Talking About the Weather: Availabilty, Affect and the Demand for Green Investments

Anders Anderson*

David T. Robinson†

January 13, 2020

Abstract

We survey investors and establish a link between adverse weather events and beliefs about future climate calamities. By matching the survey to individual registry data, we study how exposure to climate calamities drives people to make "green" choices. These individuals are more likely to say they recycle more than their neighbors, are willing to pay extra for environmentally friendly products, think green investments outperform, and are willing to pay higher fees for green mutual funds. They also trade their retirement portfolios into investments that tout environmental sustainability.

*Swedish House of Finance at the Stockholm School of Economics, Drottninggatan 98, SE-111 60 Stockholm, Sweden, Phone: +46-8-736 9110, E-mail: anders.anderson@hhs.se. Corresponding author.

†Fuqua School of Business, Duke University, Swedish House of Finance and NBER, E-mail: davidr@duke.edu. We thank seminar participants at Stockholm School of Economics, Anderson School UCLA, Paris Dauphine, UC San Diego, University of Maryland, the 2019 RAND Behavioral Finance Forum and the 2019 AFBC in Sydney. We are grateful to Yao Fu and Laszlo Sajtos for excellent research assistance.

1 Introduction

Talking about the weather is often the perfect icebreaker, especially in Sweden, where the summer of 2014 saw the highest temperatures on record throughout many parts of Scandinavia. By the end of 2014, the Swedish Meteorological and Hydrological Institute had recorded new average annual high temperature records at 47 out of 100 weather stations throughout the country. These unusually high temperatures were associated with an excessive number of weather-related anomalies, such as droughts, floods and thunderstorms in many places of the country. Indeed, one of the worst wildfires in Sweden since the 1950s occurred that summer, destroying an area the size of the District of Columbia.

In this paper, we show that these extreme weather events shaped opinions about the environment, causing individuals living in areas with more severe weather shocks to form more extreme expectations about the likelihood of future weather events. We then show that these expectations increase the likelihood of investing in mutual funds that tout environmental sustainability.

To do this, we administered a survey to a large random sample of Swedish households in January and February 2018. The survey contains questions about both environmental knowledge and beliefs about future climate-related calamaties such as global temperature increases, food shortages and rising sea levels. We then match survey responses to detailed government registry data on household socio-economic status, weather events and retirement savings choices. This allows us to not only connect beliefs about calamities to exposure to actual weather calamities, but also match these data with broader measures of financial and environmental knowledge and sophistication to actual investment decisions.

Many survey respondents think that future climate-related catastrophes are very likely, far more likely than would be implied by the accepted scientific consensus for the worst case scenario. This is more true of individuals who live in areas that were more dramatically affected by weather calamities. This result is well-founded in psychology: the salience of events is shown to drives peoples' attention, but also the likelihood of events through an availability bias (see Tversky and Kahneman (1973) and Slovic, Fischhoff, and Lichtenstein (1982)). Emotional responses affect risk assessments (Loewenstein et al (2001)), where the tendency to overweight low probability extreme events is one of

the distinct features of Tversky and Kahneman's (1992) prospect theory. Indeed, the fact that increased exposure to localized weather shocks increases the probability of holding such beliefs suggests that these beliefs arise from a recency or availability bias. *After* the summer of 2014—but not before—investors holding these beliefs trade their retirement accounts into positions that are heavily concentrated in mutual fund holdings labeled environmentally sustainable. The fact that their movement into "green" mutual funds occurs only after the calamities of 2014, but not before, suggests that extreme weather events caused certain individuals to overweight the probability of accelerated global warming, and that these fears then drove them into green investments.

To explore the mechanisms that connect beliefs to green mutual fund investing, we asked respondents a series of questions about their beliefs and behaviors. Respondents who overweight future environmental calamities are more likely to think that green investments outperform, and they state that they are willing to pay higher fees for funds that adhere to ESG guidelines. More generally, they claim that they are willing to pay more for environmentally sustainable products and they believe that they recycle much more than their neighbors do. These results suggest that fears about rapidly changing climate induced by extreme weather events ignite a "call to action" whereby affected respondents feel an imperative to change their consumption and investment behaviors to align with environmental sustainability.

Our results add to a growing literature on socially responsible investing. The closest paper is probably Hartzmark and Sussman (2019), which studies how the introduction of Morningstar ESG Globe rankings affects mutual fund flows. Through experiments, they find that people more generally associate higher ESG fund rankings to lower risk and higher returns, which they attribute to the affect heuristic (Alhakami and Slovic (1994)). Our results are consistent with their findings and provide direct evidence of the specific mechanisms they highlight. Krueger, Sautner, and Starks (2018) show that some institutional investors expect greater global warming than scientific consensus, which in turn is correlated with their risks assessments of firms. We complement and extend their results by showing how similar climate concerns affect households' actual investment decisions. Recent survey evidence by Greenstone (2019) shows that exposure to extreme weather

events affects beliefs about climate change.[1] Our work similarly offers an account for how rising weather volatility may be an important driver for the recent increase in demand for green investments. In this regard our work is connected also to Malmendier and Nagel (2011), who show how past stock market experiences are reflected in investment choices later in life. Finally, Bolton and Kacperczyk (2019) show that investors demand a premium for holding stocks of firms with higher carbon emissions, and Barber, Morse, and Yasuda (2018) document an excess demand for impact investing in general; our results offer a behavioral foundation for these investor preferences.

