Real Effects of Shareholder Proposals:

Diversification in the Context of Climate Change

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ABSTRACT

Extant literature has struggled to identify real effects of shareholder proposals, finding them to depend on their context. Progressively, climate change has gathered interest at annual meetings where shareholders present proposals related to the subject. The literature explains circumstances in which diversification can serve as a defense. I find that firms in receipt of shareholder proposals related to climate change diversify more, mostly into related industries. I find mixed evidence on wealth enhancements of diversification spurred by these proposals. I address endogeneity concerns in a variety of ways. The robustness of my results suggest that shareholder proposals have real effects on diversification, at least in the context of climate change.

1.0 Introduction and Motivation

"[I am] not opining on whether the world's climate is changing, at what pace it might be changing, or due to what causes. Nothing that [follows] today should be construed as weighing in on those topics. Today's guidance will help [our understanding of shareholder proposals.]"

> *~ as adapted from SEC Chairman Shapiro's opening comments in SEC press release "SEC Issues Interpretive Guidance on Disclosure Related to Business or Legal Developments Regarding Climate Change," Jan. 27, 2010.*

My research demonstrates how corporate policies have been impacted by shareholder proposals. As a low-cost form of activism (Ferri, 2012), the literature on shareholder proposals suggests that their effectiveness hinges on the context in which they are made (Carleton, Nelson and Weisbach (1998), Bizjak and Marquette (1998), Thomas and Cotter (2007), Ertimur, Ferri and Stubbens (2010)). As a recurring topic of interest at annual meetings since the 1994 proxy season, shareholders have raised concerns about the adverse impacts that climate change may have on firm fortunes. These shareholder concerns have been expressed across hundreds of industries for decades. Given the time depth and industry breadth, the context of climate change provides an excellent framework for studying the dynamics of shareholder-initiated proposals in the US. The literature also suggests that firms turn to diversification for relief against poor prospects (Weston and Mansinghka 1971; Melicher and Rush, 1974; Mason and Goudzwaard, 1976; Hopkins, 1991; Matsusaka, 2001) or as a means to cope with adversity (Beneish et al., 2008; Gormley and Matsa, 2011; Gopalan and Xie, 2011). Intuitively and relying

on the literature, I have good reason to suspect diversification as a defensive tactic on behalf of firms in receipt of a shareholder proposal which references climate change.

The frequency and intensity of shareholder proposals has increased over time (see Figure 1), suggesting that firms may take defensive measures against proposals that address climate change. The literature explains how diversification can be an effective defense against poor prospects or adversity. Recently, climate-related proposals have gained more traction and consensus among shareholders against management,[1] suggesting that firm behaviors may be defensive, seek alternative lines of business or somehow adapt their practices. I examine the extent to which diversification provides firms with a defense against the pressure that shareholder proposals apply for firms to address climate change, while considering the implications to performance.

My general findings are that firms in receipt of shareholder proposals related to climate change do, in fact, diversify more and that this diversification takes place in related industries. Asset allocations shift but not into entirely new lines of business. This general finding withstands a full set of controls established by the literature also to influence diversification, as well as time and industry invariant factors. In addition, certain industries are expected to be impacted by climate change more than others. These industries with *a priori* expectations demonstrate more pronounced diversification into related industries. To address endogeneity concerns, I employ a matching estimator, an instrumental variable and a placebo test. When matched by size, industry and year, my results hold. When the Pope instruments for proposal

[1] Shareholders voted against management in 2017 for the following firms: ExxonMobil (62.3%), Occidental Petroleum Corp (67%), Dominion (48%), Duke Energy (46%) and Southern Company (46%). (McWilliams (2017))

influence, the impact on related diversification holds. When applied to a placebo, my results do not hold, i.e. placebo proposals do not display the same diversification behaviors that climate-related proposals do. Although designed to make causal claims, these endogeneity tests do not entirely disentangle the nature of the proposal process and the context under examination: climate change. While clean identification eludes, the real effect of climate-related proposals on diversification strengthens.

With respect to performance, I find mixed evidence. In general, proposal-induced diversification has a positive impact on accounting performance, which becomes negative when decomposed into related diversification. Stock performance, for all specifications, has a negative association with diversification that is relieved by size. Risk also depends on the form of diversification: decreased risk for accounting returns with general diversification, while increased risk for accounting returns with related diversification. For robustness, I examine changes in diversification as well as lags and find my results to hold.

My contributions to the literature are threefold. First, while there are a few studies on shareholder proposals and climate change, I am unaware of any such research which discovers real effects such as diversification. While climate change has been addressed extensively in the economics literature contemplating the social cost of carbon (Kokoski and Smith (1987), Nordhaus (1990), Morgenstern (1991), Sohngen and Mendelsohn (1998), Stern (2006, 2008), Pindyck (2007, 2012), Daniel, Litterman and Wagner (2016)), most of the discussion in finance, with respect to climate change, involves information aggregation and disclosure and is largely relegated to a subset of indices which aggregate corporate social responsibility (CSR) or environmental, governance and sustainability (ESG).

Next, shareholder proposals assist our understanding of shareholder activism, and a more general notion of persuasion over coercion. Shareholder proposals are an explicit expression of activism, as opposed to selling shares or taking a firm private. Despite their explicit statement, proposals have been difficult characterize. With respect to the proxy process and the market for corporate control, Manne (1965) is among the first to struggle with the purpose of proposals. Likewise, Pound (1988) at first finds inefficiencies that he later (1991) balances against shareholder rights. Karpoff et al (1996) continue the search only to find it without effect. Gillan and Starks (2007) are careful to differentiate between initial excitement and long-term improvement. Levit and Malenko (2011) theorize why activists can improve information aggregation when conflicts are exacerbated. Such conflict, Renneboog and Szilagyi (2011) explain, leads to shareholder proposals expressing "reputational pressure" on management. The current paper finds purpose in this form of shareholder activism to pressure corporate decision making.

Third, the diversification literature often paints this corporate behavior with distain (Jensen and Murphy, 1990; Jensen, 1986; Shleifer and Vishny, 1989; Amihud and Lev, 1981; Lang and Stulz, 1994; Scharfstein, 1998; Scharfstein and Stein, 2000; Rajan, Servaes and Zingales, 2000), until circumstances become more pressing. Then, diversification can put up a good defense. A minority of the literature views diversification favorably, beginning with Penrose (1959) who discusses the ability of firms to leverage dynamic organizational skills across industries and continuing with Lucas (1978) attributing firm "bigness" to managerial talent. The favorable view of diversification comes into focus with Weston and Mansinghka (1971), observing a defense mechanism at work to assist industries with poor prospects.

Melicher and Rush (1974) agree with the defensive that diversification provides, which Hopkins (1991) develops as a hypothesis and also finds support in favor of the defense. Later, Matsusaka (2001) derives a theoretical model to explain why diversification can provide net benefits in certain circumstances. These net benefits surface in the case of tobacco, (Beneish et al., 2008), for firms with newly exposed carcinogens (Gormley and Matsa, 2011), and with industries that become distressed unexpectedly (Gopalan and Xie, 2011). After reading each proposal related to climate change and management's response to them, I have good reason to characterize the firms that receive them as defensive and add to the diversification literature accordingly.

The following paper unfolds as follows. In order to appreciate the dynamics of this form of in-house governance, Section 2.1 reviews the shareholder proposal literature to see what other contexts have found merit for finance questions. A more in-depth discussion of the mechanics behind shareholder proposals follows, along with subsequent guidance by the SEC and other government entities. Equipped with context and how proposals play out, diversification is suggested by the literature, reviewed in section 2.2.

With expectations set for increased diversification, a discussion of the data, the hand-collected sample of climate-related proposals and variable construction follows is section 3. General methodology is discussed next, before results are discussed, along with endogeneity concerns and robustness checks is section 4. Finally, I conclude in section 5 that shareholder proposals related to climate change spur increased diversification that, in turn, have mixed impacts on performance and risk. While clean identification may elude, the preponderance of

evidence suggests that shareholder proposals have real effects in the context of climate change.

2.0 Literature Review

As with all matters which come to a vote, shareholder proposals involve politics. However, corporate politics differ from democracy in that there is no majority rule. With shareholder proposals in the US, "winning" 100% of the vote has no power to force the hand of management; it cannot tell the board what to do; there is no enforcement mechanism to enjoin the firm. Rather, proposing shareholders are left to persuade other shareholders, the directors and management that their initiatives are in the best interests of the firm. The vote outcome is more of a reflection of temperature taken on investor sentiment for how seriously the board and management should consider an active owner's explicit statements. This dynamic does not occur by chance or fluke. Proposal politics unfold not only by construction and original intent of Title 17, §240.14a-8 of the Code of Federal Regulations, but also each year by the Division of Corporate Finance, as it weighs the merits of proposals which may overstep their precatory purpose. In other words, shareholder proposals cannot put owners in the position of management or otherwise bridge Berle-Means separation. To appreciate the proposal process, it helps to review their mechanical innerworkings as set forth by 14a-8 "shareholder proposals."

2.1 The Mechanics: Regulations, Press Releases and Interpretations from the SEC

Annual meetings afford formal opportunities for shareholders to voice their concerns, within limits. First, a shareholder must own at least $2,000 of market value or 1% of equity for at least one year prior to the date that a proposal is submitted, with an intention to hold onto

the interest through the date of the annual meeting. The proposal is limited to 500 words and must be submitted 120 days prior to the release of the proxy statement, or approximately a half year before the annual meeting. However, the spirit of 14a-8 is contained in the conditions which seek to prevent matters that are frivolous, conflict with law, negate board functions or which unduly inhibit management from conducting day-to-day business. There are 13 conditions which limit shareholder proposals and permit management to petition the SEC for exclusion when proposals attempt to exceed their advisory nature. The most often discussed of these 13 conditions is *(7) Management Functions ("If the proposal deals with a matter relating to the company's ordinary business operations.")*

One of the more condition for excluding a proposal is *(12) prior proposals filed within the past 5 years which fail to meet the following conditions:*

i. *Obtain at least 3% of the vote when previously submitted within the past 5 years*
ii. *Obtain at least 6% of the vote if previously submitted twice within the past 5 years*
iii. *Obtain at least 10% of the vote if previously submitted three times or more within the past 5 years*

Should management petition for exclusion, on a case-by-case basis, the Division of Corporate Finance responds to firm requests with No Action Letters;[2] Staff recommends to the Commission either that no action be taken against a firm for excluding a proposal, or that the Commission should seek to enforce the shareholder's right to propose the matter at an annual meeting. Consequently, the intent or spirit of 14a-8 was not simply set in motion in 1942 with well wishes that shareholder resolutions ensue as intended. Rather, each and every proxy season the SEC Staff actively balances the rightful roles of shareholders, management and the

[2] For more information, see https://www.sec.gov/fast-answers/answersnoactionhtm.html.

board. Further, the Staff periodically releases Staff Legal Bulletins (SLBs) to provide general guidance of the Staff's (*not* the Commission's) current stance or method of reasoning on certain matters. Recent SLBs which apply to shareholder proposals, with particular relevance to climate change, are summarized next.

SLB 14E was released in 2009 with discussion of "significant policy issues" that the Staff considers important enough to supersede board functions. Ordinarily, the Staff defers to the board to evaluate risk matters. However, "a proposal that focuses on the board's role in the oversight of a company's management of risk may transcend the day-to-day business matters of a company and raise policy issues so significant that it would be appropriate for a shareholder vote."[3] While SLB 14E stops short of listing those issues, Staff had previously qualified environmental issues as "significant" in SLB No. 14C during 2005.

To further clarify when the Staff might supersede the board, SLB 14I in 2017 looks for a "well-reasoned" analysis from the board on (1) the proposal content and (2) the degree of micromanagement. In other words, if the board is not performing a careful analysis of a proposal, the Staff is inclined to deny requests to exclude it. Thus, during the 2018 proxy season, Apple successfully excluded a proposal concerning greenhouse gas emissions on "ordinary business" grounds, while TJX and GM could not exclude similar proposals, the difference being "how [the] board of directors has analyzed this matter." (Stein, 2018). The Division issued SLB 14J in 2018 and referenced climate change with respect to micromanagement as grounds for exclusion: "a proposal to generate a plan to reach net-zero

[3] https://www.sec.gov/interps/legal/cfslb14e.htm

greenhouse gas emissions by the year 2030, which sought to impose specific timeframes or methods for implementing complex policies, was excludable on the basis of micromanagement."[4] Proposals involving "intricate detail," "specific time-frames" and "complex policies," [5] had previously served as grounds for exclusion. These grounds resurface as micromanagement in SLB 14J issued in 2018.

