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 use this measure to study the effect of regulation on companies' operating fundamentals, growth, leverage, and equity returns. We find that higher regulatory cost results in slower sales growth and lower leverage; both effects are mitigated for larger firms. A one-standard deviation increase in regulatory cost, as measured in the Q&A section of earnings calls, is associated with an increase in firms' equity returns of close to 3% per year. These findings suggest that regulatory risk is a major cost to firms, but large firms are able to manage that risk better.

JEL Codes: K23, G12, G38

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I. 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 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. We believe that our focus on understanding the impact of regulations as operating through one of these two channels – operational costs versus compliance risk – is novel to the literature.

Although many observers often express the belief that regulation is costly to firms both through its operational burdens and its compliance risks, research has not made much progress in measuring those costs.[1] For example, although there is substantial evidence that President

[1] Regulation can be beneficial to the firms, for example, if it positively affects the demand for their products by creating a more credible commitment to greater product quality. In general, however, Le Chatelier's principle should hold: adding a constraint to the firm should be a source of cost. While it is possible that some regulations benefit

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 operational 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. DeMuth (2016) and Epstein (2016) both point to dramatic increases in the use of flexible "guidance" in place of formal rulemaking in recent decades, which reflects regulators' desires to avoid the discipline of the latter. But the consequent unpredictability may have major net economic costs to society 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

firms, our results (which estimate the effect of regulation on average) confirm that, as a rule, regulation is costly to regulated firms.

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 at the sectoral level in the economy.[2] This approach results in a panel dataset, defined for each sector and each year, that measures the growth in regulatory words, which can be used in empirical studies to gauge how differences in the amount of regulation over time and across sectors affect firms. Figure 1 shows the GMU measure as an annual average across all economic sectors.

Although these data may be useful for many purposes, there are several 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. Second, state-level regulation is not included in this measure. Third, regulations can have different costs for different firms. Regulations that increase operating cost or compliance risk may create a comparative advantage for large firms (which can manage those costs better), thus boosting their ability to compete. Or a regulation may favor some aspect of one firm's business strategy relative to its competitors, similarly resulting in a competitive

[2] 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.

advantage for one firm over another. Fourth, some regulatory changes constitute a reduction in regulation rather than an increase, but a simple counting of words related to the regulation does not distinguish actions that increase regulation from those that decrease it. Fifth, 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 assess regulation via the requirements it imposes – for example, the number of regulations passed with high estimated compliance costs, compiled by George Washington University (GWU), and reported as an aggregate time series – show a precipitous decline in regulation in the first year of the Trump Administration. This is shown as the dashed blue line in Figu 1. The contrast between the two aggregate regulatory measures in Fig. 1 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. Similarly, management may blame regulation for its own failings.[3] Thus, presentations about regulation by firms may contain biases that understate or overstate the consequences of regulation, especially if regulatory talk reflects changes in firms' performance.

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 quarterly opportunities for stockholders to hear from and question management about all the important influences on the values of companies. 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.[4]

Because we analyze each company's earnings calls separately, if the same regulation favors one company and harms another, then our measure should be able to capture those differences in regulatory costs. Our focus on individual companies also permits us to see how the same

[3] Given this possibility, it is important to see whether regulation is a predictable consequence of firm underperformance. We discuss this in Section 4 below, where we find that our preferred measure of regulation is not a forecastable consequence of firm performance.

[4] Hassan et al. (2019) study the impact of political risk on US firms by measuring the share of earnings calls devoted to discussing political risk and find important effects. While we concentrate on the impact of regulation, rather than political risk, the two questions are clearly related.

regulation affects firms differently. In particular, we find that larger firms are able to manage the costs of regulation better. Earnings calls also permit investors to question management, which means that important aspects of regulatory compliance costs that may be neglected or exaggerated in management's presentation can be raised by investors in their questions. We find that, in many cases, the text of the question and answer (Q&A) portion of the earnings call produces important behavioral responses, as does the text of the management presentation portion. However, in some important instances, the Q&A portion of the earnings call displays larger and more statistically significant effects than the presentation portion.[5] This suggests that focusing only on the scripted management language found in 10-Ks misses an important source of information about the impact of regulations on firms.

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, for their leverage, and for their contemporaneous and future stock returns. Our findings indicate that more regulation has major negative implications for the growth of firms, that more regulation forecasts lower future firm leverage, and that compliance risk is likely an important channel through which regulation affects both growth and leverage. 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

[5] To be specific, in the results reported below, a measure of regulatory discussion in the Q&A section of the transcript displays statistically significant effects for future leverage and equity returns, while the comparable measure from the presentation section does not. Also, only the Q&A portion's measure of regulatory tone displays significant effects for future sales growth. The presentation section sometimes displays more significant effects than the Q&A section, as happens in the case of contemporaneous returns, and in the importance of the M&A topic for future sales growth. It makes sense that M&A-related regulatory information (often discussing positive regulatory news associated with merger approvals) is an aspect of regulatory news captured well by the presentation section.

of scale in managing the operating costs and compliance risks associated with regulation, which in turn implies consequent competitive advantages of large firms over small firms that arise from greater regulation.[6]

We organize the remainder of our paper as follows. Section 2 reviews our data sources and our main empirical specifications. Section 3 describes our methodology for measuring regulation using the transcripts of earnings calls. For each earnings call, we construct separate measures for the management presentation and for the question-and-answer part of the transcript. Our preferred measure of regulation is *NetReg*, which captures both mentions of regulation and the direction (positive or negative) of regulation. We also construct measures that capture the sentiment score of the transcript, either in the sentences in which regulation is discussed (*RegSent*) or in the call as a whole (*AllSent*). We discuss how these measures evolve over time and how they compare to one another.

Section 4 presents our empirical findings, which connect our measures of regulation with firm operating performance measures, leverage, and stock returns. The effects of our primary measure of regulation, *NetReg*, on these variables are consistent with the view that *NetReg* captures news about increased compliance risk, which causes growth to slow, leverage to fall, stock prices to fall on the day of the earnings call, and future stock returns to rise. We also consider the importance of firm size differences for regulatory impacts and the potential

[6] 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.

relevance of topical context for our text-based measures. We find that larger firm size mitigates the effects of *NetReg* on sales growth and leverage.[7]

While our main focus is on measuring regulation and its associated costs to regulated firms, we also consider the question of causality in explaining the association between regulation and firm performance. We find that our *NetReg* measure is not a predictable consequence of changes in firm performance. *NetReg* Granger causes the measures of firm performance we 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.

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

II. DATA

Our measures of regulation are derived from textual analyses of all 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.[8] 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

[7] Owing to their greater noisiness, we were not able to identify statistically significant differences for stock returns from the interaction of *NetReg* with firm size.
[8] 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).

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 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 that never had an earnings call mention regulations	9.9%

Our primary measure of firm growth is the rate of change in annual sales. We also consider alternative measures. These include annual asset growth (the rate of change in total assets) and annual operating income growth (the rate of change in operating income after depreciation and amortization). All three growth variables are measured relative to the quarter associated with the earnings call. As an example, for the quarter ending on June 30, 2012, Apple had its earnings release and conference call on July 24, 2012. All growth numbers are then relative to June 30, 2012. We also consider how regulation affects firms' financial structure (leverage). We measure leverage as the sum of a firm's current liabilities and long-term debt divided by total assets, in the quarter associated with the earnings call. Specifically, if regulation is a source of increased risk, the traditional "tradeoff" theory of leverage suggests that future leverage should decline, ceteris paribus, when regulation increases.

We also allow the consequences of regulation to depend on firm size. To measure the size of the firm, we use log sales over the quarter associated with the earnings call, with sales measured in millions of dollars. Excluded from all firm performance regressions are firm-quarters with missing values for total assets and missing or negative values for sales and operating income. Excluded quarters represent 22.5% of the sample. Industry-adjusted measures of regulation for

the firm for a given quarter are obtained by subtracting 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.

A. Empirical specifications

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 annual firm growth, industry-level measures of firm regulation calculated as the equal-weighted average regulation measure in the firm's 2-digit SIC industry, and industry fixed effects. The basic specification for firm *i* in quarter *t* is

$$G_{i,t\to t+4} = a_j + b \times CT_{i,t} + [b_1 \times CT_{i,t} \times I_{i,t}] + c^{\top} X_{i,t} + \epsilon_{i,t\to t+4}, \quad (1)$$

where $G_{i,t\to t+4}$ is the firm variable of interest (e.g. future sales or asset growth, year-ahead leverage, etc.), a_j is the 2-digit SIC industry fixed effect, $CT_{i,t}$ is the text-based "call tone" measure (one of *NetReg*, *RegSent*, or *AllSent*, to be described shortly), and $X_{i,t}$ is the vector of the quarter *t* control variables described above. In many specifications, $X_{i,t}$ will also contain the lagged dependent variable. In some specifications, we include the $CT_{i,t} \times I_{i,t}$ interaction for some firm characteristic $I_{i,t}$, for example $NetReg_{i,t} \times Size_{i,t}$ to study how the effect of our text measure (here *NetReg*) depends on firm characteristics (here log sales). In all specifications that interact firm size with our regulatory sentiment measures, we demean log sales. In some

specifications, we interact regulatory tone with a call's topical context, in which case the latter is also demeaned. All standard errors are reported by clustering by 2-digit SIC codes. It is not possible to cluster by firm, because we have too few observations for most firms.

To study the implications of regulation for stock returns, we examine returns, both in 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 days following the earnings call. If regulation is a source of increased risk, then we may expect increases in a firm's regulatory exposure to be associated with higher post earnings calls returns, as well as with negative returns on the day of the call. Returns are measured from the closing price of day *t* (the date of the conference call) for calls occurring prior to 4 PM New York time and from the closing price of day *t+1* (the following trading day) for calls occurring at 4 PM New York time or afterwards. This timing ensures that our future returns are not contemporaneous with the information revealed in the earnings call. Contemporaneous returns are either from day *t-1* to day *t*, or from day *t* to day *t+1*, depending on whether the call is pre- or post-4 PM.

