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Finance Working Paper N° 815/2022
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Abstract

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Keywords: Climate Change, Shareholder Voting, Mutual Funds

JEL Classifications: Climate Change, Shareholder Voting, Mutual Funds

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This paper explores whether investors' personal experience of climate change affects their voting behavior on environmental issues. We find that fund managers exposed to abnormally hot temperatures are significantly more likely to support environmental proposals. This increased support is stronger for proposals targeting firms with greater climate risk. The effect is less pronounced for funds that are already climate-conscious (e.g., environmental-friendly funds and funds located in areas more receptive to scientific evidence of climate change). We further show that environmental proposals receive greater aggregate support when the fraction of mutual funds exposed to abnormally hot temperatures is high. Overall, we show that fund managers' experiences and increased awareness of climate change have a positive effect on their support for environmental policies.

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1 Introduction

Environmental issues in general, and climate change in particular, are growing concerns for investors (e.g., Krueger, Sautner, and Starks 2020; Stroebel and Wurgler 2021). Related studies confirm that investors have started to price climate risk (e.g., Bolton and Kacperczyk 2021a, 2021b; Ilhan, Sautner, and Vilkov 2021; Sautner et al. 2021) and engage with companies on climate issues (e.g., Dimson, Karakaş, and Li 2021). The shareholder proposal process represents an increasingly important channel through which investors can signal their concerns, express their views, and affect companies' environmental disclosure and decisions (e.g., Flammer, Toffel, and Viswanathan 2021; He, Kahraman, and Lowry 2021). Shareholder support for environmental proposals has increased rapidly and some proposals on climate change have started to garner majority votes, which could mark a turning point.[1] Importantly, greater voting support for environmental proposals contributes to the accumulated pressure on companies over environmental issues, even when they do not pass (e.g., Grewal, Serafeim, and Yoon 2016).

Several factors potentially influence voting support for proposals on environmental issues. For example, investors may support environmental proposals because they are motivated by value maximization concerns (e.g., Flammer 2015) or ideology (Bolton et al. 2020). Alternatively, agency issues such as investor myopia, friendliness towards management, or strategic considerations among mutual funds have the potential to contribute to opposition to environmental proposals (e.g., He et al. 2021; Michaely, Ordonez-Calafi, and Rubio 2021). In this paper, we explore whether, beyond motives related to these considerations, investors' personal experience of climate change affects their voting behavior on environmental issues.

We conjecture that personal experience of climate change is likely to influence investors' perceptions of the importance of environmental issues and, as a result, increase their voting support for environmental proposals. Our conjecture is predicated on previous literature

1. Source: https://www.wsj.com/articles/more-shareholder-proposals-spotlight-climate-change-151812730 8?tesla=y. Furthermore, despite the COVID-19 crisis, pressure on environmental issues remains strong: https://www.ft.com/content/c10056af-306f-4d9d-8e97-5ffa112ddf49.

showing that managers' decisions and actions are affected by their individual life experiences (e.g., Bernile, Bhagwat, and Rau 2017; Benmelech and Frydman 2015; Cronqvist and Yu 2017; Malmendier and Nagel 2011). Climate change is a complex phenomenon that people learn about both *abstractly* through media and education, and *concretely* through personal experiences (e.g., Sugerman, Li, and Johnson 2021). Importantly, prior research highlights the existence of a local warming effect whereby people's judgements about climate change are affected by recent local temperatures. More precisely, the exposure to abnormally hot temperatures increases people's awareness about climate change and its consequences (e.g., Akerlof et al. 2013; Choi, Gao, and Jiang 2020; Myers et al. 2013; Zaval et al. 2014). We therefore proxy for investors' personal experience of climate change primarily by their exposure to abnormally hot temperatures.[2] While abnormally hot temperatures affect people' awareness about climate change, it is an open question whether personal experience with climate change has implications on the behavior of sophisticated investors such as mutual fund managers.

In our empirical analysis, we study whether managers of mutual funds, which are dominant players in the proxy voting process, change their voting behavior on environmental proposals after being exposed to abnormally hot temperatures. To address the concern that personal experience of climate change could relate to unobservable factors influencing mutual fund voting behavior on ES issues in general, we compare voting support for environmental proposals to that for social proposals. Specifically, the mechanism is the following: When temperature is abnormally hot in the area of the mutual fund's headquarters, the fund's managers become more aware of environmental issues and, as a result, increase their voting support for proposals related to environmental issues, but not for proposals related to social issues. In our main specification, a mutual fund manager is considered to have experienced

2. A related stream of research focuses on the effect of air pollution on fund managers (e.g., Foroughi, Marcus, and Nguyen 2021; Huynh, Li, and Xia 2021). Air pollution mainly increases people's concerns about their health and perceived quality of life (e.g., Chang, Huang, and Wang 2018; Deguen et al. 2012; Weir 2012). We rather aim to capture a personal experience that specifically increases fund managers' awareness about climate change.

abnormally hot temperatures if the monthly average deviation from "normal" temperatures (based on historical data over the past 10 years) at the fund's headquarters over the twelve months preceding the vote is greater than 2 degrees Fahrenheit (about one standard deviation). We focus on high abnormal temperatures because they represent salient events for mutual fund managers, and prior evidence suggests that investors pay more attention to infrequent dramatic changes than to frequent gradual changes (e.g., Choi et al. 2020; Da, Gurun, and Warachka 2014).

Analyzing 333,008 mutual fund votes on 1,706 ES proposals over the period 2006-2018, we find that funds whose managers have been exposed to abnormally hot temperatures provide significantly higher support for environmental proposals than managers who were not exposed. We control for unobserved heterogeneity using a rich set of fixed effects. Specifically, we include proposal and fund fixed effects. The proposal fixed effects capture each proposal for a given firm in a given year and therefore control for both any time-varying firm characteristics (e.g., size, profitability, ownership structure, corporate governance), and any proposal characteristics (e.g., whether the proposal has a positive ISS recommendation). Fund fixed effects capture any persistent characteristics at the fund level that may influence their voting behavior. Furthermore, by comparing voting support for environmental proposals versus social proposals, we control for factors influencing the time-varying propensity of a fund to support both E and S proposals. The magnitude of the effect is sizable: Exposure to abnormally hot temperatures increases the likelihood of the fund manager supporting environmental proposals by 15% (relative to the unconditional support for environmental proposals).

Recent studies document substantial variation in climate risk across firms and its implications for firm value (e.g., Bolton and Kacperczyk 2021a; Kölbel et al. 2020; Sautner et al. 2020). We conjecture that the impact of personal experience of climate change on voting support for environmental proposals may differ across firms, depending on their climate risk. We expect the effect of personal experience of climate change to be stronger for

environmental proposals targeting firms with greater climate risk, as those firms will suffer the most from climate change. We test this conjecture using a host of measures of climate risk. The first is the firm-level climate change exposure developed by Sautner et al. (2020) using earnings conference calls. This measure captures the proportion of the conference call that is centered on climate change topics. The second one is a measure of climate risk (notably transition and regulatory risk) based on mandatory disclosure developed by Kölbel et al. (2020). The third is a measure of firm-level climate risk based on the sensitivity of stock returns to significant temperature changes (Kumar, Xin, and Zhang 2019). The fourth measure is the ranking of industries based on Scope 1 and Scope 2 intensities (i.e., Scope 1 and Scope 2 emissions divided by firm market value) constructed by Ilhan et al. (2021) in their analysis of carbon tail risk. Regardless of the proxy for climate risk we use, we find that the impact of personal experience of climate change on voting support for environmental proposals is significantly larger in firms with greater climate risk. These results suggest that the increased support for environmental proposals by shocked funds is more pronounced for firms on which climate change is likely to have the greatest value implications.

We expect variation in the impact of personal experience of climate change across fund managers. First, a priori, fund managers with greater awareness of climate change should exhibit higher support for environmental proposals in general. Second, given their prior level of awareness, their support for environmental proposals is less likely to be affected by exposure to abnormally hot temperatures. We proxy for awareness to climate change either by the environmentally friendly nature of the mutual fund[3] or by local views about climate change. Specifically, regarding our second climate change awareness proxy, we use new publicly available data from the Yale Program on Climate Change Communication to gauge whether mutual funds are located in areas that are more receptive to scientific evidence on climate change.[4] Using these two proxies, we find that fund managers with greater awareness

3. Following He et al. (2021) and Michaely et al. (2021) we classify a fund in our sample as an environmental fund if its name contains a string that identifies it as environmentally responsible fund.

4. This data captures local views on climate change and has been used recently by Addoum, Ng, and Ortiz-Bobea (2021) among others.

of climate change are significantly more likely to support proposals related to environmental issues in general during our sample period. Consistent with our second prediction, we further show that these funds are also significantly less likely to change their voting support for environmental proposals after being exposed to abnormally hot temperatures.

The overall evidence suggests that in environments that are more open to science, and to the notion that climate change is real and impacted by human actions, fund managers are more aware of the issue and therefore their votes are less affected by personal experience of climate change. As an important by-product, it also suggests that education about climate risk can, and probably should, play an important part in the overall environmental policy. This evidence, combined with fund managers' initial predispositions towards climate change, indicates that making the public, and fund managers in particular, more aware of the perils of climate change can have a significant impact on investors' behavior.