Into 2019, the SEC Roundtable[6] discussions ponder the merits and abilities of proposals to serve shareholder interests. Some of these discussions suggest that proposals serve an integral role for minority interests, while other comments relegate proposals to an antiquated process that squanders firm resources. Senator Schatz of Hawaii is concerned that the expanded use of micromanagement exclusions target climate change related proposals.[7] The proposal process continues to evolve, often with specific reference to climate change.

From the original provisions of Rule 14a-8 in 1942 through Roundtable discussions in 2019, the SEC guides and seeks public comment on the use of shareholder proposals for governing ownership interests. While the subject matter of some proposals may be "so significant," the board continues to play a vital role in deciphering how significant the matter is to the firm. Shareholder proposals assist Berle-Means separation to find the appropriate distance between diffuse ownership and disciplined management.

2.2 Diversification Literature

[4] Apple Inc. (Dec. 5, 2016).
[5] Release No. 34-40018 (May 21, 1998).
[6] "Statement Announcing SEC Staff Roundtable on the Proxy Process," Chairman Jay Clayton: July 30, 2018.
[7] https://www.sec.gov/comments/4-725/4725-4635935-176320.pdf

Diversification can provide firms with optional lines of business but possibly at the expense of focus and profits. Much of the diversification literature suggests that such options are costly, that investors prefer firms to maintain their focus, to keep doing whatever it is they do best to maximize profits. However, in the face of adversity or, in extreme, a liquidation option, investors might favor diversification. As a temporary defense, diversification can offer relief, according to a minority of the literature.

While testing the efficiency of conglomerates, Weston and Mansinghka (1971) notice instances of improved performance for certain industries experiencing difficulties. The authors term this defensive diversification, specifically citing technological obsolescence as motivation to diversify. While poor prospects can burden during cyclical downturns, an outlook that is perpetually dismal might cause firms to pursue another line of business. Weston and Mansinghka (1971) notice that firms with below-average P/E ratios alter their asset base toward average P/E ratios in other industries. Although firms cannot attain superior performance by diversifying, they can preserve value by adapting their behavior. Melicher and Rush (1974) quickly confirm acquisition strategies that employ such a defense. Hopkins (1991) formalizes a “defensive diversification” hypothesis and finds support for it. Like any defense, the one in diversification that Weston and Mansinghka discover has its limits. A good defense is only a good defense; it cannot take offense and compel superior performance. These limits are confirmed by Mason and Goudzwaard (1976) who find no “new life” provided by diversification. The “discount” literature, that later evolves, does not reconcile well with observation, so Matsusaka (2001) offers a theoretical model to explain how organizational skills (as opposed to technical know-how) can transition away from poor prospects or adversity.

Defensive diversification, in theory, is more of a search for a suitable match between management and favorable prospects, than it is a quest in and of itself. The defense must eventually rest and allow firms to refocus on growth opportunities, rather than remain in a constant flux of preservation.

Even though the following studies do not reference "defensive diversification," the adversity each examines suggests that their samples employ the defense. One of the more intuitive studies on the positive effects of diversification follows the tobacco industry's response to the 1990's wave of litigation over health concerns, which debunks a negative relationship between Tobin's q and diversification established by Lang and Stulz (1994). Beneish et al. (2008) demonstrate the value created for tobacco firms that diversify geographically by transforming cash into less liquid, non-tobacco operating assets for agency concerns that Jensen (1986) also suspected of tobacco firms. Beneish et al. (2008) discover positive abnormal returns when diversifying acquisitions are announced, in order to avoid expropriation by impending liabilities. The length of time involved with the case of tobacco also lends itself to parallels with climate change: migratory transitions as opposed to opportunistic reactions. Gormley and Matsa (2011) examine diversifying acquisitions as response to the release of the Report on Carcinogens from the National Toxicology Program. Firms with increased exposure to carcinogen liabilities attempt to "grow" out of adversity by acquiring cash rich targets. An important insight from their conclusion suggests that agency concerns are side aside until firms can resume normal operations. Owner-agent conflict[8] becomes

[8] From the agency perspective, diversification enables the usual conflicts: from compensation (Jensen and Murphy, 1990) to empire-building (Jensen, 1986), from entrenchment and job security (Shleifer and Vishny, 1989) to management's non-diversifiable, human capital in the firm (Amihud and Lev, 1981).

somewhat moot in the face of a more serious problem. Studying financial distress, Gopalan and Xie (2011) notice significant reductions in the diversification discount. By employing an unanticipated measure of industry distress,[9] the authors remark that conglomerates in trouble can grow in both expanding industries and those in decline, thus a bright side of internal capital markets. As shareholder proposals exert pressure to adapt firm practices to accommodate a societal shift to low carbon footprints, this strand of literature suggests that diversification can provide an effective defense.

From an input or resource-based view, certain firms possess organizational keys not easily replicated. These scare, internal resources prompt firms to leverage their dynamic skills across industries in order to grow (Penrose, 1959). One particularly valuable resource is the managerial talent that Lucas (1978) attributes to a firm's "bigness." Similarly, such a view not only continues to enjoy support in the literature but also applies to firms on the decline. Matsusaka (2001) designs a model that contradicts much of the empirical literature on diversification, in that he explains how some firms maximize value by keeping an assembled organization and applying it to a new product or industry, rather than disbanding an otherwise highly capable team. Although Matsusaka makes no claim that diversification can maximize value, he explains how it can avoid the high costs of financial distress. In his specification, there is simply a mismatch between team and product. Here, diversification can be better than costly liquidation.

[9] Developed by Opler and Titman (1994): Negative sales growth of the median firm in a single-segment industry with stock returns of -30%, where such a rapid drop is not anticipated by virtue of equity's forward-look.

To be convinced that diversification is spurred by shareholder proposals, it is critically important to understand the measures of diversifications that have been utilized by the literature. Although he developed a measure to capture industry concentration, Hirschman (1945) gauges each firm's relative weight in an industry according to sales and assets, a measure of concentration that Herfindahl (1950) adapts for his dissertation on the steel industry. While the Herfindahl-Hirschman index is most popularly known for its use by the antitrust division of the Department of Justice, it is also commonly used to measure firm diversification. Jacquemin and Berry (1979) consider predecessor metrics to quantify firm focus, then construct an entropy measure of diversification. The main advantage of entropy over other metrics is how it allows decomposition of related and unrelated diversification, which will be of interest when characterizing firm focus: total diversification, across industry classifications or within them. Further, prior literature has established that relatedness can lessen the negative impacts associated with diversification (Berger and Ofek, 1995).

To determine whether diversifying decisions in my context enhance performance, I follow Krueger (2016) and turn to accounting and stock returns. Similar to Beneish et al (2008) in the case of tobacco, when shareholder proposals draw attention to climate risk, I expect diversifying firms to contradict the negative relationship established by Lang and Stulz (1994) between diversification and performance. Further, diversification can be accomplished in smaller, incremental shifts. As Brav et al. (2018) inform the debate on how shareholder activists influence firm policies, diversification can occur at the leading edge of firm practices, in their research and development divisions which expand or narrow firm boundaries (Coase, 1937). The authors find support for efficiency gains after activists intervene – R&D expenses

are reduced and patent activity increases – with the strongest valuation improvements experienced by firms with more diversified innovation portfolios.

As mentioned, Weston and Mansinghka (1971) did not set out to establish diversification as a defense. It was only upon further inspection that the authors noticed this way "…to avoid adverse effects on profitability from developments taking place in the firm's traditional product market area." (p. 928) Over a ten year period, the profitability of conglomerates improves from inferior to average. From this observation, the authors consider the state of the specific industries involved. Mason and Goudzwaard (1976) test for signs of "new life" provided by conglomerates, but find that randomly chosen portfolios perform better, limiting the extent of improvement through diversification. If fear of increased legal liabilities belies concern over climate-related proposals, the case of tobacco (Beneish et al, 2008) indicates that owners and agents may set aside differences when faced with more threatening expropriation. Consequently, industrial diversification may offer reprieve to firm fortunes, even if only temporary.

Overall, the diversification literature suggests that firms which lose focus do so at the expense of shareholders. However, there exist certain contexts in which diversification may provide a profitable option, particularly when faced with poor prospects or adversity.

3.0 Methodology

My general methodology to assess the relationship between diversification and shareholder proposals employs ordinary least squares (OLS) regressions. Since the literature offers little guidance on what type of diversification to expect, my initial regressions explore different

measures and bases: assets or sales both for the Herfindahl measure at the 4-digit and 2-digit level of Standard Industrial Codes (SIC), and for the Jacquemin and Berry (1979) measure of Total Entropy (4-digit SIC), Entropy Across (2-digit SIC) or Entropy Within (2-digit SIC) – against my main variable of interest, a running total of the number of climate-proposals that a firm has received from 1994 to present.

$$Diversification_{i,t} = \alpha_{i,t} + \beta_1 Running_{i,t} + X_{i,t} + year_t + industry_j + \varepsilon_{i,t} \quad (2)$$

Where, Running is the variable of interest, and X is a vector of control variables that includes: Size, the natural log of assets; Tobin's q, the difference between market and book equity plus assets scaled by assets; Firm Age, based on a firm's listing in Compustat; Revenue Growth, the percentage change in revenues over a year; Stock Return, a firm's change in stock price; Leverage, the ratio of long-term and current portion of debt scaled by assets; and Cash Surplus, operating cash less depreciation plus R&D scaled by assets. In addition to these control variables, indicator variables are added to the regressions for the Fama-French 49 industry classifications and for year. Standard errors are clustered at the industry level.

3.1 Data Sources and Variable Construction

Fundamental accounting data and year end stock price information is taken from Compustat for both the North America Daily and Historical Segments. The data for shareholder proposals is obtained primarily from the SEC's Edgar database, assisted by SeekEdgar's Cloud Technology developed by Raj Srivastava, as well as from Institutional Shareholder Services (ISS).

The sample of climate-related shareholder proposals was gathered by conducting a search on SeekEdgar[10] using the term "climate change" and selecting DEF 14A as the form type. Since Niagara Mohawk Power Corporation received the first shareholder proposal addressing climate change in 1994, 242 different firms have received similar proposals in 114 different industries. My search returned 1,558 shareholder proposals from the beginning of 1994 through 2018. As I am interested in the ability of shareholder proposals to capture owner-agent tensions and affect corporate behavior, each proposal was reviewed to ensure that "climate change" appears directly in a proposal sponsored by a shareholder or in management's response to a proposal. I identify 689 such proposals which are contained in 591 DEF 14As, as some firms have several proposals in a given year. Sufficient data is available for 480 firm-year observations of climate-related proposals, after matching with Compustat and eliminating firms whose characteristics lie outside the 99% and 1% level.

For diversification, I follow Jacquemin and Berry (1979) who adapt a Herfindahl measure when introducing an entropy measure, which holds up well empirically and is also sensitive to small firms. Entropy allows decomposition of related and unrelated diversification, which will be of interest when assessing how impactful shareholder proposals have been on firm decisions. Total Entropy is the entire dispersion of assets (sales) among 4-digit SIC codes. Additionally, entropy can take place Across or Within 2-digit SIC codes, which are considered to be unrelated and related forms of diversification, respectively. By log-transforming these measures, Jacquemin and Berry (1979) allow for decomposition of Total Entropy (4-digit) by

[10] Refer to https://www.seekedgar.co:8443/home.html for a complete description of the technology.

subtracting Entropy Across (2-digit) from it to estimate Entropy Within the 2-digit level. If firms diversify when presented with a climate-related proposal, this decomposition should allow me to assess how drastic shifts in asset allocations or sales efforts are. Following Jacquemin and Berry (1979), Total Entropy is constructed as:

$$E_T = \sum_{i=1}^{n} P_i \, ln \, {}^{1}/_{P_i} \tag{3}$$

Where P is the share of a firm's assets (sales) in each industry, *i*, at the 4-digit level. Similarly, Entropy Across each firm's assets (sales) occurs at the 2-digit level and the sum of the shares, P, in each segment, *s*, multiplied by the inverse log of that share:

$$E_A = \sum_{i=1}^{n} P_s \, ln \, {}^{1}/_{P_s} \tag{4}$$

Entropy Within is the difference between the above two measures and represents an average of a firm's 4-digit diversification weighted by the relative importance of each segment within which the firm operates.[11]

$$E_W = E_T - E_A \tag{5}$$

Another way to proxy for diversification uses a Herfindahl (1950) measure of industry concentration adapted by Jacquemin and Berry (1979) for the firm, both at the 4-digit and 2-digit level, each using either assets or sales. As before, P_i is each firm's share in an industry and P_s is each firm's share in a segment.

$$H_{SIC4} = (1 - \sum_{i=1}^{n} P_i \, P_i) \qquad \text{and} \qquad H_{SIC2} = (1 - \sum_{s=1}^{n} P_s \, P_s) \tag{6}$$

[11] See Jacquemin and Berry (1979) p. 361-2 for the formal derivation.