Factor loadings used to calculate risk-adjusted, or abnormal, returns and alphas are estimated over a training window from 252 to 31 trading days prior to the earnings call. 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 (the log of book equity over market equity), and standardized unexpected earnings (SUE) defined similarly to Bernard and Thomas (1989). All of these variables are measured on the end date of the quarter corresponding to the earnings call.[9] As in Tetlock, Saar-Tsechansky and Macskassy (2008), we control for abnormal excess returns on the day of the call and over the

[9] For our Apple example, the July 24, 2012 conference call took place after 4 PM New York time. The 22-day return is measured from the close of July 25, 2012 to the close of August 24, 2012. The estimation window for the calculation of alphas and risk factor loadings runs from July 25, 2011 through June 8, 2012.

21 trading days before the call. We also control for alpha, and log of share turnover, the latter defined as daily shares traded divided by shares outstanding, and having the same timing as contemporaneous returns. The specification for the returns of firm *i* on conference call day *t* is

$$RX_{i,t+\delta\to t+\delta+h} = a + b \times CT_{i,t} + c^{\top} X_{i,t} + \epsilon_{i,t+\delta\to t+\delta+h}, \quad (2)$$

where *h* is either 1, 5, or 22 trading days, δ is either 0 or 1 depending on whether the call was pre- or post-4 PM, $RX_{i,t+\delta\to t+\delta+h}$ is either the excess or risk-adjusted return for firm *i* over the ensuing *h* trading days after the call, $CT_{i,t}$ is the conference call tone variable of interest, and $X_{i,t}$ is a vector of controls. In the contemporaneous version of the regression in (2), we drop log share turnover as a control variable, because of endogeneity concerns, as well as the day-of-call return itself (obviously). We report standard errors for the return regressions by clustering by conference call dates. Since our dependent variable is at most a one-month return, and since call dates are a quarter apart, there is no need to also cluster by 2-digit SIC code to control for any negligible serial correlation.

To mitigate the influence of outliers in our regression analysis, 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.

III. 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 sentiment analysis, we ignore negated sentiment words.

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.[10]

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 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 "*adapt*" 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."

[10] 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 regulatory sentences 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.

- "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.

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

A higher value of *NetReg* implies a higher regulatory burden. 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 an alternative set of sample sentences, along with the number of Increasing, Decreasing, and Concept words in those sentences. Generally, the prevalence of Increasing and Decreasing words captures the regulatory tone of each sentence. Overall, 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. Furthermore, it should be noted that our regulatory measurement procedure is extremely straightforward to implement, once the list of words in Table 2 is available.

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 supervised learning techniques to identify Concept, Increasing or Decreasing words. A natural supervised 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.[11] The problem with this approach, however, is that there are many important high-frequency influences, other than regulation, on stock prices that are revealed in the earnings call, and thus the effect of regulatory mentions on the contemporaneous stock return may get swamped by these other factors. Therefore, the ability to discern relevant word combinations from stock price reactions is not feasible for our purposes. One could ask human experts to hand code earnings calls as indicative of increasing or decreasing regulation, and then use supervised techniques to extract associated word combinations. We see our Increasing and Decreasing word choices in Table 2 as effectively equivalent to this approach. We do, however, explore unsupervised learning approaches, as we discuss shortly.

Note that *NetReg* is not just a measure of variation in regulatory policy. It may also reflect actions by the firm that lead to regulatory problems (e.g., a violation of existing environmental regulations). We cannot think of a way to reliably disentangle regulatory discussion that reflects

[11] Examples of this approach include Ke, Kelly, and Xu (2018) and Glasserman et al. (2020).

events exogenous to firms' behavior from regulatory discussion reflecting firms' actions, and so our measure should be viewed as reflecting both the actions of firms and the actions of regulators/lawmakers. Given that *NetReg* may reflect firms' actions (e.g., seeking regulatory approval for a new drug or a merger, or being fined for a violation), it is important to understand whether discussions of regulation are part of a firm's strategy that changes as a result of its own performance. We investigate this question in Section 4 and find little association between prior firm performance and the subsequent value of *NetReg*. Furthermore, the fact that the average value of *NetReg* across firms varies over time in a way reflective of exogenous regulatory developments (see Fig. 2 and the discussion in the next section) suggests that this measure reflects important changes in the regulatory environment, not only potentially actions by regulated firms.

In addition to our preferred 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 together with a Concept word. 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* and *NetReg*. 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.

A. Regulatory trends

The upper panel of Fig. 2 plots the time-series paths of $NetRegP_t$ and $NetRegQA_t$, which measure the value of *NetReg* for the Pres and Q&A segments of the earnings calls, respectively. The subscript *t* indicates that each series is an equally-weighted average of individual call measures aggregated at the quarterly level. Generally, in what follows, the suffix *P* (*QA*) indicates a particular measure is reported for the Pres (Q&A) portion of the call (e.g. *RegSentP* refers to *RegSent* calculated in the Pres section of a particular call). It is interesting that these two aggregate measures, plotted in Fig. 2, are not highly correlated (with a correlation of only 0.09). They do not even display common low-frequency movements: $NetRegP_t$ seems to trend down since 2010, while $NetRegQA_t$ 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 the contents of the Pres and Q&A sections 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. We analyze the topics of regulatory discussion in the Pres and Q&A parts of earnings calls in Section 3.2.

The lower panel of Figure 2 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 3 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 Pres or the Q&A portions 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, $AllSentP_t > AllSentQA_t$ and $RegSentP_t > RegSentQA_t$). 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, $AllSentP_t > RegSentP_t$ and $AllSentQA_t > RegSentQA_t$). In other words, compared with other topics discussed in earnings calls, discussions of regulation, perhaps 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 4 compares our two approaches to measuring regulation, *NetReg* and *RegSent*. The measures are negatively correlated, as expected ($NetRegP_t$, the solid blue line, and $RegSentP_t$, the dotted red line, are correlated -0.62, and $NetRegQA_t$ and $RegSentQA_t$ are correlated -0.31). Within the presentation section, the measures also follow opposite trends ($NetRegP_t$ trends

downward while $RegSentP_t$ trends upward), but for the Q&A section, a somewhat different picture is visible. While $NetRegQA_t$ is flat from 2010-2016 and then falls dramatically at the end of 2016, $RegSentQA_t$ begins to rise in 2013, and then rises dramatically at the end of 2016. We summarize the definition of the text variables in Table 4, and report summary statistics for all the variables in Table 7.

B. 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 or M&A) it has 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 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 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), suggesting topic modeling is a very effective unsupervised-learning tool for economics applications.

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, see Blondel et al. 2008) and generative topic models (such as Latent Dirichlet Allocation,

or LDA, due to Blei, Ng, and Jordan 2003)[12]. A key difference is that in the Louvain method a word is affiliated with only one of many word clusters, so that each cluster consists of a list of words that only appear in that cluster. In the LDA method, a topic is represented as a probability distribution over words, so naturally words can appear in multiple topics, 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 LDA to estimate topical categories, which we label based on our own subjective judgment of how to think about each of the topical word clusters.

We estimate a ten-topic LDA model separately for the Pres and Q&A portions of our corpus. In each case we use the Gibbs sampling implementation from the `topicmodels` package in R. We run 2,000 iterations of the Gibbs sampler to estimate each model. We feed each model with the document-term matrix derived from 41-word windows centered on the occurrence of the string *regulat* in either the Pres or Q&A section of calls. The 41-word windows are formed after stop words are removed. We use these longer windows (rather than looking only at the sentence level) in order to have more context for the LDA topic estimation. By construction, LDA does

[12] See Steyvers and Griffiths 2007 for a good primer on LDA.

not contain stop words, and we also exclude a list of frequently occurring words, as is common practice.[13] The outcome of each model estimation consists of the topic-word distributions, which we already discussed, as well as document-topic distributions. The document-topic distribution gives the fraction of words in a document belonging to a particular topic.

We display and label our LDA topics in the Appendix in Figures A1 and A2 and Tables A1 and A2. Figures A1 (for the Pres topics) and A2 (for the Q&A topics) show the word clouds associated with each topic, as well as quarterly topic frequencies over time, calculated as the average within-quarter document-topic distributions. Tables A1 and A2 show the most frequently occurring words in each topic, as well as the topic-word probabilities for these words. The topic names come from our subjective judgement of the qualitative nature of each topic based on the word clouds and top-word lists. We now discuss the differences in topics between the Pres and Q&A parts of the call. These differences turn out to be very informative. They explain the low correlation between *NetRegP* and *NetRegQA*, and suggest the necessity of analyzing the Pres and Q&A parts of earnings call separately.

As seen in Figure A1 and Table A1, regulatory discussion in the Pres section of the call contains two "legalese" topics, which mention *regulation* in the context of boilerplate legal disclaimers. There are six very coherent topics dealing with: the utility industry, the financial industry, China, Europe, the FDA, and M&A activity. Of the two remaining topics, one (*client*) deals with firms' clients or customers, and the other deals with the impact of regulation on profit levels or margins. These topics reflect the carefully crafted regulatory messaging that management chooses to give investors. From the bottom part of Figure A1, we see the fraction of

[13] These words include: *regulat, regul, regulatori, question, year, will, also, go, s, now, can, said,* among others.

the Pres section devoted to the two legalese topics and to the utility sector has been declining over time, while the Europe and *client* share has been growing. The other topic categories do not show pronounced trends.

In the Q&A portion of the call, as shown in Figure A2 and Table A2, the nature of the topics is quite different. There are several topics that have large overlaps with peer topics in the Pres section, and to which we assign the same name. These topics deal with the FDA, M&A activity, China issues, the financial and utility industries, the firms' clients and profitability. There are three distinct topics, which do not have close Pres section peers. One of these, which we call *euro-competit*, relates to market competition in the context of Europe. The second of these is a topic dealing with corporate finance questions, such as bank financing and credit access; there is no close analogue here in the Pres section suggesting investors are more interested in discussing these questions than are the management teams. The final topic is one we call *neg* because it contains many negated words. Recall from our earlier discussion that we employ the Das and Chen (2007) negation algorithm, which appends the suffix "_NEG" to all words following a negating word (e.g. *no* or *not*) in a sentence. The *neg* topic assigns high probabilities to many words that have been negated, e.g. *regul_NEG* or *impact_NEG* (which indicates that these words were mentioned on the call after a negating word).[14] There is no comparable tendency in the Pres section, suggesting that in conversation between investors and management teams, the latter feel a need to refer to regulations in a negating way. For example, the following sentence appears in the Q&A of a call in June 2019: "I don't see a lot of other regulation". Or this one from September 2010: "In the very short term, frankly, it's not because you need to get into

[14] LDA does not assign words to a topic based on the similarity of the characters in a word. The negated words do not appear in the same topic because the "_NEG" suffix makes them look similar. They appear in the same topic because they tend to co-occur in regulatory sentences together.

conversations with the regulators to pay a dividend from here or there." In terms of trends in the Q&A section, the bottom part of Figure A2 shows that the fraction of regulatory discussion that is negated and the share coming from the utility sector decline over time, while the *euro-competit* topic is growing.