In additional tests, we consider fund managers' exposure to alternative weather-related events, that we derive both from the climate change and the finance literature. We start by considering low snowfall, which past studies on climate change have described as a personal experience of climate change (e.g., Akerlof et al. 2013; Sugerman et al. 2021). We find that mutual fund managers provide higher support for environmental proposals after being exposed to abnormally low snowfall, although the effect is weaker than with abnormally hot temperatures.

Next, following the finance literature, we consider major natural disasters. Using 20 major hurricanes affecting 134 unique funds, Fich and Xu (2021) document that fund managers increase their support for environmental proposals after being exposed to major hurricanes. There are, however, several concerns with the use of natural disasters like hurricanes in this context. First, the number of events is limited, and they are typically geographically clustered, which might further exacerbate identification issues. Second, natural disasters are not among the most frequently described personal experiences of climate change (e.g., Akerlof et al. 2013). Third, prior literature shows that natural disasters significantly affect

risk attitudes of managers (Bernile et al. 2017; Bernile et al. 2021), which may influence voting behavior across all types of proposals for reasons not directly related to climate change. Even when we consider various types of disasters (e.g., hurricanes, floods, wildfires, and tornadoes), only 239 unique funds are affected by major natural disasters in our sample compared to 2,920 unique funds affected by an abnormally hot temperature of 2°F (or more). Contrary to abnormally hot temperatures and low snowfall, we find that mutual fund managers are significantly and equally more likely to vote in favor of both environmental and social proposals after being exposed to a major natural disaster, consistent with their impact on managers' risk aversion.

Our baseline approach compares the voting support for environmental proposals relative to social proposals. In complementary tests, we examine whether fund managers' personal experience of climate change increases voting support for environmental proposals in absolute terms. We find that the exposure to abnormally hot temperatures increases mutual fund managers' support for environmental proposals per se. On the contrary, the exposure to abnormally hot temperatures is not associated with greater support for social or governance proposals. In other words, the effect of personal experience of climate change on fund managers voting patterns can be directly attributed to environmental motives.

Finally, and importantly, we examine whether fund managers exposed to abnormally hot temperature play a role in the outcome of environmental proposals. We find that the aggregate support received by environmental proposals increases with the fraction of mutual funds exposed to abnormally hot temperatures. This effect is specific to environmental proposals as we find no impact on the aggregate voting support for social and governance proposals. Prior studies show that while ES proposals almost always fail, greater voting support matters, and in particular, contributes to the pressure on companies to act on environmental issues (e.g., Grewal et al. 2016; He et al. 2021).[5] Our results therefore suggest

5. Anecdotal evidence confirms the role played by the aggregate voting support received by ES proposals in inducing managerial actions. For example, the US Sustainable Investment Forum claims that, "often, a shareholder resolution will fail to win a majority of the shares voted, but still succeeds in persuading management to adopt some or all of the requested changes because the resolution was favored by a significant

that the voting behavior of mutual funds exposed to abnormally hot temperatures increases the pressure on companies to act over environmental issues.[6]

We perform additional tests to assess the robustness of our main results. In particular, when the firm and mutual fund are headquartered in the same state or linked to the same weather station, they will both be exposed to abnormally hot temperatures at the same time. As a result, disentangling whether the greater voting support for environmental proposals is due to the fund's or the firm's exposure to abnormally hot temperatures might be challenging. To address this concern, we exclude observations for which the firm and fund are headquartered in the same state or for which the firm and fund are linked to the same weather station. We find that our main results hold if we impose this sample restriction.

Our findings are relevant to several strands of the literature. Our paper adds to the literature on the determinants of mutual fund votes in general (e.g., Calluzzo and Kedia 2019; Cvijanović, Dasgupta, and Zachariadis 2016; Heath et al. 2022; Iliev and Lowry 2015) and on mutual fund votes on ES proposals, which have received less attention. Recent studies on ES votes highlight the role played by business connections, investment horizon, and conflicts of interest between ES funds and their families (e.g., He et al. 2021; Michaely et al. 2021). We contribute to this literature by showing that personal experience of climate change is a key determinant of mutual fund managers' voting behavior.

Second, our paper is related to the literature focusing on the growing concerns of institutional investors for environmental and climate risk (e.g., Flammer et al. 2021; Ilhan et al. 2020; Krueger et al. 2020; Ramelli et al. 2021). While more and more institutional investors seem to care about climate risk, less is known about the factors that contribute to increase climate risk awareness. We uncover new evidence on the role played by personal experience of climate change.

number of shareholders".

6. A possible fund-level implication is that shocked fund managers, because they revise their views on the importance of climate change for their clients, start to strategically vote more favorably on environmental proposals in order to attract more flows. However, in untabulated results, we do not observe that shocked mutual funds experience greater flows in the subsequent months.

The remainder of the paper is organized as follows. Section 2 describes the data and the empirical methodology. Section 3 presents the empirical results, and Section 4 concludes.

2 Data and measures

2.1 Main data sources and sample construction

Analyzing the effect of increased awareness of climate change among mutual fund managers through their exposure to abnormally hot temperatures requires data on mutual fund proxy voting, data on their headquarters' location, and temperature data. We describe the data sets used in the empirical analysis in this section.

We obtain mutual fund proxy voting records over the period 2006 to 2018 from Risk Metrics' ISS Voting Analytics. For every vote cast, this database provides a description of the item being voted on, the voting recommendation of the firm's management and that of ISS, and the fund's vote. Our empirical analysis focuses on the set of proposals related to environmental and social (ES) issues. ISS Voting Analytics provides category codes (*AgendaItemID*) to identify different types of shareholder proposals. We follow He et al. (2021) in their selection of E and S proposal codes. Like these authors, we then refine this set of proposals in two ways. First, we remove a subset of proposals which either do not have a clear association with ES issues or appear to be data errors (e.g., proposals titled "Report on Pay Disparity" turn out to be about executive compensation as opposed to the gender pay gap). Second, we review the detailed description (*ItemDesc*) of 13 categories of proposals characterized by generic titles (e.g., "Company Specific-Governance Related"), and we eliminate those proposals that are not related to E and S topics. Our sample includes 1,706 ES proposals in 55 categories, matching those in He et al. (2021). Finally, given the purpose of our study, we further need to divide these ES proposals into E proposals and S proposals. To do so, we read through the brief description (*AgendaGeneralDesc*) or detailed description (*ItemDesc*). For some proposals, the brief description is explicit enough to identify E proposals (e.g., "Report

on Climate Change" or "GHG emissions") or S proposals (e.g., "Human Rights Related" or "Report on EEO"). For proposals whose categories are not explicitly related to social or environmental issues (e.g., "Require Environmental/Social Issue Qualifications for Director Nominees"), it is necessary to read through the detailed description. In this way, we identify among the 1,706 ES proposals, 719 (42%) that are related to environmental issues and 987 (58%) that are related to social issues. The universe of environmental proposals is largely dominated by proposals related to climate change issues (e.g.,"GHG Emissions", "Report on Climate Change", "Report on Sustainability"). In untabulated tests, we find that our results are qualitatively similar if we restrict the sample of environmental proposals to those strictly related to climate change. More detailed information on proposal classifications and the complete list of E and S related proposals are reported in Appendix Tables A.1 and A.2.

We obtain data on the location of mutual funds' headquarters from the CRSP mutual fund database (city variable provided in the *contact_info* table). Our main proxy for the mutual fund manager's personal experience of climate change is abnormally hot temperatures close to the fund's headquarters. Managers are likely to spend considerable time at the firm's headquarters and to be affected by events taking place in the vicinity (e.g., Dai et al. 2020; Deng and Gao 2013; Levine, Lin, and Wang 2018). Fund managers are therefore likely to be affected and potentially to react to abnormally hot temperatures at the fund's headquarters. Because there is no unique fund identifier that is common to ISS data and CRSP data, we use N-PX filings to download all fund names and tickers. We match the ISS data to the N-PX filings based on fund and family name, and then match via ticker to the CRSP mutual fund database. Because tickers are only available in the EDGAR header files starting in September 2005, we restrict our sample to the 2006-2018 period. Detailed information about the matching procedure is reported in the Appendix. From the CRSP mutual fund database, we also obtain time-varying controls at the fund level (e.g., turnover ratio and total assets under management).

We obtain temperature data from the Global Surface Summary of Day Data, which are

produced by the National Climatic Data Center (NCDC). The input data used in building these daily observations are the Integrated Surface Data (ISD), which contain weather records from about 5,900 stations covering the U.S between 1973 and today.[7] By identifying location coordinates, we select the weather station closest to the city where a fund is located.

The starting point for our sample construction comprises all mutual fund votes on ES proposals voted on at shareholder meetings of Russell 3000 firms over 2006-2018 by mutual funds at the intersection of ISS and CRSP data sources and for which we could obtain temperature data. Appendix A.2 provides detailed information about how each restriction affects the number of mutual fund votes included in the sample. Our main sample comprises 333,008 mutual fund votes by 5,994 unique funds on 1,706 ES proposals for 429 unique companies over the 2006-2018 period. Table 1 provides summary statistics for the main variables used in our empirical analysis. 40% of mutual fund votes are on environmental proposals and 60% for social proposals. About 20% of the votes are in favor of ES proposals (28% for environmental proposals) and 43% of the votes are for proposals that receive a positive recommendation from ISS.