I follow Faleye et al (2014) and Ferris, Javakhadze and Rajkovic (2017) for control variables with well-documented effects on diversification, in order to suggest the influence of shareholder proposals related to climate change. The controls for my main regressions and subsequent analyses include Size, Tobin's q, Firm Age, Revenue Growth, Stock Returns, Leverage and Cash Surplus.

As has been discovered in prior literature, Size has a powerful impact on diversification. Large firms tend to be more diversified. In fact, Lang and Stulz (1994) allow that "diversification [could] simply proxy for size." (p. 1254) To reduce the influence of "small" firms, I eliminate firms with assets less than the smallest climate-firm, which is approximately $800 million. I follow Bhandari and Javakahadze (2017) for my measurement of Tobin's q: the difference between market value and book value of equity plus total assets all divided by total assets. Leverage is the ratio of long-term debt and its short-term portion to total assets. Cash Surplus is cash flow from operations less depreciation plus R&D scaled by assets (Ferris et al, 2017). In order to reduce the influence of small startups with protracted, negative measures of Cash Surplus, I require that a firm have a positive cash surplus over its entire life, but do not exclude from my sample those firms which have negative cash surplus in some years. This procedure follows Brown et al (2009) to eliminate a small portion of outliers with a disproportionate influence.

The control variables for stock returns follow Bhandari and Javakhadze (2017). Here, Size is constructed as the natural log of the market value of assets: the market value of equity plus the book value of total liabilities. Market-to-Book is the ratio of the market value of equity to the book value of equity. Leverage is the same as above: the ratio of long-term debt and its

short-term portion to total assets. Momentum is the prior 24 months of compounded stock returns.

To assess the impact that climate-related proposals have on performance, I construct accounting and stock returns over a three-year period. Accounting performance includes returns on assets (ROA), return on investment (ROI) and total asset turnover (TAT). ROA is calculated as net income divided by beginning of period assets. ROI is calculated as earnings before interest, taxes, depreciation and amortization (EBITDA) divided by invested capital. TAT is calculated as total revenues divided by beginning total assets. Stock returns are compounded monthly beginning one year from the current fiscal year-end and ending three years hence for a three-year buy-and-hold return. To adjust for risk, the monthly factors on Ken French's website are employed to determine Jensen's alpha and the Carhart four-factor alpha. Risk is constructed as the standard deviations of accounting and stock returns.

3.2 Descriptive Statistics, Trends and Correlations

The descriptive statistics highlight the differences between the average firm in Compustat from 1994 to 2018 (Table 1A) and the average firm that received a shareholder proposal (Table 1B) during this timeframe. In comparison to firms that received a proposal related to climate change, the average firm is less diversified across all measures (Herfindahl and Entropy) than the average firm which receives a proposal related to climate change. Part of this difference may be attributable to the size differences between the two samples.

The variation in firm diversification policies according to size over time can be appreciated in Figure 3. Even before we consider the influence of proposals related to climate

change, we see that the largest Compustat firm is much more diversified than the smallest firm. Over time (left side of Figure 3), the average Compustat firm has diversified its asset base over more SIC codes at the 2-digit level, whereas the average firm in receipt of a climate-related proposals has diversified slightly less in view of the Herfindahl measure and dramatically less in view of the Entropy measure within the same 2-digit SIC code. These broad patterns of diversification policies will be important to consider when deciphering the unique impact that shareholder proposals related to climate change have.

Compared to the average Compustat firm, firms that receive a climate-proposals are more mature, have 1/5th the revenue growth, and 2/3rd the stock returns (comparing tables 1A and 1B). In terms of revenues, assets or market capitalization, the average treated firm is over 8 times larger than the control firms. The average firm and average firm in receipt of a proposals are similar in leverage, Tobin's q, Cash Surplus and Market:Book.

The pairwise correlations (Table 1C) show that Running (total of proposals related to climate change that a firm receives over time) has a positive correlation with all measures of diversification, as does Size with diversification, a relationship previously established by the literature (Ferris, Javakhadze and Rajkovic, 2017).

4.0 Results

4.1 Main Regressions

Tables 2A and 2B explore which diversification measures are associated with Proposal. As mentioned, the literature only builds expectations *that* shareholder proposals related to climate change can turn to diversification as a defense. The level (SIC at the 4-digit or 2-digit),

measure (Herfindahl or Entropy) and base (Assets or Sales) are largely empirical questions that Tables 2A and 2B begin to answer. Table 2A shows that only Herfindahl measures at the 2-digit level are significantly, negatively related to Running, which is contrary to the positive correlations shown in Table 1C. To determine whether diversification is taking place, across or within the 2-digit level, whether it is related or unrelated diversification, the Entropy measure allows for such a decomposition.

Table 2B entertains the same empirical exploration of all Entropy measures: levels (4-digit and 2-digit SIC) and bases (assets and sales), as well as Across and Within. With a full set of control variables, time and industry invariant factors, the Entropy measure where Running has an impact indistinguishable from zero occurs mostly Within the 2-digit level, both for assets and sales. Running is positively related and significant at the 1% level. As these climate-related proposals build up over time, they appear to have a positive impact on related diversification.

Overall, I find some interesting associations for my main regressions. As pressure from shareholders to address climate change mounts year after year, it has a negative impact on general diversification, as proxied by the Herfindahl measure at the 2-digit SIC level. Despite this overall reduction in diversification, a decomposition through the Entropy measure reveals that firms may increasingly diversify into related lines of business. These findings encourage the literature's suggestion that firms turn to diversification for a defense, with insight that it is related diversification. Given the broad range of industries which have experienced proposals related to climate change, certain industries may exhibit more acute diversification.

4.2 Industry Intensity

To help understand the intensity of the industry impact, the Sustainability Accounting Standards Board (SASB) provides a map of industries and segments believed to have materially relevant exposure to climate change. This heat map (see Figure 5) provides an *a priori* basis for which industries are more exposed to climate concerns. Extant literature also builds theoretical expectations for which industries are likely to experience a pronounced impact from climate change. Lee and Lounsbury (2011) draw on social movement literature to suggest a "consumer distance" (p.23) measure that uses a petroleum indicator, as this industry is more visible to consumers. For these reasons, I design regressions to focus on the impact of industry with indicator variables from the Fama-French 49 industry classifications for the Petroleum & Natural Gas and Utilities. Krueger (2016) aggregates Extractive Industries (SIC 12, 13 and 29 -- Oil, Gas, Petro, Coal, Natural Gas), which is also suggested by the SASB heat map to be a sector highly impacted by climate change.

Table 3A displays the results of introducing industry indicators to the Herfindahl measures as the dependent variables in the regressions, while holding the aforementioned control variables constant. Notice that all other industries, as captured by Running, are negative. The Petroleum & Natural Gas interactions (Petro*Running) are positive (and significant for Asset bases), while the Utilities interactions (Elect*Proposal) are all negative and significant at the 1% level. This suggests that, as shareholder bring climate change to attention at annual meetings, Petroleum firms respond by increasing general diversification, while Utility firms respond by focusing on existing lines of business.

Table 3B follows the same industry analysis, using the Entropy measures of diversification (for assets only in order to conserve space). There is no impact distinguishable from zero for the Petroleum firms, as shown by the interaction term. For Utility firms, total Entropy decreases, dominated by a decline in Entropy Across 2-digit SICs, while related diversification (Within) increases. Taken together, some industries experience more pronounced responses to climate-related shareholder proposals than do others.

4.3 Endogeneity Concerns

In order to assist identification and a unique impact of shareholder proposals related to climate change on diversification, I employ a matching estimator, an instrumental variable and a placebo. Following Krueger (2016), firms are matched based on size, industry and year. I employ the Coarsened Exact Matching (CEM) estimator, as introduced by Blackwell, Iacus, King and Porro (2009). As the authors discuss, the CEM estimator prunes the observations to avoid the "curse-of-dimensionality," where "adding one continuous variable to a dataset effectively kills exact matching because two observations are unlikely to have identical values on a continuous measure." (p.527) Once matched, I follow the suggestions of Rubin (2001, p. 174) to ensure (1) that the means are less than half a standard deviation apart, (2) the ratio of variance is close to one and (3) the variance ratio of residuals is within a relevant range. Table 4A shows a good match on size, industry and year, where the ratio variance of the treated is 0.84 or well within a relevant range (0.75 to 1.34). Table 4B confirms the highly significant, negative relationship of Running to Herfindahl at the SIC 2-digit level of prior regressions. Once matched against firms of similar size in the same industry and during the same year, firms that receive climate-related proposals diversify less overall.

Table 4C shows a highly significant, positive relationship that Running has on Total Entropy (4-digit) that when decomposed is shown to be related diversification, proxied by Entropy Assets Within SIC2. Unlike the previous regressions where I control for size, matching on size, industry and year produces a consistently positive and statistically meaningful impact that Running has on the Entropy measure of related diversification. With the CEM estimator, I am able to disentangle some of the mixed indications from prior regressions. Overall, firms are diversifying less but within the 2-digit SIC code their assets base and sales mix is becoming more diverse, when they receive a proposal related to climate change.

Another way to approach endogeneity employs a two-stage least squares regression with an instrumental variable. In hopes of locating an appropriate instrument that only affects diversification through the proposal channel, I consider the number of newswires and press releases in the United States by domestic publishers that reference the Pope and climate change. The natural log of the number of such articles serves as my instrumental variable. Although the Pope is an influential person and religious groups actively sponsor shareholder proposals, no known proposals are directly sponsored by the Pope. News articles on the Pope and climate change, therefore, cannot have the same direct link to diversification that shareholder proposals can have.

Referring to the correlations in table 1C, Proposal and Pope have a positive correlation. Even if the economic significance is marginal (0.042), the correlation is statistically significant at the 1% level. The intuition for the instrument is straight-forward: Pope might compel shareholders to sponsor proposals, yet the Pope is not a sponsoring shareholder himself. The first climate-related proposals were sponsored in 1994 by the Benedictine Sisters of San

Antonio, Texas, Immaculate Heart Missions of Arlington, Virginia, and The Sisters of St. Dominic of Caldwell, New Jersey: all Catholic sponsors. Further, the Institutional Shareholder Services (ISS) aggregates shareholder sponsors by type. Religious groups sponsor about 11 percent of all shareholder proposals, but religious groups are the most frequent sponsor (about 27 percent) of all climate-related shareholder proposals. Figure 6 displays the percentage of sponsorship for all proposals and those related to climate change, along with sponsorship frequency over time by the two most frequent sponsors: Religious groups and Socially Responsible Investing (SRI) funds. Given these dynamics, it is reasonable to assume that the Pope addressing climate change exerts an influence on proposals without directly influencing firm decisions to diversify.

Formally, the first stage relationship between Proposals and Pope is significant and the F-test is greater than the critical value of 10 for all specifications, for both Herfindahl and Entropy measures (Tables 5A and 5B). As mentioned, the Pope intuitively satisfies the exclusion restriction. The test of endogeneity is also satisfied in all specifications. As shown in Table 5A, all *Herfindahl* measures are significantly negative when the Pope instruments for Running. With the *Entropy* measures, the Pope also proves to be a valid instrument that also passes the Endogeneity test in all specifications of Table 5B. Running, as instrumented by the Pope, follows a similar pattern: significantly negative is all specifications, including Entropy Within 2-digit SIC.

