

# **Public Sentiment Decomposition and Shareholder Actions\***

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## **Abstract**

Employing a novel approach with unique data on public sentiment and a new metric on shareholder concerns, we establish an association between shareholder actions and public sentiment about a firm. The number of shareholder proposals effectively captures investor dissatisfaction, particularly since it includes firms with no shareholder proposals. We find that negative public sentiment about financial, governance, environmental or social issues is associated with more shareholder proposals, and we establish causality through a creative instrumental variable approach. Further, shareholder actions have real consequences as a larger number of shareholder proposals results in higher turnover for CEOs and directors.

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## **1. Introduction**

Public sentiment regarding corporate practices has become increasingly pronounced, particularly with the rise of social media and the democratization of information. This heightened public engagement encompasses a variety of issues including, for example, a company's financial performance, products, environmental policies, treatment of employees, and corporate governance practices. Traditional media coverage and social media interactions serve as platforms for capturing public sentiment. Public sentiment can not only influence a corporation's management and its board of directors, but it also affects shareholders, including large institutional investors such as mutual funds, pension funds, and asset managers. Given their role as stewards of capital, institutional investors typically monitor public sentiment alongside conducting their own independent research to inform their investment decisions.

When concerned about a firm's policies, although many institutional investors have the option to choose between exiting their ownership (voting with their feet) or using their voice to engage with the firm, passive investors only have the latter choice as they do not have the option to divest. In using voice, shareholders also have the opportunity to submit proposals to the annual proxy statement, but they typically only do so when direct voice with the firm has not been successful.

The question that arises is whether public opinion influences shareholders' actions, which we capture through shareholder proposals. Alternatively, public sentiment may be irrelevant to shareholders' actions, as different stakeholders might simply follow their own financial and nonfinancial research and beliefs that do not necessarily overlap with wider public sentiment. Therefore, understanding the effect of public sentiment on shareholder actions is important, especially with the ever-increasing push for democratization of information.

We study the relationship between public sentiment and shareholder actions and provide two innovative contributions. First, we use unique measures of public sentiment to capture not only a firm's traditional financial and governance attributes but also newer issues of interest such as climate risk and social issues. Our proxy for sentiment is obtained from LSEG's MarketPsych Analytics.<sup>1</sup> MarketPsych generates sentiment data using state-of-the-art textual analysis and machine learning on a large collection of news and social media contents to measure public sentiment in a highly granular fashion. The data captures public sentiment for each firm on each specific topic, down to each given date or even minute.<sup>2</sup>

Second, our paper introduces a novel approach to capture shareholder dissatisfaction with firm management. Rather than using the voting outcomes for shareholder proposals to capture shareholder concerns, we use the number of shareholder proposals as our primary measure to capture shareholder dissent. In any given year, the majority of firms do not have a shareholder proposal on the ballot, either because shareholders do not have major concerns or because shareholders express their concerns elsewhere, for example, by holding directors responsible, i.e., voting against directors nominated by management. To capture the latter action, which also measures shareholder dissent, for robustness we use an additional measure of shareholder dissent that has been employed in previous research (e.g., Aggarwal, Dahiya, and Yilmaz, 2024), which is shareholder support for directors.

The number of shareholder proposals not only provides evidence of shareholder dissent in general, but it also serves as a proxy for the number of issues at a firm that shareholders have

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<sup>1</sup> <https://www.lseg.com/en/data-analytics/financial-data/financial-news-coverage/marketpsych>

<sup>2</sup> Our public sentiment concept differs conceptually and in measurement from the investor sentiment studied in Baker and Wurgler (2006), Stambaugh, Yi and Yuan (2012) and Devault, Sias and Starks (2019), which is based on the Baker and Wurgler combined measure of investor sentiment. Specifically, our notion of public sentiment captures all the news and social media sentiment on a firm's practices on a specific topic (financial, environmental, social and governance issues). Our sentiment measure captures broader societal sentiment towards a company, and is not limited to investor sentiment.

concerns about. For example, the Amazon proxy statement in 2022 contained fifteen shareholder proposals. The number increased to eighteen in 2023 and then dropped to fourteen in 2024. The proposals varied from requests for management to adopt a policy to consider employees' pay grades in setting executive compensation targets, establish a board committee on public policy, amendment of bylaws related to shareholder rights, provide reports on such issues as retirement plan options related to climate goals, customer due diligence related to Amazon Web Services, content removal requests, stakeholder impacts, climate lobbying, animal welfare, racial and gender pay gaps, warehouse working conditions, packaging materials, executive compensation policy, and tax transparency among a number of other concerns.

Our approach has the advantage that the number of shareholder proposals measure is a more complete representation of shareholder concerns in any given year. Further, it allows us to examine the association between public sentiment and shareholder dissent for all firms, even those without shareholder proposals. The absence of shareholder proposals is important information in itself and unlike vote in support of proposals, our measure allows us to capture this information. Besides being few in number, especially relative to management-sponsored proposals, shareholder proposals are also often withdrawn, usually because management and the sponsoring shareholder reach an agreement before the actual vote. Therefore, our analysis is conducted both with and without withdrawn proposals.

As discussed by He, Kahraman, and Lowry (2023), shareholder proposals rarely achieve a passing vote of 50 percent. However, this low success rate does not diminish their importance, as shareholders often submit proposals primarily to draw attention to particular issues. The number of shareholder proposals serves as a better measure of shareholder concerns than vote outcomes alone, as it captures the full range of issues being raised. Supporting our approach, Aggarwal,

Dahiya, and Yilmaz (2024) have documented that the mere presence of a shareholder proposal on the ballot results in less support for management-sponsored directors in director elections.

We find that negative public sentiment about a firm on both financial and broad ESG aspects are significantly related to the number of shareholder-sponsored proposals. In addition, the two subcomponents: (1) environment and social sentiments, and (2) governance sentiments, also show significant relationships with the number of shareholder proposals that are independent of each other, affecting shareholder proposals on their corresponding category (i.e., the E&S sentiment matters for E&S proposals, while the G sentiment matters for G proposals).<sup>3</sup> Moreover, our data allows us to examine the sentiment reflected in social media sources separately from the sentiment reflected in traditional news sources. We find that both sentiment sources are important in the extent of shareholder submissions of proposals, with the news sources being slightly stronger in affecting the number of shareholder proposals.

In order to examine the relevance of our metric – the number of shareholder proposals representing shareholder dissent – we examine whether the number of shareholder proposals has any consequences for directors and management of the firm. We find a strong association between the number of shareholder proposals on the ballot and director turnover at the firm. There is also an association between our measure of shareholder dissent and forced turnover of CEOs. In terms of economic significance, one additional shareholder proposal is associated with a 10.9% increase in director turnover and a 24.8% increase in forced CEO turnover, both relative to the mean.

To ascertain whether the effect of public sentiment on shareholder proposals is causal, we ideally need variation in public sentiment that is not driven by firm fundamentals that may influence shareholder actions directly. We argue that such variation can be found in the setting of

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<sup>3</sup> We combine Environmental and Social (E&S) proposals due to their frequent overlap. Many proposals, such as those on CSR reports, address both areas, leading ISS voting analytics to classify them in a combined E&S category.

scandal movies, defined as movies that expose a firm's past scandals related to corporate misconduct (see Jiang, Kang, Nie, and Zhou, 2024). Since for each movie setting, the scandal happened in the distant past, the release of the movie should not reflect a firm's current fundamentals but may deteriorate public sentiment on the firm. Therefore, focusing on a sample of firms that were the subject of a scandal in a movie between 2004 and 2020, we find that these firms experienced a decline in their public sentiment relative to control firms. Instrumenting public sentiment by the presence of a scandal movie allows us to assess the causal effect of sentiment on shareholder proposals. In this setting, we again find that more negative (instrumented) public sentiment leads to a larger number of shareholder proposals.

We also find consistent results when we examine the association between director elections and public sentiment, as many investors express their concerns through votes against directors. Lower public sentiment leads to a lower support rate for director elections. All the components of the public sentiment, from ESG to financial sentiments, appear to matter for the director support rate.

Our study contributes to understanding the role of public sentiment as a source of information in financial markets. For example, the media plays a role in financial markets as a collector, aggregator, and disseminator of information (e.g., Dyck, Volchkova and Zingales, 2008; Solomon, Soltes, and Sosyura, 2014). Previous research also implies that media coverage should improve investment decisions due to reducing the cost of information acquisition (Grossman and Stiglitz, 1980), by increasing investors' awareness of financial assets (Merton, 1987), faster incorporation of information (DellaVigna and Pollet, 2009), and lower information asymmetry between investors and firms (Tetlock, 2010). Our specific contribution to this strand of the literature is to examine not only media coverage but also social media coverage of corporations and to relate this combined

coverage to shareholder actions. Public sentiment can provide additional power to institutional investors' engagements with firms because it reflects the existence of a wider scale of concerns.

We also add to previous research that examines how shareholder actions can affect corporate actions. For example, investors use the proxy voting mechanism to express their dissatisfaction with a firm. McCahery, Sautner, and Starks (2016) and Krueger, Sautner, and Starks (2020), discuss the role of engagement with management, however, if engagement fails then investors sponsor shareholder proposals indicating the level of contention. Shareholder proposals can also be submitted by smaller investors who might not have the opportunity to directly engage with management. Li, Naaraayanan, and Sachdeva (2021) examine voting by ESG funds relative to non-ESG funds within the same fund family and find that ESG funds are generally less likely to vote against shareholder-sponsored E&S proposals. However, there is a condition in which these funds are more likely to vote against these proposals, which is if approval rates are close to the passing threshold due to concerns about financial returns. Even though E&S proposals almost always fail to achieve a passing grade, He, Kahraman, and Lowry (2021) find that higher voting support for these types of proposals predicts future environmental and social incidents at the firm. They also find that votes in support of these proposals are related to firm value. Differing from prior studies, we focus on the number of shareholder proposals, which we argue effectively captures shareholder concerns and results in significant impacts on board and CEO tenure.

Our paper also contributes to the literature on how investors engage with management using their voice and therefore influence firm policies (Hirschman, 1970; Gillan and Starks, 2000, 2003; Edmans, 2009; Edmans and Manso, 2011; Edmans and Holderness, 2017; Appel, Gormley, and Keim, 2016). The comparative impact of submitting shareholder proposals and voting versus exiting by institutional investors on firm policies has also been examined (e.g., Parrino, Sias, and

Starks, 2003). Our focus is again on the shareholder dissent through the number of proposals they submit and through their vote in director elections.

## **2. Public Sentiment and Shareholder Proposals**

### *2.1 Public Sentiment*

Public sentiment plays a critical role in shaping a company's policies, actions, and outcomes. Today, information spreads rapidly through social media and other digital platforms, and the public's perception of a company can change almost instantaneously. Companies may be highly sensitive to public opinion because it can directly affect their brand image, customer loyalty, and ultimately their bottom line. Positive public sentiment potentially leads to increased sales, higher stock prices, and greater customer and employee retention, while negative sentiment can result in boycotts, reduced sales, and plummeting stock prices. As a result, companies may adjust their policies and actions to align with public expectations and mitigate potential backlash. The retailer Target is an example of a firm that received severe backlash in 2023 with customers boycotting its products and it had to immediately make changes to its product offerings. The firm had one shareholder proposal in 2023 but subsequently had five in 2024.

Public sentiment can also influence regulatory scrutiny and political pressure. When the public expresses strong opinions about a company's practices, it can prompt lawmakers and regulators to act. For instance, widespread concern over product safety or labor conditions can lead to new regulations or investigations. To avoid such outcomes, companies may proactively adopt policies that address these concerns. This alignment with public opinion not only helps companies maintain a positive image but also supports their long-term viability in terms of a license to operate from society.

## *2.2 Shareholder Proposals*

Shareholder-sponsored proposals are precatory, that is, only advisory to the company's board. Thus, in concept, and often in practice, a firm's board and management can ignore the voting outcome, even if the proposal receives a majority positive vote. However, passage of the proposal may not be the submitter's only intention. The proposal itself provides investors with a way to communicate with management, shareholders, and other stakeholders. Therefore, the intent of the proposal submitter may be to bring attention to the issue in order to create sufficient influence to ultimately bring about change at the firm. That is, given the increasing attention on shareholder proposals by the public and investors, it is often not necessary for the proposal to win a majority vote to have influence. Further proof of this motivation lies in the fact that shareholder proposals are often withdrawn because the proposer reaches an agreement with management. For example, in 2024, AFL-CIO trusts filed shareholder proposals demanding greater transparency on the use of AI at a number of companies including Apple, Comcast, Disney, Netflix and Warner Bros. AFL-CIO withdrew the proposals at Comcast and Disney because the firms agreed to greater disclosure regarding their use of AI.

A combination of changes in which shareholder proposals are put on a proxy ballot and the subsequent outcome of the voting on those proposals can have indirect effects on firms as well, again, even if the proposals do not pass. They may be able to engender a regulatory response, in which Congress changes laws or the SEC changes rules governing corporate behavior. Such changes can be costly for firms in terms of new constraints or compliance costs. An example would be the Dodd-Frank Act requirements regarding say-on-pay, which followed a few years after these types of proposals were initially submitted as shareholder proposals. In this sense, the submission of proxy proposals is similar in spirit to the role of divestment campaigns as argued by Becht,

Pajuste, and Toniolo (2023). Specifically, Becht, Pajuste and Toniolo argue that rather than resulting in a goal of changing the cost of equity to pressure companies, widely publicized divestment commitments attract attention to the issue and results in wider public pressure on companies to make changes.

### **3. Data and Descriptive Statistics**

#### *3.1 Public Sentiment*

We obtain firm-level data on public sentiment from the LSEG MarketPsych Analytics database. MarketPsych digitizes meanings and sentiments into machine readable values and signals based on textual analysis of around 1,000 global financial social media sites, 2,000 top global business news outlets, as well as 3,000 additional ESG-specific sources (both news and social media).<sup>4</sup> The database's ESG Analytics scores include more than 100 ESG metrics such as workplace sentiment and carbon emissions improvement as well as other controversies including tax fraud and industrial accidents.

The MarketPsych database, which uses machine learning tools to extract and analyze both news and social media sources, captures public sentiment for each company on a given day or even minute. The database allows us to capture sentiment on financial, governance, environmental, and social issues separately, as well as subcomponents: Strategy, Management, and Shareholders for the G category; Emissions, Environmental Innovation, and Resource Use for the E category; and Community, Human Rights, Product, and Workforce for the S category. To keep our analyses

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<sup>4</sup> The MarketPsych database has media sources back to 1998. Given newer forms of social media arising, that content is included in the database. The social media started with Internet forums and message boards, adding LexisNexis social media content in 2008, and tweets data in 2009

manageable, we focus on the sentiment measures on the broader categories of financial, E, S, and G topics.

To capture the public sentiment on a given issue, for example, emissions, MarketPsych aggregates all of the positive references to the firm’s emissions on a day, net of all the negative references to the firm’s emissions on the same day, and scales it by the total references to the firm’s emissions on the same day. Consider the following example: suppose that on a given day Apple Inc., across all the social media and news sources, has the following references about emissions: 1) “Apple is going carbon-neutral”, a positive reference on emissions issues; 2) “Apple emits too much CO<sub>2</sub>”, a negative reference; and 3) “Apple will decrease CO<sub>2</sub> emissions”, another positive reference. Then the database will record a sentiment score of  $(1-1+1)/(1+1+1) = 0.333$  for Apple on the Emissions category for that day. The database will also record the total references to emissions, 3 in this case, as the total “buzz” on the Emissions category for Apple Inc.

The inclusion of social media sources in MarketPsych makes the database more comprehensive than the sentiment databases used in prior research, which have been based on news sources only, such as RavenPack (e.g., Dang, Moshirian, and Zhang (2015)) and TruValue Lab (e.g., Leung et al. (2023), Li, Watts, and Zhu (2024)). An empirical question that arises, and which we address, is whether the social media sources provide informative content. Thus, we measure public sentiment on news sources and social media sources in combination as well as separately.

MarketPsych defines the public sentiment of companies as arising from financial and non-financial issues. The database uses its algorithm on the global business and investment news and social media sources to capture an overall financial sentiment for each firm. For non-financial issues, the database includes those sources as well as additional sources that are specific to governance, environmental and social topics, particularly those provided by ESG-focused news

providers, watchdog groups, environmental NGOs, and social monitors. Among this larger set of media sources, the algorithm measures sentiment on these issues by narrowing their focus to specific key words, allowing them to form measures of environmental, social and governance sentiments that are distinct from their financial sentiment measures.

For an overall ESG sentiment measure, we aggregate the E, S, and G sentiment measures using a weighted average of each of these components, where the weights are industry-specific, provided by the MarketPsych database administrator.<sup>5</sup> For sentiment on each of the E, S, and G categories, we aggregate sentiments on the corresponding subcomponents using the associated buzz measures as weights. For example, to calculate the E sentiment measure, we calculate the weighted average of its components (the Emissions sentiment, Resource Use sentiment, and Environment Innovation sentiment), where the weights are the associated Emissions buzz, Resource Use buzz, and Environmental Innovation buzz. These subcategory buzz and sentiment measures are obtained directly from the MarketPsych database.

Finally, we aggregate each sentiment measure at the daily level into its monthly level for each firm. We do so by calculating a weighted average of the daily sentiment by their associated daily buzz. As mentioned earlier, the buzz measure captures the total references to a firm's specific topic. Therefore, aggregating by the buzz measure allows for a consistent measurement of sentiments across all time windows. Scaling and weighting by the buzz measure also ensures that the sentiment measure lies between -1 and 1.

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<sup>5</sup> We do not have a strong reason to use industry weights as opposed to buzz as weights, but MarketPsych recommends using industry weights to aggregate big categories like E, S, and G into one single score, following a similar convention among ESG ratings.