2.2 Measures of fund exposure to abnormally hot temperatures

Our empirical analysis exploits the occurrence of abnormally hot temperatures in the area of a mutual fund's headquarters as a shock raising the awareness of fund managers on environmental issues. Prior studies show that the exposure to abnormally hot temperatures leads to increased salience of environmental issues and an increased perception of climate risk (e.g., Akerlof et al. 2013; Myers et al. 2013; Zaval et al. 2014). Li, Johnson, and Zaval (2011) show that perceived deviations from normal temperatures not only alter beliefs, but are also followed by actions, as people are more likely to donate their earnings to global warming charities. Choi et al. (2020) provide supportive evidence that people and investors in particular

7. The National Climatic Data Center is a standard source for temperature data and is increasingly used in the finance literature to assess the effect of temperature on different outcomes (Choi et al. 2020; Kumar et al. 2019).

pay more attention to climate change after experiencing abnormally hot temperatures.

We measure temperatures in the area of a mutual fund's headquarters by matching the city of the mutual fund's headquarters to its nearest weather station based on their respective coordinates.[8] We study the effect of exposure to abnormally hot temperature on voting behavior of individual mutual funds rather than fund families. This follows from prior research suggesting that unlike for management proposals, there is substantial variation in fund voting behavior on shareholder proposals within a fund family, especially for ES proposals (Dikolli et al. 2021; Michaely et al. 2021; Morgan et al. 2011). A potential concern with this approach is however that, in some families, voting may be centralized, which implies that it would be more relevant to focus on abnormally hot temperature at the fund family's headquarters. To address this potential concern, in untabulated tests, we check that our results are similar if we restrict the sample to funds located in the same city or state as the family. Following Choi et al. (2020), we break local temperatures down into three components, which account for predictable, seasonal, and abnormal patterns. Therefore, the abnormal component is measured as follows:

$$Abnormal\ Temp_{it} = Temp_{it} - Average\ Temp_{it} - Monthly\ Temp_{it} \tag{1}$$

where $Temp_{it}$ is the actual temperature measured in the city of the mutual fund's headquarters i in month t; $Average\ Temp_{it}$ is the average monthly local temperature in the city i over the 120 months prior to t; $Monthly\ Temp_{it}$ is the average deviation of this month's temperature from the average, i.e., the average temperature in the city i in the same calendar month over the last 10 years minus $Average\ Temp_{it}$.

Our focus is on local abnormal temperatures. Specifically, we capture a fund manager's exposure to abnormally hot temperatures using a dummy variable that is equal to one if the average monthly abnormal temperature at the fund's headquarters over the twelve months

8. For each fund, we retrieve the coordinates of the headquarters (latitude and longitude) from Google Map. To match a city to its nearest station based on their respective coordinates, we use the Stata command gnear. We require the station to have at least 10 years of historical data prior to the year of matching to be able to compute our monthly measure of abnormal temperatures.

preceding the vote is greater than 2 degrees Fahrenheit (*Hot Temperature Shock*). The 2 °F cutoff roughly corresponds to one standard deviation above the mean in the distribution of abnormal temperatures in our sample and is motivated by the fact that the highest abnormal local temperatures are the most salient.[9] Prior evidence suggests that investors pay more attention to infrequent dramatic changes than to frequent gradual changes (Choi et al. 2020; Da et al. 2014). An average annual abnormally hot temperature of at least 2°F likely represents an experience of climate change that is salient and noticeable for mutual fund managers. Table 1 shows that about 16% of votes are made by mutual fund managers that have been exposed to abnormally hot temperatures. Figure 1 shows the number of funds and the number of funds exposed to an abnormally hot temperature of at least 2°F over time. On average, exposure to abnormally hot temperatures is more common in recent years. 2012 is the year with the largest fraction of funds experiencing an abnormally hot temperature of at least 2°F. This is due to the fact that 2012 witnessed one of the most severe heat waves in modern North American history and was marked by a significant increase in temperatures compared to historical ones.[10] In robustness tests, we show that our results hold if we exclude the year 2012.

In complementary tests, we consider alternative ways of capturing the exposure of mutual fund managers to abnormally hot temperatures. For example, we consider 1°F as an alternative threshold and therefore focus on a dummy variable that is equal to one if the average monthly abnormal temperature in the vicinity of the fund's headquarters over the twelve months preceding the vote is greater than 1 degree Fahrenheit (*Hot Temperature Shock 1 °F*). We also consider a continuous measure corresponding to the average monthly abnormal temperature at the fund's headquarters over the twelve months preceding the vote (*Abnormal Temperature*).

9. In untabulated tests, we check that our results are similar if we consider different thresholds around 2°F. In Table 7, we consider a substantially lower threshold (i.e., 1°F) as well as a continuous measure of abnormal temperature.

10. See: https://www.nytimes.com/2013/01/09/science/earth/2012-was-hottest-year-ever-in-us.html and https://en.wikipedia.org/wiki/2012_North_American_heat_wave.

3 Empirical results

3.1 Abnormally hot temperatures and mutual fund votes

We begin our empirical analysis by examining the notion that abnormally hot temperatures are likely to influence investors' perceptions of the importance of environmental issues, and as a consequence the voting behavior of fund managers on environmental proposals. Specifically, we estimate the following regression:

$$\begin{aligned} Vote\ For_{ijpt} = \beta_0 + \beta_1 Hot\ Temperature\ Shock_{it} \times Environmental\ Proposal_{ijpt} \\ + \beta_2 Hot\ Temperature\ \ Shock_{it} + Controls_{it} + P_{jpt} + F_i \end{aligned} \quad (2)$$

where, the subscripts i, j, p, and t, refer to funds, firms, proposals, and months, respectively. The dependent variable in the estimation is *Vote For*, a dummy variable that is equal to one if the fund votes in favor of the proposal. *Hot Temperature Shock* is a variable capturing whether the fund manager has been exposed to abnormally hot temperatures of at least 2°F during the 12 months preceding the month of the vote. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (if the proposal is related to social issues). The main variable of interest is the interaction between *Hot Temperature Shock* and *Environmental Proposal*. The coefficient on the interaction captures whether funds exposed to abnormally hot temperatures are significantly more likely to vote in favor of proposals related to environmental issues compared to proposals related to social issues.

Comparing the voting support for environmental and social proposals ensures that the exposure to abnormally hot temperatures is not related to unobservable factors influencing mutual fund ES votes in general. In unreported results, we find that our main results are robust if we compare the voting support for environmental proposals to the one for governance proposals. *Controls* is a set of time-varying controls at the fund level that may influence voting patterns. Specifically following prior literature (e.g., Calluzzo and Kedia 2019; He et al. 2021; Iliev and Lowry 2015), we control for fund turnover ratio and the net

assets under management. We also include the interaction terms between the aforementioned variables and the environmental proposal dummy to control for these characteristics being associated with greater propensity to support environmental proposals.

We control for unobserved heterogeneity by including a rich set of fixed effects. First, we include *Proposal* fixed effects, which capture each proposal voted on at the shareholder meeting of a given firm in a given year. This is the strongest control for how the nature and timing of the proposal impacts mutual fund voting. In particular, the *Proposal* fixed effects subsume $Firm \times Year$ fixed effects and absorb the effect of any time-varying firm level characteristics, such as profitability, size, or governance. Moreover, the *Proposal* fixed effects also capture proposal characteristics, including whether the proposal is related to environmental issues, or whether the proposal has a positive ISS recommendation. Second, we include *Fund* fixed effects to capture fund level fixed characteristics that may influence mutual fund voting on ES proposals, such as fund ideology (Bolton et al. 2020; Michaely et al. 2021).

We estimate a linear probability model using OLS, as this allows us to include saturated fixed effects. The linear probability model also helps with the interpretation of interaction terms in our estimation (see Ai and Norton (2003) and Greene (2010)). In line with Iliev and Lowry (2015), we cluster the standard errors at the fund level.

Table 2 reports the regression results of Equation (2). We report the results with and without the interaction term of interest. Both regressions include *Proposal* fixed effects, which capture each proposal voted for a firm in a given year and subsume $Firm \times Year$ fixed effects and *Fund* fixed effects.[11] The coefficient on the interaction between *Hot Temperature Shock* and *Environmental Proposal* is positive and statistically significant at the 1% level, indicating that funds whose managers have been exposed to abnormally hot temperatures are significantly more likely to vote in favor of proposals related to environmental issues. In Column 2, the coefficient of *Hot Temperature Shock* is no longer statistically significant,

11. Proposal fixed effects also absorb the effect of the dummy variable Environmental Proposal.

indicating that the exposure to abnormally hot temperatures translates into greater voting support for E proposals but not for S proposals.

The results are consistent with the conjecture that exposure to abnormally hot temperatures increases fund managers' awareness of the importance of environmental issues and translates into greater voting support only for environmental proposals, but not for proposals related to social issues. Support for environmental proposals by funds whose managers have been exposed to abnormally hot temperatures is economically important. As the unconditional support for environmental proposals is 28%, the 4.31 coefficient estimate of the interaction of *Hot Temperature Shock* and *Environmental Proposal* seen in Column 2 represents a 15% increase in the likelihood of the fund manager supporting the environmental proposal.