While the aggregate trends in the utility and Europe topics are similar between the Pres and Q&A sections of the calls, the aggregate time-series variation of the other topical categories does not appear very correlated across the two sections. Even at this aggregated level, we find that the Pres and Q&A portions of earnings calls concern themselves with different aspects of the firm—regulatory relationship. Of course, the variation in the disaggregated information content of the two sections is likely even higher.

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 document-topic probability is above 50%. 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.

IV. EMPIRICAL FINDINGS

In this section, we divide our discussion into six parts. First, we present our baseline results for equation (1), which examine the effects of *NetReg* on sales growth, other measures of firm financial performance, and leverage, using a variety of control variables, and explore differences in those results for large and small firms. Second, we examine the time-horizon over which these effects operate. Third, we show that *NetReg* is not forecasted by lagged measures of firm performance (other than lagged sales growth) or by lagged stock returns. Fourth, we repeat the 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. Fifth, we extend our analysis to take into account the potential importance of topical context for our NLP measures. Finally, we examine the effects of all of our NLP measures of regulation on stock returns by estimating equation (2).

A. 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, as well as the one-year lagged value of *NetReg*[15]). 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 0.9% 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 in the subsequent year.

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, for an average-sized firm, a one standard deviation increase in *NetRegP* is associated with a 1.84% decline in sales growth, but at the 75th 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 25th percentile of size the effect is a 2.2% decline in sales growth. The comparable computation for *NetRegQA* results in a 1.2% decrease in sales growth at the mean (in column 4). At the 75th percentile of size, the effect is a decline of 0.9%. At the 25th percentile of size, the effect is a decline of 1.5%. As in the case of *NetRegP*, for the

[15] 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 VIII, we find that values of *NetReg*, beyond its most recent value, have little effect on next year's sales growth.

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 *Ind. Adj. NetRegP* and *Ind. Adj. NetRegQA* (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 *Ind. Adj. NetRegP* and *Ind. Adj. NetRegQA* 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 year ahead operating income margin (defined as operating income/sales in the quarter associated with the earnings call). 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 operational costs 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 leverage and 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 management choices likely to be discussed by firms in 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).

If increases in *NetReg* capture increased compliance risk, then according to the traditional "tradeoff" theory of leverage – where firms trade off the gains from the tax benefit of debt against the expected cost of financial distress – a rise in risk should be associated with a decline in leverage. We test this proposition in Table 10, where the structure of the regressions is identical to those in Tables 8 and 9, but the dependent variable is year-ahead leverage. We find that higher *NetReg* is associated with reduced leverage, and these effects are statistically significant for both the presentation and Q&A sections of the earnings call, and in the regressions

that control for size or for industry effects. The magnitudes of the effects are consistently greater for *NetRegQA* than for *NetRegP*. As in the case of *NetReg*'s effect on sales growth, the effect of *NetReg* on leverage is mitigated for larger firms. The magnitude of the effect on leverage is, however, small. A one standard deviation increase in *NetRegP* or *NetRegQA* is associated with a one year-later decline of leverage of a little more than one percent of a standard deviation of leverage. However, much of the standard deviation of leverage comes from cross-sectional variation as different firms have very different leverage ratios, and the time-series variation for a single firm is smaller. Relative to the time-series measure, the effect of regulation on year-ahead leverage is larger.

These results are consistent with the view that *NetReg* captures greater compliance risk, which results in lower leverage. The small magnitude of the effect suggests that leverage may adjust more slowly to shocks than does sales growth. It may be that long-run leverage effects are more similar to long-run sales growth effects. In the next section, we investigate that possibility.

B. Are regulatory effects on sales growth and leverage persistent?

Our empirical findings thus far have focused on one-year-ahead forecasts of sales growth and leverage. Does an increase in *NetReg* produce further declines in sales growth and leverage in the next, or third, or fourth years, or perhaps a leveling off of the growth effect on sales, or perhaps reversion? How do the dynamics of sales growth and leverage differ over time? Are long-run effects of regulation on the two variables more similar than their short-run effects, which were very different in magnitude (with one-year sales growth effects larger than one-year leverage effects)? To address these questions, we use the local projections method of Jorda (2005) to calculate the impulse response of cumulative sales growth and leverage to a one standard deviation shock in *NetRegP* and *NetRegQA*. This method offers the benefit of

robustness to data generating process misspecification and accommodation of potential nonlinearities, relative to a traditional vector autoregression approach.

As the graph in Figure 5 shows, after three years the effect of a *NetRegP* shock on an average-sized firm's sales growth flattens out. The cumulative four-year effect on sales growth is about three times the one-year effect. For *NetReqQA*, the entire effect for an average-sized firm happens in year one, as the four-year cumulative effect is very similar to the one-year effect. We also calculate the impulse responses for a larger firm (in the 75th percentile by log sales) and find in both the Pres and Q&A cases that it is smaller than the effect for an average-sized firm, as was to be expected given the results in Table 8. We conclude that *NetRegQA* has a one-time but persistent effect on the level of sales, while *NetRegP* has a continuing effect over the next several years. There is no evidence of a reversal in either case. 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 level off after year one.

Figure 6 shows the impulse response for leverage. As in the case of sales growth, there is no reversal in the impulse response. However, in the case of leverage, by the fourth year, the cumulative response is an order of magnitude larger than the one-year response, and after four years the decline in leverage does not appear to be flattening. This is true for both average-sized and large (75th percentile) firms. This suggests that leverage adjusts much more slowly than sales growth to regulatory shocks. We are not confident reporting results beyond four years for the leverage impulse response (note that our data period is only a decade long), but we believe it is clear that leverage responses grow over time much more than sales growth responses. Thus long-run responses of sales growth and leverage to regulatory shocks are more similar in magnitude than short-run responses.

C. Is regulatory discussion forecastable by other variables?

Next, we examine the question of whether *NetReg* itself is forecasted by other variables, and in particular, by firm performance measures like sales or asset growth, earnings growth, or stock returns. These results are presented in Table 11. The adjusted R-squareds in all the specifications are between eight and nine percent for *NetRegP* and between three and five percent for *NetRegQA*. The regulatory discussion from the presentation section is more forecastable than the unscripted regulatory discussion from the Q&A section. *NetRegP* and *NetRegQA* are predicted positively by their own lagged values, and *NetRegP* is predicted negatively by firm size, which is a control in all our specifications. The lagged one-month risk-adjusted 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 managers or shareholders to talk more about regulation).

Generally, the firm operating performance measures do not forecast *NetRegP* or *NetRegQA*. The exception is lagged asset growth for *NetRegP* 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 operating 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 for *NetRegQA*, the effect loses significance in column (8).

In summary, *NetRegQA* and *NetRegP* are mainly forecastable by their own past and *NetRegP* is related to 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), leverage (Table 10) 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.

D. 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 12 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 12 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 of the entire earnings call. Table 13 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 14 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 16-17% range) than in the Q&A section (R-squareds in the 4-6% range). *AllSent* is much more forecastable than *RegSent*, as shown in Table 15. 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.

E. 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. The three topical categories that proved to have value for conditioning the informational content of regulatory sentiment were M&A, FDA, and China. In our topic-specific specifications for each of these we add the document-topic probability for a given section of the call – a measure of the prevalence of a given topical category in that section – as an explanatory variable. For example, in Table 16, we add the document-topic probabilities for the M&A topic in each section as a right-hand side variable, labeled "M&A (Pres)" and "M&A (QA)" in the table. We then check how the document-topic probability, 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 shown in Table A3 (most mergers are not opposed by regulators and the M&A topic has negative values of *NetReg*),

the effect of the topic's appearance in the presentation section is positive for sales growth. The *NetReg* interaction with the M&A topic in both the presentation and Q&A sections is very negative suggesting that future sales growth is particularly sensitive to the *NetReg* measure of M&A focused calls. 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 in M&A-focused calls, the effect of *RegSent* is smaller than it is in calls that do not deal with M&A.

In the case of the FDA topic area, the presence of this topic in either the Pres or Q&A sections of conference call increases future sales growth. The interaction of *RegSentQA* and the FDA topic in Table 17 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 18, the proportion of the call devoted to the China topic surprisingly lowers future sales growth, which is true for both the Pres and Q&A section of the call. Perhaps regulation in China serves as a barrier to entry which reduces firms' future sales growth, and firms that discuss the China-regulations topic on their conference calls are particularly exposed to this effect. 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.

F. Effects of regulatory discussion 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 future 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 the call 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 19.[16] We analyze returns in excess of the risk-free rate (*Excess Ret* in the table), as well as abnormal returns relative to the Fama-French five-factor model augmented with the momentum factor (*FF6 Ret* in the table).

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. Across the specifications we run in Table 19, there are 12 instances of a significant call tone CT coefficient in equation (2); of these, nine are CT coefficients from the Q&A section of the call, and only three come from the Pres section. The more muted response with regard 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 that isn't already baked into prices.[17] 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.[18]

[16] The one- and five-day results are available from the authors. The full results of the 22-day regressions are shown in Tables A6—A8 in the Appendix.
[17] 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).
[18] We also considered size interactions to test whether there are significant size-related differences in excess return responses to our measures. Given the noisiness of the returns data, we were not able to find robust results relating to size differences.

There are two ways to interpret these coefficients: either as a delayed market price response to value-relevant news 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 expect positive coefficients on *RegSent* and *AllSent*, which represent good news, but negative coefficients on *NetReg*, which represents bad news. 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.

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 four quarters (Table 13). On the other hand, the fact that *NetReg* negatively predicts sales growth (Table 8) but positively forecasts 22-day ahead returns supports its interpretation as a compensation for risk.

That *NetReg* matters positively for expected returns suggests discussion of increased regulatory burden during conference call increases the market's perceptions of future regulatory risk. This complements 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 profit margins), is the more important aspect of regulatory cost. The difference in the future return outcomes for *NetReg* versus *RegSent* and

AllSent indicates that 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).