While the strength of these results for Entropy is encouraging towards alleviating endogeneity concerns, it is still difficult to claim causation. The ubiquitous nature of climate change and the legal mechanics of shareholder proposals render true causal claims difficult to reconcile against reason or intuition. However, there does appear to be something unique

about the impact of climate-related proposals on diversification through matching and instrumenting. To gain additional clarity on the uniqueness of proposals, I turn to placebos.

The 500 words or so shareholders are afforded to make their proposals can address several shareholder concerns at once. Monks, Miller and Cook (2004) and Hoepner et al (2018) find efficacy in combining governance with environmental proposals. By extending their sample period, I reconstruct Monks, Miller and Cook (2004) and make some observations about adding and removing "climate change" from proposals to separate the roles of chairman and CEO from the same sponsor: increased support when "climate change" was included and a subsequent decrease in support when "climate change" was dropped. While this is only a casual observation, it does provide a reasonable basis with support from prior literature for testing whether the proposal process, in general, is responsible for the impact on diversification, with "climate change" only incidental to the process. In other words, there may be nothing special about these climate-related proposals. The impact is attributable to shareholder activism expressed by proposals, regardless of what is discussed in the 500 words.

The Institutional Shareholder Services (ISS) database characterizes shareholder proposals with a brief description of the Resolution and categorizes them with four-digit Item Codes. In an effort to address concerns about firms that experience shareholder proposals possessing certain characteristics that make them more likely to receive a proposal than firms that do not, I limit the sample to only those firms that have received at least one proposal from 1994 to 2018, i.e. an ISS sample, as opposed to the Compustat universe.

Further, instead of my hand-collected sample of "climate change" firms, I use the ISS Item Codes that capture climate-related proposals indicated by the ISS Resolution description. I create a running total of the proposals by item code: Run CC shp for the running total of climate-related shareholder proposal firm-years (item code 3425) and Run Non-CC shp for firm-years that receive all other proposals (not item code 3425).

The same regression design for the Herfindahl measure in table 2A is conducted in table 6A, using the ISS database and item codes. The pattern of results for diversification proxied by Herfindahl is similar to my hand-collected sample: same sign, similar magnitude, but with less significance. Firms that receive shareholder proposals related to everything other than item code 3425, Run Non-CC shp in table 6B, exhibit diversification according to the Herfindahl measure different than the climate proposals. For firms that receive proposals other than those related to climate change, there are significant, positive increases in the diversification of their sales at the 4-digit SIC level, whereas the diversifying behavior of firm that experience climate-related proposals is indistinguishable from zero.

I consider the Entropy measure of diversification developed by Jacquemin and Berry (1979) in tables 6C and 6D. Similar to my hand-collected data and the Compustat sample in table 2B, the ISS-sample in table 6C shows a positive impact on diversification, mainly for Entropy Within 2-digit SIC. Unlike the Herfindahl measure, the Entropy measure of related diversification provides some evidence toward defensive tactics. Climate-related proposals have a much greater impact on Entropy, than placebo proposals: six to seven times the coefficient, e.g. SIC2_AssetWithin for Run CC shp is 0.020 versus 0.003 for Run Non-CC shp.

These results, along with the matching estimator and instrumental variable, incline me to believe that the content of proposals can have an impact distinguishable from the proposal process, in general, and that I am not incorrectly attributing uniqueness to the impact that climate-related proposals have on diversification.

4.4 Performance

To determine the overall impact on firm performance of changes to firm behavior that proposals related to climate change have, I consider returns and risk both from accounting and stock perspectives. As a first step, I take the fitted estimates of diversification from regression (2) (with controls and time and industry dummies) and, next, use them in the following regression, controls and invariant factors are considered:

$$\overline{Accounting\ Performance}_{i,t+1,t+3} = \alpha_t + \boldsymbol{\beta_1} \widehat{Diversification}_{i,t} +$$

$$+ \sum Accounting\ Controls_{i,t} + year \quad + industry \quad + \varepsilon_t \qquad (7)$$

As described above, accounting performance is proxied by return on assets (ROA), return on investment (ROI) and total asset turnover (TAT), each averaged over a three-year period starting at t+1 and continuing through t+3. Return on assets is calculated as net income divided by beginning of period assets. Return on investment is calculated as earnings before interest, taxes, depreciation and amortization (EBITDA) divided by invested capital. Asset turnover is calculated as total revenues divided by beginning total assets. The accounting controls are the same as those in the main regression. In addition to these control variables,

indicator variables are added to the regressions for the Fama-French 49 industry classifications and for each year.

Similarly, stock performance is estimated based on $\widehat{diversification}$ predicted by equation (2) and utilized in the following regression:

$$\overline{Stock\ Performance}_{i,t+1,t+3} = \alpha_t + \boldsymbol{\beta_1}\widehat{Diversification}_{i,t} + \sum Stock\ Controls_{i,t} + year + industry + \varepsilon_t \quad (8)$$

Where the measures of Stock Performance include buy-and-hold returns for three-year periods on unadjusted stock returns and risk adjusted returns, using Jensen's alpha and the Carhart four-factor alpha. Stock returns are compounded monthly beginning a year from the current year and ending three years hence for a three-year buy-and-hold return. To adjust for risk, the monthly factors on Ken French's website are employed to determine Jensen's alpha and the Carhart four-factor alpha. The control variables for stock returns follow Bhandari and Javakhadze (2017). Here, Size is the market value of assets. Market-to-Book is the ratio of the market value of equity to the book value of equity. Leverage is the same as above: the ratio of long-term debt and its short-term portion to total assets. Momentum is the prior 24 months of compounded stock returns. Indicator variables are added to the regressions for Fama-French 49 industry classifications and for each year.

Table 7A displays the impact on accounting performance that predicted diversification influenced by Proposal has. Both the Herfindahl and Entropy measures have positive impacts on ROA, ROI and TAT, significant at the 1% level or better. The impact on stock performance can be seen in Table 7B. Both measures of predicted diversification, $\widehat{Herf2Assets}$ and

$\widehat{Entropy2Within}$, experience significant declines in stock performance on both a raw and risk-adjusted basis. These results reflect the literature, which also finds mixed evidence, that diversification *per se* is not a profitable strategy (Chang and Thomas, 1989) but can lead to positive outcomes in some circumstances (Beneish et al, 2008; Gormley and Matsa, 2011).

Table 7C shows the impact that fitted diversification has on risk, proxied as the variability of accounting and stock returns. The standard deviations of ROA and ROI are unaffected for $\widehat{Herf2Assets}$, while buy-and-hold returns increase their variability. This same pattern recurs: no change in the standard deviations of ROA and ROI for $\widehat{Entropy2Within}$, while the risk of stock performance increases.

4.5 Robustness

For robustness, I consider the pressure that shareholder proposals apply on diversification policies by looking at the number of Proposals in a single year and changes in diversification from year to year. As discussed above, some firms receive a single proposal over the entire, twenty-five-year period, while other firms have received up to 6 proposals in a single year. To gauge the impact that receiving multiple proposals in a single year has, I run Poisson regressions on the same Herfindahl and Entropy measures. The results are unreported but a general pattern emerges: the coefficients gain magnitude as firms experience more proposals in a single year. Proposals become more negative for the Herfindahl measures and more positive for the Entropy Within measures and more negative for Entropy Across.

For *changes* in diversification, I take the first difference in three-year moving averages of the Herfindahl and Entropy measures in tables 8A and 8B and regress them with the same

specifications in tables 2A and 2B. I discover a similar pattern of sign as in the preceding regressions but with reduced significance in some specifications. Herfindahl diversification is negative. Entropy Within diversification increases, while Entropy Across decreases.

Although management becomes aware of proposals almost a half-year before they are voted upon, it may take more time for firm policies to respond. Although I find significant, concurrent relationships (ignoring the "built-in" lag) between diversification and climate-related proposals, I also employ lagged independent variables to allow for the possibility of a delayed response. Changes in Herfindahl diversification are regressed against the same specifications as above but with independent variables lagged one year in unreported results. The one year lagged results indicate an increase in the Herfindahl for sales at the 4-digit SIC, significant at the 1% level. The regressions with the change in Entropy Within as the dependent, while independent variables are lagged one year, reveal similar patterns as before: increases in related diversification.

Shareholder proposals related to climate change are robust to alternative specifications and databases (ISS). When considering the intensity or importance of climate change to shareholders by the number of such proposals in a single year, firms diversify less overall but more into related industries. When considering changes in diversification, a similar pattern emerges: firms diversify less overall but more within existing lines of business. When allowing for a delayed response, lagged changes in diversification are also robust.

5.0 Conclusion

The literature suggests that diversification in and of itself is not a profitable endeavor. Firms are better served by improving their existing lines of business, not branching into other ones. As a response to circumstance, however, diversification can provide relief against poor prospects or adversity. In the context of climate change, diversification offers an alternative to business as usual. Increasingly, with more frequency and across more industries, shareholders have expressed concern at annual meetings over firm practices staying the course. Diversification is a response to shareholder demands the literature suggests. If the response exists, the extent and character of diversification is largely empirical.

I find that firms are responsive to shareholder pressure exerted through their proposals and that diversification is one such response. Given that Rule 14a-8 was designed to provide shareholders with a low-cost means of expressing concerns to management, and given that the SEC ensures that these expressions maintain Berle-Means distance, any causal statements about shareholder proposals *effecting* change in corporate behavior would defy their very construction. Nonetheless, "causality" tests can strengthen claims that shareholder proposals can have real effects attributable to the resolutions sponsored. With this qualification in mind, I am reassured by the consistent direction of results from a matching estimator, a straight-forward instrumental variable and a placebo, even if imperfect. Further reassurance is gained through the intensity of proposals, the change in diversification and lagging this change. In response to shareholder proposals referencing climate change, firms diversify their assets and sales less overall but more into related industries. Thus, shareholders are able to "voice" their concerns about climate change through the proposal process.

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Tables

Table 1A: Summary statistics Full Sample

Summary statistics

	N	Mean	Median	St.Dev	min	max	p25	p75	skewness	kurtosis
Diversification										
Herf Assets SIC4	38271	0.440	0.494	0.360	0.000	1.000	0.000	0.732	0.041	1.604
Herf Assets SIC2	38271	0.243	0.000	0.346	0.000	1.000	0.000	0.449	1.228	3.108
Herf Sales SIC4	38271	0.398	0.476	0.310	0.000	0.867	0.000	0.670	-0.140	1.482
Herf Sales SIC2	38271	0.124	0.000	0.197	0.000	0.659	0.000	0.213	1.386	3.515
Entropy Asset SIC4	38271	0.593	0.476	0.629	0.000	2.003	0.000	1.080	0.607	2.076
Entropy Asset Across SIC2	38271	0.196	0.000	0.328	0.000	1.183	0.000	0.337	1.541	4.172
Entropy Asset Within SIC2	38271	0.393	0.000	0.513	-0.000	1.748	0.000	0.693	1.075	2.986
Entropy Sales SIC4	38271	0.756	0.712	0.645	0.000	2.131	0.000	1.254	0.322	1.982
Entropy Sales Across SIC2	38271	0.209	0.000	0.326	0.000	1.186	0.000	0.381	1.452	3.988
Entropy Sales Within SIC2	38271	0.543	0.440	0.572	-0.000	1.927	0.000	0.958	0.718	2.397
Size										
Assets - Total	38271	14144.807	3647.943	28451.423	799.832	150590.369	1644.338	11527.111	3.521	15.665
Revenue - Total	38271	8325.883	2613.154	14879.300	2.041	75188.802	1130.995	7705.500	3.124	12.883
MV Equity	38271	10664.113	3110.765	19793.169	1.540	99453.813	1231.438	9501.104	3.151	12.987
Controls										
Tobin's Q	38271	1.706	1.369	1.066	0.542	8.410	1.084	1.911	3.010	15.121
Firm Age	38271	3.004	2.996	0.735	1.386	4.159	2.398	3.664	-0.180	2.039
Revenue Growth	38271	0.108	0.069	0.269	-0.580	1.738	-0.013	0.174	2.356	13.958
Stock Return	36397	0.119	0.071	0.433	-0.803	2.840	-0.110	0.280	1.912	11.554
Cash Surplus	38271	0.068	0.056	0.080	-0.266	0.448	0.023	0.103	0.774	6.398
Leverage	38271	0.613	0.611	0.217	0.060	1.503	0.477	0.742	0.395	4.304
Market:Book	38270	2.727	1.934	3.450	-7.978	22.291	1.190	3.240	2.702	16.392
Momentum (24mos)	35612	0.351	0.220	0.805	-0.895	5.858	-0.106	0.596	2.771	16.254
Performance										
Avg ROA $_{t+1,+3}$	21508	0.041	0.040	0.068	-0.498	0.267	0.014	0.074	-1.487	12.509
Avg ROI $_{t+1,+3}$	21466	0.208	0.188	0.140	-0.685	0.936	0.133	0.264	0.705	10.716
Avg TAT $_{t+1,+3}$	21508	0.871	0.711	0.674	0.056	3.916	0.410	1.108	1.825	7.316
BH Return $_{t+1,+3}$	21508	0.336	0.227	0.733	-0.869	5.683	-0.085	0.588	2.529	15.327
J Alpha $_{t+1,+3}$	21508	0.004	0.004	0.018	-0.050	0.104	-0.005	0.013	0.359	5.773
FF-Mom $_{t+1,+3}$	21508	0.003	0.003	0.017	-0.050	0.107	-0.006	0.011	0.562	6.744