3.2 Firm-level climate risk

Recent studies document substantial variation in climate risk across firms and its implications for firm value (e.g., Bolton and Kacperczyk 2021a; Kölbel et al. 2020; Sautner et al. 2020). Therefore, the impact of personal experience of climate change on voting support for environmental proposals could differ across firms, depending on their exposure to climate risk. We expect the effect of personal experience of climate change to be stronger for environmental proposals targeting firms with greater climate risk, as those firms will suffer the most from climate change. We test this hypothesis using the following four measures of climate risk:

i) The firm-level climate change exposure developed by Sautner et al. (2020). This measure is constructed using transcripts of earnings conference calls. As argued by Sautner et al. (2020), a key benefit of using conference calls is that they are less susceptible to "greenwashing" by management. The measure captures the proportion of the conversation during the call that is centered on climate change as a measure of the firm's exposure to climate risk.

ii) The measure of climate risk (notably transition and regulatory risk) based on mandatory disclosure developed by Kölbel et al. (2020). Specifically, they use BERT, an A-I based algorithm for language understanding, to analyze 10-K reports that firms are required to file with the SEC. The measure captures whether climate relevant risks (i.e., transition and physical risks) are mentioned in item 1.A of 10-K reports.

iii) The sensitivity of stock returns to significant temperature changes (Kumar et al. 2019).

iv) The ranking of industries based on Scope 1 and Scope 2 intensities (i.e., Scope 1 and Scope 2 emissions divided by firm market value) constructed by Ilhan et al. (2021) in their analysis of carbon tail risk.

In Table 3, we examine whether the effect of exposure to abnormally hot temperatures on mutual fund voting support for environmental proposals is stronger for proposals targeting firms with greater climate risk. In all columns, the dependent variable is a dummy variable equal to one if the mutual fund votes in favor of the proposal and zero otherwise. The main variable of interest is the triple interaction between *Hot Temperature Shock*, *Environmental Proposal*, and *High Climate Risk*. *High Climate Risk* is a dummy variable that is equal to one for votes related to firms with a greater level of climate risk and is computed successively using the four above-mentioned measures. At the top of each column, we indicate the measure on which the *High Climate Risk* dummy is based. Specifically, in Column 1, *High Climate Risk* takes the value of one for votes related to firms for which climate change exposure based on Sautner et al. (2020) measure is in the top quartile of the distribution. In Column 2, *High Climate Risk* takes the value of one for firms for which the sum of transition and physical climate risks based on Kölbel et al. (2020) is in the top quartile of the distribution. In Column 3, *High Climate Risk* takes the value of one for votes related to firms with a sensitivity of stock returns to abnormal temperatures in the top quartile of the distribution. As described in Kumar et al. (2019), this sensitivity corresponds to the estimated coefficient in a regression of monthly excess returns on abnormal temperatures. We therefore scale the coefficient by its standard error to account for estimation error. In

Column 4, *High Climate Risk* takes the value of one for votes related to firms belonging to industries with an emission intensity in the top quartile of the distribution based on the ranking built by Ilhan et al. (2021).

The results are very similar for the four measures of climate risk. In all columns, the coefficient on the triple interaction between *Hot Temperature Shock*, *Environmental Proposal*, and *High Climate Risk* is positive and statistically significant, indicating that fund managers exposed to abnormally hot temperatures are significantly more likely to vote in favor of environmental proposals when firms have high climate risk.

3.3 The role of prior awareness on climate change

Fund managers that are already more aware and conscious of climate change (e.g., managers of environmentally responsible funds or managers living in an environment that is more attentive to these issues) are likely to have a greater tendency to support environmental proposals, and at the same time their voting behavior is less likely to change following exposure to abnormally hot temperatures. Simply stated, for more climate-conscious investors, the exposure to abnormally hot temperatures is less likely to act as a shock raising awareness on environmental issues. We test this prediction using two characteristics that are likely to be related to fund managers' attitude towards environmental issues.

First, we focus on environmentally responsible funds (E funds). Following He et al. (2021) and Michaely et al. (2021), we classify a fund in our sample as an E fund if its name contains a string that identifies it as an environmentally responsible fund.[12] In Table 4, we examine whether E funds are more supportive of environmental proposals in general, and whether the effect of abnormally hot temperatures on mutual fund voting support for environmental proposals is different for E funds and other funds. The dependent variable is equal to one if the mutual fund votes in favor of the proposal and zero otherwise. *E Fund* is a

12. He et al. (2021) and Michaely et al. (2021) both examine ES funds. Given the particular focus of our paper, we seek to identify funds that are explicitly environmentally responsible. Based on Michaely et al. (2021), the list of strings is: "green", "low carbon target", "clean", "climate", "ecology", "environment", "wind energy", and "solar energy".

dummy variable that is equal to one if the fund is environmentally responsible and zero otherwise. In Column 1, we start by verifying that E funds indeed have a greater tendency to support environmental proposals. The coefficient on the interaction between *E Fund* and *Environmental Proposal* is positive and statistically significant at the 1% level, confirming that E funds are more likely to support environmental proposals in general. In Column 2, we examine whether E funds are less likely to change their voting behavior following the exposure to abnormally hot temperatures. We continue to find that the coefficient of the interaction between *Hot Temperature Shock* and *Environmental Proposal* is positive and statistically significant. However, the coefficient on the triple interaction between *Hot Temperature Shock*, *Environmental Proposal*, and *E Fund* is negative and statistically significant at the 1% level, indicating that managers of E funds react significantly less to personal experience of climate change than other funds.

One way to interpret the result is that for those managers, the exposure to abnormally hot temperatures is less of a shock. Second, we examine whether managers of mutual funds located in areas that are more receptive to scientific evidence on climate change are less likely to change their voting support for environmental proposals after experiencing abnormally hot temperatures. Along the same arguments as for E funds, fund managers who are more exposed to scientific arguments on climate change and its consequences should be more supportive of environmental proposals in general and their voting behavior should be less affected by the exposure to abnormally hot temperatures. We test this hypothesis using new publicly available data from the Yale Program on Climate Change Communication. This dataset captures the significant geographic variation of beliefs toward climate change documented and provided by Howe et al. (2015).[13] Specifically, at the county level, the authors provide the percentage of the population who believe that climate change is happening in the U.S.

In Table 5, we examine whether the effect of exposure to abnormally hot temperatures

13. The data are available as for the year 2016 and are obtained from the following website: http://climatecommunication.yale.edu/visualizationsdata/ycom-us-2016/.

on mutual fund voting support for environmental proposals is different depending on local views toward climate change. *Climate Change Attitude* is a dummy variable that is equal to one if the mutual fund is located in an area where the percentage of county residents who believe that climate change is happening is in the top decile of the distribution.[14] In Column 1, the coefficient on the interaction between *Environmental Proposal* and *Climate Change Attitude* is positive and statistically significant at the 1% level, indicating that mutual fund managers located in areas that are more receptive to scientific evidence on climate change are significantly more likely to vote in favor of environmental proposals. In Column 2, the main variable of interest is the triple interaction between *Hot Temperature Shock*, *Environmental Proposal*, and *Climate Change Attitude*. The coefficient on the triple interaction is negative and statistically significant, indicating that mutual fund managers located in areas more receptive to scientific evidence on climate change react significantly less to abnormally hot temperatures. Their initial level of support was higher, and they are likely to be less surprised by (and hence learn less from) their personal experience of climate change.

Collectively, the results from this section suggest that mutual fund managers that have a greater natural tendency to support environmental proposals, are less affected by personal experience of climate change and also suggest that local environment and attitudes towards climate change have an important effect on support for environmental policies.

3.4 Alternative measures of personal experience of climate change

In this section, we consider alternative measures capturing a mutual fund manager's exposure to abnormally hot temperatures. Table 6, Panel A reports the results. We start by focusing on less salient exposures to abnormally hot temperatures. First, we consider a dummy variable that is equal to one if the average monthly abnormal temperature at the fund's headquarters over the twelve months preceding the vote is greater than 1 degree Fahrenheit (*Hot Temperature Shock 1 °F*). The results from Column 1 show that the coefficient of the

14. Results are qualitatively similar if we use the top quartile or quintile.

interaction between *Hot Temperature Shock 1°F* and *Environmental Proposal* is positive and statistically significant at the 1% level. The results confirm that fund managers having experienced abnormally hot temperatures are significantly more likely to vote in favor of environmental proposals. The magnitude of the coefficient (i.e., 2.33) is however lower than the coefficient in our baseline regression with a temperature shock of at least 2°F (i.e., 4.31), consistent with the highest abnormal temperatures having a stronger effect. In Column 2, we consider the average monthly abnormal temperatures in the area of the fund's headquarters over the twelve months preceding the vote. The coefficient of the interaction between *Abnormal Temperature* and *Environmental Proposal* is statistically significant but the coefficient is relatively small, consistent with the effect of local temperatures being non-linear and with the highest abnormal local temperatures being the most salient (Choi et al. 2020).

Next, we consider fund managers' exposure to alternative weather-related events such as low snowfall or natural disasters (e.g., hurricanes and floods). Table 6, Panel B reports the descriptive statistics for the number of funds and votes affected by different weather-related events. The number of unique funds affected by major natural disasters is 239, compared to 2,920 unique funds affected by an abnormally hot temperature of 2°F (or more). Moreover, about 16% of votes are made by mutual funds that have been exposed to abnormally hot temperatures in the 12 months preceding the vote compared to only 1.5% of votes by mutual funds affected by a major natural disaster. The vast majority of mutual fund managers would therefore become aware of climate change through abnormally hot temperatures. Regarding snowfall, the number of unique funds affected by abnormally low snowfall is 2,004. Low snowfall is however less often mentioned as a personal experience of climate change compared to abnormally hot temperatures (e.g., Akerlof et al. 2013). Furthermore, it almost never snows in some states, making abnormally low snowfall less relevant as a personal experience of climate change.