Another piece of evidence supporting this interpretation comes from our analysis of the contemporaneous version of the regression in (2), which is summarized in Table 20 (with details in Appendix Tables A9—A11). If a positive *NetReg* value on an earnings call causes investors to demand a higher risk compensation for that firm going forward, then we would expect positive *NetReg* to be associated with a negative contemporaneous stock reaction.[19] Indeed, this is what we find. Positive *NetReg* is associated with negative contemporaneous returns and positive future returns; this is consistent with *NetReg* as a proxy for a firm's regulatory risk. On the other hand, if the market reaction to *RegSent* and *AllSent* is an underreaction to the information content of the call, then the contemporaneous return due to these two measures should have the same (positive) sign as do future returns, i.e. good conference call news positively, but insufficiently, impacts day-of-call returns, and then filters into the stock price over time. Again, this is exactly what we find.

V. CONCLUSION

We study new ways to measure regulation and its effects on firm performance, and stock returns. We construct two measures of regulation. The first, *NetReg*, identifies mentions of the string *regulat* accompanied by words indicating increasing or decreasing regulation. The second,

[19] This assumes the effect of a positive *NetReg* (indicating higher regulatory burden) does not increase investor expectations of the firm's future cash flows. Given the negative effect of *NetReg* on future sales growth, and lack of any offsetting effect on future margins, this is a reasonable assumption.

RegSent, uses common sentiment measures to assess tone of sentences mentioning *regulat* in a regulatory context. We compare these to *AllSent*, which measures the sentiment tone of the entire presentation and Q&A section of earnings calls.

Our primary measure is *NetReg*. This measure implies substantial negative effects on future sales growth and leverage from increased regulatory burden in both the presentation and Q&A sections of earnings calls. The (positive) forecasting power of *RegSent* for future sales growth is much weaker. *AllSent* also positively forecasts future sales growth, but most likely for reasons other than regulation, as this is a broad measure of conference call sentiment. We do not find any measure of regulation that affects operating margins. This suggests that regulatory costs 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 the operational costs of regulation, 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) 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 leverage and excess stock returns confirm the view that the regulatory costs we capture are related to risk because higher regulatory risk reduces leverage and increases stock returns. Our evidence on stock returns, however, 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 future 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 positively forecasts future excess returns.

Supplementary Material

The appendix for this article is provided in a separate file.

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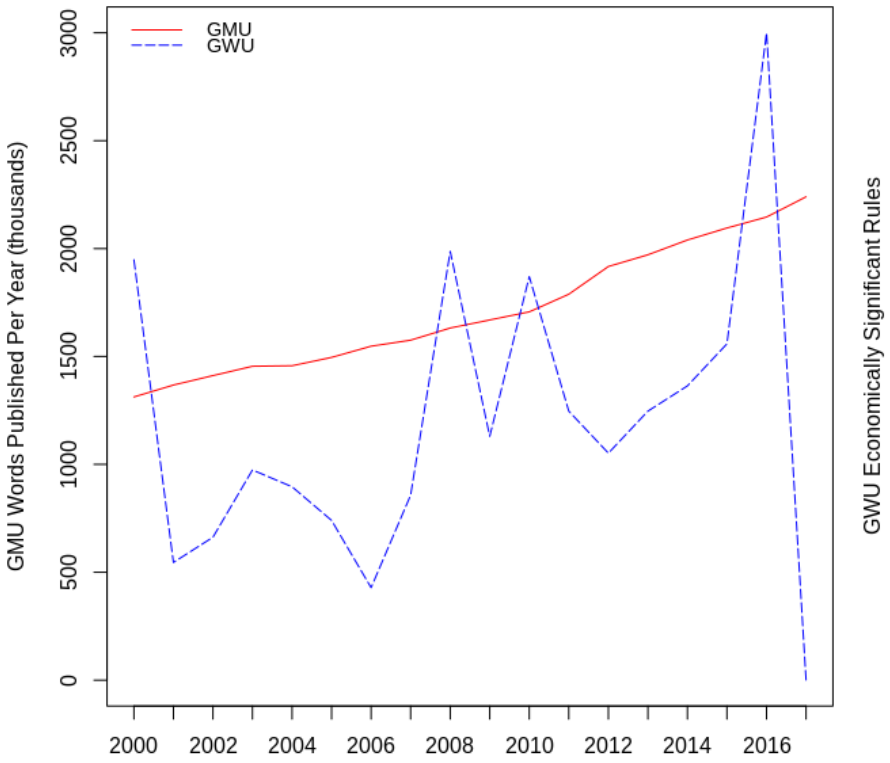

FIG. 1.——The solid red line summarizes the George Mason University approach to federal regulation monitoring by plotting the average, for each year, of the word counts of regulations published across 3-digit NAICS industries. The annual 3-digit NAICS industry-level regulation data comes from Al-Ubaydli and McLaughlin (2017) and are based on the Code of Federal Regulations. The dashed blue line refers to the number of economically significant regulatory rules tracked by George Washington University using the following definition stated in Executive Order 12866: "Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities."

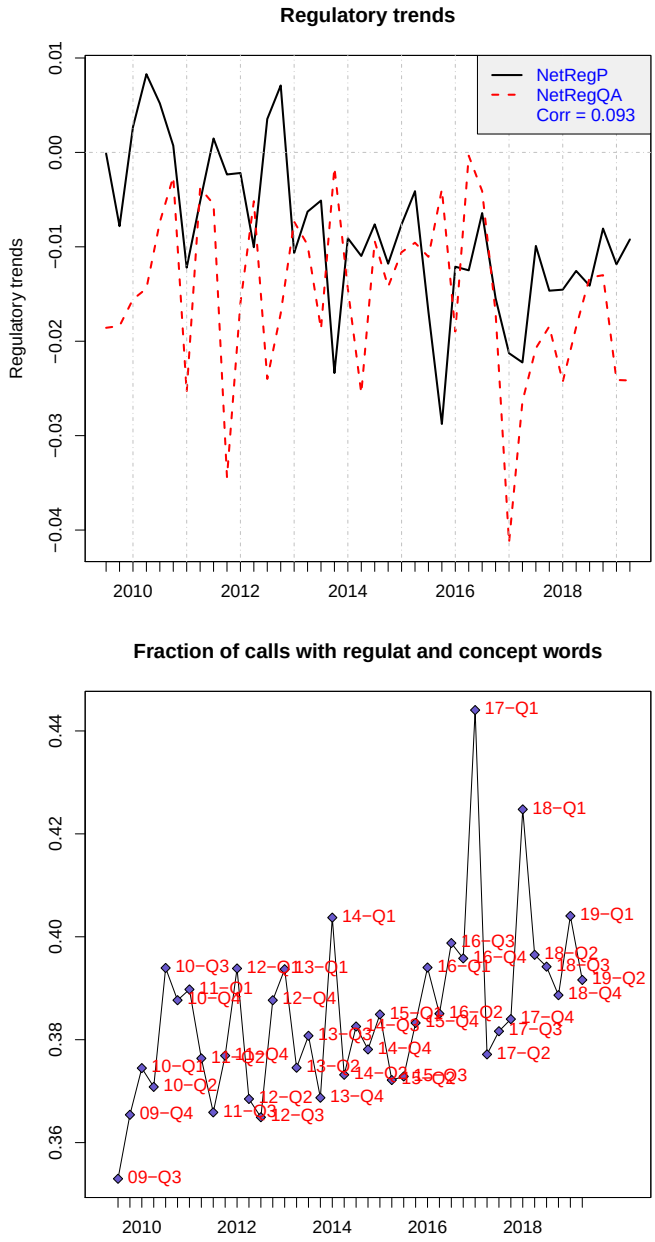

FIG. 2.——The top panel shows our net regulatory trends measure in earnings call sentences that match our regulatory filter in the presentation ($RegSentP_t$) and Q&A ($RegSentQA_t$) portions of earnings calls. The bottom panel shows the percentage of all earnings calls in the SP Global data set which contain at least one sentence in either the presentation or the Q&A portion of the call that satisfies our regulatory filter. The underscore t indicates each series is an equally-weighted average of individual call measures within each quarter. Data are quarterly.