Table 1B: Summary statistics Shareholder Proposal Sample

	N	Mean	Median	St.Dev	min	max	p25	p75	skewness	kurtosis
Diversification										
Herf Assets SIC4	480	0.541	0.626	0.314	0.000	1.000	0.323	0.759	-0.522	2.150
Herf Assets SIC2	480	0.268	0.118	0.318	0.000	1.000	0.000	0.488	1.038	3.022
Herf Sales SIC4	480	0.505	0.594	0.290	0.000	0.867	0.331	0.734	-0.673	2.107
Herf Sales SIC2	480	0.155	0.019	0.206	0.000	0.659	0.000	0.281	1.093	2.838
Entropy Asset SIC4	480	0.868	0.957	0.653	0.000	2.003	0.074	1.405	-0.010	1.744
Entropy Asset Across SIC2	480	0.291	0.071	0.362	0.000	1.183	0.000	0.588	0.899	2.461
Entropy Asset Within SIC2	480	0.577	0.553	0.531	-0.000	1.748	0.000	0.951	0.488	2.166
Entropy Sales SIC4	480	0.996	1.065	0.644	0.000	2.131	0.558	1.462	-0.084	2.031
Entropy Sales Across SIC2	480	0.264	0.055	0.340	0.000	1.186	0.000	0.466	1.153	3.259
Entropy Sales Within SIC2	480	0.731	0.693	0.581	0.000	1.927	0.101	1.149	0.292	2.040
Shareholder Proposals										
Proposals (per yr)	480	1.181	1.000	0.591	1.000	6.000	1.000	1.000	4.247	24.331
Mentions (climate change)	480	6.529	3.000	7.886	1.000	55.000	2.000	9.000	2.907	14.431
Running (total proposals)	480	3.837	2.000	5.908	1.000	48.000	1.000	4.000	4.231	24.460
Size										
Assets - Total	480	52116.794	30876.500	53619.110	799.845	150590.369	9134.949	78116.000	0.953	2.350
Revenue - Total	480	28444.400	14721.500	28373.124	490.079	75188.802	5470.350	55485.000	0.774	1.921
MV Equity	480	37643.314	21294.454	36853.221	179.111	99453.813	7170.768	64634.908	0.760	1.967
Controls										
Tobin's q	480	1.710	1.394	0.981	0.643	8.410	1.147	1.894	3.197	17.111
Firm Age	480	3.632	3.892	0.621	1.386	4.159	3.296	4.111	-1.356	4.112
Revenue Growth	480	0.022	0.030	0.210	-0.580	1.513	-0.056	0.115	0.783	10.323
Stock Return	467	0.082	0.068	0.354	-0.768	2.085	-0.094	0.207	1.654	10.208
Cash Surplus	480	0.067	0.053	0.074	-0.166	0.431	0.029	0.103	0.853	6.064
Leverage	480	0.634	0.634	0.198	0.085	1.503	0.493	0.760	0.202	4.308
Market:Book	480	2.920	2.105	3.725	-7.978	22.291	1.440	3.226	2.778	16.187
Momentum (24mos)	467	0.237	0.199	0.537	-0.895	3.475	-0.062	0.438	1.609	8.874
Performance										
Avg ROA $_{t+1,+3}$	206	0.046	0.040	0.062	-0.260	0.182	0.020	0.087	-1.066	6.740
Avg ROI $_{t+1,+3}$	206	0.206	0.188	0.132	-0.264	0.776	0.134	0.301	0.153	5.001
Avg TAT $_{t+1,+3}$	206	0.798	0.633	0.596	0.056	3.711	0.358	1.042	1.872	8.361
BH Return $_{t+1,+3}$	206	0.260	0.235	0.581	-0.802	4.097	-0.073	0.492	2.142	13.660
J Alpha $_{t+1,+3}$	206	0.000	0.002	0.016	-0.050	0.057	-0.008	0.008	0.008	5.200
FF-Mom $_{t+1,+3}$	206	0.000	0.002	0.014	-0.050	0.040	-0.007	0.007	-0.529	4.483

Table 1C: Pairwise Correlations: All Firms

This table shows a pairwise correlation among variables and their significance.

Variables	Herf Assets SIC4	Herf Assets SIC2	Entropy Asset SIC4	Entropy Asset Across SIC2	Entropy Asset Within SIC2	Running	Size	Tobin's q	Firm Age	Revenue Growth	Stock Return	Cash Surplus	Leverage	Pope
Herf Assets SIC4	1.000													
Herf Assets SIC2	0.730*	1.000												
Entropy Asset SIC4	0.534*	-0.014*	1.000											
Entropy Asset Across SIC2	0.297*	0.361*	0.573*	1.000										
Entropy Asset Within SIC2	0.460*	-0.248*	0.849*	0.060*	1.000									
Running	0.029*	0.008	0.051*	0.035*	0.041*	1.000								
Size (ln assets)	0.247*	0.156*	0.230*	0.160*	0.178*	0.111*	1.000							
Tobin's Q	-0.088*	-0.018*	-0.136*	-0.097*	-0.104*	-0.007	-0.107*	1.000						
Firm Age	0.138*	0.068*	0.208*	0.211*	0.120*	0.074*	0.181*	-0.009	1.000					
Revenue Growth	-0.074*	-0.039*	-0.060*	-0.034*	-0.051*	-0.021*	-0.052*	0.119*	-0.172*	1.000				
Stock Return	-0.015*	-0.008	-0.014*	-0.007	-0.013	-0.009	-0.022*	0.189*	-0.041*	0.092*	1.000			
Cash Surplus	-0.033*	0.029*	-0.108*	-0.072*	-0.083*	-0.006	-0.044*	0.579*	0.034*	0.036*	0.083*	1.000		
Leverage	0.065*	0.013	0.089*	0.057*	0.072*	0.000	0.182*	-0.189*	0.060*	-0.075*	-0.007	-0.326*	1.000	
Pope	0.021*	0.025*	-0.049*	-0.074*	-0.016*	0.042*	0.095*	-0.004	0.101*	-0.116*	-0.054*	0.027*	-0.002	1.000

* shows significance at the .01 level

Table 2A: Herfindahl Measures

This table uses ordinary least square regressions with Herfindahl measures of diversification defined as $H_{SIC4(2)} = (1 - \sum_{i(s)=1}^{n} P_{i(s)}\ P_{i(s)})$, where P is the percent of total assets or sales for each industry, *i*, or segment, *s*. *Herf4* and *Herf2* designate Herfindahl at the SIC 4-digit and 2-digit levels, respectively. *Running* is the total number of firm-year proposals which contain "climate change." Other control variables include: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above in the Description of Variables.

	(1)	(2)	(3)	(4)
	Herf4Asset	Herf4Sales	Herf2Asset	Herf2Sales
Running	-0.000	0.001	-0.006*	-0.004***
	(-0.140)	(0.647)	(-1.770)	(-2.769)
Size (ln assets)	0.064***	0.059***	0.042***	0.022***
	(9.710)	(11.731)	(5.083)	(4.334)
Tobin's Q	-0.021***	-0.021***	-0.015***	-0.009***
	(-4.130)	(-5.067)	(-2.866)	(-3.613)
Firm Age	0.039***	0.053***	0.020**	0.045***
	(4.391)	(6.766)	(2.163)	(5.781)
Revenue Growth	-0.031**	-0.026**	-0.021*	-0.005
	(-2.297)	(-2.181)	(-1.837)	(-0.564)
Stock Return	0.007	0.006	0.006	0.008**
	(1.043)	(1.196)	(1.124)	(2.681)
Leverage	0.038	0.048*	0.008	0.005
	(1.166)	(1.774)	(0.305)	(0.324)
Cash Surplus	0.019	-0.107	0.097	-0.092**
	(0.229)	(-1.646)	(0.902)	(-2.319)
_cons	-0.216***	-0.332***	0.062	-0.021
	(-3.915)	(-5.937)	(0.975)	(-0.469)
Obs.	36397	36397	36397	36397
R-squared	0.155	0.220	0.073	0.167
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 2B: Entropy Measures

This table uses ordinary least square regressions with Jacquemin and Berry (1979) Entropy measures of diversification defined in the following ways: Total Entropy takes place at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i \, ln \, {}^{1}/_{P_i}$, Entropy Across SIC2 is $E_A = \sum_{i=1}^{n} P_s \, ln \, {}^{1}/_{P_s}$, and Entropy Within is the difference between them, $E_W = E_T - E_A$. *Running* is the total number of firm-year proposals which contain "climate change." Other control variables include: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above in the Description of Variables.

	(1)	(2)	(3)	(4)	(5)	(6)
	SIC4_Asset	SIC4_Sales	SIC2_Asset Across	SIC2_Sales Across	SIC2_Asset Within	SIC2_Sales Within
Running	0.014**	0.003	0.000	-0.007***	0.013***	0.010***
	(2.558)	(0.615)	(0.117)	(-2.826)	(4.824)	(3.741)
Size (ln assets)	0.107***	0.143***	0.043***	0.042***	0.064***	0.101***
	(12.084)	(11.578)	(5.337)	(4.676)	(6.687)	(7.885)
Tobin's Q	-0.026***	-0.039***	-0.013***	-0.016***	-0.013**	-0.024***
	(-2.812)	(-4.483)	(-2.869)	(-3.455)	(-2.132)	(-3.224)
Firm Age	0.125***	0.103***	0.079***	0.076***	0.047***	0.027**
	(7.665)	(5.955)	(6.235)	(5.485)	(4.866)	(2.175)
Revenue Growth	-0.009	-0.043*	0.004	-0.005	-0.013	-0.038**
	(-0.384)	(-1.826)	(0.346)	(-0.372)	(-0.915)	(-2.168)
Stock Return	0.007	0.001	0.010**	0.013**	-0.003	-0.012
	(0.871)	(0.150)	(2.154)	(2.672)	(-0.522)	(-1.491)
Leverage	0.059	0.089	0.008	0.007	0.051	0.082*
	(1.186)	(1.558)	(0.287)	(0.235)	(1.262)	(1.714)
Cash Surplus	-0.243	-0.211	-0.101	-0.162**	-0.141	-0.050
	(-1.544)	(-1.530)	(-1.547)	(-2.412)	(-1.204)	(-0.418)
_cons	-0.932***	-0.991***	-0.206***	-0.097	-0.726***	-0.894***
	(-9.995)	(-7.247)	(-3.101)	(-1.183)	(-9.081)	(-7.859)
Obs.	36397	36397	36397	36397	36397	36397
R-squared	0.202	0.230	0.174	0.175	0.135	0.172
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 3A: Shareholder Proposal Effect on Herfindahl by Industry

This table uses ordinary least square regressions with Herfindahl measures of diversification defined as $H_{SIC4(2)} = (1 - \sum_{i(s)=1}^{n} P_{i(s)} P_{i(s)})$, where P is the percent of total assets or sales for each industry, *i*, or segment, *s*. *Herf4* and *Herf2* designate Herfindahl at the SIC 4-digit and 2-digit levels, respectively. Indicator variables for Fama-French 49 industry classifications for Petroleum & Natural Gas and Utilities are examined. *Running* is the total number of firm-year proposals which contain "climate change." Other control variables include: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above in the Description of Variables.