In Table 6, Panel C, we examine how these alternative proxies for personal experience of

climate change affect mutual funds' voting support for environmental proposals. In Column 1, we focus on a dummy variable, *Low Snowfall Shock*, that is equal to one if mutual fund managers' experience an abnormally low level of snowfall (i.e., at least one standard-deviation below the mean). The results show that the coefficient of the interaction between *Low Snowfall Shock* and *Environmental Proposal* is positive and statistically significant at the 10% level (p-value = 6.7%), suggesting that mutual fund managers who have been exposed to abnormally low snowfall are more likely to vote in favor of environmental proposals. In terms of economic effect, as the unconditional support for environmental proposals is 28%, the 1.23% coefficient estimate of the interaction of *Low Snowfall Shock* and *Environmental Proposal* seen in Column 1 represents a 4.4% increase in the likelihood of the fund manager supporting the environmental proposal.

In Column 2, we focus on a dummy variable, *Natural Disaster*, that is equal to one if the fund is affected by a major natural disaster over the twelve months preceding the vote. We consider that a fund is affected if it is located in a county hit by a major natural disaster that creates more than $1 billion of total damage, or in the same state as the disaster zone. The results show that the coefficient on *Natural Disaster* is positive and significant at the 1% level, indicating that mutual fund managers increase their voting for ES proposals in general after being exposed to a major natural disaster. On the contrary, the coefficient of the interaction between *Natural Disaster* and *Environmental Proposal* is not statistically significant, indicating that the effect of natural disasters is not specific to environmental proposals. Relatedly, using a narrower sample of 134 affected mutual funds, Fich and Xu (2021) find a positive effect of mutual fund managers' exposure to hurricanes on their voting support for environmental proposals. One possible consideration, however, is that exposure to natural disasters also affects the risk attitudes of CEOs and fund managers (e.g., Bernile et al. 2017; Bernile et al. 2021), and hence it might also influence the voting behavior of mutual fund managers on all proposals, as indeed we find. Moreover, a concern with using only hurricanes is that they are infrequent and geographically concentrated, as only 134 funds are affected.

Although climate change can also manifest itself in alternative weather-related events like natural disasters, because abnormally hot temperatures are more frequent and less concentrated geographically, they represent a more likely channel through which the population of mutual fund managers should become aware of climate change. Furthermore, our focus rests on an emerging body of research on the 'local warming' effect showing that people's judgments of climate change are impacted by recent, local temperatures (see Sugerman et al. (2021) for a meta-analysis).

3.5 Robustness tests

In this section, we present empirical tests we have conducted to assess the robustness of our results. We report the results in Tables 7 and 8.

First, when the firm and the mutual fund are headquartered in the same state or linked to the same weather station, they will both be exposed to abnormally hot temperatures at the same time. In this case, it is impossible to disentangle whether the greater voting support for environmental proposals is due to the fund's exposure or to the firm's exposure to abnormally hot temperatures. Addoum et al. (2021) show that extreme temperatures affect companies' earnings. In Table 7, we re-estimate our baseline regression excluding observations for which the firm and the fund are headquartered in the same state (Column 1) or for which the firm and the fund are linked to the same weather station (Column 2). The results from both columns show that the coefficient of the interaction between *Hot Temperature Shock* and *Environmental Proposal* is positive and significant, indicating that our main results hold when we exclude observations for which the firm and the fund are simultaneously exposed to abnormally hot temperatures. Second, as mentioned earlier, 2012 was marked by a sharp increase in temperatures across the United States and could drive our results. In Column 3, we therefore reproduce our baseline regression excluding the year 2012 and find that our main results hold. Third, in line with common approach (e.g., He et al. 2021; Iliev and Lowry 2015), standard errors are clustered at the fund level. To account for the possible

non-independence in the errors at the proposal level, in Column 4, we cluster standard errors at the proposal level. Finally, in Column 5, we further control for the weight of the stock in the fund's portfolio, and the size of the fund's stake in the company. In both cases, we find that our main results are robust.

We expect temperature shocks to specifically affect funds' support for environmental proposals (as opposed to social or governance proposals). While it allows for a better identification, our main setting captures a greater support for environmental proposals in relative terms (with respect to social proposals). We ensure that the greater support we document is specific to environmental proposals by examining separately the voting support for environmental, social, and governance proposals. Table 8 reports the results. The coefficient on *Hot Temperature Shock* is positive and statistically significant for the sample of environmental proposals but insignificant for the samples of social or governance proposals. This confirms that mutual fund managers exposed to abnormally hot temperatures increase their support for environmental proposals only, consistent with a greater consideration for environmental concerns.

3.6 Voting outcome

In this section, we examine the implications of our results for the outcome of environmental proposals. As explained by He et al. (2021), ES proposals are unique in that they nearly always fail.[15] However, the aggregate voting support matters and in particular, contributes to the pressure on companies to act on environmental issues (e.g., Grewal et al. 2016; He et al. 2021). We therefore focus on the aggregate support received by environmental proposals. More formally, we estimate the following equation:

$$\begin{aligned} Aggregate\ Support_{ipt} = \beta_0 + \beta_1 Proportion\ \ Fund\ \ Shocked_{it} \\ + \Gamma_1 Firm\ Controls_{it} + \Gamma_2 Proposal\ Controls_{ip} + T_t + F_i \end{aligned} \tag{3}$$

where *Aggregate Support* is the fraction of positive votes received by proposal p in firm i

15. In our sample, about 2% of the environmental proposals pass.

in year *t*. *Proportion Fund Shocked* is the (share-weighted) fraction of mutual funds exposed to abnormally hot temperatures at the firm level. We control for several firm and proposal level variables. Controls at the proposal level include dummies for whether ISS or the firm management recommend to vote in favor of the proposal. We also control for firm level variables that may influence the outcome of the proposal (see Denes, Karpoff, and McWilliams (2017) for a review). Specifically, we control for size, profitability, leverage, market-to-book ratio, and asset tangibility. Finally, we include firm and year-month fixed effects.

Table 9, Column 1, presents the regression results of the estimation of Equation (3). The results show that the aggregate voting support for an environmental proposal is significantly larger when a greater (share-weighted) fraction of mutual funds are exposed to abnormally hot temperatures. Based on Column 1, a one standard deviation increase in the fraction of mutual funds exposed to abnormally hot temperatures is associated with an increase of 4.14 percentage points in the aggregate voting support. Compared to an average support of 24%, this represents a 17% increase. The controls have their expected signs. In particular, consistent with prior evidence that many mutual funds follow ISS recommendations (e.g., Iliev and Lowry 2015), we find that the aggregate voting support is significantly larger when ISS recommends to vote in favor of the proposal. Conversely, negative management recommendation is associated with lower aggregate support.

In Columns 2 and 3, we estimate Equation (3) for social proposals and governance proposals, respectively. The results show that the (share-weighted) fraction of mutual funds exposed to abnormally hot temperatures is not statistically associated with the aggregate voting support for these types of proposals. Overall, the results from Table 9 confirm that the role played by personal experience with climate change is specific to shareholder voice on environmental issues. They also suggest that the voting behavior of mutual funds exposed to abnormally hot temperatures leads to a greater aggregate support for environmental proposals, thereby increasing pressure on management to take actions on environmental issues.

4 Conclusion

This paper studies how mutual fund managers' personal experience of climate change affects their voting behavior on environmental proposals. We find that mutual fund managers exposed to abnormally hot temperatures are significantly more likely to vote in favor of environmental proposals. These results are robust to a stringent set of fixed effects. Moreover, since the exposure to abnormally hot temperatures increases voting support for environmental proposals relative to social proposals, it is unlikely to be due to omitted factors.

Evidence suggests that the exposure to abnormally hot temperatures may act as a "wake-up call" for fund managers, that alerts them about environmental issues. In particular, we find that funds with a greater natural tendency to support environmental proposals (e.g., environmentally responsible funds, funds located in areas more receptive to scientific evidence on climate change) are less prone to react to abnormally hot temperatures. Moreover, support for environmental proposals following hot temperatures exposure does not increase in an undifferentiated way but is significantly more pronounced for firms with greater climate risk exposure. Overall, our study sheds light on the role played by personal experience of climate change for shareholder voice on environmental issues. The role of personal experience is however less pronounced in areas more receptive to scientific evidence of climate change, consistent with education playing an important part in making investors act on climate change.

