.006 | | 0.003 |
| | (0.019) | | (0.029) | (0.016) | | (0.025) |
| $\text{NetRegQA}^i_{t;t+1}$ | | 0.045** | 0.039 | | 0.031* | 0.021 |
| | | (0.020) | (0.032) | | (0.017) | (0.028) |
| log(ME) | −0.002*** | −0.002*** | −0.001*** | −0.001*** | −0.001** | −0.001 |
| | (0.0005) | (0.0005) | (0.0005) | (0.0004) | (0.0004) | (0.0004) |
| SUE | 0.0004* | 0.001** | 0.001** | 0.001*** | 0.001*** | 0.001*** |
| | (0.0002) | (0.0002) | (0.0003) | (0.0003) | (0.0003) | (0.0003) |
| log(BM) | −0.0005 | −0.00000 | 0.0003 | −0.001 | −0.0002 | −0.0004 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| log(share turnover) | 0.0005 | 0.0004 | 0.0001 | −0.0004 | −0.0004 | −0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| No Regulat | −0.0005 | 0.001 | 0.001 | 0.0001 | −0.0001 | 0.002 |
| | (0.001) | (0.001) | (0.002) | (0.001) | (0.001) | (0.002) |
| Never Regulat | 0.004 | 0.006* | 0.006* | 0.004 | 0.004 | 0.005** |
| | (0.003) | (0.003) | (0.003) | (0.002) | (0.003) | (0.003) |
| Constant | 0.031*** | 0.027*** | 0.025*** | 0.010** | 0.008* | 0.005 |
| | (0.006) | (0.006) | (0.007) | (0.004) | (0.004) | (0.005) |
| Observations | 25,975 | 24,590 | 21,628 | 25,975 | 24,590 | 21,628 |
| $R^2$ | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 |
| Adjusted $R^2$ | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table A7: This table shows the results of regressing returns on lagged *RegSent* (for the presentation and the Q&A sections), as well as control variables. $SUE$ measures the standardized unexpected earnings following the construct found in Bernard and Thomas (1989) and Tetlock, Saar-Tsechansky, Macskassy (2008). Returns are measured from the close of day $t$ (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day $t+1$ (the next business day) for calls occurring after 4PM New York time. Excess returns refer to the stock return in excess of the risk-free rate and $FF6$ *Ret* refers to abnormal excess returns relative to the Fama-French five factor model augmented with the momentum factor. Standard errors, clustered on conference call event dates, are reported in parentheses.

**Effects of *RegSent* on returns**

| | Excess $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | | FF6 $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| FF6 $\text{Ret}^i_{t-1,t;t,t+1}$ | 0.025** | 0.028** | 0.028** | 0.009 | 0.007 | 0.010 |
| | (0.012) | (0.012) | (0.013) | (0.010) | (0.010) | (0.011) |
| FF6 $\text{Ret}^i_{t-22,t-1;t-21,t}$ | −0.010 | −0.007 | −0.006 | −0.017 | −0.014 | −0.014 |
| | (0.013) | (0.013) | (0.014) | (0.012) | (0.012) | (0.013) |
| FF6 Alpha | −1.725** | −1.467* | −1.706** | −2.130*** | −1.797*** | −2.039*** |
| | (0.743) | (0.752) | (0.792) | (0.661) | (0.673) | (0.712) |
| $\text{RegSentP}^i_{t;t+1}$ | 0.017 | | 0.052** | 0.002 | | 0.039* |
| | (0.016) | | (0.026) | (0.014) | | (0.022) |
| $\text{RegSentQA}^i_{t;t+1}$ | | 0.050*** | 0.061** | | 0.029* | 0.039 |
| | | (0.019) | (0.029) | | (0.016) | (0.025) |
| log(ME) | −0.002*** | −0.002*** | −0.002*** | −0.001*** | −0.001** | −0.001* |
| | (0.0005) | (0.0005) | (0.001) | (0.0004) | (0.0004) | (0.0004) |
| SUE | 0.0004* | 0.001** | 0.001** | 0.001*** | 0.001*** | 0.001*** |
| | (0.0002) | (0.0002) | (0.0003) | (0.0003) | (0.0003) | (0.0003) |
| log(BM) | −0.0005 | 0.0001 | 0.0003 | −0.001 | −0.0002 | −0.0004 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| log(share turnover) | 0.0005 | 0.0004 | 0.0003 | −0.0004 | −0.0005 | −0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| No Regulat | −0.001 | 0.0003 | 0.001 | 0.00002 | −0.0003 | 0.002 |
| | (0.001) | (0.001) | (0.002) | (0.001) | (0.001) | (0.002) |
| Never Regulat | 0.004 | 0.005* | 0.006* | 0.004 | 0.003 | 0.006** |
| | (0.003) | (0.003) | (0.003) | (0.002) | (0.003) | (0.003) |
| Constant | 0.032*** | 0.029*** | 0.027*** | 0.010** | 0.009** | 0.006 |
| | (0.006) | (0.006) | (0.007) | (0.004) | (0.005) | (0.005) |
| Observations | 25,677 | 24,097 | 21,348 | 25,677 | 24,097 | 21,348 |
| $R^2$ | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| Adjusted $R^2$ | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.003 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