The remainder of the paper is structured as follows. First we describe the context of the Swedish heat wave of 2014. This is provided in Section 2. Then we provide the demographics of our study population and present basic summary statistics for the questions in our survey. This is presented in Section 3. Section 4 explores how consumer behaviors and beliefs are connected, and Section 5 provides our main results with respect to mutual fund choices in the pension system. Section 6 concludes.

2 The year 2014: A Catastrophic Summer in Sweden

The weather in 2014 was exceptionally warm throughout many parts of Scandinavia. The Swedish Meteorological and Hydrological Institute (SMHI) recorded new average annual temperature records at 47 out of 100 weather stations throughout the country that year.[2] During the summer of 2014, an extreme heatwave brought average July temperatures four degrees centigrade higher than normal in the south of the country and six degrees higher in the north. Figure 1 displays heat maps obtained from SMHI for the month July, and compares the average temperature in 2014 to those in 2012 to 2017. There were between 6 to 26 "heat wave days" (defined as days with temperatures above 25 Centigrades) in the ten most northern weather stations above the Arctic Circle during 2014. By comparison, a normal year at that latitude would have zero, or only a handful, of heat wave days. Hot air and humidity also released a record number of lightning strikes, adding to the dramatic weather conditions.

[1] Leiserowitz (2006) and Myers et al (2013) also find survey evidence of experiential factors driving views of climate change.

[2] SMHI publication, The Year 2017 - Air Temperature, downloaded from www.smhi.se.

High temperatures in July caused drought in many areas and are thought to be responsible for the worst Swedish wildfire since the 1950s. The fire eventually destroyed approximately 150 square kilometers (or more than 37,000 acres, similar in size to the District of Columbia) of forest and took several months to extinguish. But more extreme weather was to follow. In southern Sweden, there was a record of 100 milimeters of rainfall in the city of Malmö on a single day, and later in the fall heavy rains and winds in the southwest of Sweden caused severe floods in many cities, shutting down roads and trains and prompting citizens to evacuate their homes.

Figure 1 here

These events created a tremendous upsurge in public discourse surrounding climate change. Figure 2 plots the number of average high temperature records for the 100 weather stations throughout the country along with then number of articles in the four largest Swedish newspapers (Aftonbladet, Dagens Nyheter, Expressen and Svenska Dagbladet) that contain the phrase "climate change" in them. The spike in news relevance beginning mid-way through 2014 and persisting through 2017 clearly illustrates that people were talking about the weather in Sweden.[3]

Figure 2 here

Concomitantly, there was rapid growth in the number of financial products describing themselves as adhering to environmental, social or governance standards (ESG), especially throughout Europe. In Sweden, the Swedish Pension Authority started to label ESG mutual funds in 2004, when 7% of around 700 mutual funds in the offering were marked as such. It took almost ten years for their proportion to double to 13% in 2013, but it quickly doubled again to 31% in 2016. As Figure 2 illustrates, by the end of 2017, 36% of all funds in the pension system have a pronounced ESG strategy of some sort, even though there is no set industry standard for these guidelines until more recently.

[3]Relatedly, Choi, Gao, and Jiang (2018) show that Google searches on climate change spike in the wake of local high temperatures.

3 Data and Empirical Setting

Our data are collected and matched in four steps. First, we administered a survey in January and February 2018 in conjunction with Statistics Sweden. The survey invitation was sent out by mail to 20,000 respondents; respondents completed the survey online. These survey results were matched to each respondent's registry data from various sources, including the Swedish Tax Authority, which is maintained by Statistics Sweden. This step allows us to combine their environmental views with a large set of demographic and wealth characteristics, including in which of the 290 municipalities the respondent lives.

Because we are specifically interested in understanding the demand for green investments, in the third step we add the complete transaction histories—this includes the timing and size of any trades as well as the year-end holdings—from the Swedish Pension Authority (SPA). From the SPA, we also obtain data on fund characteristics, which allows us to determine whether a fund is labeled as an ESG investment choice. As we describe in greater detail below, the fact that contributions are mandatory, and in fixed proportions to one's income, combined with the fact that pension savers can choose to control how the funds are invested, make this an ideal setting in which to study the demand for green investment.

The final step merges on data from SMHI, which include heat records and weather warnings. Warnings are issued at a regional level; there are 21 distinct administrative counties, which means that there is only low-frequency variation in regional weather reports. The warnings are graded from Class 1 (some risks and disturbances to transport and other parts of society); Class 2 (danger, damage and larger disturbances); and Class 3 (serious danger, serious damage and major disturbances). The warnings are also categorized into five types: Heat, Wind, Rain, Snow and Thunderstorms. There were 493 Class 1 warnings and 28 Class 2 warnings (and no Class 3 warnings) during 2014, of which 207 refer to Snow and 34 to Heat. Heat warnings account for 14 of the 28 Class 2 warnings issued that year.[4] We match county-level warning data to the municipalities for which we have survey data, which allows us to provide direct evidence of how exposure to the weather calamities of 2014 affected public opinion.

[4]We include a complete break-up of weather warnings across counties, class and type in the Appendix. Flood warnings were not available for our county-level analysis.

In the remainder of this section, we explain the Swedish pension system in more detail as well as the supply of ESG funds. We then show the data on individual allocations in our sample and explain our survey measures and results sorted on investor characteristics.