	(1)	(3)	(5)	(7)
	Herf4Asset	Herf2Asset	Herf4Asset	Herf2Asset
Running	-0.010**	-0.018***	-0.001	-0.003**
	(-2.137)	(-2.874)	(-0.667)	(-2.036)
Petro & Natural Gas	-0.053***	-0.002		
	(-3.236)	(-0.157)		
Petro*Running	0.012**	0.016**		
	(2.627)	(2.392)		
Utilities			-0.055***	-0.071***
			(-2.764)	(-5.108)
Utility*Running			-0.006***	-0.023***
			(-3.228)	(-20.488)
_cons	-0.349***	-0.197***	-0.360***	-0.207***
	(-6.912)	(-3.450)	(-7.125)	(-3.749)
Obs.	36397	36397	36397	36397
R-squared	0.096	0.034	0.096	0.037
Industry Dummy	No	No	No	No
Year Dummy	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 3B: Shareholder Proposal Impact on Entropy by Industry

This table uses ordinary least square regressions with Jacquemin and Berry (1979) Entropy measures of diversification defined in the following ways: *Entropy Within* is the difference between *Total Entropy* at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i \, ln \, {}^{1}/_{P_i}$, and *Entropy Across* SIC2 is $E_A = \sum_{i=1}^{n} P_s \, ln \, {}^{1}/_{P_s}$. Indicator variables for Fama-French 49 industry classifications for Petroleum & Natural Gas and Utilities are examined. *Running* is the total number of firm-year proposals which contain "climate change." Other control variables include: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above in the Description of Variables.

	(1)	(2)	(3)	(4)	(5)	(6)
	SIC4_Asset	SIC2_Asset Across	SIC2_Asset Within	SIC4_Asset	SIC2_Asset Across	SIC2_Asset Within
Running	0.004	-0.008	0.012	0.017***	0.008***	0.009**
	(0.322)	(-0.740)	(1.020)	(4.489)	(3.162)	(2.509)
Petro & Natural Gas	-0.020	0.066***	-0.087***			
	(-0.616)	(4.027)	(-3.513)			
Petro*Running	0.015	0.013	0.002			
	(1.288)	(1.129)	(0.202)			
Utilities				-0.011	-0.026	0.016
				(-0.267)	(-0.985)	(0.557)
Utility*Running				-0.019***	-0.033***	0.014***
				(-5.392)	(-17.215)	(4.311)
_cons	-0.765***	-0.287***	-0.478***	-0.766***	-0.285***	-0.482***
	(-7.857)	(-4.383)	(-5.861)	(-7.753)	(-4.211)	(-5.966)
Obs.	36397	36397	36397	36397	36397	36397
R-squared	0.120	0.091	0.071	0.120	0.090	0.070
Industry Dummy	No	No	No	No	No	No
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

The Coarse Exact Matching (CEM) estimator developed by Blackwell, Iacus, King and Porro (2009), which "temporarily coarsen each variable into substantively meaningful groups, exact match on these coarsened data, and then retain only the original (uncoarsened) values of the matched data." (p.527).

Table 4A: CEM Test of Match on Size, Industry and Year

	Mean		t-test			
Variable	Treated	Control	%bias	t	p>t	V(T)/V(C)
Size (ln revenues)	9.642	10.124	-36.4	7.02	0.000	0.84

* if variance ratio outside [0.75; 1.34]

Table 4B: CEM: Herfindahl

This table uses ordinary least square regressions with Herfindahl measures of diversification defined as $H_{SIC4(2)} = (1 - \sum_{i(s)=1}^{n} P_{i(s)}\ P_{i(s)})$, where P is the percent of total assets or sales for each industry, *i*, or segment, *s*. *Herf4* and *Herf2* designate Herfindahl at the SIC 4-digit and 2-digit levels, respectively. *Running* is the total number of firm-year proposals which contain "climate change." Other control variables include: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

	(1)	(2)	(3)	(4)
	Herf4Asset	Herf4Sales	Herf2Asset	Herf2Sales
Running	0.000	0.006***	-0.008***	-0.004***
	(0.039)	(3.207)	(-3.650)	(-3.368)
_cons	-0.579***	-0.250	-0.296	0.148
	(-3.071)	(-1.538)	(-1.456)	(1.297)
Obs.	4471	4471	4471	4471
R-squared	0.184	0.203	0.187	0.230
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 4C: CEM: Entropy

This table uses ordinary least square regressions with Jacquemin and Berry (1979) Entropy measures of diversification defined in the following ways: Total Entropy takes place at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i\ ln\ {}^{1}/_{P_i}$, Entropy Across SIC2 is $E_A = \sum_{i=1}^{n} P_s\ ln\ {}^{1}/_{P_s}$, and Entropy Within is the difference between them, $E_W = E_T - E_A$. *Running* is the total number of firm-year proposals which contain "climate change." Other control variables include: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

	(1)	(2)	(3)	(4)	(5)	(6)
	SIC4_Asset	SIC4_Sales	SIC2_Asset Across	SIC2_Sales Across	SIC2_Asset Within	SIC2_Sales Within
Running	0.021***	0.013***	0.000	-0.008***	0.021***	0.021***
	(4.862)	(3.193)	(0.008)	(-3.546)	(5.920)	(5.518)
_cons	-0.767**	-0.969***	0.023	0.096	-0.791**	-1.065***
	(-2.033)	(-2.692)	(0.112)	(0.491)	(-2.553)	(-3.186)
Obs.	4471	4471	4471	4471	4471	4471
R-squared	0.215	0.232	0.241	0.247	0.175	0.226
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

The following table employ a two-stage least squares regression with an instrumental variable. In the first stage, Herfindahl measures of diversification defined as $H_{SIC4(2)} = (1 - \sum_{i(s)=1}^{n} P_{i(s)} \; P_{i(s)})$, where P is the percent of total assets or sales for each industry, *i*, or segment, *s*. *Herf4* and *Herf2* designate Herfindahl at the SIC 4-digit and 2-digit levels, respectively, which are regressed against the number of times that a Business Wire or Press Release in the US by a US publisher contained the "Pope" and "climate change" in a Nexis-Uni search, along with other controls as indicated. In the second stage, the results from the first stage instrument for the *Running* total of shareholder proposals. All four models include controls: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

Table 5A: 2SLS: The Pope and Climate Change in Press: Herfindahl

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Stage1_1	Stage2_1 Herf Assets	Stage1_2	Stage2_2 Herf Sales	Stage1_3	Stage2_3 Herf Assets	Stage1_4	Stage2_4 Herf Sales
VARIABLES	Running	SIC4	Running	SIC4	Running	SIC2	Running	SIC2
Running		-0.331**		-1.021***		-0.023		-1.123***
		(-2.56)		(-4.71)		(-0.20)		(-5.03)
Pope	0.009***		0.009***		0.009***		0.009***	
	(5.20)		(5.20)		(5.20)		(5.20)	
Constant	-0.669***		-0.669***		-0.669***		-0.669***	
	(-9.08)		(-9.08)		(-9.08)		(-9.08)	
Observations	31,399	31,399	31,399	31,399	31,399	31,399	31,399	31,399
F-Test (SW)	27.09		27.09		27.09		27.09	
p-value	(0.000)		(0.000)		(0.000)		(0.000)	
Endogeneity Test		8.622		120.621		0.022		313.337
p-value		(0.003)		(0.000)		(0.8814)		(0.000)
Industry Dummy		Yes		Yes		Yes		Yes
Year Dummy		No		No		No		No
Other Controls		Yes		Yes		Yes		Yes

Robust t-statistics in parentheses, unless otherwise indicated

*** p<0.01, ** p<0.05, * p<0.1

The following table employ a two-stage least squares regression with an instrumental variable. In the first stage, the Jacquemin and Berry (1979) Entropy measures of diversification defined in the following ways: Total Entropy takes place at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i \, ln \, {}^{1}/_{P_i}$, Entropy Across SIC2 is $E_A = \sum_{i=1}^{n} P_s \, ln \, {}^{1}/_{P_s}$, and Entropy Within is the difference between them, $E_W = E_T - E_A$, which are regressed against the number of times that a Business Wire or Press Release in the US by a US publisher contained the "Pope" and "climate change" in a Nexis-Uni search, along with other controls. In the second stage, the results from the first stage instrument for the *Running* total of shareholder proposals. All four models include controls: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

Table 5B: 2SLS: The Pope and Climate Change in Press: Entropy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Stage1_1	Stage2_1	Stage1_2	Stage2_2	Stage1_3	Stage2_3 Entropy Asset Across	Stage1_4	Stage2_4 Entropy Sales Across	Stage1_5	Stage2_5 Entropy Asset Within	Stage1_6	Stage2_6 Entropy Sales Within
VARIABLES	Running	Entropy Asset SIC4	Running	Entropy Sales SIC4	Running	SIC2	Running	SIC2	Running	SIC2	Running	SIC2
Running		-3.273***		-2.423***		-2.114***		-2.001***		-1.159***		-0.422**
		(-4.95)		(-4.80)		(-5.05)		(-5.05)		(-4.11)		(-2.10)
Pope	0.009***		0.009***		0.009***		0.009***		0.009***		0.009***	
	(5.20)		(5.20)		(5.20)		(5.20)		(5.20)		(5.20)	
Constant	-0.669***		-0.669***		-0.669***		-0.669***		-0.669***		-0.669***	
	(-9.08)		(-9.08)		(-9.08)		(-9.08)		(-9.08)		(-9.08)	
Observations	31,399	31,399	31,399	31,399	31,399	31,399	31,399	31,399	31,399	31,399	31,399	31,399
F-Test (SW)	27.09		27.09		27.09		27.09		27.09		27.09	
p-value	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Endogeneity Test		276.196		150.792		385.633		347.827		48.614		5.573
p-value		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.0182)
Industry Dummy		Yes		Yes		Yes		Yes		Yes		Yes
Year Dummy		No		No		No		No		No		No
Other Controls		Yes		Yes		Yes		Yes		Yes		Yes

Robust t-statistics in parentheses, unless otherwise indicated. *** p<0.01, ** p<0.05, * p<0.1

The following tables replicate table 2A, using data from the Institutional Shareholder Services (ISS) as a basis for various types of proposals: ordinary least square regressions with a Herfindahl measure of diversification defined as $H_{SIC2} = (1 - \sum_{S=1}^{n} P_s \, P_s)$. The dependent variable is *Herf2Assets* is the Herfindahl measure of diversification at the SIC 2-digit level for the percent of assets (P_i). The sample includes only those firms which appear in the ISS database from 1994 to 2018. Control variables include: Size, Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

Table 6A: Climate Proposals: HERFINDAHL: ISS data

Run CC shp for the running total of climate-related shareholder proposal firm-years (item code 3425).

	(1)	(2)	(3)	(4)
	Herf4Asset	Herf4Sales	Herf2Asset	Herf2Sales
Run CC shp	0.005	0.004	-0.003	-0.005
	(0.677)	(0.696)	(-0.533)	(-1.352)
_cons	-0.057	-0.109	0.129	0.149
	(-0.482)	(-1.125)	(0.932)	(1.532)
Obs.	4843	4843	4843	4843
R-squared	0.202	0.325	0.138	0.253
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 6B: Placebo Proposals: HERFINDAHL: ISS data

Run Non-CC shp for firm-years that receive all other proposals (not item code 3425)

	(1)	(2)	(3)	(4)
	Herf4Asset	Herf4Sales	Herf2Asset	Herf2Sales
Run Non-CC shp	0.001*	0.002***	-0.000	-0.000
	(1.698)	(2.724)	(-0.418)	(-0.459)
_cons	-0.005	-0.021	0.120	0.154
	(-0.034)	(-0.204)	(0.725)	(1.513)
Obs.	4843	4843	4843	4843
R-squared	0.203	0.328	0.138	0.252
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

The following tables replicate tables 2B, using data from the Institutional Shareholder Services (ISS) as a basis for various types of proposals. The regressions are ordinary least squares with Jacquemin and Berry (1979) Entropy measures of diversification defined in the following ways: *Entropy Within* is the difference between *Total Entropy* at the SIC 4-digit level, $E_T = \sum_{i=1}^{n} P_i \, ln \, {}^{1}/_{P_i}$, and *Entropy Across* SIC2, $E_A = \sum_{i=1}^{n} P_s \, ln \, {}^{1}/_{P_s}$. The dependent variable is the Entropy measure for diversification. The sample includes only those firms which appear in the ISS database from 1994 to 2018. Control variables include: Size, Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

Table 6C: Climate Proposals: ENTROPY: ISS data

Run CC shp for the running total of climate-related shareholder proposal firm-years (item code 3425).