### *3.2 Shareholder Proposals Characteristics*

We obtain proxy voting records for all firms in the Russell 3000 Index from the ISS Voting Analytics dataset.<sup>6</sup> The database tracks the voting records of shareholder proposals since 2003. The voting record includes the date of the meeting, a description of each proposal with its focus, whether it is sponsored by management or shareholders, the identity of the sponsor (person or organization), and the voting recommendations from the firm's management as well as the proxy advisory firm, ISS. The voting record for each proposal also includes the number of shares the firm has outstanding, the number of shares voted for/against/abstain the proposal, the voting threshold requirement for the proposal to pass, and the final voting outcome.—Typically management recommends voting against the shareholder proposals included on the ballot.

To classify the shareholder proposals into their E, S, or G categories, we obtain the categories of shareholder proposals directly from ISS, matched to the voting dataset. We classify a proposal as an E proposal if its subcategory is “Environmental Proposal”, and as an S proposal if its subcategory is “Social Proposal”. When E and S are not separable, i.e., the subcategory is “E&S proposal”, we record it as an inseparable E&S proposal. Any other shareholder proposal is considered a G proposal. We also include management proposals on director elections.

For each subcategory (E, S, E&S, G), we calculate the number of shareholder proposals per firm year. For the director elections we calculate the average support rate in that firm year. The key dependent variable in our study is the number of shareholder proposals, which is the annual number of shareholder proposals on the ballot for a firm. We focus more on this variable because doing so allows us to capture shareholder actions for every firm-year, as we simply record a zero

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<sup>6</sup> <https://wrds-www.wharton.upenn.edu/pages/get-data/institutional-shareholder-services-iss/voting-analytics/company-vote-results-us/>

count for firm-years without any shareholder proposal on a given category. We focus less on the average voting support rate measure despite its usage in prior studies, because many firm-years (over 85% of our sample) do not have any shareholder proposals. Focusing on the average support rate would lead to a substantial 85% drop in sample size and concerns related to selection biases.

For our primary measure we do not include a control for the recommendation of the proxy advisor ISS as in previous studies of proxy proposals (e.g., Cai, Garner, and Walkling, 2009; Aggarwal, Dahiya, and Prabhala, 2019) due to three reasons. First, our primary analyses includes firms with and without shareholder proposals and no ISS recommendations exist when there is no shareholder proposal. In addition, our analysis is at the firm-level and not at the proposal-level, and ISS's recommendations are at the proposal-level. Moreover, ISS recommendations are not available when the shareholders decide on whether they submit a proposal or not; they become available after the count of shareholder proposals is determined.

### *3.3 Sample formation and other datasets*

Our sample includes all firm-years with at least one record in the ISS voting database, covering shareholder meetings between January 2003 and December 2021 (the latest meeting date in the voting data downloaded in November 2022). We collapse the ISS voting dataset at the proposal level to the firm-year level, retaining the average support rate and number of proposals for each firm-year and proposal type (E, S, E&S, and G). For the reasons discussed earlier, we also examine management-sponsored director election proposals. Every firm has director election proposals on the ballot each year, and therefore we can examine all firms in the sample using this measure. We then merge the firm-year panel with the sentiment variables from the MarketPsych database measured over the twelve months preceding each shareholder meeting date for each firm-year.

After the merge, we arrive at our main sample with 4,849 unique firms with non-missing voting records and non-missing public sentiment measures between 2003 and 2021.

To remove noise, we drop firms with a total buzz (a measure of total media attention) below the 25th percentile in the cross-section in each year. The idea is to remove observations if public sentiment is measured with low precision due to a firm having very few media mentions in a year. The example with Wells Fargo described in a later section illustrates how a measure of public sentiment could be very volatile when the associated buzz is low. After this step, our sample consists of 4,063 unique firms over 2003-2021 period.

In order to control for firm-specific characteristics, we obtain the characteristics from Compustat as well as CRSP and merge them into our main sample. We require that firms have non-missing accounting data and stock returns data for the fiscal year-end preceding the annual shareholders meeting date. The control variables include (measured as of the last fiscal year end before proxy voting): natural logarithm of total assets in millions of U.S. dollars ( $\ln(Assets)$ ), capital expenditures to total assets ( $CAPEX/Assets$ ), return on assets ( $ROA$ ), book leverage ( $Debt/Assets$ ), institutional ownership percentage (*Inst. Ownership*), and institutional ownership concentration (*Inst. Ownership HHI*). In addition, we control for a firm's annual stock return minus the value-weighted stock market return (*Excess Return*), measured over the 12-month window preceding the firm's shareholder meeting month.

In robustness tests we also control for annual sales growth (*SGrowth*) and market to book (*MB*) as including these variables drops the number of observations and they are highly correlated with some other control variables. We also control for the Entrenchment Index (Bebchuk, Cohen, and Ferrell (2009)) only in our robustness tests because doing so restricts the sample to only S&P 1500 firms and therefore reduces our sample size by more than 40%. In the Internet Appendix, we show

that our main results remain qualitatively unchanged when controlling for the Entrenchment Index. We winsorize all the ratio variables at the 1st and 99th percentiles, to remove the effect of outliers.

Finally, for identification purposes (described later), we collect the incidences of a firm having a scandal movie released during our sample period. Jiang et al. (2024) identified 23 movies released in North America between 1999 and 2020 that re-exposed past scandals of various companies. (We term them scandal movies for short.) We merge this list of movies to our sample, by creating an indicator equaling one for firm-years with a scandal movie released within two years before the firm's shareholder meeting and zero otherwise. This indicator variable serves as our instrument for public sentiment in a two-stage least square analysis of the effect of public sentiment on shareholder voting outcomes. Since a movie often exposed scandals related to multiple firms, we have 34 unique firms affected by a scandal movie in our sample.

### *3.4 Descriptive Statistics*

On average, both the financial and ESG sentiment has increased over time, as seen in Figure 1, Panel A. The E category has the highest positive sentiment followed by S and then G. The general increasing trend in sentiment applies to all the ESG categories, except for a dip in 2017 and 2018 for the G category, as seen in Figure 1, Panel B. (The governance proposals went down because of fewer proxy access proposals. For example, there were 89 fewer such proposals in 2017 as compared to 2016 (Mueller and Ising, 2017.)) While the average sentiment for all firms in our sample is quite smooth, there exists considerable volatility across individual firms and industries. There are also significant differences in sentiment across industries. A comparison of average sentiment for the oil and gas industry (Figure 2) and the banking industry (Figure 3) shows that high environmental sentiment scores for banks and low environmental scores for oil and gas firms, particularly relative to scores on social and governance sentiment. Social sentiment is higher than

environmental and governance sentiment for oil and gas while environment sentiment is higher than social and governance for banking.

Figure 4, Panels A to C provides examples of time trends in sentiment for Exxon, Tesla, and Wells Fargo, respectively. As expected, sentiment is much more volatile for individual firms than for industries. There even exist periods of negative environmental sentiment for Exxon and negative governance sentiment for Wells Fargo. A sharp drop in the environmental sentiment for Exxon is observed during periods of particular negative news such as the BP Deepwater Horizon spill in 2010. Similarly, the governance sentiment for Wells Fargo dips significantly in 2016 on news about fraudulent sales by its employees. By contrast, Tesla observed a very high level of sentiment on the E category throughout the sample period, and a rather stable sentiment of S and G, though with a decreasing trend towards zero or negative in more recent years.

Notably, the environmental sentiment for Wells Fargo appears quite volatile. This is because Wells Fargo's business model has little to do with environmental issues, so the firm's environmental issues were mentioned very little in the media (under 100 times across thousands of media sources in many years). With low media attention (buzz), the denominator in the associated sentiment measure is small, creating larger volatility in the measure. Because of this issue, as explained earlier, we drop firms with very low media attention on that topic.

We present statistics on shareholder votes in Table 1. On average, the support rate for shareholder proposals is 36.7% compared to 92.58% for management-sponsored proposals. However, as discussed earlier just having these proposals on the ballot helps to raise awareness of issues that concern management. In addition, proxy advisors pay attention to proposals that receive about 30% support, and they expect management to address them even though the proposal does

not garner majority votes. Within management-sponsored proposals, those related to director elections receive more support than non-director election proposals.

The number of shareholder proposals increased considerably during the period 2004 to 2009, however, there has been a sharp decline since then till 2021. As seen in Figure 5, by far the largest number of shareholder proposals concern governance issues, followed by social and then environment. It is governance-related proposals that account for the large increase and then the drop in shareholder proposals. This pattern is due to say-on-pay proposals that became a requirement in 2010 after the Dodd-Frank Act when they started showing up as management-sponsored proposals rather than shareholder-sponsored proposals. We don't see a significant rise in social proposals around the time of "Black Lives Matter" movement in 2013 or the "Me Too" movement in 2017. As seen in Figure 4, for individual firms there are lots of ups and downs in the number of shareholder proposals over time. For example, in the case of Exxon the number of ESG-related shareholders proposals varies from a low of 3 in 2018 to a high of 26 in 2021. (2021 was the year when activist investor Engine #1 was demanding changes at Exxon and had the support of large investors. There is variation in number of proposals on all three dimensions, E, S, and G. The number of shareholder proposals ranges from a high of six to a low of two in several years in the case of Wells Fargo. However, there are no proposals related to the environment throughout our sample period for the bank.

## **4. Public Sentiment and Shareholder Proposals**

### *4.1 Public Sentiment and Shareholder Proposals Count*

To test for the relation between the decision of shareholders to present a proposal or proposals and public sentiment, we run the following estimation at the firm-year level:

$$ShareholderProposalCount_{i,t} = \beta_0 + \beta_1 \cdot Sentiment_{i,t} + \Gamma \cdot X_{it} + \mu_i + \vartheta_{jt} + \varepsilon_{it}, \quad (1)$$

where  $i$  indexes the firm,  $t$  indexes year, and  $j$  indexes the industry of the firm. The dependent variable is the number of shareholder proposals on a firm's proxy statement in a given year. The main independent variables are our sentiment measures, including measures of ESG sentiment and financial sentiment. We also provide the sentiment estimations for the environment, social issues, and governance separately. The regression model is a Poisson model to account for the count nature of the dependent variable. Our unit of observation is firm-year. Standard errors are corrected for clustering of observations at the firm level.

In each specification, we include controls for various firm characteristics – i.e., natural logarithm of total assets, debt to assets, cash holdings to assets, return on assets (ROA), capital expenditures (CAPEX) to assets, annual stock return minus the value-weighted stock market return (Excess Return) in addition to institutional ownership and its concentration (Herfindahl-Hirschman Index of institutional ownership). The variable definitions are provided in the Appendix. All of these characteristics are measured at the firm level, using data within a one-year window leading up to a firm's shareholder meeting. We winsorize all the firm characteristics variables (except log assets) at the upper and lower 1% levels. We further standardize the independent variables to have a mean of zero and a standard deviation of one. The sample is restricted to firm-years that have at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

Results are presented in Table 3. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. In the regressions with ESG sentiment as the primary independent variable (Columns (1), (2), (3) and (4)) there exists a negative and significant coefficient on ESG sentiment suggesting that

shareholders put forward more proposals when the public's view on a given firm's ESG standards is rather negative. The effect is economically large as well. A one standard deviation decrease in the ESG sentiment leads to a 0.26 higher shareholder proposal count – which is equivalent to over 150% of the sample mean ( $0.26/0.17$ ). Importantly, the coefficients on the ESG sentiment remain negative --reducing to -0.12 and stay statistically significant at the 5 percent level when we include the financial sentiment in Column 2. Financial sentiment is also important, with a one standard deviation decrease in this sentiment leading to 0.23 unit increase in the shareholder proposal count. The findings are similar when we replace industry-year fixed effects with firm and year fixed effects as shown in Columns 4 and 5. However, these specifications are rather restrictive as they control for any within-firm factor fixed over time and any cross-firm factor in a given year. Importantly, firm (year) fixed effects control for omitted variables unique to these firms (time periods). In other words, both the ESG sentiment and the financial sentiment remain significant when the effect is identified through only within-firm changes.

In Columns 3 and 6, we disentangle the effects of E, S, and G sentiments and find that all load significantly with firm-year fixed effects, with the results being marginally significant for the E sentiment but stronger and significantly negative for the S and G sentiments. Control variables have expected signs on their coefficients as well. For example, we see a large and positive effect of firm size on the number of shareholder proposals as shareholders are more likely to hold the largest firms to account.

In the next two tables, we examine whether the E, S, and G sentiments separately relate to the count of E and S proposals in Table 4 and governance proposals in Table 5. Table 4 shows that when we examine the count of E and S shareholder proposals as the dependent variable, the overall ESG sentiment remains significantly negative, suggesting that these sentiments overall are related

to shareholder decisions to submit shareholder proposals. The financial sentiment is similarly significantly negative in Column (2) with the industry year fixed effects, which also suggests that shareholders' decisions are affected by the firm's financial performance. However, financial sentiment loses significance in the firm year fixed effects model shown in Column (4). Moreover, the coefficients on the separate E and S sentiments are (marginally) significantly negative, but the G sentiment loses its significance completely. Thus, the conclusion could be reached that the E and S sentiments could help explain the number of E and S shareholder proposals on the proxy statement while the firm's governance significance does not have any effect.

In Table 5 where we examine the subsample of governance-related shareholder proposals separately as the independent variables, the ESG sentiment remains significantly negative in most specifications, suggesting again that when public sentiment exhibits concerns about a firm's ESG practices, shareholders will put forth more governance shareholder proposals. Further, as might be expected from the results in Table 4, the coefficient on the G sentiment measure by itself becomes significantly negative in both specifications while the coefficients on the E and S sentiment measures largely lose their significance. Moreover, these results are reassuring as they suggest that our measures of public sentiment, representing different parts of the firm's overall E, S, and G practices, are measured well.

A central question about the results thus far is whether the sentiment measures developed from the news media or social media are more important. That is given the power of social media in recent years, it is reasonable to expect that social media sentiments may play an important role. However, for institutional investors, who dominate the shareholder base of most publicly listed companies, traditional news may still be the primary source of information relative to social media. In Table 6 we examine the differences in results when we measure sentiments using either

traditional news media only (Panel A) or social media only (Panel B). Panel A shows that sentiment measures from traditional media are quite strong in their associations with the count of shareholder proposals. In fact, the ESG sentiment, financial sentiment, and E, S, and G individual sentiments are all strongly related to the number of shareholder proposals. A cursory comparison of the coefficients from Panel A of Table 6 with those from Table 3, shows similar magnitudes for the coefficients but much stronger significance. Examining Panel B along with Panel A leads to the general takeaway that both sources of sentiments (traditional news media and social media) appear to matter for the number of shareholder proposals similar to the results in Table 3, with coefficients being larger and more significant for the news-based sentiment measures, suggesting that news sources are still the more important outlet for reflecting public sentiments on public firms.

We also examine the role of all shareholder proposals which includes withdrawn and omitted proposals versus only those proposals that go for a final vote. Proposals are typically withdrawn when management and the sponsor of a shareholder proposal reach an agreement, which implies that the shareholder concerns have been at least mitigated to some extent. During our sample period shareholder proposals could be omitted by a company if the SEC approves a “no action” request from the company, indicating that these proposals were not suitable for the ballot. Thus, with both the withdrawn and omitted proposals we would expect less of a relationship between the number of shareholder proposals and public sentiment. Because of data availability, this analysis is limited to S&P 1500 firms. Not surprisingly, as we demonstrate in the Internet Appendix Table IA3, the relation between the number of shareholder proposals and public sentiment is much stronger for the group of firms where the proposals are not withdrawn and go for a final vote. Nonetheless, the

baseline results remain similar when we focus on the number of all shareholder proposals submitted to a firm in a year.

#### *4.2 Consequences of Shareholder Proposals*

Earlier we provided our arguments regarding why the number of shareholder proposals is an appropriate metric to capture shareholder dissent. Next, we examine whether our metric, the number of shareholder proposals, appears to result in any consequences for a firm's directors and management. We examine whether a relationship exists between the number of shareholder proposals on the ballot and director turnover at the firm. Director turnover refers to the percentage of directors at a firm that left during a particular year. Table 7 presents the results from regressing director turnover on the number of shareholder proposals. The same firm-level controls are used as in previous tables. The sample is larger as we no longer need to restrict to firm-years with sufficient media coverage as this test does not concern with media sentiment measures.<sup>7</sup> Column 1 of the table reports results with industry-year fixed effects and column 2 with firm and year fixed effects. In each specification the coefficient of the number of shareholder proposals is significant at the 1% level. The coefficients indicate that one additional shareholder proposal is associated with at least 10% higher in the rate of director turnover relative to the sample mean.

We repeat this analysis to examine the relation between the support that directors receive during annual director elections and the number of shareholder proposals submitted per firm-year. The dependent variable is average support for directors at a firm in a particular year. As reported in columns 3 and 4 of Table 7, more shareholder proposals on the ballot are significantly associated with directors at the firm receiving more dissent votes. The coefficients indicate that one additional

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<sup>7</sup> Results are similar when we impose the restriction of sufficient media attention as in previous tests.

shareholder proposal is associated with 7 to 9% standard deviation lower in the support rate of directors.<sup>8</sup>

We further examine whether there is an association between forced CEO turnover and shareholder dissent as captured by the number of shareholder proposals. As shown, in columns 5 and 6 of Table 7, we find similar results. The economic magnitude is quite large. The coefficients indicate that one additional shareholder proposal is associated with at least 18.6% higher in the rate of forced CEO turnover relative to the sample mean.

Overall, our results are consistent with the findings of He, Kahraman, and Lowry (2023) using a different proxy for shareholder dissent. Even if shareholder proposals don't pass, just the mere presence of an additional shareholder proposal has a disciplining effect on the firm's CEO and board of directors.