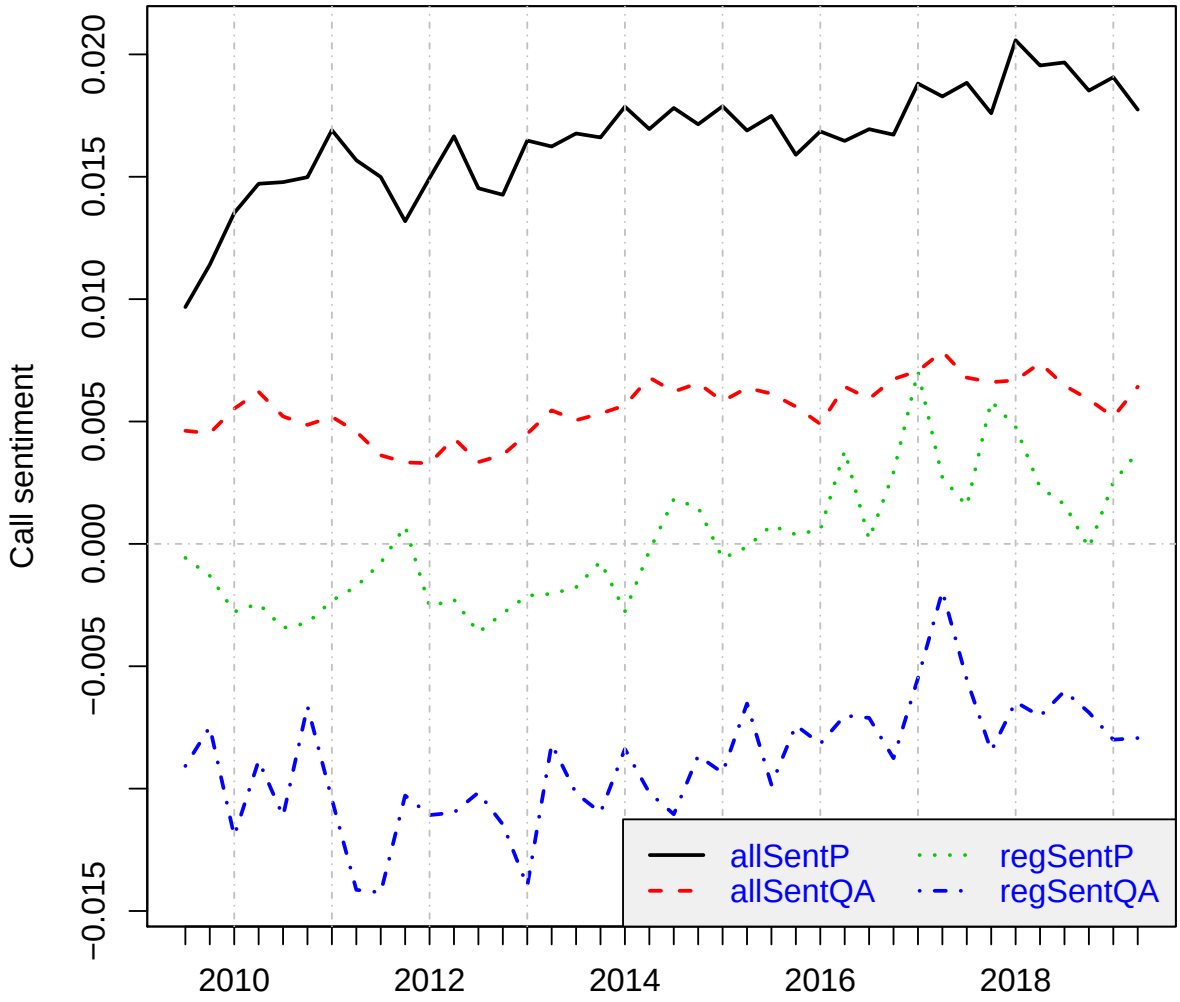

FIG. 3.—Sentiment series using the Loughran-McDonald dictionary in sentences matching our regulatory filter in the presentation ($RegSentP_t$) and Q&A ($RegSentQA_t$) portions of the earnings calls. Also shown are the Loughran-McDonald sentiment in the entire presentation ($AllSentP_t$) and Q&A ($AllSentQA_t$) portions of the earnings call. The underscore t indicates each series is an equally-weighted average of individual call measures within each quarter. Data are quarterly.

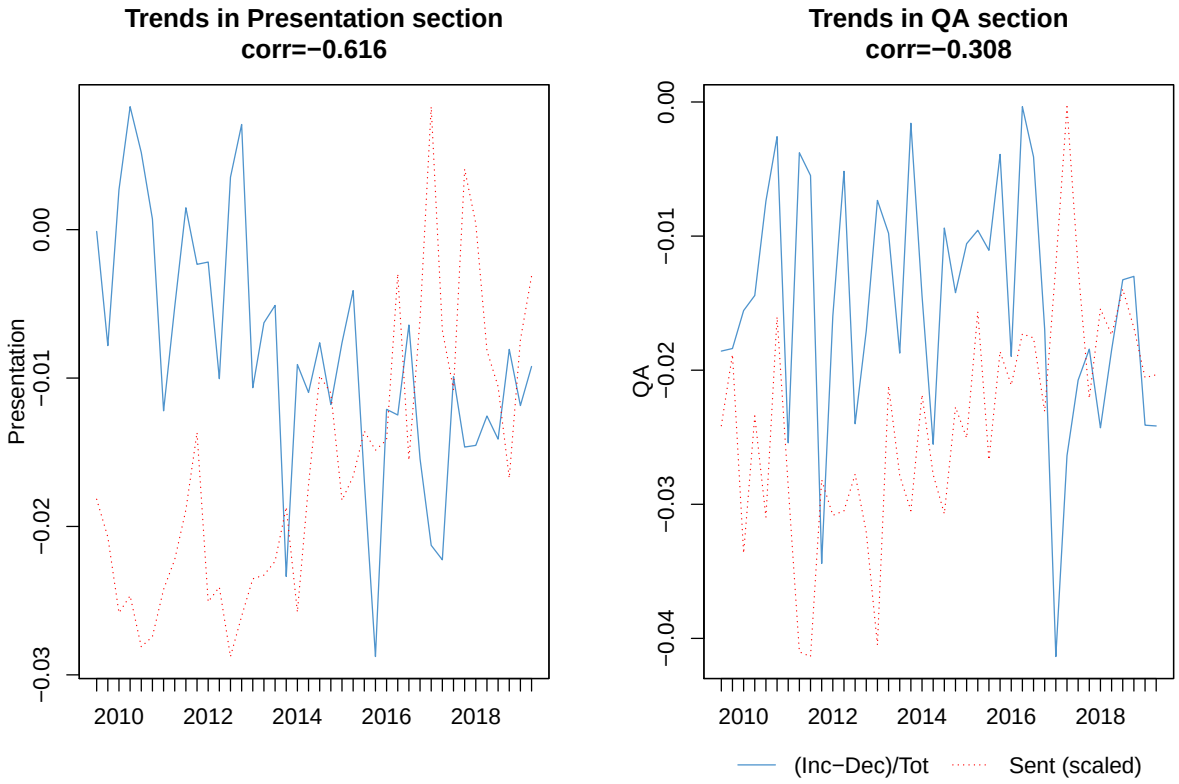

FIG. 4.——For the presentation portion of earnings call, the left panel shows the net regulatory trends measure $NetRegP_t$ (in blue) against a scaled version of the Loughran-McDonald sentiment in sentences matching our regulatory filter $RegSentP_t$ (dotted, red line). The right panel shows $NetRegQA_t$ and $RegSentQA_t$ 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. The underscore t indicates each series is an equally-weighted average of individual call measures within each quarter. Data are quarterly.

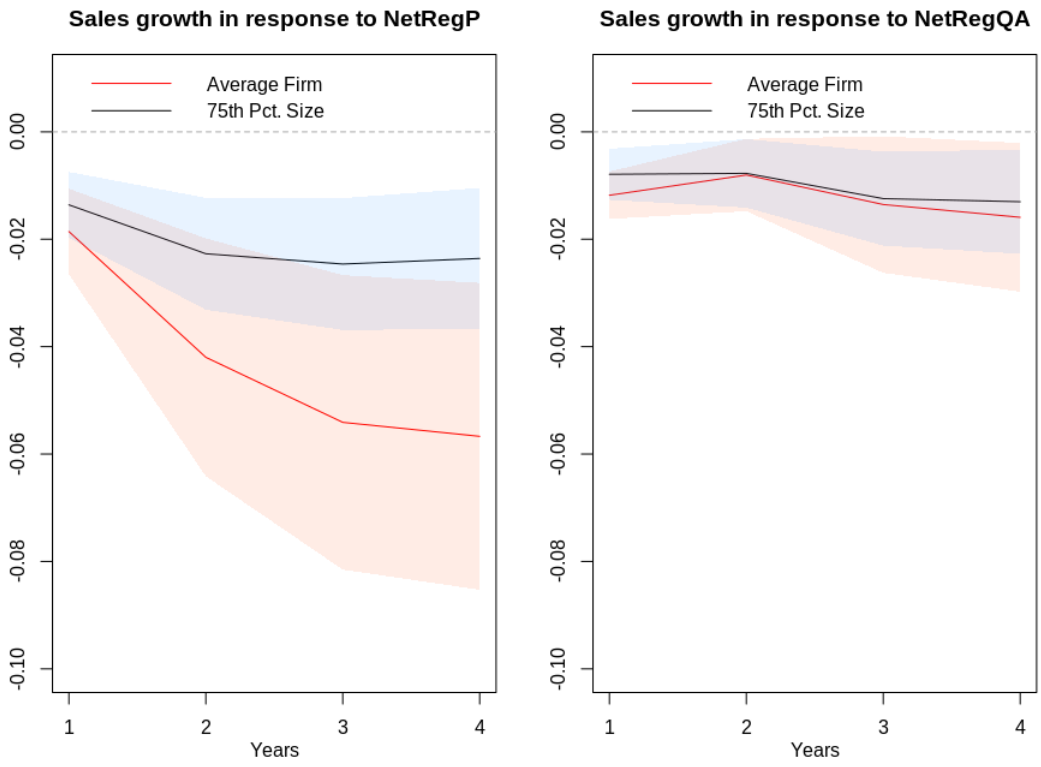

FIG. 5.—The response of Sales Growth to a one-standard deviation shock to measures of regulation from the presentation section (*NetRegP*) and Q&A section (*NetRegQA*). We use the local projection method of Jorda (2005) to calculate the cumulative impulse response, as the sum of all prior prior and current single period responses to a one standard deviation shock of the respective *NetReg* measure. We show the cumulative response for an average-sized firm, as well as for a firm in the 75^{th} percentile. The impulse response assumes that the *NetReg* shock is orthogonal to all other influences. The standard errors assume that successive shocks are independent. The bands in the figure show 95% confidence intervals.

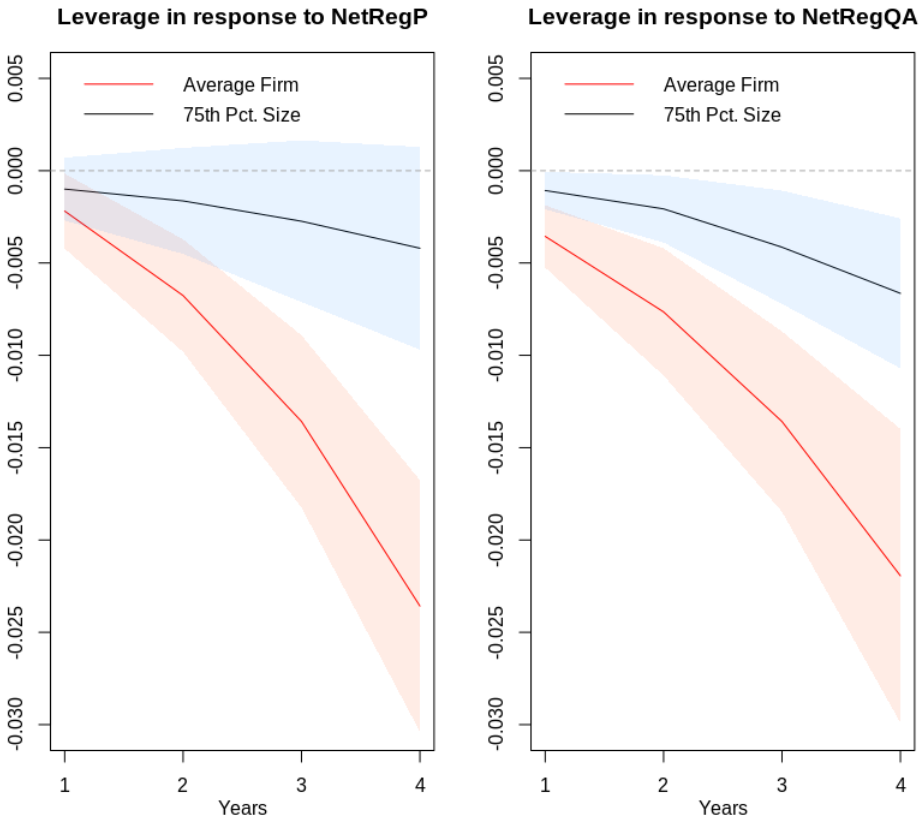

FIG. 6.—The response of Leverage to a one-standard deviation shock to measures of regulation from the presentation section (*NetRegP*) and Q&A section (*NetRegQA*). We use the local projection method of Jorda (2005) to calculate the cumulative impulse response, as the sum of all prior prior and current single period responses to a one standard deviation shock of the respective *NetReg* measure. We show the cumulative response for an average-sized firm, as well as for a firm in the 75^{th} percentile. The impulse response assumes that the *NetReg* shock is orthogonal to all other influences. The standard errors assume that successive shocks are independent. The bands in the figure show 95% confidence intervals.