	(1)	(2)	(3)	(4)	(5)	(6)
	SIC4_Asset	SIC4_Sales	SIC2_Asset Across	SIC2_Sales Across	SIC2_Asset Within	SIC2_Sales Within
Run CC shp	0.027**	0.013	0.007	-0.006	0.020**	0.019*
	(2.328)	(1.075)	(1.233)	(-0.980)	(2.133)	(1.856)
_cons	-0.567**	-0.691***	0.008	0.121	-0.575***	-0.813***
	(-2.664)	(-3.037)	(0.055)	(0.690)	(-3.339)	(-4.774)
Obs.	4843	4843	4843	4843	4843	4843
R-squared	0.288	0.348	0.240	0.266	0.215	0.267
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 6D: Placebo Proposals: ENTROPY: ISS data

Run Non-CC shp for firm-years that receive all other proposals (not item code 3425)

	(1)	(2)	(3)	(4)	(5)	(6)
	SIC4_Asset	SIC4_Sales	SIC2_Asset Across	SIC2_Sales Across	SIC2_Asset Within	SIC2_Sales Within
Run Non-CC shp	0.004*	0.003***	0.001	-0.000	0.003**	0.004***
	(1.739)	(2.746)	(0.580)	(-0.580)	(2.133)	(3.045)
_cons	-0.442*	-0.517**	0.014	0.119	-0.457**	-0.636***
	(-1.764)	(-2.093)	(0.088)	(0.645)	(-2.480)	(-3.567)
Obs.	4843	4843	4843	4843	4843	4843
R-squared	0.288	0.350	0.239	0.265	0.216	0.270
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 7A: Proposals, Accounting Performance and Fitted Diversification

Diversification is fitted by regressing Herfindahl measure for assets at SIC2, defined as $\widehat{Herf2Assets} = (1 - \sum_{s=1}^{n} P_s\ P_s)$, or $\widehat{Entropy2Within}$ (which is the difference between *Total Entropy* at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i\ ln\ {}^{1}/_{P_i}$, and *Entropy Across* SIC2 is $E_A = \sum_{i=1}^{n} P_s\ ln\ {}^{1}/_{P_s}$) on the Running and the set of control variables. Accounting Performance is the dependent variable averaged from t+1 to t+3 and proxied by: return on assets (ROA) calculated as net income divided by beginning of period assets, return on investment (ROI) calculated as earnings before interest, taxes, depreciation and amortization (EBITDA) divided by invested capital, and total asset turnover (TAT) calculated as total revenues divided by beginning total assets. *Size (ln revenues)* is the natural log of total firm revenues. Control variables include: Size, Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

	(1) ROA_avg	(2) ROI_avg	(3) TAT_avg	(4) ROA_avg	(5) ROI_avg	(6) TAT_avg
$\widehat{Herf2Assets}$	0.265***	1.181***	15.376***			
	(3.282)	(7.971)	(9.750)			
$\widehat{Entropy2Within}$				0.242***	1.061***	13.908***
				(3.434)	(7.797)	(9.648)
_cons	0.017*	0.137***	3.051***	0.041***	0.241***	4.428***
	(1.956)	(5.398)	(16.898)	(3.146)	(6.843)	(14.089)
Obs.	21508	21466	21508	21508	21466	21508
R-squared	0.312	0.343	0.776	0.312	0.342	0.767
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 7B: Proposals, Stock Performance and Fitted Diversification

Diversification is fitted by regressing Herfindahl measure for assets at SIC2, defined as $\widehat{Herf2Assets} = (1 - \sum_{s=1}^{n} P_s\ P_s)$, or $\widehat{Entropy2Within}$ (which is the difference between *Total Entropy* at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i\ ln\ {}^{1}/_{P_i}$, and *Entropy Across* SIC2 is $E_A = \sum_{i=1}^{n} P_s\ ln\ {}^{1}/_{P_s}$) on the proposal dummy and a set of control variables. Stock Performance is the dependent variable averaged from t+1 to t+3 and proxied with buy-and-hold returns (BH_Return), Jensen's Alpha (Jensens) and Fama-French plus Momentum. Control variables include: Market:Book, Leverage and Momentum, as defined above.

	(1) BH_Return	(2) Jensens	(3) FF-Mom	(4) BH_Return	(5) Jensens	(6) FF-Mom
$\widehat{Herf2Assets}$	-0.018	-0.028***	-0.037***			
	(-0.056)	(-2.712)	(-3.178)			
$\widehat{Entropy2Within}$				-0.740***	-0.029***	-0.031***
				(-5.888)	(-8.447)	(-7.820)
_cons	0.707***	0.007***	0.004***	0.595***	0.005**	0.003**
	(8.917)	(3.135)	(2.874)	(6.963)	(2.316)	(2.166)
Obs.	21435	21435	21435	21435	21435	21435
R-squared	0.141	0.131	0.046	0.146	0.141	0.057
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 7C: Proposals, Risk-taking and Diversification

Diversification is fitted by regressing Herfindahl measure for assets at SIC2, defined as $\widehat{Herf2Assets} = (1 - \sum_{s=1}^{n} P_s\ P_s)$, or $\widehat{Entropy2Within}$ (which is the difference between *Total Entropy* at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i\ ln\ {}^{1}/_{P_i}$, and *Entropy Across* SIC2 is $E_A = \sum_{i=1}^{n} P_s\ ln\ {}^{1}/_{P_s}$) on the proposal dummy and a set of control variables. *Risk* is proxied by the standard deviation over the period t+1 to t+3 for return on assets (ROA), return on investments (ROI) and buy-and-hold returns (BH_Return). *Size (ln revenues)* is the natural log of total firm revenues. Control variables include: Size, Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above.

	(1) SD_ROA	(2) SD_ROI	(3) SD_BH_Return	(4) SD_ROA	(5) SD_ROI	(6) SD_BH_Return
$\widehat{Herf2Assets}$	-0.073	0.076	0.884**			
	(-1.309)	(1.173)	(2.316)			
$\widehat{Entropy2Within}$				-0.060	0.069	0.792**
				(-1.264)	(1.206)	(2.460)
_cons	0.072***	0.029*	0.862***	0.067***	0.036*	0.940***
	(10.206)	(1.960)	(9.766)	(6.507)	(1.935)	(9.134)
Obs.	21508	21423	21508	21508	21423	21508
R-squared	0.111	0.084	0.148	0.111	0.084	0.148
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

The following tables replicate tables 2A (Herfindahl) and 2B (Entropy) but using a three-year moving average of each proxy for diversification. *Running* is the total number of firm-year proposals which contain "climate change." Other control variables include: Tobin's q, Firm Age, Revenue Growth, Stock Returns, Cash Surplus and Leverage, as defined above in the Description of Variables.

Table 8A: Change in Herfindahl SIC2 Assets: 3-year Moving Average

This table uses ordinary least square regressions with Herfindahl measures of diversification defined as $H_{SIC4(2)} = (1 - \sum_{i(s)=1}^{n} P_{i(s)}\ P_{i(s)})$, where P is the percent of total assets or sales for each industry, *i*, or segment, *s*. *Herf4* and *Herf2* designate Herfindahl at the SIC 4-digit and 2-digit levels, respectively.

	(1)	(2)	(3)	(4)
	3MA_Chg_ Herf4Asset	3MA_Chg_ Herf4Sales	3MA_Chg_ Herf2Asset	3MA_Chg_ Herf2Sales
Running	0.000	0.000**	-0.001	-0.000***
	(0.102)	(2.603)	(-1.359)	(-2.909)
_cons	0.076***	0.074***	0.045***	0.028***
	(13.316)	(18.176)	(7.616)	(13.866)
Obs.	28734	28734	28734	28734
R-squared	0.050	0.071	0.019	0.016
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 8B: Change in Entropy Within SIC2 Assets: 3-year Moving Average

This table uses ordinary least square regressions with Jacquemin and Berry (1979) Entropy measures of diversification defined in the following ways: Total Entropy takes place at the SIC 4-digit level as $E_T = \sum_{i=1}^{n} P_i\ ln\,{}^{1}/_{P_i}$, Entropy Across SIC2 is $E_A = \sum_{i=1}^{n} P_s\ ln\,{}^{1}/_{P_s}$, and Entropy Within is the difference between them, $E_W = E_T - E_A$.

	(1)	(2)	(3)	(4)	(5)	(6)
	SIC4_Asset	SIC4_Sales	SIC2_Asset Across	SIC2_Sales Across	SIC2_Asset Within	SIC2_Sales Within
Running	0.001	0.001**	-0.000	-0.000**	0.001	0.001***
	(0.991)	(2.233)	(-0.160)	(-2.301)	(1.636)	(3.783)
_cons	0.114***	0.149***	0.047***	0.048***	0.067***	0.102***
	(12.932)	(18.519)	(10.278)	(14.485)	(11.865)	(13.788)
Obs.	28734	28734	28734	28734	28734	28734
R-squared	0.044	0.070	0.015	0.020	0.037	0.057
Industry Dummy	No	No	No	No	Yes	Yes
Year Dummy	No	No	No	Yes	No	Yes
Other Controls	No	No	Yes	Yes	Yes	Yes