3.1 The Swedish Pension System

In its current configuration, the Swedish National Pension system operates two types of accounts for each individual contributing to the system.[5] One is a defined contribution account funded on a pay-as-you-go basis based on a contribution rate of 16% of labor income, analogous to Social Security in the United States. A second account is based on an additional 2.5% of labor income. This operates in a manner similar to a 401(k) plan in the United States, but as part of the state pension, rather than an occupational pension as is common with 401(k) plans. Starting from 2000, individuals were allowed to control how this account was invested by allocating this portion of their account across as many as five different funds.[6] In 2000, there were 456 funds available, a number that has grown to 892 at the end of 2017. In parallell, the number of ESG labeled funds grew from 7% in the offering 2004 to represent 36% in 2017.

3.2 Green Investment Options in the Swedish Pension System

The SPA maintains complete records of all trades and portfolio balances in the pension system going back to 2000. We obtain these records for those respondents who completed our survey. In addition, we manually collect fund characteristics from the catalogue that is printed and mailed to first time savers as well as listed on the SPA website. The ESG label was introduced in 2004, and lets fund companies label themselves as investing with restrictions determined by ethical or environmental considerations (so-called *negative selection* funds as in Hong and Kacperczyk (2009)). This information is required to be clearly provided in all information and marketing about the funds, but there is no standard or minimum requirements given by the SPA to which funds must adhere in order to earn this label. Funds are therefore likely to differ in scope in which they adhere to green

[5]The Swedish pension system underwent a dramatic transformation in the 1990s. A full account of this transition is beyond the scope of this paper; details are discussed at length in Palme, Sunden, and Söderlind (2007) and Palmer (1995).

[6]Cronqvist and Thaler (2004) discuss the choice architecture during the launch of the reform.

investments and other aspects of corporate social responsibility.

Figure 3 shows how total pension savings in our survey have evolved over time across traditional and ESG investments. Prior to 2014, the amount of money trading into ESG funds was tiny relative to the amount trading into non-ESG funds. For example, in 2012 58 million SEK were traded into non-ESG funds while only 3 million SEK were traded into ESG funds. After the summer of 2014 the amount flowing into ESG funds grows dramatically. In 2015, 31 million SEK were traded into ESG funds while 44 million SEK were traded into non-ESG funds. By 2016 the trading into ESG funds matches non-ESG funds, and by 2017 the total outstanding balances held in ESG funds in our sample outweigh the amount held in non-ESG funds.

Figure 3 here

Panel A of Table I shows spectacular growth in the offering of ESG funds from 2010 to 2017, and Figure 2 traces out the full history from 1999 (which are the funds given in the catalogue in 2000). In 2010, there was 839 funds offered in the system of which 89 were ESG funds - a fraction of almost 11%. By the end of 2017, the number of funds grew to become 892, but the number of ESG funds to 325, representing a fraction of over 36%. The growth of ESG labeled funds in recent years is not explained by new funds coming into the pension system, but rather an increased change of classification and investment policies. Only about a third of the classified ESG funds in recent years constitutes new funds coming into the system.[7] We address this issue by analyzing both holdings and trades separately.

Panel B of Table I shows a snapshot of the portfolio holdings as of December 2017. We have 3,667 respondents after matching with the pension data, of which 1,193 never made an active choice and so were still in the default fund as of 2017.[8] Hence, about a third in our sample have their pensions invested in the default fund, which is similar to the results in Anderson and Robinson (2018) who show that default fund investors tend to be lower income, young females. The default fund has over the years gradually adopted

[7]For example, from 2015 through 2017, the number of funds available for investment using the ESG label increased in each year with 41, 83 and 85, but the number of new ESG funds entering the pension system was only 15, 14 and 24.

[8]The default fund technically consists of two funds: an equity fund and a bond fund to which savers are allocated depending on age.

an ESG policy, with a mix of a passive and active governance policy. In this respect, one can argue that the default fund is a low cost alternative to obtain a well-diversified, ESG-tilted portfolio for most investors, but it is a fund that is not advertised nor available to retail investors outside of the pension system. By construction, investors fall into default because of passivity—usually thought of as a lack of interest or understanding of investments in general. For this reason, we focus on the holdings and trades of active investors which are those that at some point in time chose their retirement mutual fund portfolio. At the end of 2017 there were 2,474 such active investors in our sample.

The third to the fifth row of Panel B in Table I sort investors in accordance with their ESG holdings defined for different weights. There were 1,827 survey respondents with a positive share of ESG labeled funds in their pension portfolio, and 647 that held no such funds. At the threshold of at least 50% ESG funds, there were 1,434 investors owning ESG and 1,040 not. Finally, 840 respondents held a portfolio of all ESG labeled funds at the end of 2017, which corresponds to 34% of all those selecting their own funds (i.e. outside of the default fund)—a fraction that is close to the overall offering of funds.

Table I here

Panel C in Table I displays a similar analysis for portfolio changes, but across the number of trades for individuals made in 2017. Only 382 respondents chose to trade during the year, and a vast majority only made one trade. Of those trading, 317 switched to a portfolio that contained some fraction of ESG-labeled funds, 214 to a majority-ESG portfolio, and 122 to an all-ESG mutual fund portfolio. Even if relatively few individuals switch funds within the pension system, the large fraction of trades going into ESG funds suggests that this in itself may be a motivation to rebalance.