Table 1

Number of Earnings Calls Passing Regulatory Filter

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

Note.–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. 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 Table 2 and hence do not pass our regulatory filter.

Table 2

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

Note.–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".

Table 3

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]

Note.–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.

Table 4

Description of Firm-level Fundamental and Market data

Variable Name	**Description**
Sales growth	Percentage growth in sales from quarter $t-4$ to quarter t, where t is the quarter of the earnings call; expressed in decimals not % points.
Asset growth	Percentage growth in total assets from quarter $t-4$ to quarter t, where t is the quarter of the earnings call; expressed in decimals not % points).
Operating income growth	Percentage growth in operating income after depreciation from quarter $t-4$ to quarter t, where t is the quarter of the earnings call; expressed in decimals not % points).
Operating income over sales	Operating income after depreciation divided by sales; all numbers are from the quarter associated with the earnings call.
Leverage	Sum of current liabilities and long-term debt divided by total assets; all numbers are from quarter associated with the earnings call.
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 occurring 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 trading-day window [-252,-31]
Size	Log sales from the quarter associated with the earnings call
log(ME)	ME is the closing price times shares outstanding, measured as of the end date of the quarter associated with the earnings call
log(BM)	BM is book value of common equity divided by market equity, both measured as of the end date of the quarter associated with the earnings call
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, the quarter of the earnings call, 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)	Share turnover is defined as shares traded divided by shares outstanding, on the day of the earnings call if the call is released prior to 4PM, and otherwise on the next trading day.

Table 5

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
Asset 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
Leverage	72,043	0.250	0.217	0.000	0.050	0.380	0.890
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
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	31,001	−2.430	1.861	−7.239	−3.505	−1.158	1.642
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

Description of Firm-level Earnings Call Data

Variable Name	**Description**
[Inc/Dec/Tot][P/QA]	Average number of [increasing/decreasing/total] words in regulatory sentences of the Pres or Q&A section
NetReg[P/QA]	Net difference of increasing words and decreasing words in regulatory sentences scaled by total words within that window for the Pres or Q&A section
RegSent[P/QA]	Net difference of positive tone words and negative words, based on Loughran and McDonald (2011), within regulatory sentences scaled by total words within that window for the Pres or Q&A section
AllSent[P/QA]	Net difference of positive tone words and negative words, based on Loughran and McDonald (2011), scaled by total words for the entire Pres or Q&A section
Ind. NetReg[P/QA]	2-digit SIC yearly industry average of NetReg[P/QA]
Ind. RegSent[P/QA]	2-digit SIC yearly industry average of RegSent[P/QA]
Ind. AllSent[P/QA]	2-digit SIC yearly industry average of AllSent[P/QA]
Ind. Adj. NetReg[P/QA]	Firm-level NetReg[P/QA] minus Ind. NetReg[P/QA]
Ind. Adj. RegSent[P/QA]	Firm-level RegSent[P/QA] minus Ind. RegSent[P/QA]
Ind. Adj. AllSent[P/QA]	Firm-level AllSent[P/QA] minus Ind. AllSent[P/QA]
[*topic*] (Pres)	The average topic distribution of the presentation section of calls. The topics are shown in Figure A1.—.
[*topic*] (QA)	The average topic distribution of the Q&A section of calls. The topics are shown in Figure A2.—.
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 other earning call for this firm has mentioned "regulat", and equals to 0 otherwise
NeverRegulat Dummy	Set to one for firms that have never mentioned "regulat" in any of their conference calls

Table 7

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

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.–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 net regulatory trends 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 9

Effects of NetReg on Operating Margins

	Operating Margin$^i_{t+4}$							
	(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)		
Operating Margin^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.–This table shows the results of regressing four-quarter-ahead operating margin levels 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 net regulatory measures 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 10

Effects of NetReg on Leverage

	Leverage^i_{t+4}							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NetRegP^i_t	−0.029		−0.045**				−0.040	
	(0.018)		(0.020)				(0.030)	
NetRegQA^i_t		−0.037***		−0.068***				−0.032**
		(0.013)		(0.016)				(0.014)
Ind. Adj. NetRegP^i_t					−0.041**			
					(0.020)			
Ind. Adj. NetRegQA^i_t						−0.063***		
						(0.017)		
NetRegP^i_{t-4}							−0.004	
							(0.017)	
NetRegQA^i_{t-4}								0.007
								(0.015)
Size^i_t	0.004***	0.003***	0.004***	0.003***	0.004***	0.003***	0.003***	0.002***
	(0.0004)	(0.0005)	(0.0004)	(0.0004)	(0.0004)	(0.0005)	(0.0004)	(0.001)
Ind. NetRegP^i_t					−0.017			
					(0.097)			
Ind. NetRegQA^i_t						0.022		
						(0.081)		
Leverage^i_t	0.884***	0.890***	0.884***	0.890***	0.884***	0.890***	0.897***	0.910***
	(0.015)	(0.013)	(0.015)	(0.012)	(0.015)	(0.012)	(0.016)	(0.010)
$\text{No Regulat Dummy}^i_t$	−0.001	−0.002	−0.001	−0.001	−0.001	−0.002	−0.001	−0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$\text{No Regulat Dummy}^i_{t-4}$							−0.001	−0.0004
							(0.001)	(0.002)
$\text{Never Regulat Dummy}^i_t$	−0.006***	−0.007***	−0.006***	−0.007***	−0.006***	−0.007***	−0.006**	−0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
NetRegP^i_t*Size^i_t			0.014***					
			(0.006)					
NetRegQA^i_t*Size^i_t				0.029***				
				(0.008)				
Ind. Adj. NetRegP^i_t*Size^i_t					0.011*			
					(0.006)			
Ind. Adj. NetRegQA^i_t*Size^i_t						0.022***		
						(0.008)		
2-digit SIC Ind. FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	55,438	50,677	55,438	50,677	55,438	50,677	38,755	34,513
R^2	0.834	0.842	0.834	0.842	0.834	0.842	0.841	0.856
Adjusted R^2	0.833	0.842	0.833	0.842	0.833	0.842	0.841	0.855

Note.–This table shows the results of regressing four-quarter-ahead leverage 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 net regulatory trends 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 11

Dependence of NetReg on Lagged NetReg and Other Drivers

	NetRegP_t^i				NetRegQA_t^i			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NetRegP_{t-4}^i	0.207***	0.209***	0.191***	0.191***				
	(0.027)	(0.026)	(0.031)	(0.031)				
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)
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.–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 risk-adjusted returns and company size (log sales). Standard errors, clustered by 2-digit SIC, are reported in parentheses.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 12

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.–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 Loughran-McDonald regulatory sentence sentiment 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.

$^{*}p < 0.1$.

$^{**}p < 0.05$.

$^{***}p < 0.01$.

Table 13

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.–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 Loughran-McDonald earnings call sentiment 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.

$^{*}p < 0.1$.

$^{**}p < 0.05$.

$^{***}p < 0.01$.

Table 14

Dependence of RegSent on Lagged RegSent and Other Drivers

	RegSentP_t^i				RegSentQA_t^i			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RegSentP_{t-4}^i	0.330***	0.328***	0.323***	0.323***				
	(0.029)	(0.029)	(0.026)	(0.026)				
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)
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.–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 risk-adjusted returns and company size (log sales). Standard errors, clustered by 2-digit SIC, are reported in parentheses.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 15

Dependence of AllSent on Lagged AllSent and Other Drivers

	AllSentP_t^i				AllSentQA_t^i			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AllSentP_{t-4}^i	0.502***	0.500***	0.523***	0.525***				
	(0.011)	(0.011)	(0.011)	(0.012)				
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)
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.–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 risk-adjusted returns and company size (log sales). Standard errors, clustered by 2-digit SIC, are reported in parentheses.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 16

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.–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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 17

Effects of FDA-regulatory Topic on Sales Growth

	Sales Growth$^i_{t+4}$					
	(1)	(2)	(3)	(4)	(5)	(6)
FDA (Pres.)^i_t	0.077***		0.079***		0.071***	
	(0.011)		(0.008)		(0.010)	
FDA (QA)^i_t		0.091***		0.089***		0.091***
		(0.016)		(0.015)		(0.016)
RegSentP^i_t			−0.104*			
			(0.057)			
RegSentQA^i_t				0.009		
				(0.045)		
NetRegP^i_t					−0.268***	
					(0.075)	
NetRegQA^i_t						−0.164***
						(0.048)
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)
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)
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)
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)
FDA (Pres.)^i_t*RegSentP^i_t			0.245			
			(0.239)			
FDA (QA)^i_t*RegSentQA^i_t				0.272**		
				(0.119)		
FDA (Pres.)^i_t*NetRegP^i_t					0.041	
					(0.179)	
FDA (QA)^i_t*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.–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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 18

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.–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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table 19

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.–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, and 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 Ret* refers 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.

$^{*}p < 0.1$.

$^{**}p < 0.05$.

$^{***}p < 0.01$.