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Figure 1. Number of funds and shocked funds over years

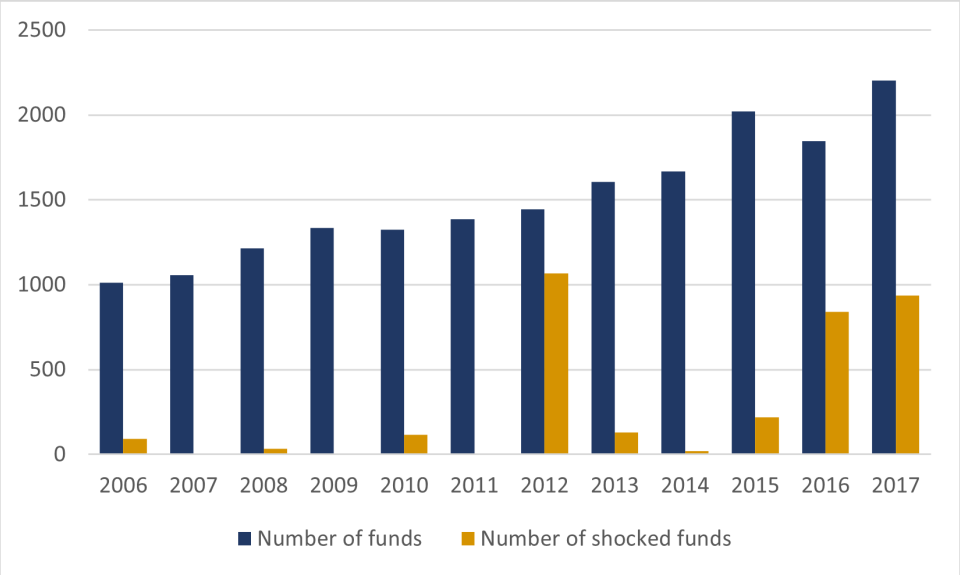

Table 1. Summary statistics

This table provides the summary statistics of the variables we use in our empirical analysis. All the variables are defined in Appendix A3.

Variables	#Obs.	Mean	S.D.	0.25	Mdn	0.75
Vote For	333,008	20.00	40.00	0.00	0.00	0.00
Environmental Proposal	333,008	0.40	0.49	0.00	0.00	1.00
Hot Temperature Shock	333,008	0.16	0.37	0.00	0.00	0.00
Hot Temperature Shock 1°F	333,008	0.36	0.48	0.00	0.00	1.00
Abnormal Temperature	333,008	0.43	1.54	-0.64	0.47	1.47
Ln (TNA Fund)	333,008	4.66	2.86	2.75	4.83	6.69
Turnover Ratio	333,008	0.27	7.39	0.18	0.44	0.88
E Fund	333,008	0.01	0.09	0.00	0.00	0.00
Climate Change Attitude (%)	328,534	78.41	4.57	74.30	79.99	82.15
Climate Change Exposure	300,608	0.12	0.26	0.00	0.04	0.10
Climate Risk	194,855	8.92	14.25	2.00	4.00	11.00
Climate Sensitivity	275,319	0.14	1.06	-0.55	0.11	0.84
Industry Emissions Intensity Rank	164,898	18.76	12.94	7.00	17.00	29.00

Table 2. Hot temperature shocks and MF voting on ES proposals

This table reports OLS estimates in a sample that includes mutual fund votes on ES proposals for Russell 3000 firms over the period from 2006 to 2018. The dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. The main independent variable is the interaction between *Environmental Proposal* and *Hot Temperature Shock*. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (that is if it is related to social issues). *Hot Temperature Shock* is a dummy variable that is equal to one if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 2 degrees Fahrenheit over the twelve months preceding the vote of the proposal. The regressions include fund turnover ratio (*Turnover Ratio*) and the natural logarithm of total net assets under management (*Ln (TNA Fund)*). Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1)	(2)
Hot Temperature Shock	1.47***	-0.62
	(0.373)	(0.413)
Hot Temperature Shock × *Env. Proposal*		4.31***
		(0.750)
Ln (TNA Fund)	-0.45*	0.02
	(0.257)	(0.254)
Turnover Ratio	0.01	-0.01
	(0.011)	(0.012)
Observations	332,446	332,443
Proposal Fixed Effects	Yes	Yes
Fund Fixed Effects	Yes	Yes
Interacted Controls	No	Yes
Adjusted R-squared	0.454	0.513

Table 3. Firm-level climate risk

This table reports OLS estimates in a sample that includes mutual fund votes on ES proposals for Russell 3000 firms over the period from 2006 to 2018. The dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. The main independent variables are the interaction between *Environmental Proposal* and *Hot Temperature Shock* as well as the interaction between *Environmental Proposal*, *Temperature Shock*, and *High Climate Risk*. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (that is if it is related to social issues). *Hot Temperature Shock* is a dummy variable that is equal to one if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 2 degrees Fahrenheit over the twelve months preceding the vote of the proposal. *High Climate Risk* is a dummy variable that is equal to one for firms with a level of climate risk in the top quartile of the distribution. We consider four different measures of climate risk. The names of climate risk measures are indicated at the top of each column. All regressions include proposal fixed effects, fund fixed effects as well as fund turnover ratio and the natural logarithm of total net assets under management. Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1) Climate Change exposure Sautner et al. (2020)	(2) Climate risk Koelbel et al. (2020)	(3) Climate sensitivity Kumar et al. (2019)	(4) Emission Ranking Ilhan et al. (2021)
Hot Temp. Shock × *Env. Proposal*	3.63***	3.61***	2.92***	1.45**
	(0.720)	(0.798)	(0.747)	(0.703)
Hot Temp. Shock × *Env. Proposal* × *High Clim. Risk*	3.92***	2.80**	5.98***	3.46***
	(1.185)	(1.377)	(1.114)	(1.329)
Hot Temp. Shock × *High Clim. Risk*	0.46	-0.61	0.53	-1.73
	(0.675)	(0.883)	(0.558)	(1.140)
Observations	300,039	194,221	274,734	164,469
Proposal Fixed Effects	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Interacted Controls	Yes	Yes	Yes	Yes
Adjusted R-squared	0.514	0.493	0.511	0.503

Table 4. E Funds

This table reports OLS estimates in a sample that includes mutual fund votes on ES proposals for Russell 3000 firms over the period from 2006 to 2018. The dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. The main independent variables are the interaction between *Environmental Proposal* and *Hot Temperature Shock* as well as the interaction between *Environmental Proposal*, *Hot Temperature Shock*, and *E Fund*. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (that is if it is related to social issues). *Hot Temperature Shock* is a dummy variable that is equal to one if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 2 degrees Fahrenheit over the twelve months preceding the vote of the proposal. *E Fund* is a dummy variable that is equal to one if the fund is environmentally responsible and zero otherwise. All regressions include proposal fixed effects, fund fixed effects as well as fund turnover ratio and the natural logarithm of total net assets under management. Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1)	(2)
Hot Temperature Shock × *E Fund*		2.91
		(9.429)
Env. Proposal × *Hot Temperature Shock*		4.39***
		(0.750)
Env. Proposal × *E Fund*	9.66***	10.11***
	(1.911)	(1.832)
Env. Proposal × *Hot Temperature Shock* × *E Fund*		-16.51***
		(4.860)
Observations	332,443	332,443
Proposal Fixed Effects	Yes	Yes
Fund Fixed Effects	Yes	Yes
Controls	Yes	Yes
Interacted Controls	Yes	Yes
Adjusted R-squared	0.513	0.513

Table 5. Local views on climate change

This table reports OLS estimates in a sample that includes mutual fund votes on ES proposals for Russell 3000 firms over the period from 2006 to 2018. The dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. The main independent variables are the interaction between *Environmental Proposal* and *Hot Temperature Shock* as well as the interaction between *Environmental Proposal*, *Hot Temperature Shock*, and *Climate Change Attitude*. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (that is if it is related to social issues). *Hot Temperature Shock* is a dummy variable that is equal to one if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 2 degrees Fahrenheit over the twelve months preceding the vote of the proposal. *Climate Change Attitude* is a dummy variable that is equal to one if the mutual fund is located in an area where the percentage of county residents who believe that climate change is happening is in the top decile of the distribution. All regressions include proposal fixed effects, fund fixed effects as well as fund turnover ratio and the natural logarithm of total net assets under management. Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1)	(2)
Hot Temperature Shock × *Climate Change Attitude*		-0.04
		(1.573)
Env. Proposal × *Hot Temperature Shock*		5.14***
		(0.793)
Env. Proposal × *Climate Change Attitude*	2.86**	3.81***
	(1.385)	(1.287)
Env. Proposal × *Hot Temperature Shock* × *Climate Change Attitude*		-6.48**
		(2.677)
Observations	327,975	327,975
Proposal Fixed Effects	Yes	Yes
Fund Fixed Effects	Yes	Yes
Controls	Yes	Yes
Interacted Controls	Yes	Yes
Adjusted R-squared	0.514	0.515

Table 6. Alternative measures of personal experience of climate change

Panel A. Alternative measures of exposure to abnormally hot temperatures

This table reports OLS estimates in a sample that includes mutual fund votes on ES proposals for Russell 3000 firms over the period from 2006 to 2018. In all columns, the dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (that is if it is related to social issues). *Hot Temperature Shock 1°F* is a dummy variable that is equal to one if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 1 degree Fahrenheit over the twelve months preceding the vote of the proposal. *Abnormal Temperature* is the monthly of abnormal temperature over the twelve months preceding the vote. All regressions include proposal fixed effects, fund fixed effects as well as fund turnover ratio and the natural logarithm of total net assets under management. Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1)	(2)
Hot Temperature Shock 1°F	-0.59	
	(0.371)	
Hot Temperature Shock 1°F × Env. Proposal	2.33***	
	(0.580)	
Abnormal Temperature		0.02
		(0.133)
Abnormal Temperature × Env. Proposal		0.39*
		(0.224)
Observations	332,443	332,443
Proposal Fixed Effects	Yes	Yes
Fund Fixed Effects	Yes	Yes
Controls	Yes	Yes
Interacted Controls	Yes	Yes
Adjusted R-squared	0.513	0.513

Panel B. Descriptive statistics for the different proxies for personal experience of climate change

This table reports descriptive statistics for different proxies for personal experience of climate change. For each proxy, we report the number of unique funds and unique fund votes affected.