Table A8: This table shows the results of regressing returns on lagged *AllSent* (for the presentation and the Q&A sections), as well as control variables. $SUE$ measures the standardized unexpected earnings following the construct found in Bernard and Thomas (1989) and Tetlock, Saar-Tsechansky, Macskassy (2008). Returns are measured from the close of day $t$ (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day $t+1$ (the next business day) for calls occurring after 4PM New York time. Excess returns refer to the stock return in excess of the risk-free rate and $FF6$ *Ret* refers to abnormal excess returns relative to the Fama-French five factor model augmented with the momentum factor. Standard errors, clustered on conference call event dates, are reported in parentheses.

**Effects of *AllSent* on returns**

| | Excess $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | | FF6 $\text{Ret}^i_{t,t+22;t+1,t+23}$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| FF6 $\text{Ret}^i_{t-1,t;t,t+1}$ | 0.024** | 0.024** | 0.024** | 0.004 | 0.004 | 0.004 |
| | (0.011) | (0.011) | (0.011) | (0.010) | (0.010) | (0.010) |
| FF6 $\text{Ret}^i_{t-22,t-1;t-21,t}$ | −0.011 | −0.011 | −0.011 | −0.017 | −0.017 | −0.017 |
| | (0.012) | (0.012) | (0.012) | (0.011) | (0.011) | (0.011) |
| FF6 Alpha | −1.377** | −1.398** | −1.397** | −1.826*** | −1.805*** | −1.830*** |
| | (0.701) | (0.701) | (0.701) | (0.622) | (0.622) | (0.622) |
| $\text{AllSentP}^i_{t;t+1}$ | 0.107 | | −0.002 | 0.172*** | | 0.089 |
| | (0.066) | | (0.075) | (0.057) | | (0.063) |
| $\text{AllSentQA}^i_{t;t+1}$ | | 0.335*** | 0.336*** | | 0.299*** | 0.255*** |
| | | (0.088) | (0.099) | | (0.079) | (0.088) |
| log(ME) | −0.002*** | −0.002*** | −0.002*** | −0.001*** | −0.001*** | −0.001*** |
| | (0.0005) | (0.0005) | (0.0005) | (0.0003) | (0.0003) | (0.0003) |
| SUE | 0.0004** | 0.0004** | 0.0004** | 0.001*** | 0.001*** | 0.001*** |
| | (0.0002) | (0.0002) | (0.0002) | (0.0003) | (0.0003) | (0.0003) |
| log(BM) | −0.001 | −0.001 | −0.001 | −0.001 | −0.001 | −0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| log(share turnover) | 0.001 | 0.001 | 0.001 | −0.0002 | −0.0001 | −0.0001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| No Regulat | 0.002 | 0.003** | 0.003* | 0.003** | 0.003** | 0.004*** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.001) | (0.002) |
| Never Regulat | 0.006** | 0.008*** | 0.008** | 0.007** | 0.006** | 0.008*** |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) |
| Constant | 0.030*** | 0.029*** | 0.029*** | 0.009** | 0.009** | 0.008* |
| | (0.006) | (0.006) | (0.006) | (0.004) | (0.004) | (0.004) |
| Observations | 28,937 | 28,879 | 28,879 | 28,937 | 28,879 | 28,879 |
| $R^2$ | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| Adjusted $R^2$ | 0.002 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 |

*Note:* *p<0.1; **p<0.05; ***p<0.01