#### *4.3 Voting Outcome*

We additionally investigate the relationship between public sentiments and the voting outcome of shareholder proposals. As pointed out earlier, we do not focus on this relationship because voting outcomes like the support rate for shareholder proposals are only available on a very small subset of firm-years with at least one shareholder proposal being voted. This also means that these voting outcomes are affected by selection concerns and remain undefined when a firm does not have any shareholder proposal in a year. It is possible that proposals with a very high probability of passing or a very low probability of passing are already privately negotiated between shareholders and managers, leaving only the relatively neutral proposals up for voting publicly. If

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<sup>8</sup> We interpret the economic magnitude of the effect on director election support relative to sample standard deviation as opposed to sample mean because the literature has documented that the average support rate for director is generally high (above 90%) but the variation (standard deviation) is still meaningful in capturing shareholder dissent.

so, there may not be any variation in this selected subset of proposals, and we may not find any relationship between public sentiments and voting outcomes for these proposals.

We find results consistent with this hypothesis. The Internet Appendix Table IA4 shows the results when we perform the baseline analysis again but replace the dependent variable by the average voting support for shareholder proposals in a firm-year whenever the firm has at least one proposal in that year. Across various specifications, we do not find a significant relationship between voting support for firms' shareholder proposals and public sentiments, be it ESG sentiments or financial sentiments.

For robustness, we examine the sample of voting for director elections, in which selection issues are less of a concern because director elections occur for every firm almost every year, we find significant relationships between public sentiments and voting support rates. Table 8 shows that a lower public sentiment predicts a lower support rate for director elections in a firm in a year. All the components of public sentiments, from ESG to financial sentiments, appear to matter for the director support rate in the same direction, with financial and G sentiments being most significant and consistent across the tests.

## **5. Causal inference**

The relationship between the public sentiment of a firm and the number of shareholder proposals brought to the firm in a year may not be causal, if other factors, such as firm performance and financial outcomes, simultaneously increase public sentiment about the firm and decrease the dissent and actions by the firm's shareholders. While we control for a host of firm characteristics and performance indicators to control for this possibility and find robust results, there may still be omitted factors related to firm fundamentals. Therefore, to investigate whether the effect of public

sentiment on shareholder actions is causal, we need to examine a shock to the public sentiment of a firm that is unrelated to the firm's performance.

In this section, we attempt to address causal inference by studying scandal movies as a shock to a firm's public sentiment. Jiang et al. (2024) identified 23 movies released in North America between 1999 and 2020 that re-exposed companies' past scandals, which we term "scandal movies." The idea is that while these scandal movies may bring past misconduct of a firm to the public eye and decrease the public sentiment associated with the firm, such movies do not directly affect how shareholders decide whether and how many new proposals to bring to the firm. In other words, scandal movies as a shock may satisfy both the relevance and exclusion criteria as an instrument for public sentiment on a firm. Since the nature of these movies is about past corporate misconduct, we expect them to be a relevant instrument for ESG sentiment, more so than for financial sentiment.

We thus identify 23 scandal movies from Jiang et al. (2024) that affected 49 firm-years in our sample. These 49 firm-years become our treated firm-years. We then match each of these firms in its treatment year with up to five control firms within the same year and industry, based on a nearest neighbor matching procedure using the following variables as matching covariates: total news, social media buzz, ESG sentiment, financial sentiment, and firm size (log assets), all measured by a one-year lag relative to the event date (the movie's wide-release date). Employing this matched sample, we then perform a two-stage least squares regression of the number of shareholder proposals in a year on ESG sentiment measured in the last year and we instrument the ESG sentiment by the interaction between treatment and post, which equals one for firm years

with a scandal movie released within the last year and zero otherwise. We additionally control for financial sentiment and the other firm characteristics used in Equation (1).<sup>9</sup>

Table 9 presents the results. In Panel A, the first stage regression suggests that scandal movies have a significant and negative impact on a firm's ESG sentiment. The coefficient on  $Treat*Post$  is statistically significant at the 1% level, regardless of the regression specification. Consistent with this statistical significance, the second-stage regressions (in Panel B) report first-stage F-statistics of above 19 without any control variables and continues to be above the conventional level of 10 after controlling for the firm characteristics. The only specification with an F-stat lower than 10 is the regression that includes all of the firm characteristics, which may be overly conservative given that financial sentiment and excess return are downstream variables that the shock (movie scandals) could affect as well.

In Panel B, the instrumented ESG sentiment appears to have a strong negative effect on the number of shareholder proposals brought to a firm. The coefficient on the instrumented ESG sentiment is significant at the 10% or 5% level, depending on the specification, and economically very large. A one standard deviation decrease in the ESG sentiment would lead to at least 1.9 more shareholder proposals in a year, which is many times larger than the sample mean. Overall, results suggest that the effect of public sentiment on shareholder actions is causal.

## 6. Conclusion

Our study underscores the significant role that public sentiment plays in shaping shareholder actions, particularly through the lens of shareholder proposals. We find that negative public sentiment, whether derived from the traditional news media or social media, correlates with a

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<sup>9</sup> Without matching, the first stage and second stage results are even stronger, as shown in the Internet Appendix Table IA5.

greater number of shareholder proposals, highlighting the sentiment's influence on shareholder behavior. By breaking down public sentiment into its ESG and financial components, we demonstrate that both aspects are crucial in understanding the motivations behind shareholder proposals. The innovative use of scandal movies as an instrumental variable further strengthens our argument by providing causal evidence that negative ESG sentiment leads to increased shareholder dissent.

Our findings contribute to the broader literature on the interplay between public sentiment, media coverage, and shareholder activism. The dual impact of news media and social media as sources of information and platforms for public engagement emphasizes their power in the corporate governance landscape. Institutional investors, acting as stewards of public capital, are shown to leverage this sentiment in their interactions with corporate management, reflecting broader societal concerns. This study not only enhances our understanding of the mechanisms driving shareholder activism but also highlights the importance for firm management to maintain a positive public image to mitigate potential shareholder conflicts.

## References

- Aggarwal, Reena, Sandeep Dahiya, and Umit Yilmaz, 2024, Why do investors vote against corporate directors? ECGI Finance working paper 924/2023.
- Baker, Malcolm, and Jeffrey Wurgler, 2006, Investor sentiment and the cross-section of stock returns, *Journal of Finance* 61, 1645–1680.
- Barko, Tamas, Martijn Cremers, and Luc Renneboog, 2021, Shareholder engagement on environmental, social, and governance performance, *Journal of Business Ethics* 180, 1–36.
- Becht, Marco, Anete Pajuste, and Anna Toniolo, 2023, Voice through divestment, ECGI Finance Working Paper 900.
- Bethel, Jennifer, and Stuart Gillan, 2002, The impact of the institutional regulatory environment on shareholder voting, *Financial Management* 31, 29-54.
- Bolton, Patrick, Tao Li, Enrichetta Ravina, and Howard Rosenthal, 2020, Investor ideology, *Journal of Financial Economics* 137, 320–352.
- Chan, Wesley S., 2003, Stock price reaction to news and no-news: Drift and reversal after headlines, *Journal of Financial Economics* 70, 223-260.
- Dang, Tung Lam, Fariborz Moshirian, and Bohui Zhang, 2015, Commonality in News Around the World, *Journal of Financial Economics* 116, 82-110.
- Dellavigna, Stefano, and Joshua M. Pollet, 2009, Investor inattention and Friday earnings announcements, *Journal of Finance* 64, 709-749.
- DeVault, Luke, Richard Sias and Laura T. Starks, 2019, Sentiment metrics and investor demand, *Journal of Finance* 74, 985-1024.
- Dougal, Casey, Joseph Engelberg, Diego Garcia, and Christopher A. Parsons, 2012, Journalists and the stock market, *Review of Financial Studies* 25, 639-679.
- Dyck, Alexander, Karl V. Lins, Lukas Roth, and Hannes F. Wagner, 2019, Do institutional investors drive corporate social responsibility? International evidence, *Journal of Financial Economics* 131, 693–714.
- Dyck, Alexander, Natalya Volchkova, and Luigi Zingales, 2008, The corporate governance role of the media: Evidence from Russia, *Journal of Finance* 63, 1093-1135
- Engelberg, Joseph and Christopher A. Parsons, 2011, The causal impact of media in financial markets, *Journal of Finance* 66, 67-97.
- Gillan, Stuart L. and Laura T. Starks, 2000, Corporate governance proposals and shareholder

activism: The role of institutional investors, *Journal of Financial Economics* 57, 275–305.

Gormley, Todd A., Vishal K. Gupta, David A. Matsa, Sandra C. Mortal, and Lukai Yang, 2023, The Big Three and board gender diversity: The effectiveness of shareholder voice, *Journal of Financial Economics* 149, 323-348.

Grossman, Sanford, and Joseph Stiglitz, 1980, On the efficiency of competitive stock markets where trades have diverse information, *Journal of Finance* 31, 573-585.

He, Yazhou, Bige Kahraman, and Michelle Lowry, 2023, ES risks and shareholder voice, *Review of Financial Studies* 36, 4824-4863.

Hirschman, Albert, 1971, *Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations, and States*, Harvard University Press, Cambridge, MA.

Jiang, Han, Le Kang, Ziyi Nie, and Hui Zhou, 2024, Can old sin make new shame? Stock market reactions to the release of movies re-exposing past corporate scandals, *Finance Research Letters* 67/A.

Krueger, Philipp, Zacharias Sautner, and Laura T. Starks, 2020, The importance of climate risk for institutional investors, *Review of Financial Studies* 33, 1067–1111.

Kuhnen, Camelia M. and Alexandra Niessen, 2012, Public opinion and executive compensation, *Management Science* 58, 1249-1272.

Leung, Ming, Chuchu Liang, Ben Lourie, and Chenqi Zhu, 2023, Voting with their feet: Employee responses to ESG news, Working paper available at SSRN (4937880).

Li, Tao, S. Lakshmi Naaraayanan, and Kunal Sachdeva, 2023, Conflicting objectives of ESG funds: Evidence from proxy voting, Working paper available at SSRN (3760753).

Liu, Baixiao and John J. McConnell, 2013, The role of the media in corporate governance: Do the media influence managers' capital allocations? *Journal of Financial Economics* 110, 1-17.

Li, Qianqian, Edward Watts, and Christina Zhu, 2023, Retail investors and ESG news, *Journal of Accounting & Economics*, forthcoming.

Lowry, Michelle, Pingle Wang, and Kelsey D. Wei, 2022, Are all ESG funds created equal? Only some funds are committed. European Corporate Governance Institute–Finance Working Paper.

McCahery, Joseph A., Zacharias Sautner, and Laura T. Starks, 2016, Behind the scenes: The corporate governance preferences of institutional investors, *Journal of Finance* 71, 2905–2932.

Merton, Robert, 1987, A simple model of capital market equilibrium with incomplete information, *Journal of Finance* 42, 483-510.

Michaely, Roni, Silvina Rubio, and Irene Yi, 2023, Voting rationales. European Corporate Governance Institute – Finance Working Paper 928/2023.

Mueller, Ronald O., and Elizabeth Ising, 2017, Shareholder proposal developments during the 2017 proxy season, Harvard Law School Forum on Corporate Governance (<https://corpgov.law.harvard.edu/2017/07/12/shareholder-proposal-developments-during-the-2017-proxy-season/>).

Parrino, Robert, Richard Sias, and Laura Starks, 2003, Voting with their feet: institutional ownership changes around forced CEO turnover, *Journal of Financial Economics* 68, 3-46.

Solomon, David H, Eugene Soltes, and Denis Sosyura, 2014, Winners in the spotlight: Media coverage of fund holdings as a driver of flows, *Journal of Financial Economics* 113, 53-72.

Stambaugh, Robert F., Jianfeng Yu, and Yu Yuan, 2012, The short of it: Investor sentiment and anomalies, *Journal of Financial Economics* 104, 288–302.

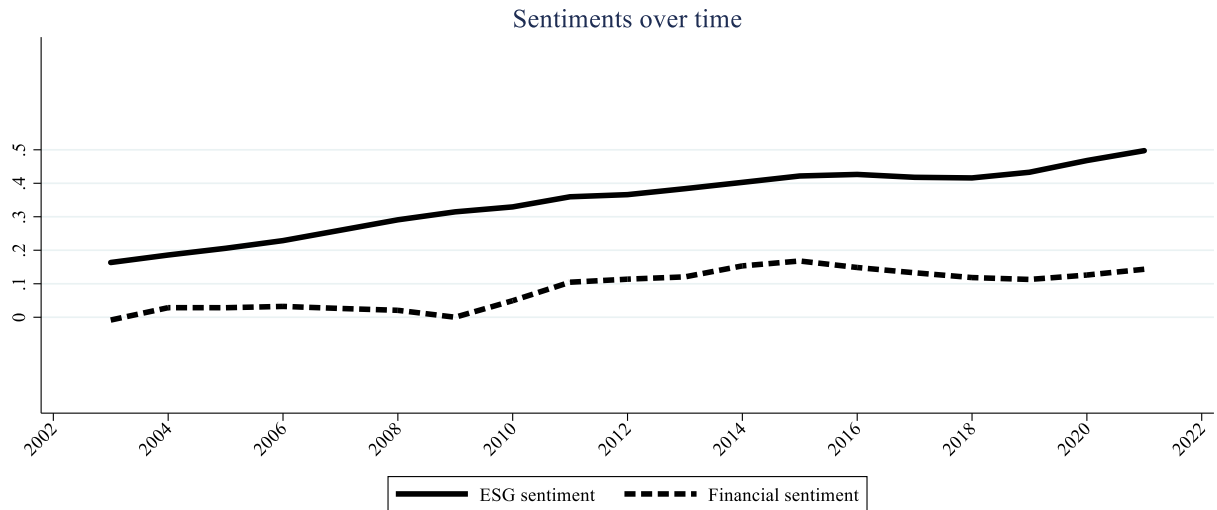
Tetlock, Paul, 2010, Does public financial news resolve asymmetric information? *Review of Financial Studies* 23, 3520-3557.

Tetlock, Paul, 2007, Giving content to investor sentiment: The role of media in the stock market, *Journal of Finance* 62, 1139-1168.

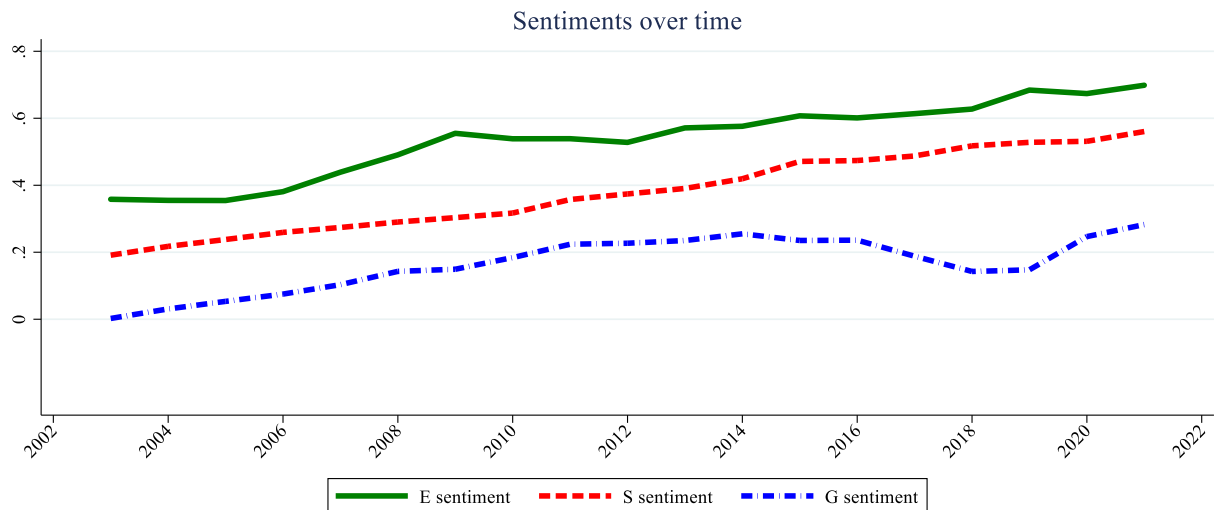
**Figure 1: ESG sentiments and financial sentiments over time**

Panel A graphs the ESG sentiment and financial sentiment for the average firm over time in the full sample. Panel B shows the sentiment across the average firm over time, separately for the E, S, and G categories. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

**Panel A: ESG sentiment vs. financial sentiment**



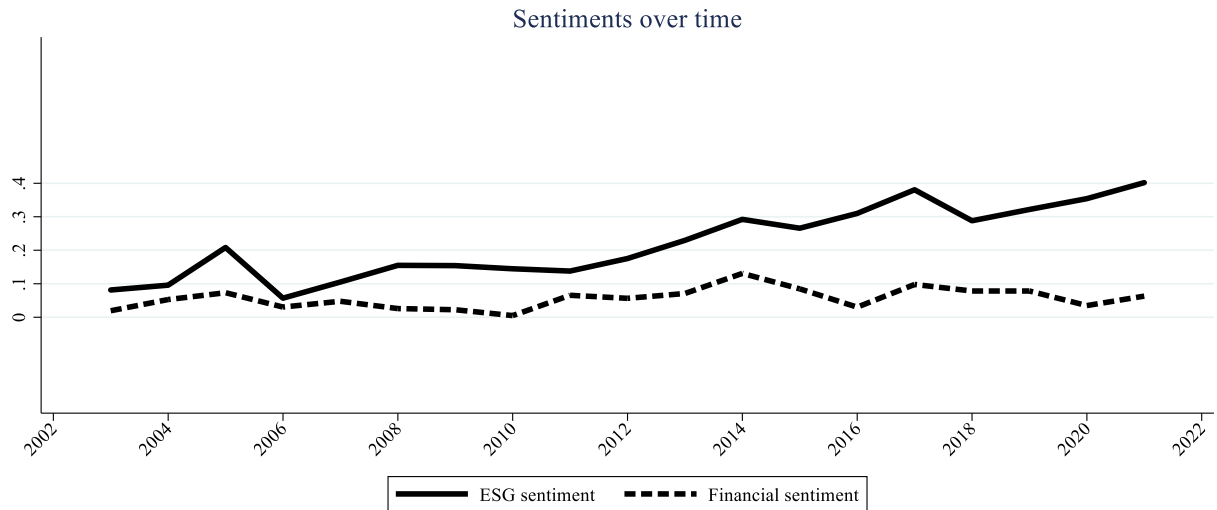
**Panel B: Components of ESG sentiment**