3.3 Surveying Swedish Environmental Beliefs

To measure financial literacy and see how it relates to a general understanding of environmental knowledge, we invited 20,000 Swedish households in ages between 18 and 65 by regular mail to participate in an online financial and environmental literacy survey.[9] A total of 4,257 respondents completed the survey where 3,993 remain after having

[9]The results of the financial and environmental literacy test and its questions are discussed in Anderson and Robinson (2019). We include tabulations of these survey responses in the Appendix.

deleted incomplete responses, or almost 20% of the invited sample; this shrinks to 3,667 after having matched them to the pension data. The survey is matched to registry data obtained from Statistics Sweden, from where we obtain standard information on gender, age and income, but also detailed information about level and subject of study and the area in which people live (divided into 290 districts/municipalities within 21 counties). The location of individuals also allows us to match on Green Party election outcomes on the municipality level, which is a control variable used alongside population density ("Urban") in the regression analysis that follows.

Table II provides a demographic breakdown of the respondents, where the Urban category here defines the eleven most populated municipalities in Sweden based on density (mostly centered around Sweden's three main cities Stockholm, Malmö and Gothenburg).

Table II here

Even if we draw from a random sample, we have an over-representation of older, wealthier, better-educated respondents in our sample relative to the overall Swedish population. Almost half of the individuals in our sample went to college and 57% of our respondents are 45 or older, while only 41% of the Swedish working age population is in this age range. Also, women are slightly over-represented in our study. Statistics Sweden offers sampling weights that allow us to adjust our regressions for these sampling differences, so that our results can be taken as though they are drawn from a stratified random sample of the population. We correct our estimates for this sampling bias in all our regressions.

The three last columns of Table II shows the fraction in our sample that had some (any non-zero amount), most (over 50%) or all (100%) of their portfolio invested in an ESG labeled fund. A majority of 74% had a non-zero portfolio weight in an ESG fund, but that is perhaps unsurprising given that the menu offering contains over 36% ESG funds together with the fact that most people hold more than one fund. Increasing the threshold to be above 50% decreases the share considerably, and about one-third of the sample hold an ESG-only portfolio. Women and those having studied environmental science are more likely to invest in these funds. For income, we find that wealthier individuals are more likely to invest in ESG funds. We find that all in the youngest age group hold ESG funds, but 98 per cent of these individuals are in the default fund, and so did not make an active

choice. The few young people making active choices suggests caution in interpreting this number. In the next section we show that environmental concerns are greater for younger and lower income respondents, but the results in Table II actually shows that the fraction of all ESG portfolios increases somewhat with age. Investing green is therefore likely to be a function of both being environmentally oriented and having sufficient financial interest or knowledge to know how to choose funds. We discuss our approach to measure investors knowledge and beliefs in the next subsection.

3.4 Calibration of environmental risks

Our survey includes four basic types of questions: financial and environmental literacy questions, questions about climate calamities, questions about green household behavior and questions on green investment.[10] The questions and responses to the environmental literacy test is described in detail in Anderson and Robinson (2019), where it is shown that the correlation between environmental and financial literacy is only just above twenty percent. In addition to the financial and environmental literacy test, we also ask people about climate calamities, which we explain next, along with questions about environmental behaviors and attitudes, which we explain in detail in the next section.

The main focus of this study is to measure possible motivations for holding green investments, where we specifically focus on climate change calamities. Even if temperature change has been in focus of the policy discussion, its effects on food shortage and sea level rise are powerful illustrations of the consequences of extended periods of drought and melting ice in the arctic region. We ask:

- "In the next 20 years, how likely do you find the following scenarios?"
  - "The average temperature on earth rises by more than one Centigrade"
  - "Food shortage will increase"
  - "The world sea level will rise by over one meter"

The frequency responses on a five point Likert scale ranging from "Very Likely" to "Very Unlikely" are displayed in Panel A of Table III and shows that 80% of the respon-

[10]The financial literacy test is based on Lusardi and Mitchell (2007) and corresponds to those in the National Finance Capability Study conducted by FINRA in the United States.

dents in our sample finds a steep temperature change likely or very likely, 65% believes that food shortages will increase while 47% believe that the world sea-level will increase by more than one meter.

Table III here

The fact that almost 40% of respondents find a one Centigrade rise very likely within such a short time frame is surprising given current scientific predictions. According to the United Nations and the Intergovernmental Panel of Climate Changes (IPCC), it is unlikely that the average temperature would rise by one degree centigrade in twenty years, since the current temperature increase is measured to be around a rate of 0.17 Centigrades per decade, and historically have been about one Centigrade since beginning of industrialization. A one-half centigrade increase in global average temperature per decade would be considered a worst-case scenario by current scientific consensus, and would also imply that the world reaches the Paris agreement's two-degree maximum global warming target in only twenty years.

Likewise, a world sea-level increase of one meter in a twenty year period far exceeds consensus estimates for sea level increases. For example, the IPCC report in their worst cace scenarios from 2014 that there is a 95% probability that the sea level rise will be less than one meter by 2100.

Broadly speaking, global hunger and undernourishment have been decreasing over the last decades. According to FAO, IFAD and WFP (2015), food shortage in many regions of the world can be closely tied to conflicts and natural disasters, but generally diminishes with economic growth. Thus, a belief in increased food shortage within the next 20 years is also likely to indicate a pessimistic outlook tied to environmental concerns.