Table 20

Effects of Regulatory Tone and Sentiment on Contemporaneous Returns

Returns	Excess $\text{Ret}^i_{t-1,t;t,t+1}$			FF6 $\text{Ret}^i_{t-1,t;t,t+1}$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{NetRegP}^i_{t;t+1}$	−0.021		−0.045**	−0.016		−0.038*
	(0.014)		(0.021)	(0.014)		(0.022)
$\text{NetRegQA}^i_{t;t+1}$		−0.017	−0.025		−0.016	−0.025
		(0.014)	(0.022)		(0.014)	(0.021)
No Regulat	0.002*	0.001	0.003**	0.001	0.0004	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Never Regulat	−0.004*	−0.005**	−0.003	−0.004*	−0.005**	−0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	25,980	24,595	21,633	25,980	24,595	21,633
$\text{RegSentP}^i_{t;t+1}$	0.006		0.016	0.001		0.009
	(0.012)		(0.020)	(0.012)		(0.020)
$\text{RegSentQA}^i_{t;t+1}$		0.020	0.044**		0.013	0.039*
		(0.014)	(0.021)		(0.014)	(0.020)
No Regulat	0.001	0.001	0.003*	0.001	0.0004	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Never Regulat	−0.004*	−0.005**	−0.003	−0.004*	−0.005**	−0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	25,682	24,102	21,353	25,682	24,102	21,353
$\text{AllSentP}^i_{t;t+1}$	0.553***		0.363***	0.569***		0.380***
	(0.048)		(0.051)	(0.047)		(0.050)
$\text{AllSentQA}^i_{t;t+1}$		0.828***	0.648***		0.831***	0.643***
		(0.061)	(0.065)		(0.059)	(0.062)
No Regulat	0.012***	0.010***	0.015***	0.012***	0.010***	0.016***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Never Regulat	0.006***	0.005**	0.010***	0.007***	0.005**	0.010***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	28,942	28,884	28,884	28,942	28,884	28,884

Note.–This table shows the results of regressing returns from the day of the conference call on *NetReg*, *RegSent*, and *AllSent* (for the presentation and the Q&A sections), as well as control variables, which include *SUE*, log market equity, and log book-to-market ratio. *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 $t-1$ through day t (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day t through $t+1$ (the next business day) for calls occurring after 4PM New York time. *Excess Ret* refers 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

APPENDIX

1 Notes

We note that the alpha coefficients in the return regressions for 22-day ahead returns in Tables A6–A11 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.

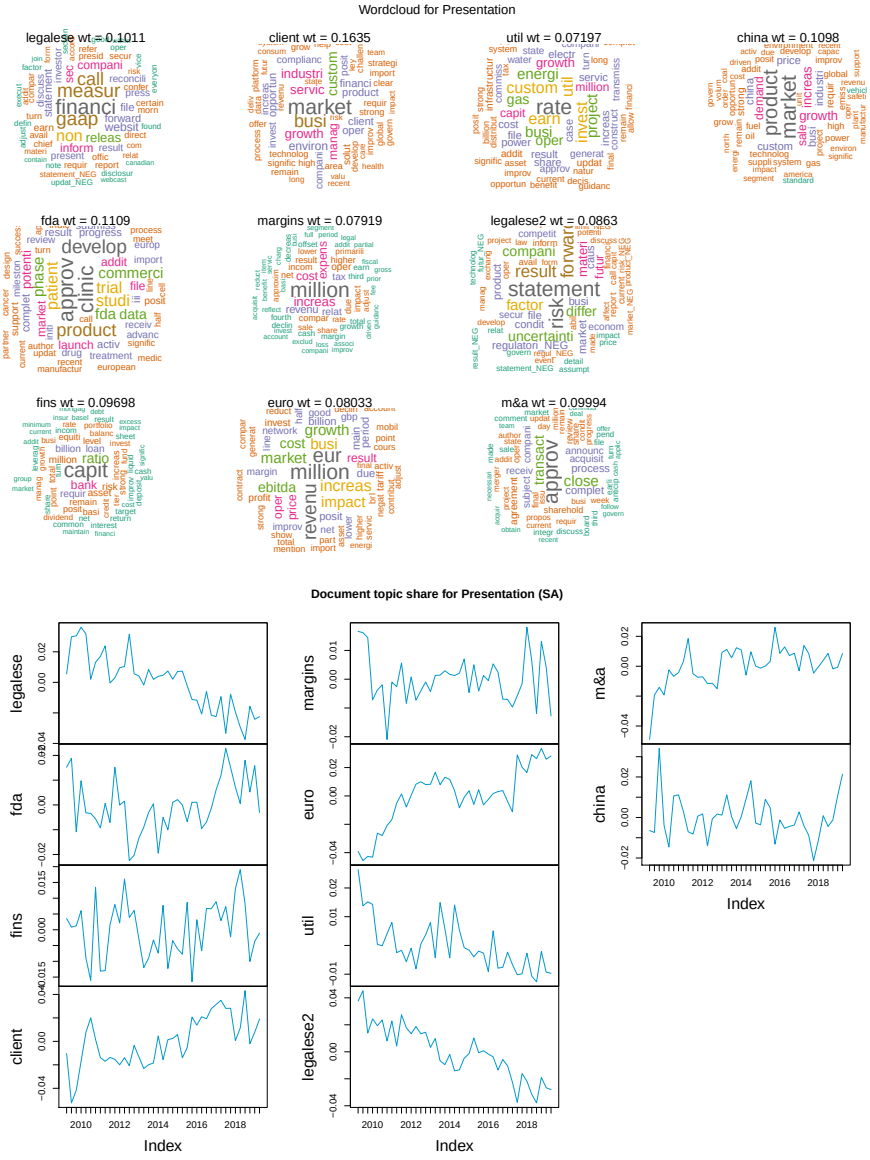

FIG. A1.—Presentation topics from LDA with 2000-iteration Gibbs sampling. Seasonally adjusted (by regressing out quarter dummies) topic frequencies (averages of document-topic distributions across all Presentation sections in a given quarter) are shown in second panel. The time-series plots are at a quarterly frequency.

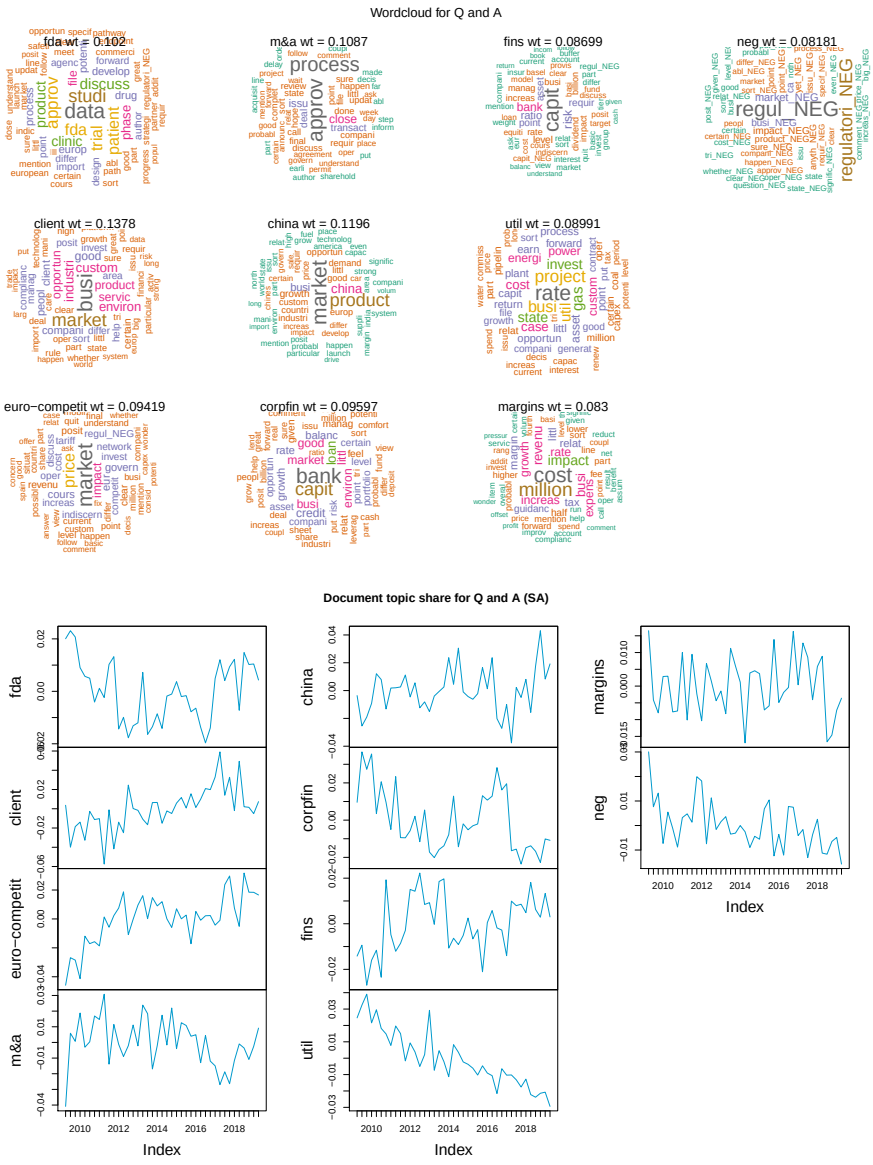

FIG. A2.——Q&A topics from LDA with 2000-iteration Gibbs sampling. Seasonally adjusted (by regressing out quarter dummies) topic frequencies (averages of document-topic distributions across all Q&A sections in a given quarter) are shown in second panel. The time-series plots are at a quarterly frequency. topics from LDA with 2000-iteration Gibbs sampling. Seasonally adjusted (by regressing out quarter dummies) topic frequencies (averages of document-topic distributions across all Q&A topics from LDA with 2000-iteration Gibbs sampling. Seasonally adjusted (by regressing out quarter dummies) topic frequencies (averages of document-topic distributions across all Q&A sections in a given quarter) are shown in second panel. The time-series plots are at a quarterly frequency. sections in a given quarter) are shown in second panel. The time-series plots are at a quarterly frequency.