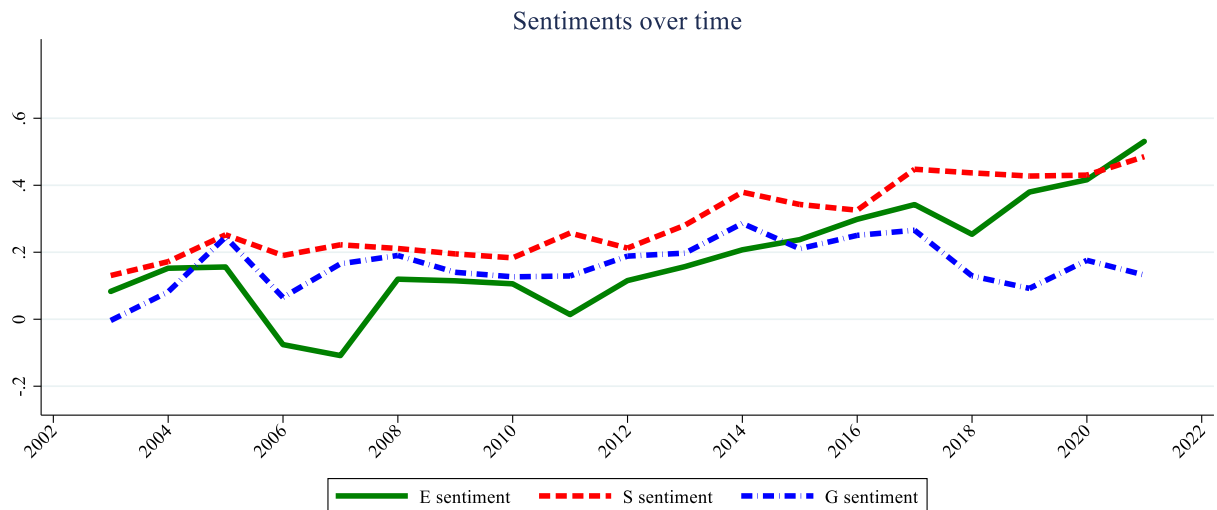
**Figure 2: ESG sentiments and financial sentiments over time – Oil and gas industry**

Panel A graphs the ESG sentiment and financial sentiment for the average sample firm over time in the oil and gas industry. Panel B shows the sentiment across the average sample firm in the oil and gas industry over time, separately for the E, S, and G categories. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

**Panel A: ESG sentiment vs. financial sentiment**



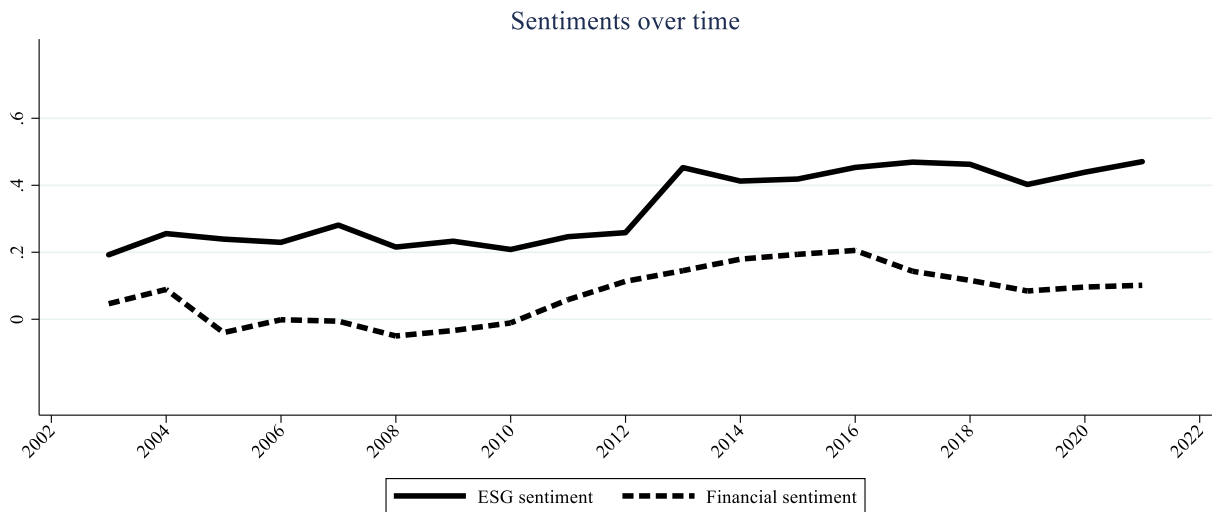
**Panel B: Components of ESG sentiment**



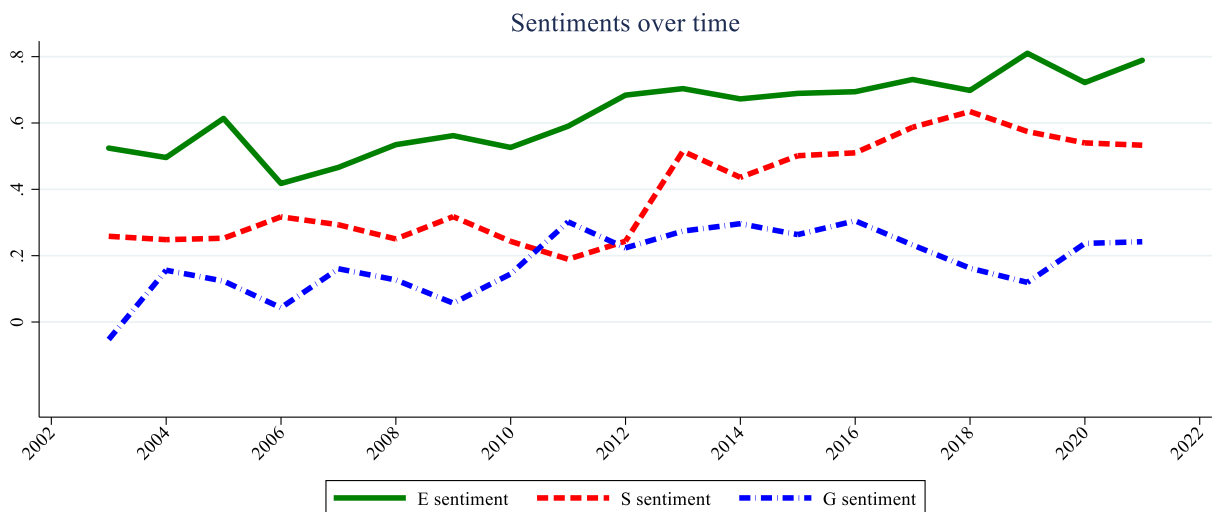
**Figure 3: ESG sentiments and financial sentiments over time – Banking**

Panel A graphs the ESG sentiment and financial sentiment for the average sample firm over time in the banking industry. Panel B shows the sentiment across the average banking firm over time, separately for the E, S, and G categories. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

**Panel A: ESG sentiment vs. financial sentiment**



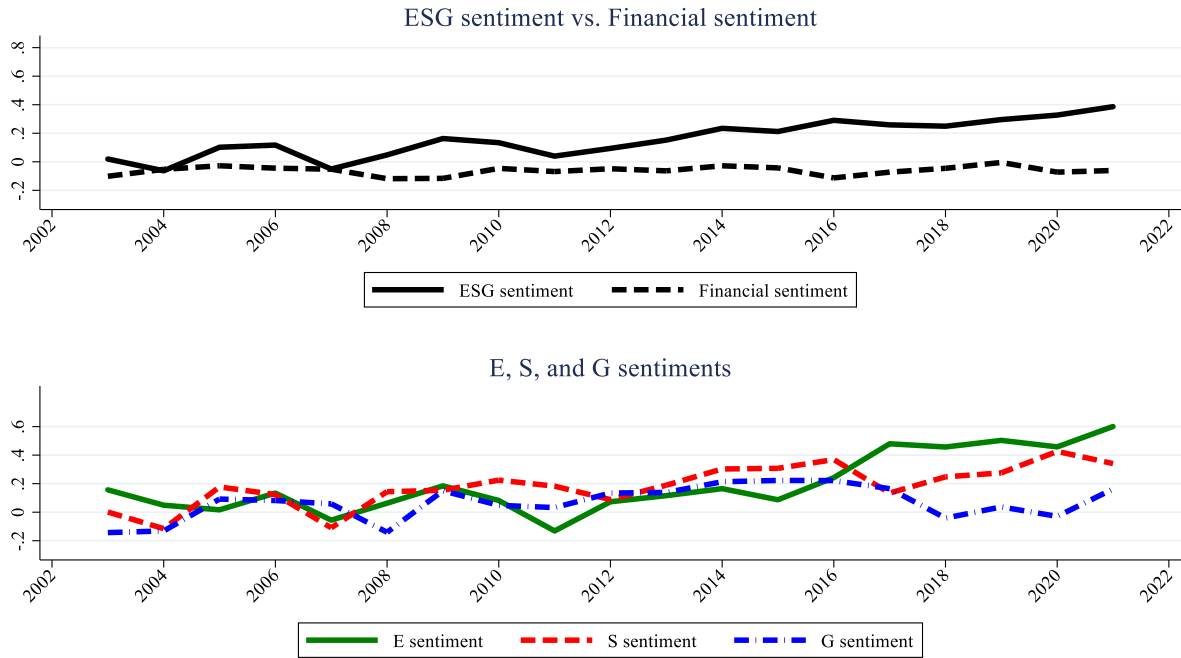
**Panel B: Components of ESG sentiment**



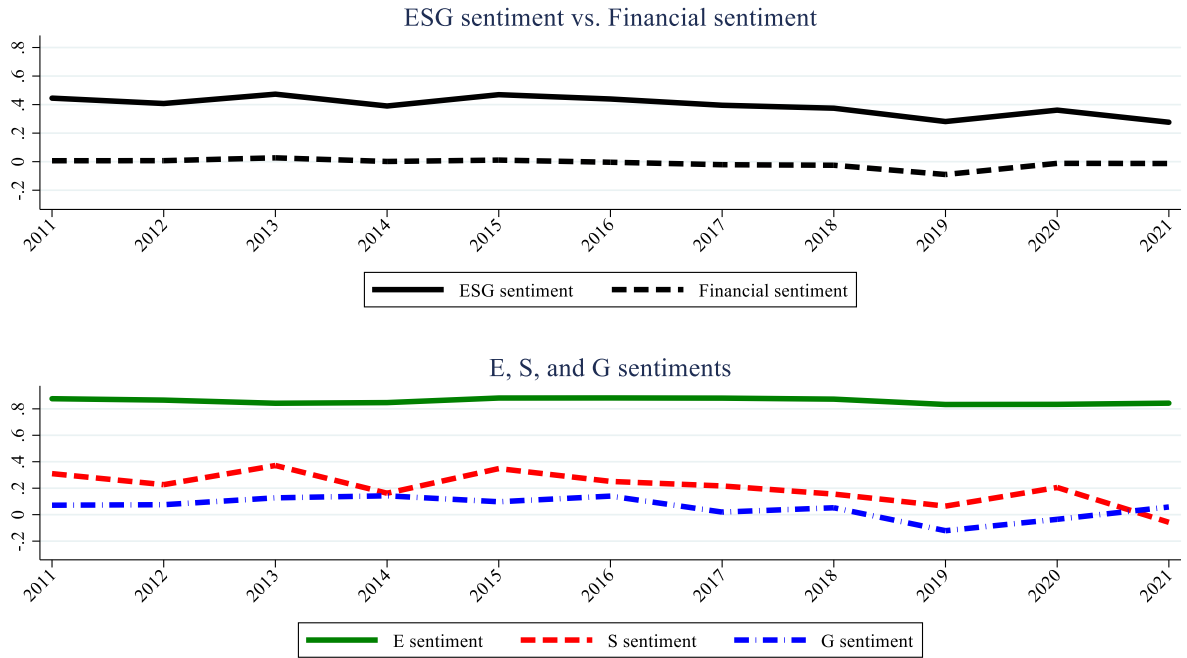
### Figure 4: Examples of ESG and financial sentiments over time for individual firms

This figure graphs sentiments over time, similar to Figure 1, but for three individual firms, Exxon in Panel A, Tesla in Panel B and Wells Fargo in Panel C.