We create a measure of a respondent's focus on climate calamities by coding a dummy variable that equals one if any of these answers is "Very Likely."[11] These responses are correlated. Of those finding a one degree temperature rise very likely, 46% and 29% also foresee food shortages and a sharply rising sea level. Our measure therefore covers a somewhat larger fraction, 47% of the sample compared to the 39% of those only fearing

[11]Our results are robust to alternative coding schemes, but confined to those concerning the most extreme tail of the belief distributions. We interpret this as the prevalence of overestimation or probability weighting among survey responses.

an aggressive rise in temperature. A more comprehensive analysis of the individual responses to these questions can be found in Anderson and Robinson (2019), in which the survey method and results are described in detail.

Table II show how the weather calamity measure is distributed across demographics, where we find that this group is overrepresented by women and young people with lower income and education living in urban areas.

3.5 Climate Calamities and Local Weather Variations

Table IV reports a set of Probit regressions to show how the motivations are related to demographics and geography. In columns (1) through (4) use the Calamity dummy as the dependent variable. Column (1) confirms that fears of environmental disasters are more common among the young, lower-income individuals, and among females. Environmental fears are less common among those who have studied economics and business. Also, individuals with higher environmental and financial literacy scores think that future calamities are very likely.

Table IV here

We next test how weather events may shape climate fears. We connect each survey respondent to the closest weather station to their home municipality to measure which local weather heat records and warnings data to which they were most likely exposed in 2014. Connecting investors with local weather shocks come with some challenges. First, it is of course likely that individuals also react to weather shocks outside of their geographical proximity, either through media exposure (such as reports of the 2014 wildfire) or because personal connections to other parts of the country making weather events there salient. Second, we have much less geographical variation in weather shocks than geographical location of survey respondents. Third, respondents are not equally spread out throughout the country, but concentrated to the southern areas and three main city regions. Taken together, these issues would weaken our results.

We first include the 2014 temperature records based on 100 weather stations across the country plotted in Figure 2, which we in turn map geographically to municipalities.

We include a dummy for heat records in column (2) and find that those exposed are five percent more likely to be in the climate calamity group.

Next we include counts of weather warnings across the twenty-one county areas. Warnings can be thought of as more salient events than average heat records, even if the geographical variation we obtain is much more limited than the actual municipality the respondent lives. We break total weather warnings separately into milder Class 1 warnings and more severe Class 2 warnings in column (3). We find that people living in areas of a greater number of Class 2 warnings are much more likely to hold fears of climate calamities, whereas this is not the case for the milder Class 1 warnings. In column (4), we separately control for Class 2 snow warnings, which shows that these type of warnings actually are negatively related to fears associated with climate change. We add average temperature records back in column (5) and which confirms that there is a much stronger link between weather warnings and climate calamities, as compared to average temperature records.

Overall, even with relatively sparse weather data, we find evidence that past experiences indeed shape peoples' views on climate change. A recent survey from the Environmental Policy Institute (Greenstone (2019)) also finds that extreme weather events is the number one stated reason people have changed their view on climate change, followed by arguments that support climate change and personal observations in the area people live. Our results speaks directly to this mechanism in which beliefs about climate change are in part driven by an availability bias based on past own experience.

4 Climate Calamities and Environmental Action

The results thus far support the idea that availability bias causes some individuals who were exposed to extreme weather events to form miscalibrated expectations about future environmental calamities. In this section we explore how these views affect their actions and decisions. To do this, we examine a set of beliefs and behaviors that reflect how much an individual factors environmental sustainability into their opinions about the cost-benefit tradeoffs they face.

4.1 Environmental Action

We included three questions designed to measure more general green orientation, and two questions explicitly targeted towards measuring beliefs about green investments. The frequency of responses are tabulated in Panel B and C of Table III and fall on a five-point Likert scale from "Strongly Agree" to "Strongly Disgree." We code a dummy equal to one in the response is "Strongly Agree" to any of the following statements (fraction within parenthesis):

- *Recycle More*. "I recycle a great deal more than my neighbors." (15%)[12]
- *Green Products*. "I am willing to pay more for environmental friendly products." (29%)
- *Clean Planet*. "A clean planet is more important to me than economic welfare." (26%)
- *Green Returns*. "Environmental sustainable investments generate higher returns in the long run." (13%)
- *Higher Fees*. "It is worth paying higher fees for a mutual fund that only make environmentally sustainable investments." (9%)

The distribution of responses to the recycling question shows that 44% of the number of people we ask believe that they recycle more or much more than their neighbors, but only around 7% admit that they recycle less or much less; 46% say that they recycle about the same as their neighbors. This unreasonable cross-sectional result is widely attributed to overplacement, as discovered by Svensson (1981) for self-assessed driving skills. As we are unable to assess if this is an individually accurate response or not, we think of the most affirmative answer to this question as a proxy for the willingness to take environmental action. Similarly, the willingness to pay more for environmentally friendly products can be thought of the same way, and almost a third of Swedes report that they strongly agree to this statement (11% disagree). A much more general indicator of green orientation is captured by the question about the importance of a clean planet over financial well-being. Here, 26% strongly agree to the statement (7% disagree to some extent).

[12]The precise survey responses to this question was indicated on a five-point Likert scale from "I recycle (Much more than); (Somewhat more than); (About the same as); (Somewhat less than); and (Much less than); my neighbors."