	Whole Sample	Hot Temperature Shock	Low Snowfall Shock	Natural Disaster
Unique fund votes	333,008	54,272	50,727	4,774
Unique funds	5,994	2,920	2,004	239

Panel C. Low snowfall and natural disasters

This table reports OLS estimates in a sample that includes mutual fund votes on ES proposals for Russell 3000 firms over the period from 2006 to 2018. In all columns, the dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (that is if it is related to social issues). *Low Snowfall Shock* is a dummy variable that is equal to one if the fund manager has been exposed to abnormally low snowfall (i.e., at least one standard-deviation below the mean) over the twelve months preceding the vote of the proposal. *Natural Disaster* is a dummy variable that is equal to one if the fund manager has been exposed to a major natural disaster over the twelve months preceding the vote. We consider that a fund is affected if it is located in a county hit by a major natural disaster that creates more than $1 billion of total damage, or in the same state as the disaster zone. All regressions include proposal fixed effects, fund fixed effects as well as fund turnover ratio and the natural logarithm of total net assets under management. Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1)	(2)
Low Snowfall Shock	-0.71	
	(0.465)	
Low Snowfall Shock × *Env. Proposal*	1.23*	
	(0.671)	
Natural Disaster		6.12***
		(1.995)
Natural × *Env. Proposal*		1.82
		(1.902)
Observations	332,443	332,443
Proposal Fixed Effects	Yes	Yes
Fund Fixed Effects	Yes	Yes
Controls	Yes	Yes
Interacted Controls	Yes	Yes
Adjusted R-squared	0.513	0.513

Table 7. Robustness checks

This table reports OLS estimates in a sample that includes mutual fund votes on ES proposals for Russell 3000 firms for restricted samples. The sample restriction is indicated at the top of each column. In all columns, the dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. The main independent variable is the interaction between *Environmental Proposal* and *Hot Temperature Shock*. *Environmental Proposal* is a dummy variable that is equal to one if the proposal is related to environmental issues and zero otherwise (that is if it is related to social issues). *Hot Temperature Shock* is a dummy variable that is equal to one if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 2 degrees Fahrenheit over the twelve months preceding the vote of the proposal. All regressions include proposal fixed effects, fund fixed effects as well as fund turnover ratio and the natural logarithm of total net assets under management. Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1) Drop firms headquartered in same state	(2) Drop firms attached to the same station	(3) Drop 2012	(4) Standard errors clustered by by proposal	(5) Additional controls
Hot Temperature Shock × *Env. Proposal*	4.22***	4.24***	4.62***	4.31***	4.964***
	(0.784)	(0.754)	(0.824)	(1.045)	(1.355)
Observations	315,536	328,609	319,903	333,008	133,013
Proposal Fixed Effects	Yes	Yes	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Interacted Controls	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.512	0.513	0.516	0.512	0.520

Table 8. E, S, and G proposals

This table reports OLS estimates in a sample that includes mutual fund votes on Environmental, Social, or Governance proposals for Russell 3000 firms. Governance proposals are the shareholder proposals our sample funds vote on that do not belong to E or S. In all columns, the dependent variable, *Vote For*, is a dummy variable that is equal to one if the fund votes in favor of the shareholder proposal. *Hot Temperature Shock* is a dummy variable that is equal to one if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 2 degrees Fahrenheit over the twelve months preceding the vote of the proposal. All regressions include proposal fixed effects, fund fixed effects as well as fund turnover ratio and the natural logarithm of total net assets under management. Standard errors are robust to heteroskedasticity, clustered by fund, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Vote For (*100)	(1) Environmental proposals	(2) Social proposals	(3) Governance proposals
Hot Temperature Shock	1.22**	0.50	-0.01
	(0.582)	(0.324)	(0.005)
Observations	133,886	197,817	999,824
Proposal Fixed Effects	Yes	Yes	Yes
Fund Fixed Effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Adjusted R-squared	0.582	0.468	0.520

Table 9. Voting outcome

This table reports OLS estimation results of Equation (3). We regress the aggregate voting received by a proposal on the fraction of mutual funds exposed to abnormally hot temperatures and control variables. The main dependent variable, *Aggregate Support*, is the percentage of votes "For" received by a proposal relative to all the votes of the shareholders. The main independent variable, *Proportion Fund Shocked*, is the share-weighted fraction of mutual funds affected by the hot temperature shock. All regressions include the following controls: a dummy variable equal to one if ISS issued a positive recommendation, a dummy variable equal to one if the firm management recommends voting against the proposal, firm size, leverage, market-to-book, return on assets, asset tangibility, year-month and firm fixed effects. Governance proposals are the shareholder proposals that do not belong to E or S. Appendix A3 provides the variable definitions. Standard errors are robust to heteroskedasticity, clustered by firm, and reported below in parentheses. Constant terms are not reported. ***, **, and * refer to significance at the 1%, 5%, and 10% levels, respectively.

Aggregate Support	(1) Environmental proposals	(2) Social proposals	(3) Governance proposals
Proportion Fund Shocked	0.18**	0.34	0.08
	(0.090)	(0.218)	(0.080)
ISS Positive Reco.	0.10***	0.14***	0.21***
	(0.028)	(0.022)	(0.013)
Management Negative Reco.	-0.34***	-0.77***	-0.34***
	(0.095)	(0.074)	(0.058)
Market-to-Book	0.00	-0.00	0.00
	(0.005)	(0.002)	(0.001)
Size	0.03	-0.02	0.01
	(0.051)	(0.038)	(0.023)
Leverage	-0.20	0.21	-0.13*
	(0.215)	(0.184)	(0.071)
Return on Asset	-0.29	0.11	0.04
	(0.200)	(0.175)	(0.078)
Asset Tangibility	-0.50***	0.18	-0.02
	(0.136)	(0.226)	(0.118)
Observations	501	653	3,055
Year-month Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Adjusted R-squared	0.390	0.606	0.610

Appendix A1. List of environmental and social shareholder proposals

Our sample includes shareholder proposals that are related to environmental issues and social issues. We use the ISS category code (*AgendaItemID*) to identify shareholder proposals related to the environment and social issues. We then follow He, Kahraman, and Lowry (2021) and refine this set of proposals in two ways. First, we remove a subset of proposals which either do not have a clear association with ES issues or appear data errors (e.g., proposals titled "Report on Pay Disparity" turns out to be about executive compensation, as opposed to the gender pay gap). The complete set of *AgendaGeneralDesc* for these 10 categories is: "Avoid Export of U.S. Jobs", "Charitable Contributions", "Company-Specific Board-Related", "Disclose Prior Government Service", "Plant Closures", "Political Activities and Action", "Political Contributions Disclosure", "Report on Outsourcing", "Report on Pay Disparity", and "Seek Sale of Company/Assets". Second, we review the detail description (*ItemDesc*) of 13 categories of proposals with generic titles. The complete set of *AgendaGeneralDesc* for these 10 categories is: "Climate Change Action", "Climate Change", "Human Rights Risk Assessment", "Human Rights-Related", "Require Environmental/Social Issue Qualifications for Director Nominees", "Link Executive Pay to Social Criteria", "Gender Pay Gap", "Glass Ceiling", "Labor Issues- Discrimination and Miscellaneous", "Tobacco-Related-Prepare Report, "Sever Links with Tobacco Industry", "Company Specific-Governance Related", and "Company-Specific-Shareholder Miscellaneous". Our final sample includes 1,706 ES proposals in 55 categories matching the ones in He, Kahraman, and Lowry (2021). Finally, we differentiate these ES proposals into E proposals and S proposals. To do so, we read through the brief description (*AgendaGeneralDesc*) or detailed description (*ItemDesc*). For some proposals, the brief description is explicit enough to identify E proposals (e.g., "Report on Climate Change" or "GHG emissions) or S proposals (e.g., "Human Rights Related" or "Report on EEO"). For proposals whose categories are not explicitly related to social or environmental issues (e.g., "Require Environmental/Social Issue Qualifications for Director Nominees"), it is necessary to read through the detailed description. The complete set of *AgendaGeneralDesc* for these proposals is: "Establish Environmental/Social Issue Board Committee", "Require Environmental/Social Issue Qualifications for Director Nominees", "Link Executive Pay to Social Criteria", and "Report on Sustainability". In this way, we identify that among the 1,706 ES proposals, 719 are related to environmental issues and 987 to social issues. The two tables below show the final list of our E and S shareholder proposal categories. Columns 1 to 3, respectively, report the unique ISS category code (*AgendaItemID*), title description (*AgendaGeneralDesc*), and the number of proposals in each category during our sample period.