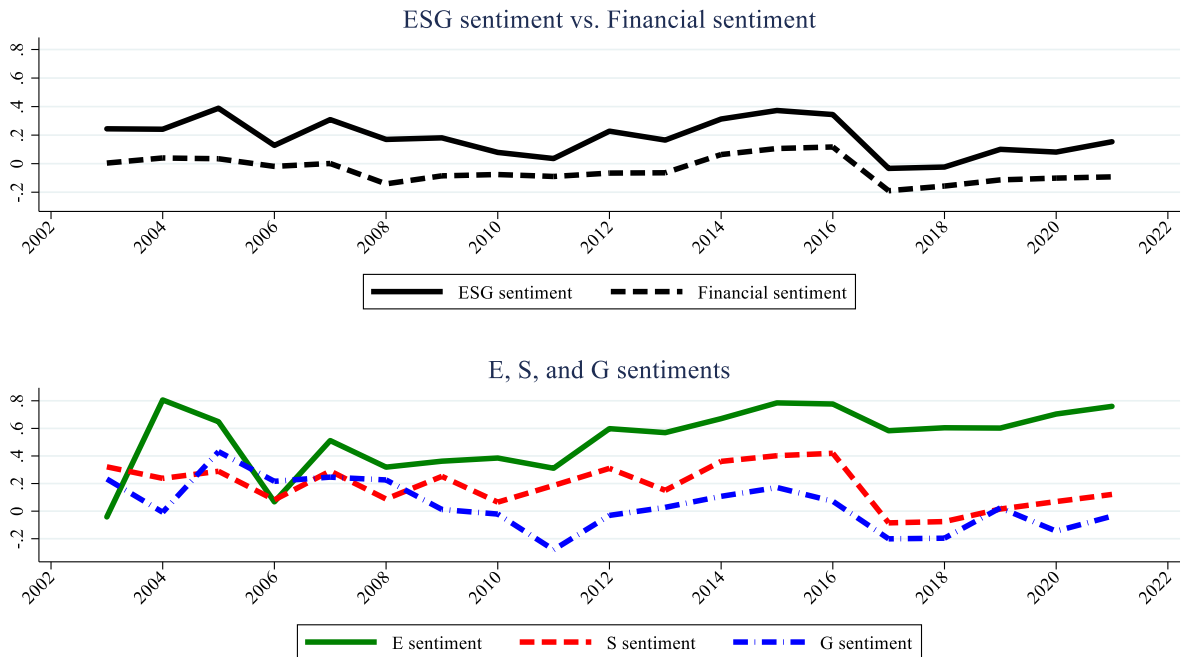
#### Panel A: Exxon



## Panel B: Tesla

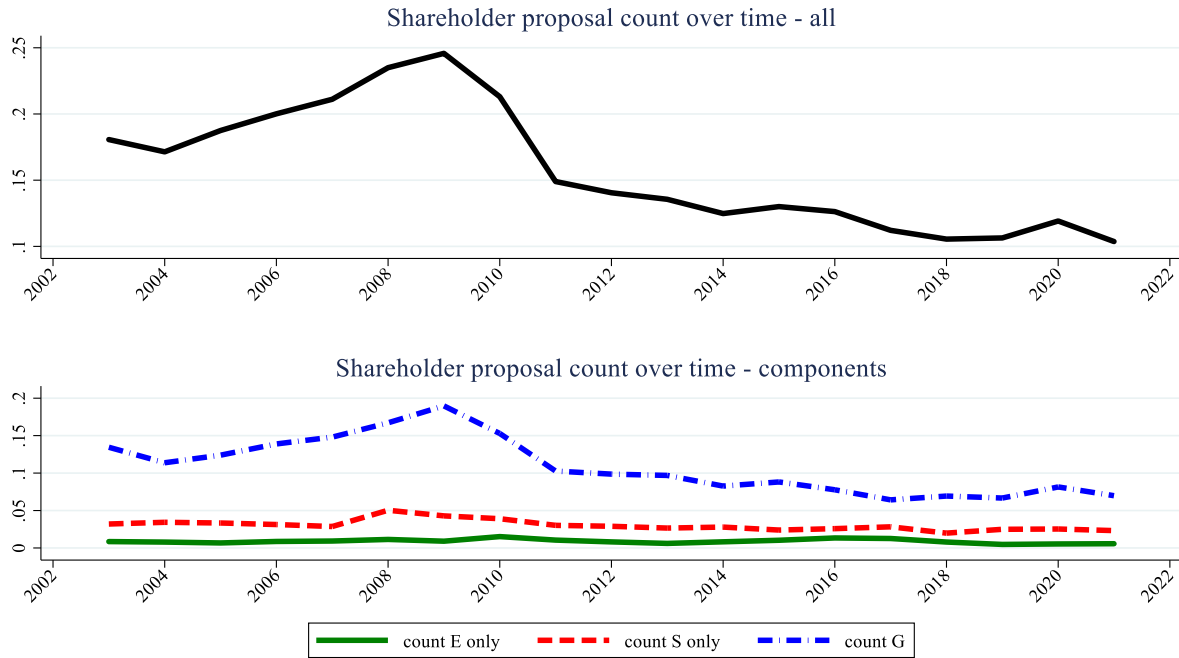


## Panel C: Wells Fargo



**Figure 5: Count of ESG-related shareholder proposals**

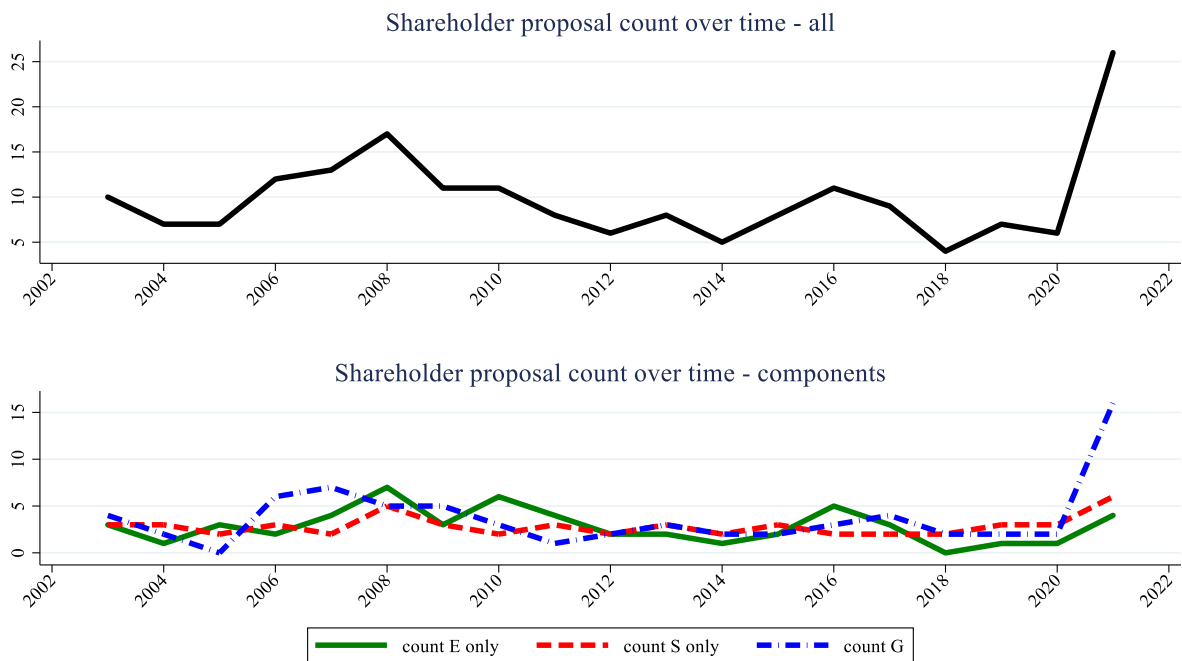
Panel A graphs the average number of shareholder proposals across the sample firms in each year. Panel B shows the average number of proposals, separately for the E, S, and G categories. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.



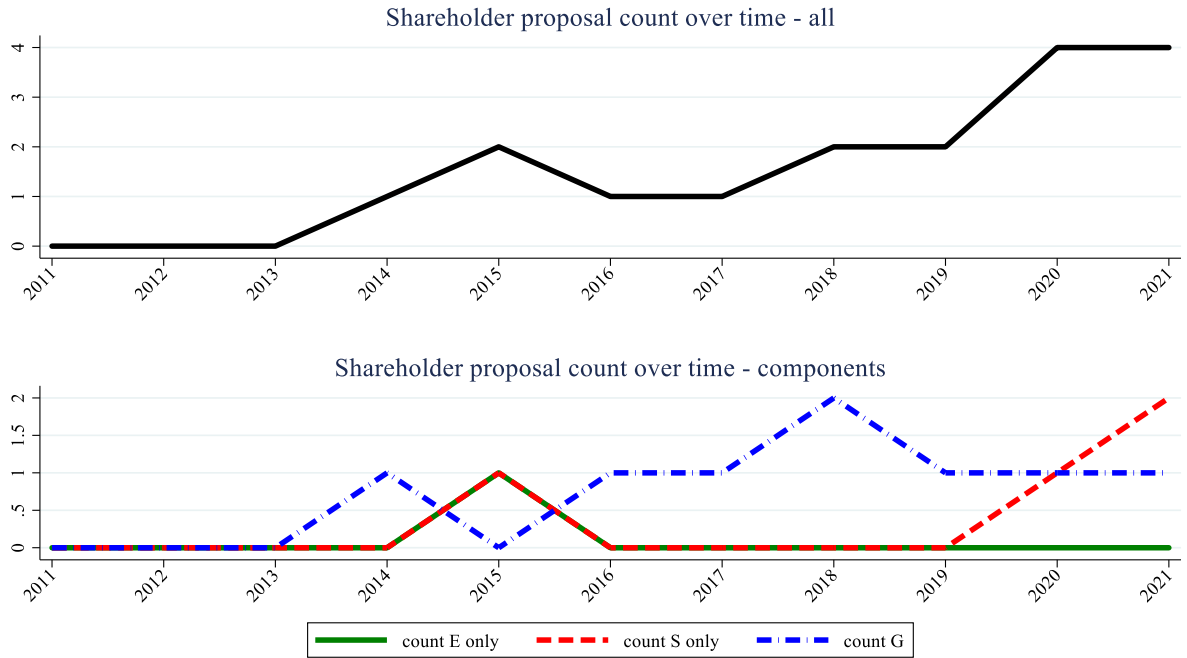
## Figure 6: Examples of the count of ESG-related shareholder proposals for individual firms

This figure graphs the number of shareholder proposals for three example firms over time with Exxon in Panel A, Tesla in Panel B, and Wells Fargo in Panel C.

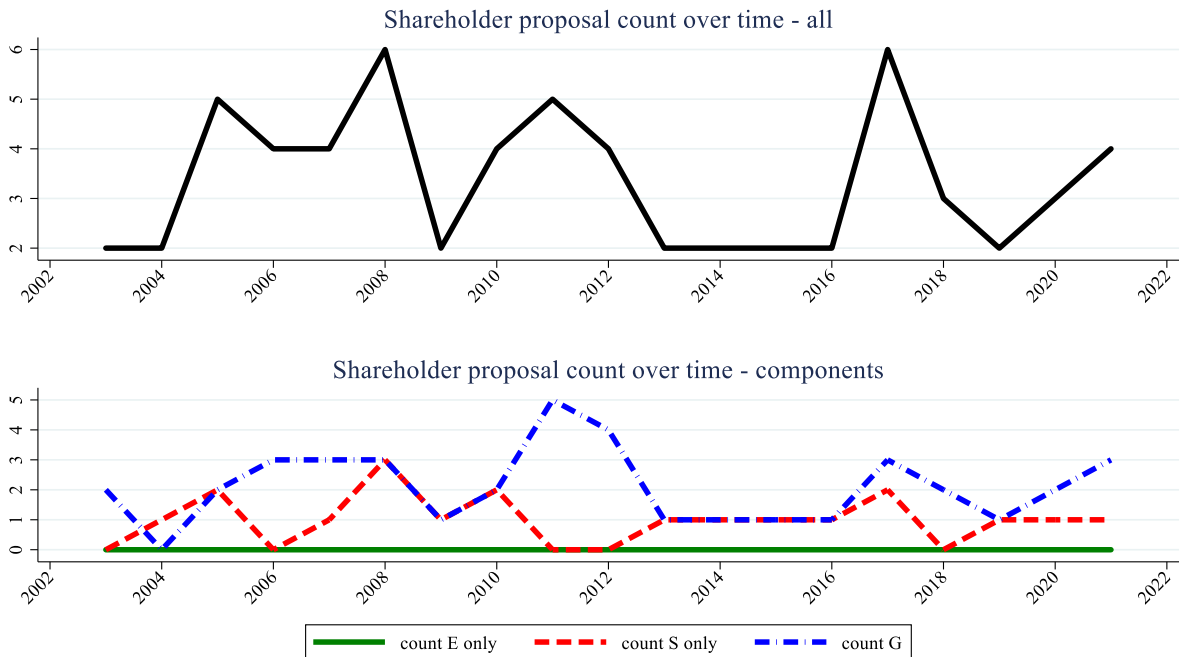
### Panel A: Exxon



### Panel B: Tesla



### Panel C: Wells Fargo



**Table 1: Descriptive statistics for sentiment measures and firm characteristics**

This table reports the summary statistics and correlation coefficients for the sentiment, proposal measures and firm characteristic measures. Panel A reports summary statistics for all of the measures. Panels B and C report the Pearson correlation coefficients between the sentiment measures and proposal measures and the sentiment measures and firm characteristics, respectively. All variables are defined in the Appendix. The unit of observation is firm-year. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

**Panel A: Summary statistics**

|                                    | N     | Mean  | Std.<br>Dev. | min   | p10   | Median | p90   | max  |
|------------------------------------|-------|-------|--------------|-------|-------|--------|-------|------|
| <b>Sentiment measures</b>          |       |       |              |       |       |        |       |      |
| Financial sentiment                | 37463 | .1    | 0.13         | -.49  | -.06  | .09    | .28   | .78  |
| ESG sentiment                      | 36896 | .38   | 0.27         | -1    | .03   | .39    | .71   | 1    |
| E sentiment                        | 35011 | .57   | 0.47         | -1    | -.05  | .72    | 1     | 1    |
| S sentiment                        | 36893 | .42   | 0.30         | -1    | 0     | .45    | .79   | 1    |
| G sentiment                        | 36633 | .19   | 0.38         | -1    | -.28  | .19    | .67   | 1    |
| <b>Proposal measures</b>           |       |       |              |       |       |        |       |      |
| Count shareholder proposals        | 60727 | .17   | 0.76         | 0     | 0     | 0      | 0     | 27   |
| Support shareholder proposals      | 5459  | 36.7  | 23.77        | 0     | 7.97  | 32.6   | 73.98 | 100  |
| Support management proposals       | 55036 | 92.58 | 7.93         | 1.02  | 82    | 95.45  | 99.15 | 100  |
| Support director election          | 53196 | 94.31 | 7.67         | 14.55 | 85.69 | 96.98  | 99.75 | 100  |
| Support other management proposals | 52096 | 90.14 | 11.94        | 0     | 68.95 | 95.46  | 99.54 | 100  |
| <b>Firm characteristics</b>        |       |       |              |       |       |        |       |      |
| Log(assets)                        | 56052 | 6.89  | 2.13         | .26   | 4.1   | 6.93   | 9.65  | 11.3 |
| Debt/assets                        | 49989 | .23   | 0.24         | 0     | 0     | .18    | .55   | 1.26 |
| Cash/assets                        | 56049 | .21   | 0.24         | 0     | .01   | .11    | .61   | .96  |
| ROA                                | 53585 | .02   | 0.35         | -2.19 | -.24  | .09    | .24   | .66  |
| CAPEX/assets                       | 55126 | .05   | 0.07         | 0     | 0     | .02    | .11   | .56  |
| Excess return                      | 54739 | 0     | 0.12         | -.32  | -.13  | 0      | .13   | .5   |
| Inst. ownership                    | 47833 | .61   | 0.30         | 0     | .12   | .69    | .96   | 1.02 |
| Inst. ownership HHI                | 47833 | .13   | 0.18         | .01   | .03   | .06    | .3    | 1    |
| Entrenchment index                 | 20588 | 3.27  | 0.90         | 0     | 2     | 3      | 4     | 6    |

**Panel B: Correlations between sentiment measures and voting measures**

| Variables                               | (1)   | (2)   | (3)   | (4)   | (5)   | (6)  | (7)  | (8)  | (9)  |
|-----------------------------------------|-------|-------|-------|-------|-------|------|------|------|------|
| (1) Financial sentiment                 | 1.00  |       |       |       |       |      |      |      |      |
| (2) ESG sentiment                       | 0.55  | 1.00  |       |       |       |      |      |      |      |
| (3) E sentiment                         | 0.22  | 0.56  | 1.00  |       |       |      |      |      |      |
| (4) S sentiment                         | 0.54  | 0.72  | 0.22  | 1.00  |       |      |      |      |      |
| (5) G sentiment                         | 0.41  | 0.71  | 0.15  | 0.30  | 1.00  |      |      |      |      |
| (6) Count shareholder proposals         | -0.13 | -0.06 | -0.02 | -0.08 | -0.03 | 1.00 |      |      |      |
| (7) Indicator shareholder proposals     | -0.11 | -0.03 | -0.01 | -0.06 | -0.01 | 0.74 | 1.00 |      |      |
| (8) Support management proposals        | 0.04  | 0.05  | 0.02  | 0.01  | 0.06  | 0.03 | 0.05 | 1.00 |      |
| (9) Support director election           | 0.06  | 0.05  | 0.02  | 0.02  | 0.06  | 0.01 | 0.02 | 0.75 | 1.00 |
| (10) Support other management proposals | 0.01  | 0.03  | 0.01  | 0.01  | 0.03  | 0.01 | 0.01 | 0.71 | 0.16 |

**Panel C: Correlations between sentiment measures and firm characteristics**

| Variables                | (1)   | (2)   | (3)   | (4)   | (5)   | (6)   | (7)   | (8)   | (9)   | (10)  | (11)  |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| (1) Financial sentiment  | 1.00  |       |       |       |       |       |       |       |       |       |       |
| (2) ESG sentiment        | 0.55  | 1.00  |       |       |       |       |       |       |       |       |       |
| (3) E sentiment          | 0.21  | 0.56  | 1.00  |       |       |       |       |       |       |       |       |
| (4) S sentiment          | 0.54  | 0.72  | 0.21  | 1.00  |       |       |       |       |       |       |       |
| (5) G sentiment          | 0.41  | 0.70  | 0.14  | 0.29  | 1.00  |       |       |       |       |       |       |
| (6) Log(assets)          | -0.04 | 0.06  | 0.05  | -0.02 | 0.07  | 1.00  |       |       |       |       |       |
| (7) Debt/assets          | -0.03 | -0.01 | -0.00 | -0.01 | -0.04 | 0.22  | 1.00  |       |       |       |       |
| (8) Cash/assets          | -0.03 | -0.07 | -0.04 | 0.02  | -0.07 | -0.49 | -0.30 | 1.00  |       |       |       |
| (9) ROA                  | 0.09  | 0.06  | 0.02  | 0.00  | 0.09  | 0.41  | 0.07  | -0.51 | 1.00  |       |       |
| (10) CAPEX/assets        | -0.03 | -0.06 | -0.10 | -0.07 | 0.01  | -0.00 | 0.05  | -0.14 | 0.11  | 1.00  |       |
| (11) Excess return       | -0.01 | -0.00 | 0.01  | -0.00 | -0.01 | -0.00 | 0.03  | -0.01 | -0.00 | 0.01  | 1.00  |
| (12) Inst. ownership     | 0.14  | 0.10  | 0.04  | 0.07  | 0.09  | 0.39  | 0.05  | -0.18 | 0.33  | 0.02  | 0.01  |
| (13) Inst. ownership HHI | -0.08 | -0.06 | -0.02 | -0.02 | -0.09 | -0.35 | 0.03  | 0.15  | -0.31 | -0.02 | -0.03 |

**Table 2: Descriptive statistics for the count of shareholder proposals**

This table shows the summary statistics for the count of shareholder proposals per firm-year. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

**Pabel A: Summary statistics**

|                                     | N     | Mean | Std. Dev. | min | Median | p90 | max |
|-------------------------------------|-------|------|-----------|-----|--------|-----|-----|
| Count shareholder proposals         | 60727 | .17  | 0.76      | 0   | 0      | 0   | 27  |
| Count G proposals                   | 60727 | .12  | 0.58      | 0   | 0      | 0   | 27  |
| Count E and S proposals             | 60727 | .06  | 0.35      | 0   | 0      | 0   | 12  |
| Count E and S proposals inseparable | 60727 | .01  | 0.12      | 0   | 0      | 0   | 5   |
| Count E proposals only              | 60727 | .01  | 0.13      | 0   | 0      | 0   | 7   |
| Count S proposals only              | 60727 | .03  | 0.23      | 0   | 0      | 0   | 6   |

**Panel B: Tabulation of the count on shareholder proposals**

| Count<br>shareholder<br>proposals | Freq. | Percent | Cum.   |
|-----------------------------------|-------|---------|--------|
| 0                                 | 55268 | 91.01   | 91.01  |
| 1                                 | 3313  | 5.46    | 96.47  |
| 2                                 | 1060  | 1.75    | 98.21  |
| 3                                 | 444   | 0.73    | 98.94  |
| 4                                 | 260   | 0.43    | 99.37  |
| 5                                 | 130   | 0.21    | 99.59  |
| 6                                 | 95    | 0.16    | 99.74  |
| 7                                 | 63    | 0.10    | 99.85  |
| 8                                 | 35    | 0.06    | 99.90  |
| 9                                 | 17    | 0.03    | 99.93  |
| 10                                | 13    | 0.02    | 99.95  |
| 11                                | 9     | 0.01    | 99.97  |
| 12                                | 6     | 0.01    | 99.98  |
| 13                                | 3     | 0.00    | 99.98  |
| 14                                | 3     | 0.00    | 99.99  |
| 15                                | 2     | 0.00    | 99.99  |
| 17                                | 2     | 0.00    | 99.99  |
| 20                                | 1     | 0.00    | 100.00 |
| 23                                | 1     | 0.00    | 100.00 |
| 26                                | 1     | 0.00    | 100.00 |
| 27                                | 1     | 0.00    | 100.00 |
| Total                             | 60727 | 100.00  |        |