Finally, the last two questions in Panel C of Table III measures attitudes towards investment by asking them if they think environmentally sustainable investments generate higher returns in the long run and if one is willing to pay higher fees for such investments. It is clear that the responses for the last two finance questions are much less in agreement compared to those about green behavior. The fraction of respondents answering "Don't Know" is also here much larger, which perhaps can be a manifestation of many peoples lack of knowledge about savings and investments in general (see Lusardi and Mitchell (2011)).

4.2 Climate Calamities and Environmental Action

Table V reports Probit regressions connecting beliefs about future environmental calamities to responses the previous five additional questions measuring the rationale behind environmental choices. First, we show the results for whether respondents recycle a great deal more than their neighbors. In columns (1) and (2), environmental literacy scores are positively associated with believing one recycles more than one's neighbors. Women, too, are more likely to believe that they out-recycle; likewise, those with a degree in environmental science or biology do also. Interestingly, respondents living in areas in which the green party polled better in the last election are less likely to report high recycling—perhaps because they know they live in areas where environmental consciousness is high, and therefore they face neighbors who also recycle.

In column (2) we introduce the calamity variable. Recycling loads highly significantly and positively on the calamity variable, indicating that those who find future environmental disasters very likely believe they are taking action above and beyond their neighbors. Introducing this variable has little effect on the other demographic controls.

Table V here

Next, we repeat the analysis for the question "I am willing to pay more for environmentally friendly products." We see a similar pattern with regard to gender, environmental literacy and educational background. Consistent with the previous two columns, respondents living in areas in which the green party polled well are more likely to say that they are willing to pay more for environmentally friendly products. Column (4) shows

that the calamities variable is highly correlated with paying more for environmentally green products.

In column (5) of Table V we analyze the results for a more general green orientation as indicated by strongly agreeing to the statement "I prefer a green planet over economic welfare." The immediacy of climate calamaties are especially strong here as for the willingness to pay more for green products, where the point estimate shows that the calamity group are 15% more likely to share this view compared to others.

The remaining columns in Table V move the discussion to the realm of investing. In column (7) the dependent variable is based on responses to the question "Environmentally sustainable investments generate higher returns in the long run." The correlation with demographic controls is weaker here, but respondents with high environmental literacy scores are again more likely to strongly agree with this statement. Including the climate calamity variable in column (6) shows that respondents with concerned beliefs about future environmental calamities are more likely to believe that environmentally sustainable investments are profitable. This indicates that pecuniary motives are part of their decision to invest in green funds, or is a way to rationalize their beliefs.

In column (9) of Table V we include the willingness to pay for financial products by the dependent variable based on strongly agreeing to the question "It is worth paying higher fees for a mutual fund that only makes environmentally sustainable investments." We see a similar pattern to the responses in columns (9) through (11): concerned respondents are willing to pay higher fees, but the effect of environmental literacy is only about half compared to the other measured behaviors. The measured effect is also almost unchanged in column (11), when we control for their belief in superior green returns. The determinants of paying a higher cost for financial products as opposed to higher prices for green products are very different, as shown in the lack of significant controls in the last specification where only beliefs play a role. There are virtually no demographic variables that can explain the willingness to pay a higher price for financial products.

Taken together, these results illustrate that those with very pessimistic views on climate change are more likely to be oriented towards environmental sustainability. Their willingness to pay higher prices for green products, and their beliefs that they recycle more than their neighbors illustrate that they have heard a call to action concerning the

environment. Individuals who know more about environmental processes and individuals who have studied the environment in school are also more likely to hear this same call to action. Importantly, these concerned individuals believe that environmentally sustainable investments will outperform in the long run. In the next section, we examine how this green orientation manifests in actual mutual fund choices that these individuals make.

5 Actual Fund Choices

To investigate the propensity to choose ESG funds, we begin by regressing the portfolio weight allocated to green mutual funds in the respondents' premium pension plan on the measure of future environmental concern. Then we use Probit regressions where the dependent variable is a dummy variable for whether the respondent invests in some green mutual funds, whether they invest most of their pension wealth in green mutual funds, and whether they are entirely invested in green mutual funds. These designations are defined in detail in Panel B and C of Table I. We first present the results for the year 2017. Then, to illustrate the impact of the 2014 weather shock, we contrast portfolio holdings and trading activity from 2012 to 2014 period with those from the 2015 to 2017 period. This diff-in-diff analysis illustrates how the summer of 2014 changed certain investors' mutual fund holdings.

5.1 Fund Holdings and Trades in 2017

In Table VI we present results from holdings of ESG on characteristics and beliefs for all individuals that made a choice (who were not in the default fund at the end of 2017). Fund controls are the portfolio weights to four fund type categories: Equity, Mixed, Bond and Target funds. We also control for the fee of the portfolio. This is to rule out the possibility that our results would be driven by a motivation to minimize fees.

We first report results from OLS regressions in columns (1) and (2) of Table VI, where the dependent variable is the portfolio weight of ESG funds. The regression shows that tilting portfolios towards ESG funds are more prevalent among older people living in urban areas who hold climate calamities but also somewhat lower financial literacy. When

introducing separate dummies for pecuniary (higher green returns) or non-pecuniary (cleaner planet) motives in column (2), climate calamities become insignificant.