T-values are in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Figures

Figure 1: Frequency of Climate Change Proposals by Year

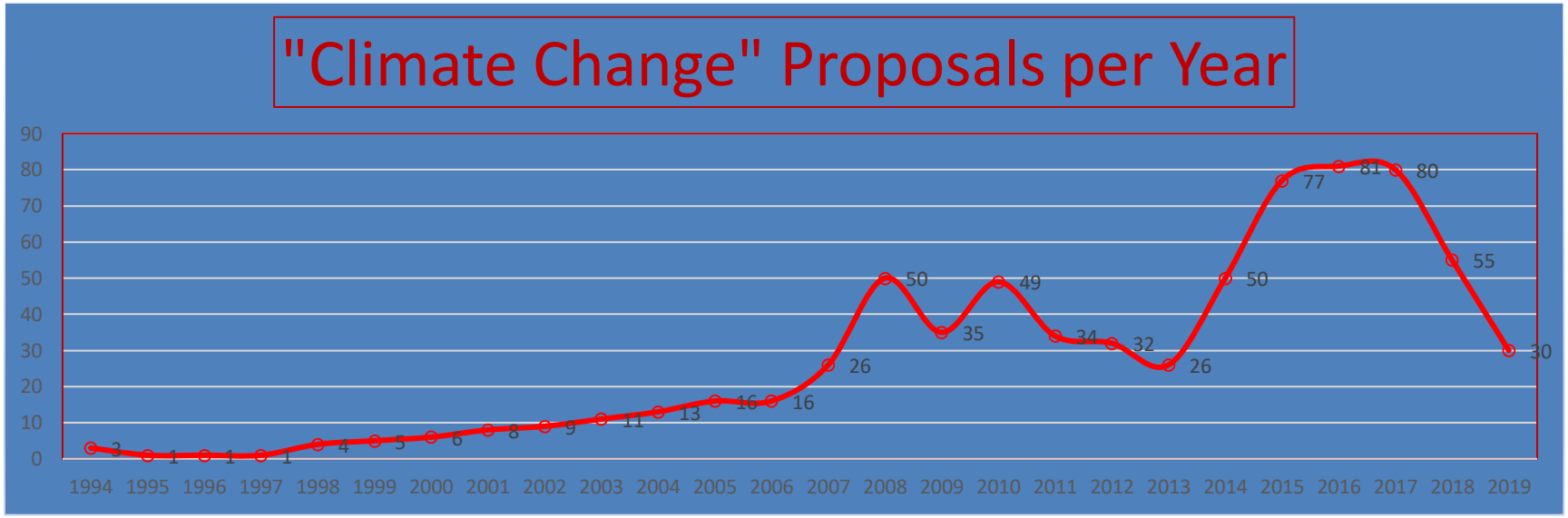


Figure 2: Shareholder Proposal Feedback Loop

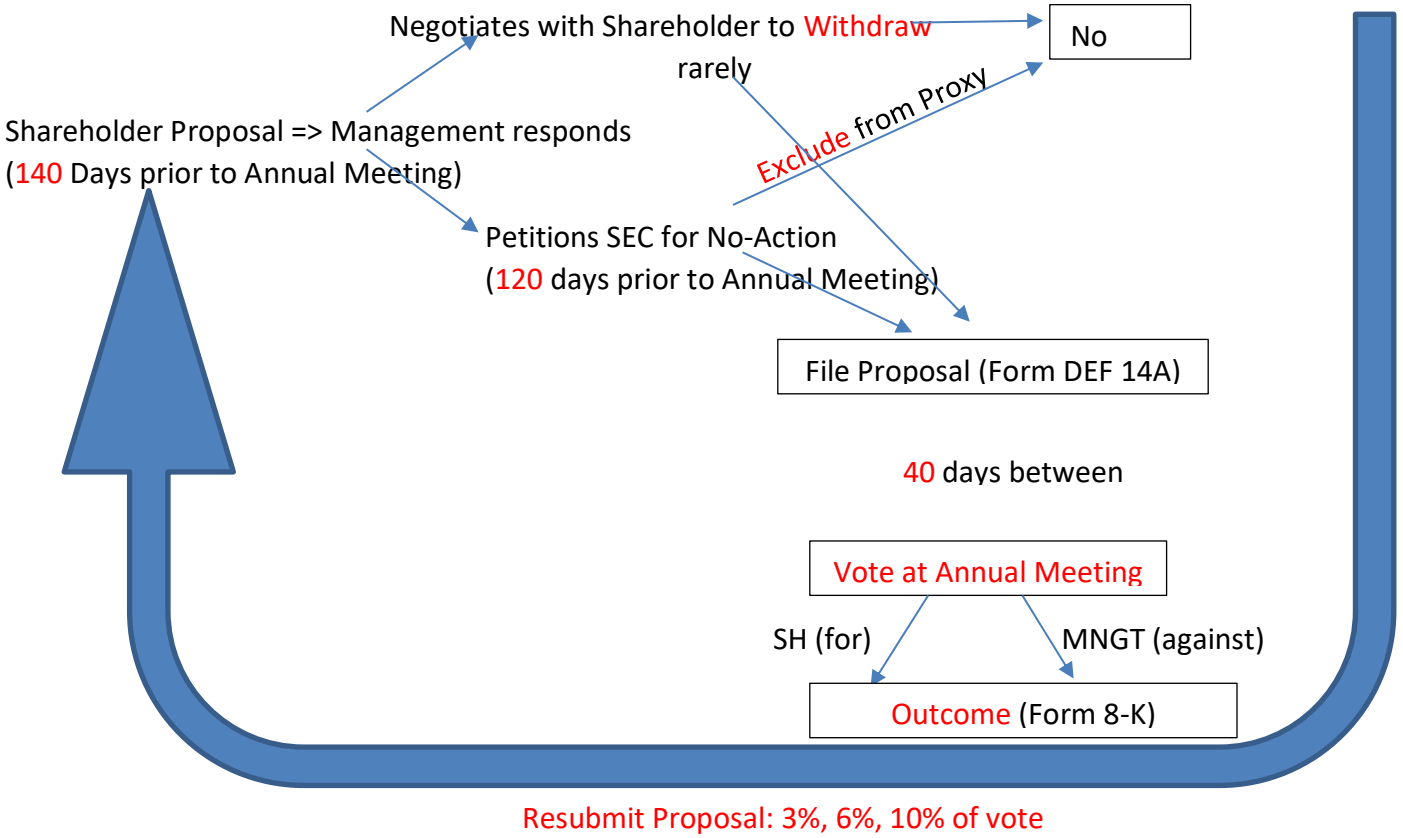
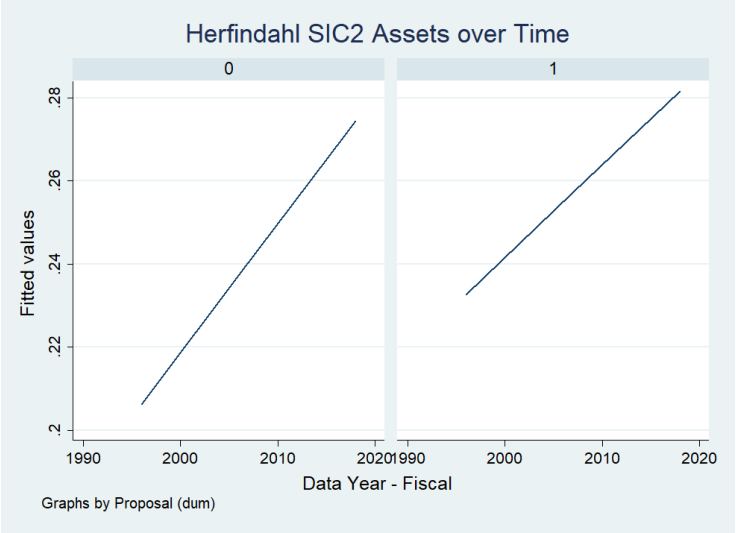
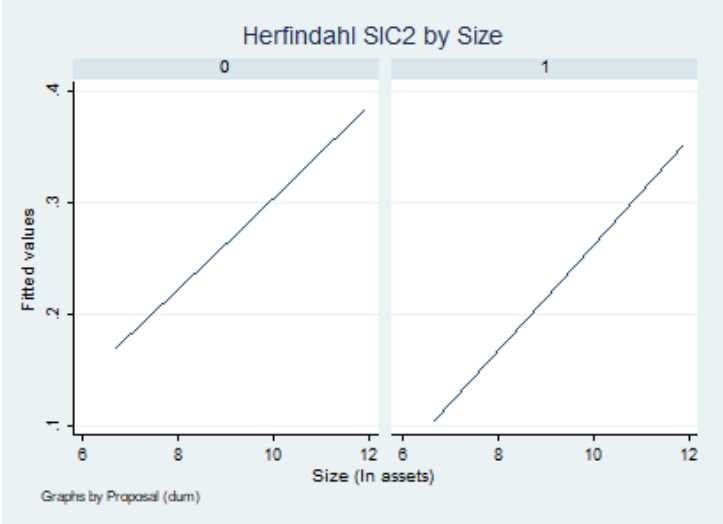
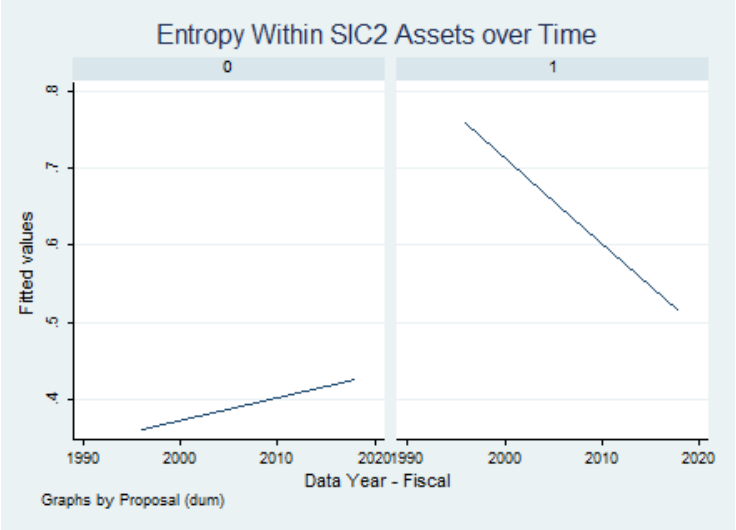


Figure 3: Diversification over Time and by Size for Firms that received Climate-Related Proposals







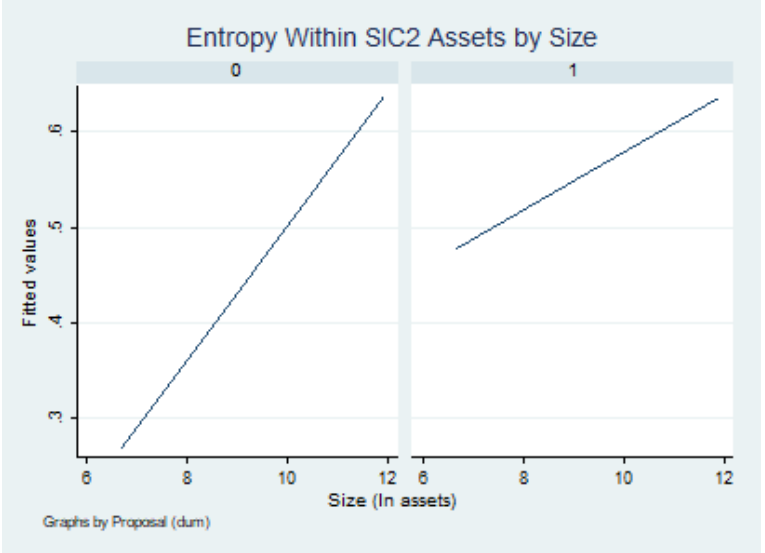
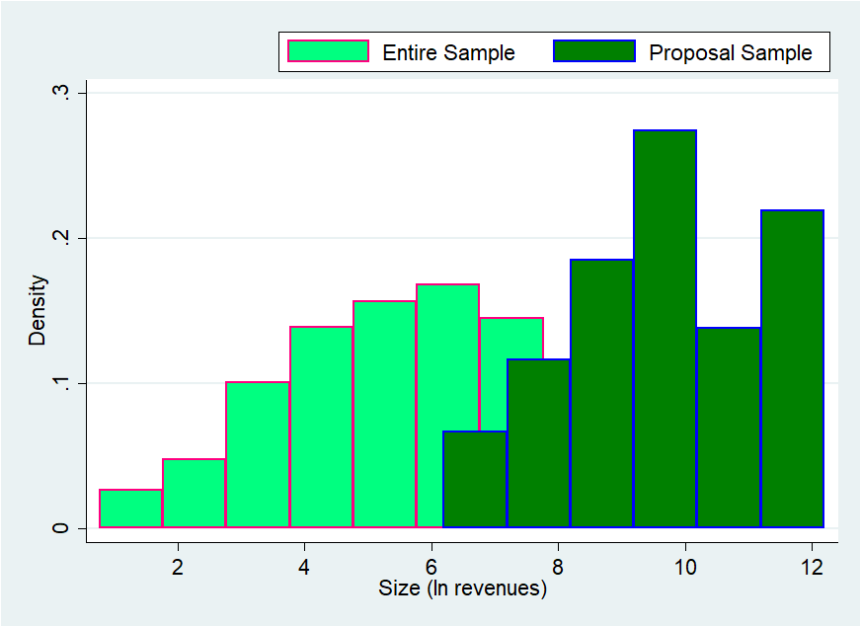


Figure 4: Size Differences



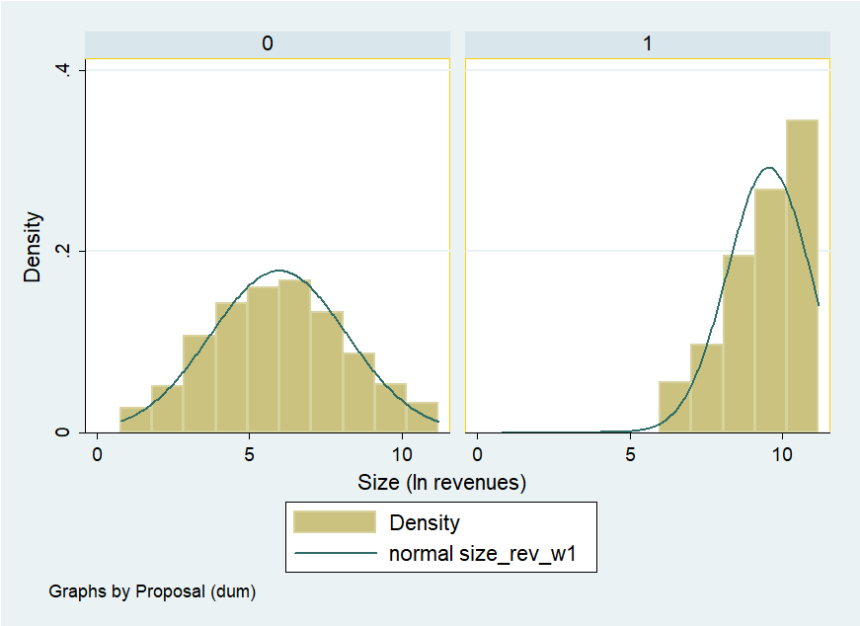


Figure 5: SASB Heat Map

Figure 6: Frequency by Sponsor Type