**Table 3: Relationship between the number of shareholder proposals and sentiment**

This table reports regressions where the dependent variable is the number of shareholder proposals on a firm's proxy statement in a given year. The regression model is a Poisson model to account for count data. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

|                       | (1)                | (2)                | (3)                | (4)                | (5)                | (6)                |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| ESG sentiment         | -0.26***<br>(0.05) | -0.12**<br>(0.05)  |                    | -0.21***<br>(0.05) | -0.15***<br>(0.05) |                    |
| Financial sentiment   |                    | -0.23***<br>(0.04) |                    |                    | -0.13***<br>(0.04) |                    |
| E sentiment           |                    |                    | -0.07<br>(0.04)    |                    |                    | -0.05*<br>(0.03)   |
| S sentiment           |                    |                    | -0.11***<br>(0.04) |                    |                    | -0.10***<br>(0.03) |
| G sentiment           |                    |                    | -0.19***<br>(0.04) |                    |                    | -0.10**<br>(0.04)  |
| Log(assets)           | 1.78***<br>(0.05)  | 1.72***<br>(0.05)  | 1.75***<br>(0.06)  | 1.53***<br>(0.14)  | 1.52***<br>(0.14)  | 1.53***<br>(0.14)  |
| Debt/assets           | -0.10*<br>(0.05)   | -0.11**<br>(0.05)  | -0.11*<br>(0.05)   | -0.02<br>(0.06)    | -0.03<br>(0.06)    | -0.01<br>(0.06)    |
| Cash/assets           | 0.21***<br>(0.07)  | 0.19***<br>(0.07)  | 0.20***<br>(0.07)  | -0.10<br>(0.08)    | -0.10<br>(0.08)    | -0.10<br>(0.08)    |
| ROA                   | 0.12<br>(0.11)     | 0.17<br>(0.11)     | 0.14<br>(0.11)     | -0.19*<br>(0.10)   | -0.16<br>(0.10)    | -0.18*<br>(0.10)   |
| CAPEX/assets          | -0.02<br>(0.04)    | -0.02<br>(0.04)    | -0.02<br>(0.04)    | -0.02<br>(0.04)    | -0.03<br>(0.04)    | -0.02<br>(0.04)    |
| Excess return         | 0.03<br>(0.03)     | 0.03<br>(0.03)     | 0.03<br>(0.03)     | 0.03<br>(0.02)     | 0.03<br>(0.02)     | 0.03<br>(0.02)     |
| Inst. ownership       | -0.17***<br>(0.06) | -0.15**<br>(0.06)  | -0.17***<br>(0.06) | 0.13<br>(0.10)     | 0.12<br>(0.10)     | 0.12<br>(0.10)     |
| Inst. ownership HHI   | -0.22**<br>(0.11)  | -0.25**<br>(0.12)  | -0.23**<br>(0.11)  | 0.20<br>(0.14)     | 0.18<br>(0.14)     | 0.19<br>(0.13)     |
| Observations          | 25063              | 25061              | 23731              | 10072              | 10072              | 9650               |
| Pseudo R <sup>2</sup> | 0.40               | 0.40               | 0.40               | 0.37               | 0.37               | 0.37               |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year          | Firm+year          |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table 4: Relationship between the number of E and S shareholder proposals and sentiment**

This table reports regressions where the dependent variable is the number of environmental or social (E or S) shareholder proposals on a firm's proxy statement in a year. The regression model is a Poisson model to account for count data. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

|                       | (1)                | (2)                | (3)                | (4)                | (5)               | (6)               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|
| ESG sentiment         | -0.28***<br>(0.07) | -0.15**<br>(0.07)  |                    | -0.18***<br>(0.07) | -0.14**<br>(0.07) |                   |
| Financial sentiment   |                    | -0.20***<br>(0.06) |                    |                    | -0.07<br>(0.06)   |                   |
| E sentiment           |                    |                    | -0.10*<br>(0.05)   |                    |                   | -0.09*<br>(0.05)  |
| S sentiment           |                    |                    | -0.18***<br>(0.05) |                    |                   | -0.10*<br>(0.05)  |
| G sentiment           |                    |                    | -0.05<br>(0.06)    |                    |                   | 0.00<br>(0.07)    |
| Log(assets)           | 2.30***<br>(0.08)  | 2.25***<br>(0.09)  | 2.29***<br>(0.09)  | 2.19***<br>(0.22)  | 2.18***<br>(0.22) | 2.19***<br>(0.23) |
| Debt/assets           | -0.08<br>(0.08)    | -0.08<br>(0.08)    | -0.07<br>(0.08)    | -0.03<br>(0.08)    | -0.03<br>(0.08)   | -0.02<br>(0.08)   |
| Cash/assets           | 0.42***<br>(0.09)  | 0.39***<br>(0.10)  | 0.40***<br>(0.09)  | -0.08<br>(0.13)    | -0.07<br>(0.13)   | -0.09<br>(0.13)   |
| ROA                   | 0.78***<br>(0.18)  | 0.83***<br>(0.18)  | 0.77***<br>(0.18)  | -0.14<br>(0.17)    | -0.11<br>(0.18)   | -0.15<br>(0.17)   |
| CAPEX/assets          | 0.01<br>(0.06)     | 0.01<br>(0.06)     | 0.01<br>(0.06)     | 0.03<br>(0.07)     | 0.03<br>(0.07)    | 0.04<br>(0.07)    |
| Excess return         | 0.09***<br>(0.03)  | 0.09***<br>(0.03)  | 0.10***<br>(0.03)  | 0.08***<br>(0.03)  | 0.08***<br>(0.03) | 0.08***<br>(0.03) |
| Inst. ownership       | -0.20**<br>(0.09)  | -0.18**<br>(0.09)  | -0.19**<br>(0.09)  | 0.11<br>(0.13)     | 0.11<br>(0.13)    | 0.08<br>(0.13)    |
| Inst. ownership HHI   | -0.64***<br>(0.19) | -0.68***<br>(0.20) | -0.63***<br>(0.19) | -0.14<br>(0.19)    | -0.16<br>(0.19)   | -0.17<br>(0.19)   |
| Observations          | 21899              | 21897              | 20678              | 5385               | 5385              | 5257              |
| Pseudo R <sup>2</sup> | 0.48               | 0.48               | 0.47               | 0.32               | 0.32              | 0.32              |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year         | Firm+year         |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table 5: Relationship between number of G shareholder proposals and sentiment**

This table reports regressions where the dependent variable is the number of governance (G, or non-E&S) shareholder proposals on a firm's proxy statement in a year. The regression model is a Poisson model to account for count data. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

|                       | (1)                | (2)                | (3)                | (4)                | (5)                | (6)                |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| ESG sentiment         | -0.25***<br>(0.06) | -0.10<br>(0.07)    |                    | -0.22***<br>(0.05) | -0.14**<br>(0.06)  |                    |
| Financial sentiment   |                    | -0.24***<br>(0.05) |                    |                    | -0.16***<br>(0.05) |                    |
| E sentiment           |                    |                    | -0.06<br>(0.05)    |                    |                    | -0.03<br>(0.04)    |
| S sentiment           |                    |                    | -0.07<br>(0.05)    |                    |                    | -0.10**<br>(0.04)  |
| G sentiment           |                    |                    | -0.22***<br>(0.05) |                    |                    | -0.14***<br>(0.05) |
| Log(assets)           | 1.57***<br>(0.06)  | 1.51***<br>(0.06)  | 1.55***<br>(0.06)  | 1.23***<br>(0.17)  | 1.21***<br>(0.17)  | 1.23***<br>(0.17)  |
| Debt/assets           | -0.10*<br>(0.06)   | -0.11*<br>(0.06)   | -0.11*<br>(0.06)   | -0.02<br>(0.08)    | -0.02<br>(0.08)    | -0.01<br>(0.08)    |
| Cash/assets           | 0.07<br>(0.08)     | 0.05<br>(0.07)     | 0.06<br>(0.08)     | -0.13<br>(0.09)    | -0.12<br>(0.09)    | -0.13<br>(0.09)    |
| ROA                   | -0.08<br>(0.09)    | -0.04<br>(0.10)    | -0.06<br>(0.10)    | -0.23**<br>(0.11)  | -0.19*<br>(0.11)   | -0.21*<br>(0.12)   |
| CAPEX/assets          | -0.03<br>(0.05)    | -0.03<br>(0.05)    | -0.03<br>(0.05)    | -0.05<br>(0.05)    | -0.05<br>(0.05)    | -0.05<br>(0.05)    |
| Excess return         | 0.00<br>(0.03)     | 0.01<br>(0.03)     | 0.01<br>(0.03)     | 0.00<br>(0.03)     | 0.00<br>(0.03)     | -0.00<br>(0.03)    |
| Inst. ownership       | -0.11<br>(0.07)    | -0.10<br>(0.07)    | -0.11*<br>(0.07)   | 0.14<br>(0.13)     | 0.14<br>(0.13)     | 0.14<br>(0.13)     |
| Inst. ownership HHI   | -0.10<br>(0.12)    | -0.13<br>(0.12)    | -0.11<br>(0.12)    | 0.31*<br>(0.17)    | 0.29*<br>(0.17)    | 0.30*<br>(0.16)    |
| Observations          | 24630              | 24628              | 23321              | 8905               | 8905               | 8541               |
| Pseudo R <sup>2</sup> | 0.31               | 0.32               | 0.31               | 0.28               | 0.28               | 0.28               |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year          | Firm+year          |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table 6: Relationship between the number of shareholder proposals and traditional media versus social media ESG measures**

This table reports regressions where the dependent variable is the number of shareholder proposals on a firm's proxy statement in a year. The regression model is a Poisson model to account for count data. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year. In Panel A, sentiment measures are based on news (traditional media) sources only. In Panel B, sentiment measures are based on social media sources only. Control variables are included in all the regressions, same as the previous regressions, but not shown for simplicity.

**Panel A: Traditional (news) media only**

|                       | (1)                | (2)                | (3)                | (4)                | (5)                | (6)                |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| ESG sentiment         | -0.24***<br>(0.05) | -0.12**<br>(0.05)  |                    | -0.18***<br>(0.04) | -0.11***<br>(0.04) |                    |
| Financial sentiment   |                    | -0.22***<br>(0.05) |                    |                    | -0.14***<br>(0.04) |                    |
| E sentiment           |                    |                    | -0.09**<br>(0.04)  |                    |                    | -0.07**<br>(0.03)  |
| S sentiment           |                    |                    | -0.09**<br>(0.04)  |                    |                    | -0.08**<br>(0.04)  |
| G sentiment           |                    |                    | -0.19***<br>(0.03) |                    |                    | -0.13***<br>(0.03) |
| Observations          | 24804              | 24801              | 20778              | 9970               | 9970               | 8732               |
| Pseudo R <sup>2</sup> | 0.40               | 0.40               | 0.39               | 0.37               | 0.37               | 0.36               |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year          | Firm+year          |
| Controls              | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Panel B: Social media only**

|                       | (1)                | (2)                | (3)                | (4)                | (5)               | (6)               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|
| ESG sentiment         | -0.17***<br>(0.04) | -0.06<br>(0.04)    |                    | -0.14***<br>(0.04) | -0.10**<br>(0.04) |                   |
| Financial sentiment   |                    | -0.25***<br>(0.05) |                    |                    | -0.11**<br>(0.05) |                   |
| E sentiment           |                    |                    | -0.00<br>(0.04)    |                    |                   | -0.02<br>(0.03)   |
| S sentiment           |                    |                    | -0.16***<br>(0.04) |                    |                   | -0.10**<br>(0.04) |
| G sentiment           |                    |                    | -0.08**<br>(0.04)  |                    |                   | -0.06<br>(0.04)   |
| Observations          | 24872              | 24872              | 19672              | 10044              | 10044             | 8352              |
| Pseudo R <sup>2</sup> | 0.40               | 0.40               | 0.41               | 0.37               | 0.37              | 0.37              |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year         | Firm+year         |
| Controls              | Yes                | Yes                | Yes                | Yes                | Yes               | Yes               |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table 7: Consequence of shareholder proposals**

This table reports ordinary least square regressions of different outcomes for a firm's board of directors and CEO in each year on the number of shareholder proposals on the ballot for that firm-year. The outcome variable is either board turnover, support for directors, or an indicator for forced CEO turnover. Board turnover is defined as the percentage of a firm's directors that left the firm's board in a year, scaled by the sample mean of board turnover for easy interpretation. The support for directors is the percentage vote support rate for all the directors up for election in a firm in a year, scaled by the sample standard deviation. CEO turnover is an indicator of whether a firm's CEO is forced out of office in a year, scaled by the sample mean rate of forced CEO turnover to facilitate interpretation. All independent variables, except for the count of shareholder proposals, are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. All regressions include either industry times year fixed effects or firm and year fixed effects.

|                             | (1)                   | (2)                  | (3)                          | (4)                  | (5)                        | (6)                  |
|-----------------------------|-----------------------|----------------------|------------------------------|----------------------|----------------------------|----------------------|
|                             | <b>Board turnover</b> |                      | <b>Support for directors</b> |                      | <b>Forced CEO turnover</b> |                      |
| Count shareholder proposals | 0.106***<br>(0.016)   | 0.115***<br>(0.018)  | -0.070***<br>(0.014)         | -0.092***<br>(0.016) | 0.186**<br>(0.075)         | 0.189*<br>(0.109)    |
| Log(assets)                 | 0.067***<br>(0.014)   | -0.012<br>(0.044)    | 0.179***<br>(0.012)          | -0.084**<br>(0.034)  | -0.101<br>(0.083)          | 0.607**<br>(0.303)   |
| Debt/assets                 | 0.028***<br>(0.011)   | 0.031*<br>(0.018)    | -0.017*<br>(0.010)           | -0.016<br>(0.012)    | 0.204***<br>(0.065)        | 0.164<br>(0.113)     |
| Cash/assets                 | -0.005<br>(0.012)     | -0.038<br>(0.024)    | 0.038***<br>(0.011)          | 0.060***<br>(0.015)  | -0.154*<br>(0.083)         | -0.497***<br>(0.150) |
| ROA                         | -0.098***<br>(0.013)  | -0.065***<br>(0.022) | 0.010<br>(0.011)             | 0.008<br>(0.014)     | -0.452***<br>(0.139)       | -0.455***<br>(0.159) |
| CAPEX/assets                | -0.037***<br>(0.010)  | -0.057***<br>(0.014) | 0.028***<br>(0.008)          | 0.055***<br>(0.009)  | -0.017<br>(0.059)          | -0.041<br>(0.076)    |
| Excess return               | -0.015**<br>(0.008)   | -0.004<br>(0.007)    | 0.023***<br>(0.005)          | 0.022***<br>(0.005)  | -0.217***<br>(0.051)       | -0.249***<br>(0.053) |
| Inst. ownership             | -0.004<br>(0.013)     | -0.097***<br>(0.024) | 0.005<br>(0.011)             | 0.054***<br>(0.016)  | 0.025<br>(0.096)           | -0.176<br>(0.160)    |
| Inst. ownership HHI         | 0.108***<br>(0.019)   | 0.048*<br>(0.026)    | 0.057***<br>(0.013)          | 0.044***<br>(0.014)  | 0.267<br>(0.179)           | 0.402*<br>(0.236)    |
| Constant                    | 1.028***<br>(0.010)   | 1.033***<br>(0.008)  | 0.015*<br>(0.009)            | -0.010**<br>(0.005)  | 1.262***<br>(0.108)        | 1.107***<br>(0.158)  |
| Observations                | 36598                 | 36133                | 40780                        | 40250                | 22641                      | 22570                |
| R-squared                   | 0.053                 | 0.232                | 0.099                        | 0.406                | 0.036                      | 0.126                |
| Fixed Effects               | Ind*year              | Firm+year            | Ind*year                     | Firm+year            | Ind*year                   | Firm+year            |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table 8: Relationship between sentiment measures and support for director elections**

This table reports regressions of voting support for director elections on a firm's proxy statement on sentiment measures and firm characteristics for director elections. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm and year, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year. \*\*\*, \*\*, \* denotes significance at the 1%, 5%, and 10% levels, respectively.

|                     | (1)               | (2)               | (3)               | (4)               | (5)               | (6)               |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| ESG sentiment       | 0.07***<br>(0.01) | 0.03**<br>(0.01)  |                   | 0.04***<br>(0.01) | 0.01<br>(0.01)    |                   |
| Financial sentiment |                   | 0.08***<br>(0.01) |                   |                   | 0.09***<br>(0.01) |                   |
| E sentiment         |                   |                   | 0.02*<br>(0.01)   |                   |                   | 0.01<br>(0.01)    |
| S sentiment         |                   |                   | 0.04***<br>(0.01) |                   |                   | 0.02**<br>(0.01)  |
| G sentiment         |                   |                   | 0.05***<br>(0.01) |                   |                   | 0.04***<br>(0.01) |
| Log(assets)         | 0.15***<br>(0.01) | 0.16***<br>(0.01) | 0.15***<br>(0.01) | -0.08**<br>(0.04) | -0.07*<br>(0.04)  | -0.09**<br>(0.04) |
| Debt/assets         | 0.00<br>(0.01)    | 0.00<br>(0.01)    | 0.00<br>(0.01)    | -0.01<br>(0.02)   | -0.01<br>(0.01)   | -0.01<br>(0.02)   |
| Cash/assets         | 0.02<br>(0.02)    | 0.02<br>(0.02)    | 0.02<br>(0.02)    | 0.08***<br>(0.02) | 0.08***<br>(0.02) | 0.07***<br>(0.02) |
| ROA                 | 0.04**<br>(0.01)  | 0.03**<br>(0.01)  | 0.04***<br>(0.02) | -0.01<br>(0.02)   | -0.02<br>(0.02)   | -0.01<br>(0.02)   |
| CAPEX/assets        | 0.03***<br>(0.01) | 0.03**<br>(0.01)  | 0.03***<br>(0.01) | 0.06***<br>(0.01) | 0.06***<br>(0.01) | 0.07***<br>(0.01) |
| excess return       | 0.02**<br>(0.01)  | 0.01**<br>(0.01)  | 0.01**<br>(0.01)  | 0.01**<br>(0.01)  | 0.01**<br>(0.01)  | 0.01*<br>(0.01)   |
| Inst. ownership     | 0.03**<br>(0.01)  | 0.02<br>(0.01)    | 0.03**<br>(0.02)  | 0.07***<br>(0.02) | 0.06***<br>(0.02) | 0.07***<br>(0.02) |
| Inst. ownership HHI | 0.04**<br>(0.02)  | 0.04**<br>(0.02)  | 0.04**<br>(0.02)  | 0.02<br>(0.02)    | 0.03<br>(0.02)    | 0.03<br>(0.02)    |
| Observations        | 25359             | 25357             | 24044             | 25101             | 25097             | 23754             |
| R-squared           | 0.11              | 0.11              | 0.11              | 0.41              | 0.42              | 0.42              |
| Fixed Effects       | Ind*year          | Ind*year          | Ind*year          | Firm+year         | Firm+year         | Firm+year         |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table 9: Identification with scandal movies as shocks**

This table reports two-stage least square regressions of the number of shareholder proposals in each firm-year on ESG sentiment and firm-characteristics on a matched sample. The sentiment measures and firm characteristics are all measured using data within a one-year window leading up to a firm's shareholder meeting. The ESG sentiment measure is instrumented by an indicator of *Treat\*Post* equaling one if a firm has a scandal movie widely released within a two-year window before the firm's shareholder meeting, and zero otherwise. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. All regressions include firm and year fixed effects. The sample is restricted to a matched sample in which each treated firm, i.e., firm with a scandal movie, is matched with up to five control firms based on a nearest neighbor matching procedure with exact matching on industry and year and the following covariates: total news and social media buzz, ESG sentiment, financial sentiment, and firm size (log assets), all measured by one year lag relative to the event date (movie wide release date). Panel A reports the first stage regressions, while Panel B reports the second stage regressions.