There are two main challenges when trying to measure peoples' preferences or intentions through portfolio holdings that attenuate our results. The first is related to inertia, in that few investors trade their portfolio. Dahlquist, Martinez, and Söderlind (2017) shows that as many as one-third of investors in the Swedish pension system only make one choice. In our sample, only about one in every ten investors trade during 2017. Therefore, measured holdings at a given time gives a snapshot that may not represent the desired or optimal allocation for all investors. The second challenge relates to the substantial re-labeling of funds to ESG, which has been growing rapidly since 2014. Many investors could well be passively included in our ESG categorizations which waters down the effect of those consciously acting on climate concerns.

We partly address the first challenge by reducing some of the noise in our estimation. A dummy is coded to be equal to one for investors belonging to any three categories based on the intensity of ESG concentration. The widest group "Some" includes any ESG weight, the second includes those with at least 50%, and the third includes portfolios of 100% ESG labeled funds.

Columns (3) through (8) of Table VI reports the results from Probit regressions. We find no evidence of that people's views of quick climate change play a role for moderate tilts of the portfolios in columns (3) and (4), but a significant effect for concentrated portfolios in columns (5) through (8), even when controlling for alternative motivations of green investment. The point estimates reveal that those strongly agreeing to quick global warming, increased food shortage and sharp sea level rise are around 5% more likely to hold an all ESG portfolio at the end of 2017. The overall results therefore point to that weather calamities are associated with a conscious choice of a portfolio tilt towards ESG funds.

Table VI here

We address the second challenge by analyzing trades (or rebalances), rather than holdings, which are summarized in Panel C of Table I. A trade into ESG funds should be a much stronger revelation of preferences, even if the drawback is that they are much fewer.

Table VII presents the results for our analysis of trades.[13] Fund controls also include difference in fees between the chosen portfolio and the previous portfolio in order to rule out fee-motivated trading. In column (1) and (2) we first model the decision to trade by creating a dummy equal one if the individual traded during the year, and zero otherwise. The results show that the average trader is an older male with significantly higher financial literacy. When introducing the pecuniary motives and calamities in Column (2), we find that they are less likely to hold non-pecuniary beliefs. There is therefore no evidence that those with green-oriented beliefs or climate calamities tend to be more active traders than other respondents in our sample.

Table VII here

In column (3) of Table VII, we only consider those who actively traded. There are 382 investors who traded during 2017. We find little support for climate calamities to explain the decision to switch to more broadly defined ESG portfolio in columns (3) and (4), but strong support for those who switched to concentrated green portfolios in columns (5) through (6). The point estimates here implies that respondents having climate fears are around 14% more likely to trade into an all ESG fund depending on specification. The alternative motivations for this behavior are widely insignificant.

To summarize, in this subsection we establish a link between fears of climate calamities and the propensity to both hold and trade ESG funds in the year 2017. In line with the hypothesis that people indeed act on their beliefs, we find that this effect is much stronger for portfolios that are concentrated to ESG holdings. We find weak or no evidence for alternative pecuniary and non-pecuniary mechanisms driving this behavior. Neither do convictions of green investments to outperform, nor do concerns of the planet above financial well-being, explain actual retirement decisions to hold and shift into green funds.

5.2 Fund Holdings and Trades Before and After the 2014 Heat Wave

In the next step, we investigate to which extent the survey responses can explain recent years portfolios and trades compared to those preceding the climate shock in 2014. We

[13] When creating dummy variables for the corresponding trade categories, we first average the ESG holdings across trades in cases individuals made more than one trade.

pool the time-series of portfolio holdings and trades for the years 2012 through 2017, and define a dummy variable that takes the value of one for the period after the heat wave between 2015 and the end of sample in 2017, and zero for the preceding three years 2012 to 2014. We use the same characteristics, test scores and fund controls as in Table VI and VII and include year fixed effects in all specifications.

Columns (1) through (3) of Table VIII display the results for holdings, which is presented for three intensities: Some (>0%), Most (>50%) and All (100%) ESG labeled portfolios of funds. The dummy for the time period after the heat wave during 2015 through 2017 (labeled "AHW") is very significant and positive, which corresponds to the general increase in holdings of ESG funds described in Figure 3. The point estimates are substantial and reveal that the probability rises from 17% (All ESG) to 34% (Some ESG) across thresholds for portfolio holdings after the heat wave in 2014. There is here no significant effect of the Calamity dummy and its interaction with the heat wave period, but some evidence that they together are larger than zero for the most concentrated ESG portfolios, as revealed by a t-test with p-value of 0.06.

Table VIII here

Columns (4) through (6) of Table VIII repeats the analysis for trades into ESG funds where we find much stronger results. Not only is the 2015 to 2017 heat wave dummy strongly positive ranging from 10% to 40%, but we also find that the interaction term between climate calamities and heat wave is significant, and also becomes stronger as the ESG intensity of the portfolio increase. By summing the estimates of Calamity and the interaction term, we only find significant effects for more concentrated portfolio trades, where the combined marginal probability to hold ESG concentrated portfolios increases by 5% to 6% after the heat wave.[14] The bottom row reports the p-value of a test for differences between the interaction effect of Climate Calamities, and confirms that the effect is significant only for trades into concentrated ESG portfolios.