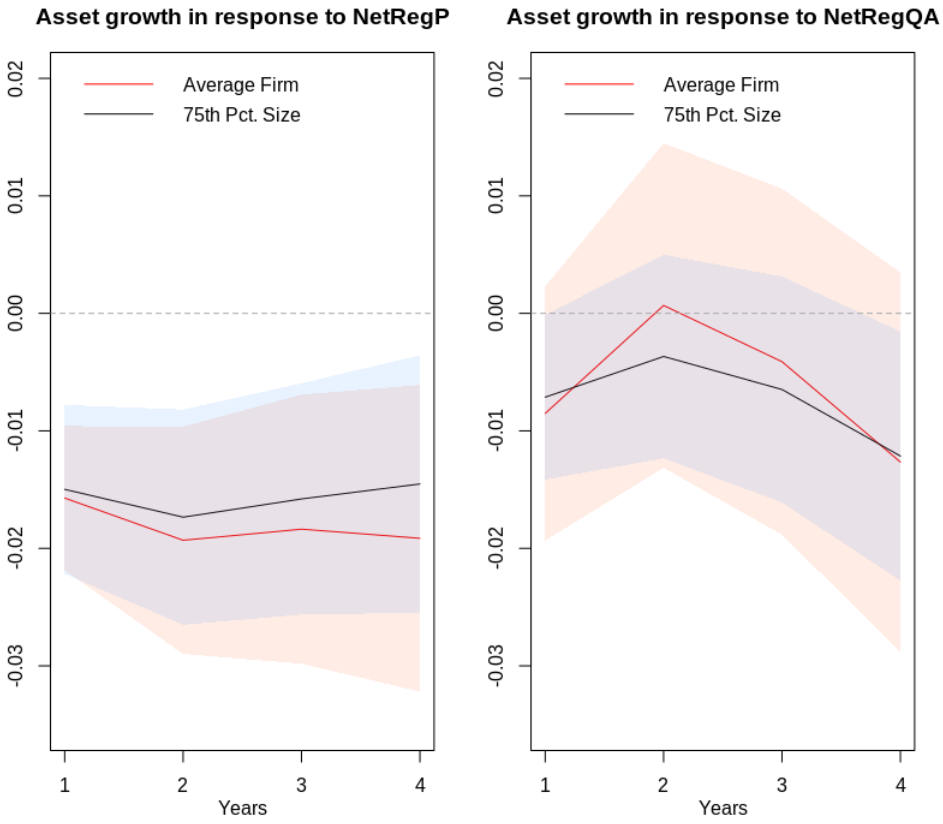

FIG. A3.——The response of Asset Growth to a one-standard deviation shock to measures of regulation from the presentation section (*NetRegP*) and Q&A section (*NetRegQA*). We use the local projection method of Jorda (2005) to calculate the cumulative impulse response, as the sum of all prior prior and current single period responses to a one standard deviation shock of the respective *NetReg* measure. We show the cumulative response for an average-sized firm, as well as for a firm in the 75^{th} percentile. The impulse response assumes that the *NetReg* shock is orthogonal to all other influences. The standard errors assume that successive shocks are independent. The bands in the figure show 95% confidence intervals.

Table A1

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

NOTES.–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.

Table A2

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

NOTES.–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.

Table A3

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

NOTES.–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.

Table A4

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)		
Asset 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.–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 net regulatory measures 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table A5

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)		
Operating Income 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.–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 net regulatory measures 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table A6

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.–This table shows the results of regressing returns on lagged *NetReg* (for the presentation and the Q&A sections), as well as control variables, which include *SUE*, log market equity, log book-to-market ratio, and 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 Ret* refers 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table A7

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.–This table shows the results of regressing returns on lagged *RegSent* (for the presentation and the Q&A sections), as well as control variables, which include SUE, log market equity, log book-to-market ratio, and 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 Ret* refers 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table A8

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.–This table shows the results of regressing returns on lagged *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, and 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 Ret* refers 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.

*$p < 0.1$.

**$p < 0.05$.

***$p < 0.01$.

Table A9

Effects of NetReg on Contemporaneous Returns

	Excess $\text{Ret}^i_{t-1,t;t,t+1}$			FF6 $\text{Ret}^i_{t-1,t;t,t+1}$		
	(1)	(2)	(3)	(4)	(5)	(6)
FF6 $\text{Ret}^i_{t-22,t-1;t-21,t}$	-0.023^{***}	-0.027^{***}	-0.023^{***}	-0.027^{***}	-0.031^{***}	-0.027^{***}
	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.009)
FF6 Alpha	-1.797^{***}	-1.664^{***}	-1.924^{***}	-1.790^{***}	-1.660^{***}	-1.937^{***}
	(0.528)	(0.545)	(0.582)	(0.530)	(0.545)	(0.584)
$\text{NetRegP}^i_{t;t+1}$	-0.021		-0.045^{**}	-0.016		-0.038^{*}
	(0.014)		(0.021)	(0.014)		(0.022)
$\text{NetRegQA}^i_{t;t+1}$		-0.017	-0.025		-0.016	-0.025
		(0.014)	(0.022)		(0.014)	(0.021)
log(ME)	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
SUE	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}
	(0.0004)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0004)
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)
No Regulat	0.002^{*}	0.001	0.003^{**}	0.001	0.0004	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Never Regulat	-0.004^{*}	-0.005^{**}	-0.003	-0.004^{*}	-0.005^{**}	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	0.017^{***}	0.018^{***}	0.016^{***}	0.016^{***}	0.018^{***}	0.017^{***}
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Observations	25,980	24,595	21,633	25,980	24,595	21,633
R^2	0.010	0.010	0.010	0.011	0.010	0.011
Adjusted R^2	0.010	0.009	0.010	0.011	0.010	0.010

Note.–This table shows the results of regressing returns on *NetReg* (for the presentation and the Q&A sections), as well as control variables, which include SUE, log market equity, and log book-to-market ratio. 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 $t-1$ through day t (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day t through $t+1$ (the next business day) for calls occurring after 4PM New York time. *Excess Ret* refers 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.

$^{*}p < 0.1$.

$^{**}p < 0.05$.

$^{***}p < 0.01$.

Table A10

Effects of RegSent on Contemporaneous Returns

	Excess $\text{Ret}^i_{t-1,t;t,t+1}$			FF6 $\text{Ret}^i_{t-1,t;t,t+1}$		
	(1)	(2)	(3)	(4)	(5)	(6)
Adj. $\text{Ret}^i_{t-22,t-1;t-21,t}$	-0.023^{***}	-0.026^{***}	-0.022^{**}	-0.026^{***}	-0.030^{***}	-0.027^{***}
	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.009)
FF6 Alpha	-1.723^{***}	-1.715^{***}	-1.905^{***}	-1.728^{***}	-1.725^{***}	-1.941^{***}
	(0.532)	(0.547)	(0.583)	(0.533)	(0.547)	(0.585)
$\text{RegSentP}^i_{t;t+1}$	0.006		0.016	0.001		0.009
	(0.012)		(0.020)	(0.012)		(0.020)
$\text{RegSentQA}^i_{t;t+1}$		0.020	0.044^{**}		0.013	0.039^{*}
		(0.014)	(0.021)		(0.014)	(0.020)
log(ME)	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
SUE	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}
	(0.0004)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0004)
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)
No Regulat	0.001	0.001	0.003^{*}	0.001	0.0004	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Never Regulat	-0.004^{*}	-0.005^{**}	-0.003	-0.004^{*}	-0.005^{**}	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	0.017^{***}	0.018^{***}	0.016^{***}	0.016^{***}	0.018^{***}	0.016^{***}
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Observations	25,682	24,102	21,353	25,682	24,102	21,353
R^2	0.010	0.009	0.010	0.011	0.010	0.010
Adjusted R^2	0.010	0.009	0.009	0.010	0.010	0.010

Note.–This table shows the results of regressing returns on *RegSent* (for the presentation and the Q&A sections), as well as control variables, which include SUE, log market equity, and log book-to-market ratio. 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 $t-1$ through day t (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day t through $t+1$ (the next business day) for calls occurring after 4PM New York time. *Excess Ret* refers 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.

$^{*}p < 0.1$.

$^{**}p < 0.05$.

$^{***}p < 0.01$.

Table A11

Effects of AllSent on Contemporaneous Returns

	Excess $\text{Ret}^i_{t-1,t;t,t+1}$			FF6 $\text{Ret}^i_{t-1,t;t,t+1}$		
	(1)	(2)	(3)	(4)	(5)	(6)
FF6 $\text{Ret}^i_{t-22,t-1;t-21,t}$	-0.028^{***}	-0.030^{***}	-0.031^{***}	-0.031^{***}	-0.034^{***}	-0.034^{***}
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
FF6 Alpha	-1.804^{***}	-1.735^{***}	-1.835^{***}	-1.789^{***}	-1.716^{***}	-1.821^{***}
	(0.498)	(0.500)	(0.499)	(0.497)	(0.499)	(0.498)
$\text{AllSentP}^i_{t;t+1}$	0.553^{***}		0.363^{***}	0.569^{***}		0.380^{***}
	(0.048)		(0.051)	(0.047)		(0.050)
$\text{AllSentQA}^i_{t;t+1}$		0.828^{***}	0.648^{***}		0.831^{***}	0.643^{***}
		(0.061)	(0.065)		(0.059)	(0.062)
log(ME)	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}	-0.001^{***}
	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
SUE	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}	0.002^{***}
	(0.0003)	(0.0003)	(0.0003)	(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)
No Regulat	0.012^{***}	0.010^{***}	0.015^{***}	0.012^{***}	0.010^{***}	0.016^{***}
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Never Regulat	0.006^{***}	0.005^{**}	0.010^{***}	0.007^{***}	0.005^{**}	0.010^{***}
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	0.009^{***}	0.009^{***}	0.005^{**}	0.008^{***}	0.009^{***}	0.004^{**}
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	28,942	28,884	28,884	28,942	28,884	28,884
R^2	0.014	0.016	0.018	0.015	0.017	0.019
Adjusted R^2	0.014	0.016	0.017	0.015	0.017	0.018

Note.–This table shows the results of regressing returns on *AllSent* (for the presentation and the Q&A sections), as well as control variables, which include SUE, log market equity, and log book-to-market ratio. 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 $t-1$ through day t (i.e. the earnings reporting date) for calls occurring prior to 4PM New York time, and from the close of day t through $t+1$ (the next business day) for calls occurring after 4PM New York time. *Excess Ret* refers 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.

$^{*}p < 0.1$.

$^{**}p < 0.05$.

$^{***}p < 0.01$.