**Panel A: First stage**

|                                   | (1)              | (2)              | (3)              | (4)              | (5)              |
|-----------------------------------|------------------|------------------|------------------|------------------|------------------|
| Dependent variable: ESG sentiment |                  |                  |                  |                  |                  |
| Treat*Post                        | -.25***<br>(.07) | -.22***<br>(.08) | -.22***<br>(.08) | -.18***<br>(.04) | -.17***<br>(.05) |
| Log(assets)                       |                  | -.14**<br>(.07)  | -.14*<br>(.07)   |                  | -.12**<br>(.05)  |
| Debt/assets                       |                  | -.04*<br>(.02)   | -.04*<br>(.02)   |                  | 0<br>(.02)       |
| Cash/assets                       |                  | -.05<br>(.03)    | -.05<br>(.03)    |                  | -.06**<br>(.03)  |
| ROA                               |                  | .04<br>(.05)     | .04<br>(.05)     |                  | -.07*<br>(.04)   |
| CAPEX/assets                      |                  | .01<br>(.02)     | .01<br>(.02)     |                  | .03<br>(.02)     |
| Inst. ownership                   |                  | .05<br>(.04)     | .05<br>(.04)     |                  | .02<br>(.04)     |
| Inst. ownership HHI               |                  | -.02<br>(.05)    | -.02<br>(.05)    |                  | -.01<br>(.05)    |
| Excess return                     |                  |                  | .03**<br>(.01)   | .01<br>(.01)     | .03**<br>(.01)   |
| Financial Sentiment               |                  |                  |                  | .39***<br>(.03)  | .38***<br>(.03)  |
| Constant                          | -.18***<br>(0)   | -.07<br>(.08)    | -.07<br>(.08)    | -.07***<br>(.01) | .06<br>(.06)     |
| Observations                      | 2446             | 1875             | 1872             | 2341             | 1872             |
| R-squared                         | .51              | .52              | .52              | .61              | .62              |
| Year F.E.                         | yes              | yes              | yes              | yes              | yes              |
| Firm F.E.                         | yes              | yes              | yes              | yes              | yes              |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Panel B: Second stage**

|                                 | (1)              | (2)             | (3)             | (4)              | (5)              |
|---------------------------------|------------------|-----------------|-----------------|------------------|------------------|
| Number of shareholder proposals |                  |                 |                 |                  |                  |
| Instrumented ESG Sentiment      | -2.46**<br>(.96) | -1.91*<br>(.97) | -1.94*<br>(.99) | -3.2**<br>(1.37) | -2.38*<br>(1.25) |
| Log(assets)                     |                  | .6**<br>(.24)   | .63***<br>(.24) |                  | .6**<br>(.27)    |
| Debt/assets                     |                  | -.06<br>(.07)   | -.07<br>(.07)   |                  | 0<br>(.07)       |
| Cash/assets                     |                  | -.09<br>(.11)   | -.1<br>(.11)    |                  | -.14<br>(.13)    |
| ROA                             |                  | .06<br>(.13)    | .06<br>(.13)    |                  | -.12<br>(.16)    |
| CAPEX/assets                    |                  | .04<br>(.09)    | .04<br>(.08)    |                  | .07<br>(.09)     |
| Inst. ownership                 |                  | -.01<br>(.12)   | 0<br>(.11)      |                  | -.02<br>(.11)    |
| Inst. ownership HHI             |                  | -.06<br>(.11)   | -.04<br>(.11)   |                  | -.03<br>(.12)    |
| Excess return                   |                  |                 | .14**<br>(.05)  | .09*<br>(.05)    | .15**<br>(.06)   |
| Financial Sentiment             |                  |                 |                 | 1.06*<br>(.55)   | .7<br>(.48)      |
| Observations                    | 2446             | 1875            | 1872            | 2341             | 1872             |
| R-squared                       | -.73             | -.36            | -.37            | -1.13            | -.5              |
| Year F.E.                       | yes              | yes             | yes             | yes              | yes              |
| Firm F.E.                       | yes              | yes             | yes             | yes              | yes              |
| 1st-stage F-Stat                | 19.505           | 10.658          | 10.875          | 11.649           | 7.979            |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

## Internet Appendix

**Table IA1: Detailed descriptive statistics for the number of shareholder proposals**

**Panel A: Count by industry**

| Industry code | Industry name                            | N    | Count shareholder proposals | count G | count E&S | count E only | count S only |
|---------------|------------------------------------------|------|-----------------------------|---------|-----------|--------------|--------------|
| 5             | Tobacco Products                         | 86   | 1.40                        | 0.27    | 1.13      | 0            | 1.06         |
| 24            | Aircraft                                 | 306  | 0.67                        | 0.49    | 0.18      | 0.01         | 0.17         |
| 4             | Beer & Liquor                            | 163  | 0.53                        | 0.27    | 0.26      | 0.05         | 0.13         |
| 31            | Utilities                                | 1538 | 0.45                        | 0.28    | 0.18      | 0.09         | 0.08         |
| 26            | Defense                                  | 144  | 0.44                        | 0.23    | 0.21      | 0            | 0.20         |
| 29            | Coal                                     | 157  | 0.39                        | 0.23    | 0.16      | 0.11         | 0.05         |
| 43            | Restaurants, Hotels, Motels              | 944  | 0.34                        | 0.19    | 0.15      | 0.02         | 0.07         |
| 42            | Retail                                   | 2703 | 0.34                        | 0.23    | 0.11      | 0.02         | 0.07         |
| 23            | Automobiles and Trucks                   | 898  | 0.32                        | 0.24    | 0.07      | 0.02         | 0.04         |
| 32            | Communication                            | 1434 | 0.31                        | 0.23    | 0.08      | 0.00         | 0.07         |
| 30            | Petroleum and Natural Gas                | 2486 | 0.31                        | 0.14    | 0.17      | 0.08         | 0.07         |
| 2             | Food Products                            | 852  | 0.29                        | 0.12    | 0.17      | 0.06         | 0.06         |
| 40            | Transportation                           | 1680 | 0.24                        | 0.17    | 0.07      | 0.01         | 0.05         |
| 3             | Candy & Soda                             | 164  | 0.22                        | 0.15    | 0.07      | 0.01         | 0.03         |
| 9             | Consumer Goods                           | 721  | 0.21                        | 0.14    | 0.07      | 0.01         | 0.04         |
| 48            | Almost Nothing                           | 1409 | 0.18                        | 0.12    | 0.06      | 0.02         | 0.04         |
| 18            | Construction                             | 790  | 0.18                        | 0.13    | 0.05      | 0.03         | 0.01         |
| 38            | Business Supplies                        | 585  | 0.17                        | 0.13    | 0.05      | 0.01         | 0.03         |
| 8             | Printing and Publishing                  | 345  | 0.16                        | 0.15    | 0.01      | 0.00         | 0.01         |
| 39            | Shipping Containers                      | 158  | 0.16                        | 0.16    | 0         | 0            | 0            |
| 6             | Recreation                               | 297  | 0.15                        | 0.12    | 0.03      | 0            | 0.01         |
| 35            | Computers                                | 1723 | 0.14                        | 0.11    | 0.03      | 0            | 0.02         |
| 14            | Chemicals                                | 1176 | 0.14                        | 0.11    | 0.03      | 0.01         | 0.01         |
| 45            | Insurance                                | 2303 | 0.13                        | 0.08    | 0.05      | 0.00         | 0.05         |
| 25            | Shipbuilding, Railroad Equipment         | 151  | 0.13                        | 0.09    | 0.04      | 0            | 0.03         |
| 33            | Personal Services                        | 700  | 0.13                        | 0.11    | 0.02      | 0.00         | 0.02         |
| 21            | Machinery                                | 1787 | 0.13                        | 0.10    | 0.04      | 0.00         | 0.02         |
| 46            | Real Estate                              | 466  | 0.13                        | 0.11    | 0.02      | 0            | 0.01         |
| 28            | Non-Metallic and Industrial Metal Mining | 330  | 0.13                        | 0.12    | 0.02      | 0.00         | 0.00         |
| 11            | Healthcare                               | 924  | 0.12                        | 0.10    | 0.02      | 0            | 0.01         |
| 10            | Apparel                                  | 640  | 0.12                        | 0.08    | 0.05      | 0.01         | 0.04         |
| 7             | Entertainment                            | 756  | 0.12                        | 0.10    | 0.02      | 0.00         | 0.01         |
| 34            | Business Services                        | 6665 | 0.11                        | 0.08    | 0.03      | 0.00         | 0.02         |
| 36            | Electronic Equipment                     | 3358 | 0.10                        | 0.08    | 0.02      | 0.00         | 0.02         |
| 17            | Construction Materials                   | 964  | 0.10                        | 0.08    | 0.02      | 0.01         | 0.01         |
| 13            | Pharmaceutical Products                  | 6282 | 0.10                        | 0.07    | 0.03      | 0.00         | 0.02         |
| 44            | Banking                                  | 7709 | 0.10                        | 0.07    | 0.03      | 0.00         | 0.02         |
| 47            | Trading                                  | 4964 | 0.09                        | 0.08    | 0.02      | 0.00         | 0.01         |

|    |                                    |      |      |      |      |      |      |
|----|------------------------------------|------|------|------|------|------|------|
| 41 | Wholesale                          | 1645 | 0.09 | 0.08 | 0.01 | 0.00 | 0.01 |
| 37 | Measuring and<br>Control Equipment | 1070 | 0.08 | 0.06 | 0.02 | 0.00 | 0.01 |
| 19 | Steel Works Etc                    | 683  | 0.08 | 0.05 | 0.04 | 0.00 | 0.03 |
| 27 | Precious Metals                    | 183  | 0.08 | 0.05 | 0.02 | 0.01 | 0.01 |
| 12 | Medical Equipment                  | 2038 | 0.07 | 0.06 | 0.01 | 0.00 | 0.00 |
| 22 | Electrical Equipment               | 870  | 0.06 | 0.03 | 0.03 | 0.00 | 0.01 |
| 15 | Rubber and Plastic<br>Products     | 286  | 0.06 | 0.06 | 0    | 0    | 0    |
| 1  | Agriculture                        | 132  | 0.04 | 0.02 | 0.02 | 0    | 0.02 |
| 16 | Textiles                           | 128  | 0.02 | 0.02 | 0.01 | 0    | 0.01 |
| 20 | Fabricated Products                | 109  | 0    | 0    | 0    | 0    | 0    |

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**Panel B: Top firm-years by count of shareholder proposals**

| Name                               | year | count | Sh |
|------------------------------------|------|-------|----|
| Amylin Pharmaceuticals, Inc.       | 2009 |       | 27 |
| Exxon Mobil Corporation            | 2021 |       | 26 |
| Health Management Associates, Inc. | 2013 |       | 23 |
| CoreLogic, Inc.                    | 2020 |       | 20 |
| Exxon Mobil Corporation            | 2008 |       | 17 |
| CSX Corporation                    | 2008 |       | 17 |
| Darden Restaurants, Inc.           | 2014 |       | 15 |
| General Electric Company           | 2004 |       | 15 |
| Micrel, Inc.                       | 2008 |       | 14 |
| Zoran Corp.                        | 2011 |       | 14 |

**Panel C: Top firm-years by count of shareholder proposals – different categories**

| Name                    | year | Count E |
|-------------------------|------|---------|
| Exxon Mobil Corporation | 2008 | 7       |
| Exxon Mobil Corporation | 2010 | 6       |
| Dominion Energy, Inc.   | 2012 | 5       |
| Chevron Corporation     | 2016 | 5       |
| Exxon Mobil Corporation | 2016 | 5       |
| ConocoPhillips          | 2010 | 5       |
| Dominion Energy, Inc.   | 2015 | 5       |
| Dominion Energy, Inc.   | 2011 | 4       |
| Exxon Mobil Corporation | 2021 | 4       |
| Exxon Mobil Corporation | 2007 | 4       |

| Name                    | year | Count S |
|-------------------------|------|---------|
| Exxon Mobil Corporation | 2021 | 6       |
| Amazon.com, Inc.        | 2020 | 5       |
| Alphabet Inc.           | 2017 | 5       |
| Altria Group, Inc.      | 2004 | 5       |
| Altria Group, Inc.      | 2009 | 5       |
| Exxon Mobil Corporation | 2008 | 5       |
| Amazon.com, Inc.        | 2021 | 4       |
| Altria Group, Inc.      | 2003 | 4       |
| Altria Group, Inc.      | 2008 | 4       |
| Reynolds American, Inc. | 2003 | 4       |

| Name                               | year | Count G |
|------------------------------------|------|---------|
| Amylin Pharmaceuticals, Inc.       | 2009 | 27      |
| Health Management Associates, Inc. | 2013 | 22      |
| CoreLogic, Inc.                    | 2020 | 20      |
| CSX Corporation                    | 2008 | 17      |
| Exxon Mobil Corporation            | 2021 | 16      |
| Equity Commonwealth                | 2014 | 14      |
| Micrel, Inc.                       | 2008 | 14      |
| Zoran Corp.                        | 2011 | 14      |
| Darden Restaurants, Inc.           | 2014 | 13      |
| XenoPort, Inc.                     | 2014 | 13      |

**Table IA2: Double clustering as a robustness check**

This table reports regressions where the dependent variable is the number of shareholder proposals on a firm's proxy statement in a given year. The regression model is a Poisson model to account for count data. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm and year, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year.

|                       | (1)                | (2)                | (3)                | (4)                | (5)                | (6)               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|
| ESG sentiment         | -0.26***<br>(0.05) | -0.12**<br>(0.05)  |                    | -0.21***<br>(0.04) | -0.15***<br>(0.04) |                   |
| Financial sentiment   |                    | -0.23***<br>(0.05) |                    |                    | -0.13***<br>(0.04) |                   |
| E sentiment           |                    |                    | -0.07<br>(0.05)    |                    |                    | -0.05<br>(0.03)   |
| S sentiment           |                    |                    | -0.11**<br>(0.05)  |                    |                    | -0.10**<br>(0.04) |
| G sentiment           |                    |                    | -0.19***<br>(0.04) |                    |                    | -0.10**<br>(0.04) |
| Log(assets)           | 1.78***<br>(0.06)  | 1.72***<br>(0.06)  | 1.75***<br>(0.06)  | 1.53***<br>(0.15)  | 1.52***<br>(0.15)  | 1.53***<br>(0.15) |
| Debt/assets           | -0.10*<br>(0.06)   | -0.11**<br>(0.05)  | -0.11*<br>(0.06)   | -0.02<br>(0.06)    | -0.03<br>(0.06)    | -0.01<br>(0.06)   |
| Cash/assets           | 0.21***<br>(0.07)  | 0.19***<br>(0.06)  | 0.20***<br>(0.07)  | -0.10<br>(0.09)    | -0.10<br>(0.09)    | -0.10<br>(0.09)   |
| ROA                   | 0.12<br>(0.10)     | 0.17<br>(0.10)     | 0.14<br>(0.10)     | -0.19**<br>(0.09)  | -0.16*<br>(0.08)   | -0.18**<br>(0.09) |
| CAPEX/assets          | -0.02<br>(0.05)    | -0.02<br>(0.05)    | -0.02<br>(0.05)    | -0.02<br>(0.04)    | -0.03<br>(0.05)    | -0.02<br>(0.04)   |
| Excess return         | 0.03<br>(0.03)     | 0.03<br>(0.03)     | 0.03<br>(0.03)     | 0.03<br>(0.02)     | 0.03<br>(0.02)     | 0.03<br>(0.02)    |
| Inst. ownership       | -0.17**<br>(0.07)  | -0.15**<br>(0.07)  | -0.17**<br>(0.07)  | 0.13<br>(0.10)     | 0.12<br>(0.09)     | 0.12<br>(0.10)    |
| Inst. ownership HHI   | -0.22**<br>(0.10)  | -0.25**<br>(0.11)  | -0.23**<br>(0.10)  | 0.20<br>(0.16)     | 0.18<br>(0.16)     | 0.19<br>(0.15)    |
| Observations          | 25063              | 25061              | 23731              | 10072              | 10072              | 9650              |
| Pseudo R <sup>2</sup> | 0.40               | 0.40               | 0.40               | 0.37               | 0.37               | 0.37              |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year          | Firm+year         |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table IA3: Relationship between sentiment measures and count of all shareholder proposals submitted**

This table reports regressions where the dependent variable is the number of shareholder proposals submitted to a firm each year (Panel A) or the number of shareholder proposals with a final vote (Panel B), i.e. removing withdrawn and omitted proposals. The regression model is a Poisson model to account for count data. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year. Control variables are included in all regressions as in the baseline, but not shown to save space.