ISS category code	Environmental proposal description	#proposals
S0206	Establish Environmental/Social Issue Board Committee	4
S0224	Require Environmental/Social Issue Qualifications for Director Nominees	14
S0352	Company Specific-Governance Related	1
S0510	Link Executive Pay to Social Criteria	8
S0708	Toxic Emissions	3
S0709	Nuclear Power-Related	17
S0711	Nuclear Safety	1
S0730	Report on Environmental Policies	23
S0731	Community- Environmental Impact	91
S0737	Toxic Substances	2
S0740	Environmental - Related Miscellaneous	13
S0741	Operations in Protected Areas	3
S0742	Report on Climate Change	111
S0743	GHG Emissions	156
S0744	Hydraulic Fracturing	15
S0745	Climate Change Action	2
S0777	Report on Sustainability	156
S0778	Wood Procurement	8
S0779	Renewable Energy	44
S0780	Energy Efficiency	6
S0781	Recycling	40
S0810	Company-Specific – Shareholder Miscellaneous	1

ISS category code	Social proposal description	#proposals
S0205	Establish Other Governance Board Committee	25
S0206	Establish Env./Soc. Issue Board Committee	26
S0224	Require Env./Soc. Issue Qualifications for Director Nominees	2
S0352	Company Specific-Governance Related	1
S0411	MacBride Principles	20
S0412	Human Rights Risk Assessment	18
S0414	Improve Human Rights Standards or Policies	157
S0415	Vendor Standards (For Reporting Purposes Only)	3
S0417	Workplace Code of Conduct (For Reporting Purposes Only)	6
S0423	Operations in High-Risk Countries	22
S0425	China Principles	4
S0427	Data Security, Privacy, and Internet Issues	25
S0510	Link Executive Pay to Social Criteria	14
S0602	Fair Lending	13
S0703	Tobacco - Related - Miscellaneous	8
S0710	Facility Safety	13
S0725	Weapons - Related	17
S0727	Review Foreign Military Sales	18
S0729	Review Drug Principles or Distribution	8
S0732	Sever Links with Tobacco Industry	1
S0733	Reduce Tobacco Harm to Health	7
S0734	Review Tobacco Marketing	16
S0735	Health Care - Related	39
S0736	Genetically Modified Organisms (GMO)	31
S0738	Product Safety	27
S0777	Report on Sustainability	3
S0810	Company-Specific – Shareholder Miscellaneous	3
S0811	Adopt Sexual Orientation Anti-Bias Policy	90
S0812	Report on EEO	48
S0815	Labor Issues - Discrimination and Miscellaneous	11
S0817	Gender Pay Gap	23
S0890	Animal Welfare	48
S0891	Animal Testing	24
S0892	Animal Slaughter Methods	19
S0911	Anti-Social Proposal	73
S0999	Social Proposal	124

Appendix A2. Matching procedure and sample construction

Analyzing the effect of temperature shocks on mutual fund voting requires data on mutual fund proxy voting from ISS and data on their headquarters' location from the CRSP mutual fund database. Because there is no unique fund identifier that is common to these two data sources, we follow standard approach in the literature (e.g., Matvos and Ostrovsky 2010; Iliev and Lowry 2015). In this Appendix, we provide details regarding the matching procedure we used and how it affects our final sample.

Since 2003, mutual funds are required to report their votes on form N-PX to be submitted to the SEC. From 2006 onward, ISS Voting Analytics provides the N-PX accession numbers it uses. For each N-PX number, we collect the fund tickers attached to the associated N-PX form from the SEC's website. More specifically, we refer to the ISS item *NPXFileID*. For instance, for the N-PX identifier 0000009713-07-000036, we go to the SEC's page https://sec.report/Document/0000009713-07-000036 and collect the tickers and their attached weblink reported at the bottom of the page, in the contracts table. We then link the SEC tickers to their corresponding CRSP funds. After that, we link back the SEC-CRSP fund identifiers to ISS funds. To do so, for each fund ticker, we retrieve the associated fund name from the SEC. For instance, for the fund ticker CMPFX, we collect information from the SEC's page: funds This link is provided together with the ticker at the bottom of the N-PX form. Then, for each N-PX form, we perform a fuzzy matching to match ISS fund names to the SEC fund names for which tickers are available. Prior to the matching, we format the ISS and SEC fund names to facilitate the pairing. For instance, we remove the name endings such as 'CLASS XX' from the SEC fund names, and for both ISS and SEC funds names, we turn them to upper case, trim them, and remove special characters and numbers. We use the Stata function *matchit* to perform the fuzzy matching. For each N-PX, we match each ISS fund name to the SEC fund name with the highest similarity score. When the similarity score is equal to 1, we do not conduct further checks (this is the case for 40% of the 9,985 unique funds for which at least one associated N-PX reports at least one ticker –

that is 3,974 unique funds). For the remaining ones, we validate the match manually when the similarity score is below 1 but above 0.7 (we drop 2,573 unique funds with a similarity score below 0.7). We find additional matches for 3,438 unique funds. In total, we find a match for 7,412 unique funds.

The starting point for our sample construction comprises 1,027,230 mutual fund votes on environmental and social proposals voted on for Russell 3000 firms over 2006-2018 by 15,041 unique funds with N-PX identifier. We first restrict the sample to mutual fund votes for which we find a N-PX fund name match. This restriction reduces our sample to 538,380 fund votes by 7,263 unique funds. We further restrict the sample to funds for which we can link the N-PX ticker to the N-PX fund name to CRSP data. This restriction reduces the sample to 414,248 fund votes (6,743 unique mutual funds). We further restrict the sample to funds for which we can compute the exposure to abnormal temperatures. This restriction results in a sample of 371,906 fund votes (6,436 unique mutual funds). We also require fund time-varying controls (turnover ratio and total assets under management, from CRSP mutual fund data) which further restrict our sample to 335,342 fund votes (6,009 unique mutual funds). Finally, we drop votes which are not "For", "Abstain", "Do not Vote", "Withhold", or "Against". Our final sample includes 333,008 mutual fund votes by 5,994 unique funds on 1,706 ES proposals (719 environment-related and 987 social-related) from 429 unique companies over 2006-2018.

Appendix A3. Variable definitions

Variables	Definitions	Sources
Abnormal Temperature	Average monthly abnormal temperature a fund has been exposed to over the last twelve months preceding the vote of a proposal.	NCDC
Aggregate Support	Number of votes "For" received by a proposal expressed as a percentage of total number of votes.	ISS
Asset Tangibility	Net property plant and equipment scaled by total assets.	Compustat
Climate Change Attitude	Dummy variable equals to one if the percentage of county residents who believe that climate change is happening is in the top decile of the distribution.	Yale Program on Climate Change Communication
Climate Change Exposure	Measure of firm-level climate exposure developed by Sautner et al. (2020).	Sautner et al. (2020)
Climate Risk	Measure of firm-level climate risk developed by Kölbel et al. (2020).	Kölbel et al. (2020)
Climate Sensitivity	The sensitivity of stock returns to abnormal temperature. This sensitivity corresponds to the estimated coefficient in a regression of monthly excess returns on abnormal temperature scaled by its standard error to account for estimation error.	CRSP and NDC
E Fund	Dummy variable equal to 1 if the fund is environmentally responsible. We classify a fund in our sample as E fund if its name contains a string that identifies it as environmentally responsible fund. Based on Michaely, Ordonez-Calafi, and Rubio (2021), the list of strings is: Responsib, sustainab, green, low carbon, clean, fossil, climate, ecolog, environm, water, alternative energy, wind energy, solar.	ISS
Emission Ranking	The ranking of industries based on Scope 1 and Scope 2 intensities (i.e., Scope 1 and Scope 2 emissions divided by firm market value) used by Ilhan, Sautner, and Vilkov (2021)	Ilhan, Sautner, and Vilkov (2021)
Environmental Proposal	Dummy variable equal to 1 if the proposal is related to environmental issues. The set of environmental proposals is listed in Appendix A.1	ISS

Hot Temperature Shock	Dummy variable equal to 1 if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 2 degree Fahrenheit over the twelve months preceding the vote of the proposal.	NCDC
Hot Temperature Shock 1°F	Dummy variable equal to 1 if the fund manager has been exposed to an average monthly abnormal temperature equal or greater than 1 degree Fahrenheit over the twelve months preceding the vote of the proposal.	NCDC
ISS Positive Reco.	Dummy variable coding for whether ISS recommendation is "For".	ISS
Leverage	Short and long term debt divided by total assets	Compustat
Ln (TNA Fund)	Natural logarithm of fund's total net assets	CRSP
Low Snowfall Shock	Dummy variable equal to 1 if mutual fund managers experience a level of abnormal snowfall that is at least one standard deviation below the mean over the twelve months preceding the vote of the proposal.	NCDC
Management Negative Reco.	Dummy variable coding for whether management recommends voting against the proposal.	ISS
Market-to-book	Market value of equity divided by book value of equity.	Compustat
Natural Disaster	Dummy variable equal to 1 if the mutual fund is affected by a major natural disaster over the twelve months preceding the vote . A fund is affected if it is located in a county hit by a major natural disaster that creates more than $1 billion of total damage, or in the same state as the disaster zone.	Sheldus
Proportion Fund Shocked	Average number of mutual funds affected by a temperature shock, weighted by the number of shares of each fund.	ISS / CRSP
Return on Asset	Net income divided by total assets	Compustat
Size	Natural logarithm of total assets	Compustat
Turnover Ratio	Rolling average of fund's past 12-month turnover ratio; turnover ratio is defined as the minimum (of aggregated sales or aggregated purchases of securities) divided by fund's average past 12-month total net assets.	CRSP

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