**Panel A: Count of all shareholder proposals submitted in a year**

|                       | (1)                | (2)                | (3)                | (4)                | (5)                | (6)                |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| ESG sentiment         | -0.15***<br>(0.05) | -0.03<br>(0.06)    |                    | -0.18***<br>(0.04) | -0.10**<br>(0.05)  |                    |
| Financial sentiment   |                    | -0.18***<br>(0.04) |                    |                    | -0.12***<br>(0.03) |                    |
| E sentiment           |                    |                    | -0.02<br>(0.04)    |                    |                    | -0.05<br>(0.03)    |
| S sentiment           |                    |                    | -0.10***<br>(0.04) |                    |                    | -0.09***<br>(0.03) |
| G sentiment           |                    |                    | -0.11**<br>(0.04)  |                    |                    | -0.07*<br>(0.04)   |
| Observations          | 23187              | 23185              | 22156              | 8867               | 8867               | 8676               |
| Pseudo R <sup>2</sup> | 0.52               | 0.53               | 0.52               | 0.46               | 0.46               | 0.46               |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year          | Firm+year          |
| Controls              | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Panel B: Count of all shareholder proposals with a final vote in a year**

|                       | (1)                | (2)                | (3)                | (4)                | (5)                | (6)                |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| ESG sentiment         | -0.24***<br>(0.06) | -0.12*<br>(0.07)   |                    | -0.23***<br>(0.05) | -0.19***<br>(0.06) |                    |
| Financial sentiment   |                    | -0.17***<br>(0.05) |                    |                    | -0.06<br>(0.04)    |                    |
| E sentiment           |                    |                    | -0.06<br>(0.05)    |                    |                    | -0.06<br>(0.04)    |
| S sentiment           |                    |                    | -0.14***<br>(0.05) |                    |                    | -0.12***<br>(0.04) |
| G sentiment           |                    |                    | -0.13**<br>(0.05)  |                    |                    | -0.07<br>(0.05)    |
| Observations          | 22360              | 22358              | 21330              | 6423               | 6423               | 6282               |
| Pseudo R <sup>2</sup> | 0.49               | 0.49               | 0.48               | 0.39               | 0.39               | 0.38               |
| Fixed Effects         | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year          | Firm+year          |
| Controls              | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table IA4: Relationship between sentiment measures and support for shareholder proposals**

This table reports regressions where the dependent variable is the average support rate for all the shareholder proposals on a firm's proxy statement in a year. The regression model is OLS. The independent variables include sentiment measures and firm characteristics, all measured using data within a one-year window leading up to a firm's shareholder meeting. The unit of observation is firm-year. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. Columns (1)-(3) include industry by year fixed effects. Columns (4) to (6) repeat Columns (1) to (3), respectively, using firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year. Panel A focuses on all types of shareholder proposals. Panels B and C break it down to E&S vs. G proposals, respectively.

**Panel A: Support for all shareholder proposals in a year**

| Support for all shareholder proposals | (1)                | (2)                | (3)                | (4)               | (5)               | (6)               |
|---------------------------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|
| ESG sentiment                         | -0.00<br>(0.04)    | -0.02<br>(0.05)    |                    | -0.06<br>(0.04)   | -0.05<br>(0.05)   |                   |
| Financial sentiment                   |                    | 0.03<br>(0.04)     |                    |                   | -0.03<br>(0.03)   |                   |
| E sentiment                           |                    |                    | -0.01<br>(0.03)    |                   |                   | -0.06**<br>(0.03) |
| S sentiment                           |                    |                    | 0.04<br>(0.04)     |                   |                   | -0.01<br>(0.04)   |
| G sentiment                           |                    |                    | -0.03<br>(0.04)    |                   |                   | 0.01<br>(0.04)    |
| Log(assets)                           | -0.48***<br>(0.04) | -0.47***<br>(0.04) | -0.49***<br>(0.04) | -0.30**<br>(0.12) | -0.30**<br>(0.12) | -0.29**<br>(0.12) |
| Debt/assets                           | -0.10***<br>(0.03) | -0.10***<br>(0.03) | -0.10***<br>(0.03) | -0.02<br>(0.05)   | -0.02<br>(0.05)   | -0.01<br>(0.05)   |
| Cash/assets                           | -0.20***<br>(0.05) | -0.20***<br>(0.05) | -0.20***<br>(0.05) | -0.04<br>(0.07)   | -0.04<br>(0.07)   | -0.01<br>(0.06)   |
| ROA                                   | -0.10*<br>(0.06)   | -0.11*<br>(0.06)   | -0.12*<br>(0.06)   | 0.16<br>(0.11)    | 0.17<br>(0.11)    | 0.07<br>(0.10)    |
| CAPEX/assets                          | 0.02<br>(0.04)     | 0.02<br>(0.04)     | 0.03<br>(0.04)     | 0.05<br>(0.06)    | 0.05<br>(0.06)    | 0.05<br>(0.06)    |
| Excess return                         | -0.02<br>(0.03)    | -0.02<br>(0.03)    | -0.02<br>(0.03)    | -0.01<br>(0.02)   | -0.01<br>(0.02)   | -0.02<br>(0.02)   |
| Inst. ownership                       | 0.16***<br>(0.05)  | 0.16***<br>(0.05)  | 0.13**<br>(0.05)   | -0.00<br>(0.07)   | -0.01<br>(0.07)   | -0.01<br>(0.07)   |
| Inst. ownership HHI                   | -0.09<br>(0.11)    | -0.09<br>(0.11)    | -0.12<br>(0.11)    | -0.19<br>(0.14)   | -0.20<br>(0.14)   | -0.17<br>(0.15)   |
| Observations                          | 3045               | 3045               | 3003               | 2940              | 2940              | 2902              |
| R-squared                             | 0.33               | 0.33               | 0.34               | 0.50              | 0.50              | 0.49              |
| Fixed Effects                         | Ind*year           | Ind*year           | Ind*year           | Firm+year         | Firm+year         | Firm+year         |
| Controls                              | Yes                | Yes                | Yes                | Yes               | Yes               | Yes               |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Panel B: Support for E&S shareholder proposals in a year**

|                                          | (1)                | (2)                | (3)                | (4)             | (5)             | (6)             |
|------------------------------------------|--------------------|--------------------|--------------------|-----------------|-----------------|-----------------|
| Support for E or S shareholder proposals |                    |                    |                    |                 |                 |                 |
| ESG sentiment                            | 0.02<br>(0.07)     | -0.03<br>(0.08)    |                    | -0.05<br>(0.06) | -0.04<br>(0.06) |                 |
| Financial sentiment                      |                    | 0.06<br>(0.06)     |                    |                 | -0.03<br>(0.04) |                 |
| E sentiment                              |                    |                    | -0.03<br>(0.05)    |                 |                 | -0.07<br>(0.05) |
| S sentiment                              |                    |                    | 0.01<br>(0.06)     |                 |                 | -0.06<br>(0.04) |
| G sentiment                              |                    |                    | 0.06<br>(0.07)     |                 |                 | 0.11*<br>(0.06) |
| Log(assets)                              | -0.29***<br>(0.07) | -0.28***<br>(0.07) | -0.29***<br>(0.07) | -0.23<br>(0.19) | -0.23<br>(0.19) | -0.22<br>(0.20) |
| Debt/assets                              | -0.02<br>(0.05)    | -0.02<br>(0.05)    | -0.02<br>(0.05)    | -0.12<br>(0.07) | -0.12<br>(0.07) | -0.12<br>(0.07) |
| Cash/assets                              | -0.16*<br>(0.09)   | -0.15*<br>(0.09)   | -0.15*<br>(0.09)   | 0.10<br>(0.09)  | 0.11<br>(0.09)  | 0.10<br>(0.09)  |
| ROA                                      | -0.17<br>(0.14)    | -0.18<br>(0.14)    | -0.17<br>(0.14)    | -0.00<br>(0.18) | 0.01<br>(0.18)  | -0.03<br>(0.18) |
| CAPEX/assets                             | -0.02<br>(0.05)    | -0.02<br>(0.05)    | -0.02<br>(0.05)    | 0.13*<br>(0.07) | 0.13*<br>(0.07) | 0.13*<br>(0.07) |
| Excess return                            | 0.01<br>(0.05)     | 0.02<br>(0.05)     | 0.02<br>(0.05)     | -0.01<br>(0.03) | -0.01<br>(0.03) | -0.01<br>(0.03) |
| Inst. ownership                          | 0.18**<br>(0.08)   | 0.18**<br>(0.08)   | 0.17**<br>(0.08)   | 0.00<br>(0.12)  | -0.00<br>(0.12) | 0.01<br>(0.12)  |
| Inst. ownership HHI                      | -0.41***<br>(0.13) | -0.40***<br>(0.13) | -0.40***<br>(0.13) | -0.04<br>(0.20) | -0.04<br>(0.21) | -0.02<br>(0.22) |
| Observations                             | 1264               | 1264               | 1249               | 1362            | 1362            | 1342            |
| R-squared                                | 0.48               | 0.48               | 0.48               | 0.62            | 0.62            | 0.62            |
| Fixed Effects                            | Ind*year           | Ind*year           | Ind*year           | Firm+year       | Firm+year       | Firm+year       |
| Controls                                 | Yes                | Yes                | Yes                | Yes             | Yes             | Yes             |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Panel C: Support for governance related (G) shareholder proposals in a year**

|                                     | (1)                | (2)                | (3)                | (4)                | (5)                | (6)                |
|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Support for G shareholder proposals |                    |                    |                    |                    |                    |                    |
| ESG sentiment                       | -0.04<br>(0.05)    | -0.07<br>(0.06)    |                    | -0.03<br>(0.06)    | -0.03<br>(0.07)    |                    |
| Financial sentiment                 |                    | 0.05<br>(0.04)     |                    |                    | -0.00<br>(0.04)    |                    |
| E sentiment                         |                    |                    | -0.04<br>(0.04)    |                    |                    | -0.06<br>(0.04)    |
| S sentiment                         |                    |                    | 0.02<br>(0.04)     |                    |                    | 0.04<br>(0.04)     |
| G sentiment                         |                    |                    | -0.00<br>(0.05)    |                    |                    | 0.02<br>(0.05)     |
| Log(assets)                         | -0.50***<br>(0.05) | -0.49***<br>(0.05) | -0.50***<br>(0.05) | -0.36**<br>(0.15)  | -0.36**<br>(0.15)  | -0.35**<br>(0.15)  |
| Debt/assets                         | -0.09**<br>(0.04)  | -0.09**<br>(0.04)  | -0.09**<br>(0.04)  | -0.09<br>(0.05)    | -0.09<br>(0.05)    | -0.08<br>(0.06)    |
| Cash/assets                         | -0.18***<br>(0.06) | -0.18***<br>(0.06) | -0.18***<br>(0.06) | -0.08<br>(0.08)    | -0.08<br>(0.08)    | -0.03<br>(0.07)    |
| ROA                                 | -0.00<br>(0.06)    | -0.01<br>(0.06)    | -0.03<br>(0.06)    | 0.14<br>(0.13)     | 0.14<br>(0.13)     | 0.02<br>(0.13)     |
| CAPEX/assets                        | 0.10**<br>(0.05)   | 0.10**<br>(0.05)   | 0.10**<br>(0.05)   | 0.07<br>(0.08)     | 0.07<br>(0.08)     | 0.06<br>(0.08)     |
| Excess return                       | -0.01<br>(0.04)    | -0.01<br>(0.04)    | -0.01<br>(0.04)    | -0.02<br>(0.03)    | -0.02<br>(0.03)    | -0.03<br>(0.03)    |
| Inst. ownership                     | 0.17***<br>(0.06)  | 0.17***<br>(0.06)  | 0.15**<br>(0.06)   | -0.00<br>(0.08)    | -0.00<br>(0.08)    | -0.01<br>(0.08)    |
| Inst. ownership HHI                 | -0.13<br>(0.14)    | -0.12<br>(0.14)    | -0.15<br>(0.15)    | -0.44***<br>(0.15) | -0.44***<br>(0.15) | -0.41***<br>(0.16) |
| Observations                        | 2304               | 2304               | 2278               | 2217               | 2217               | 2196               |
| R-squared                           | 0.35               | 0.36               | 0.36               | 0.48               | 0.48               | 0.48               |
| Fixed Effects                       | Ind*year           | Ind*year           | Ind*year           | Firm+year          | Firm+year          | Firm+year          |
| Controls                            | Yes                | Yes                | Yes                | Yes                | Yes                | Yes                |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Table IA5: Two-stage least squares on the full sample (without matching)**

This table reports two-stage least square regressions of the number of shareholder proposals in each firm-year on ESG sentiments and firm-characteristics. The sentiment measures and firm characteristics are all measured using data within a one-year window leading up to a firm's shareholder meeting. The ESG sentiment measure is instrumented by an indicator of *Treat\*Post* equaling one if a firm has a scandal movie widely released within a two-year window before the firm's shareholder meeting, and zero otherwise. The variable definitions are provided in the Appendix. All independent variables are standardized to have a mean of zero and a standard deviation of one. Standard errors, clustered by firm, are reported below each coefficient estimate. All regressions include firm and year fixed effects. The sample is restricted to firm-years with at least some shareholder voting data, and a total media attention (news and social media buzz) above the 25th percentile in the cross-section of firms in each year. Panel A reports the first stage regression estimates. Panel B reports the second stage regression estimates.

**Panel A: First stage**

| Dependent variable =<br>ESG sentiment | (1)              | (2)              | (3)              | (4)              | (5)              |
|---------------------------------------|------------------|------------------|------------------|------------------|------------------|
| Treat*Post                            | -.26***<br>(.08) | -.23**<br>(.09)  | -.23**<br>(.09)  | -.19***<br>(.04) | -.17***<br>(.06) |
| Log(assets)                           |                  | -.05*<br>(.02)   | -.05*<br>(.02)   |                  | .01<br>(.02)     |
| Debt/assets                           |                  | -.04***<br>(.01) | -.04***<br>(.01) |                  | -.02***<br>(.01) |
| Cash/assets                           |                  | .04***<br>(.01)  | .04***<br>(.01)  |                  | .02**<br>(.01)   |
| ROA                                   |                  | .02**<br>(.01)   | .02*<br>(.01)    |                  | -.03**<br>(.01)  |
| CAPEX/assets                          |                  | .02***<br>(.01)  | .02***<br>(.01)  |                  | .01<br>(.01)     |
| Inst. ownership                       |                  | .04***<br>(.01)  | .04***<br>(.01)  |                  | .02<br>(.01)     |
| Inst. ownership HHI                   |                  | -.02<br>(.01)    | -.02<br>(.01)    |                  | .01<br>(.01)     |
| Excess return                         |                  |                  | 0<br>(0)         | 0<br>(0)         | 0<br>(0)         |
| Financial Sentiment                   |                  |                  |                  | .38***<br>(.01)  | .37***<br>(.01)  |
| Constant                              | .01***<br>(0)    | -.04***<br>(.01) | -.04***<br>(.01) | -.01***<br>(0)   | -.03***<br>(.01) |
| Observations                          | 36459            | 25990            | 25922            | 33895            | 25918            |
| R-squared                             | .44              | .45              | .45              | .53              | .53              |
| Year F.E.                             | yes              | yes              | yes              | yes              | yes              |
| Firm F.E.                             | yes              | yes              | yes              | yes              | yes              |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

**Panel B: Second stage**

|                                                         | (1)               | (2)               | (3)               | (4)                | (5)               |
|---------------------------------------------------------|-------------------|-------------------|-------------------|--------------------|-------------------|
| Dependent variable =<br>Number of shareholder proposals |                   |                   |                   |                    |                   |
| Instrumented ESG Sentiment                              | -2.54***<br>(.93) | -2.35**<br>(1.05) | -2.37**<br>(1.05) | -3.37***<br>(1.22) | -3.22**<br>(1.25) |
| Log(assets)                                             |                   | .16*<br>(.08)     | .16**<br>(.08)    |                    | .31***<br>(.08)   |
| Debt/assets                                             |                   | -.1**<br>(.05)    | -.1**<br>(.05)    |                    | -.08**<br>(.04)   |
| Cash/assets                                             |                   | .06<br>(.05)      | .06<br>(.05)      |                    | .05<br>(.05)      |
| ROA                                                     |                   | .03<br>(.04)      | .02<br>(.03)      |                    | -.11**<br>(.05)   |
| CAPEX/assets                                            |                   | .04<br>(.03)      | .04<br>(.03)      |                    | .01<br>(.02)      |
| Inst. ownership                                         |                   | .07<br>(.05)      | .07<br>(.05)      |                    | .04<br>(.05)      |
| Inst. ownership HHI                                     |                   | -.05<br>(.04)     | -.05<br>(.04)     |                    | .03<br>(.04)      |
| Excess return                                           |                   |                   | .01<br>(.01)      | 0<br>(.01)         | 0<br>(.01)        |
| Financial Sentiment                                     |                   |                   |                   | 1.26***<br>(.47)   | 1.14**<br>(.46)   |
| Observations                                            | 36459             | 25990             | 25922             | 33895              | 25918             |
| R-squared                                               | -6.21             | -4.94             | -5.01             | -9.45              | -8.03             |
| Year F.E.                                               | yes               | yes               | yes               | yes                | yes               |
| Firm F.E.                                               | yes               | yes               | yes               | yes                | yes               |
| 1st-stage F-Stat                                        | 12.735            | 6.886             | 7.028             | 7.307              | 4.346             |

*Standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$