In sum, we find evidence that investors who find extreme climate scenarios very likely have tilted their portfolios into ESG labeled funds in the time period after 2014, but not before. Our results are not merely driven by a general increase in ESG holdings, possibly explained by a combination of inertia and re-labeling of funds, but by consciously trading

[14]We confirm these results by separate regressions across subperiods which we leave untabulated.

into ESG labeled funds. Looked at this way, environmental concern could work as an important wake-up-call that triggers investors out of passivity and into active investment decision-making.

6 Discussion and Conclusion

This paper connects extreme weather events to the financial decisions made by the people who are exposed to them. It not only provides evidence that extreme weather calamities affect both the supply and the demand for environmentally responsible financial investments, but it explores the underlying psychological mechanisms by which this might occur.

Our results suggest that some individuals, after being exposed to extreme weather events, overweight the probability of disasterous future climate-related outcomes will occur. It is these individuals, and not others, who are more likely to tilt their retirement portfolios towards green investments. Thus, the affect heuristic and availability bias seem important for understanding the demand for green investments. This suggests that behavioral channels are likely an important mechanism for understanding how exposure to extreme events affects portfolio choice.

One channel through which this might occur is that individuals might believe, rightly or wrongly, that the actual returns to environmentally sustainable investments will be higher than previously expected. Altering the perceived risk/return tradeoff of so-called green investments might induce them to increase their holdings for purely pecuniary reasons, regardless of any inherent concern for the environment per se. Although individuals who hold pessimistic views about climate change do indeed believe that the returns to environmentally sustainable investments are high, this channel does not drive out the overriding effect of climate calamities on mutual fund choice.

Alternatively, scenes of environmental devastation might cause a more general reorientiation in preferences towards environmentally sustainable products. Raising social consciousness could cause individuals to increase their allocations to green investments regardless of whether the expected financial returns are higher or lower than previously thought. While we do find that those with pessimistic risk-assessments of climate change

believe in the importance of environmental sustainability in general, this green orientation does little to explain their mutual fund choice. The belief that future environmental calamities are imminent reflects a call to action that operates above and beyond either of these two channels.

These findings are important for several reasons. First, as climate change induces increasing weather volatility, the exposure to extreme weather events is likely to increase in the future. Thus the scope for overweighting to play into decision-making is likely to be important going forward. More generally, households and institutional investors alike are increasingly being asked to make investment choices based not only on standard pecuniary risk and return tradeoffs but also on the environmental or social performance of companies and mutual funds. The difficulty in measuring these alternative dimensions leaves them even more susceptible to the types of behavioral biases that have been shown to affect financial decision-making in other contexts.

References

Alhakami, Siddiq, and Paul Slovic, 1994, A psychological study of the inverse relationship between perceived risk and perceived benefit, *Risk Analysis* 14, 1085–1096.

Anderson, Anders, and David T. Robinson, 2018, Who feels the nudge? Knowledge, self-awareness and retirement savings decisions, Swedish House of Finance working paper No. 17-15.

——— , 2019, Knowledge, fear and beliefs: Understanding household demand for green investments, Swedish House of Finance working paper.

Barber, Brad M., Adair Morse, and Ayako Yasuda, 2018, Impact investing, Working paper, University of Californa, Davis.

Bolton, Patrick, and Marcin Kacperczyk, 2019, Do investors care about carbon risk?, Working paper, Imperial College.

Choi, Darwin, Zheyu Gao, and Wenxi Jiang, 2018, Attention to global warming, Working paper, SUHK Business School, The Chinese University of Hong Kong.

Cronqvist, Henrik, and Richard H. Thaler, 2004, Design choices in privatized social-security systems: Learning from the Swedish experience, *American Economic Review, Papers and Proceedings* 94, 424–428.

Dahlquist, Magnus, José Martinez, and Paul Söderlind, 2017, Individual investor activity and performance, *Review of Financial Studies* 30, 866–899.

FAO, IFAD, and WFP, 2015, The state of food insecurity in the world 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress., Rome, FAO.

Greenstone, Michael, 2019, Is the public willing to pay to help fix climate change?, Energy Policy Institute at the University of Chicago.

Hartzmark, Samuel M., and Abigail B. Sussman, 2019, Do investors value sustainability? a natural experiment examining ranking and fund flows, Forthcoming in Journal of Finance.

Hong, Harrison, and Marcin Kacperczyk, 2009, The price of sin: The effects of social norms on markets, *Journal of Financial Economics* 93, 15–36.

IPCC, 2014, Climate change 2014: Synthesis report. Contribution of working groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core writing team, R.K. Pachauri and L.A. Meyer (eds.)]., IPCC, Geneva, Switzerland, 151 pp.

Krueger, Philipp, Zacharias Sautner, and Laura T. Starks, 2018, The importance of climate risks for institutional investors, Forthcoming in the Review of Financial Studies.

Leiserowitz, Anthony, 2006, Climate change risk perception and policy preferences: The role of affect, imagery, and values, *Climatic change* 77, 45–72.

Loewenstein, George F., Christopher K. Hsee, Eleke U. Weber, and Ned Welch, 2001, Risk as feelings, *Psychological Bulletin* 127, 267–286.

Lusardi, Annamaria, and Olivia S. Mitchell, 2007, Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth, *Journal of Monetary Economics* 54, 205–224.

——— , 2011, Financial literacy around the world: An overview, *Journal of Pension Economics and Finance* 10, 497–508.

Malmendier, Ulrike, and Stefan Nagel, 2011, Depression babies: Do macroeconomic experiences affect risk taking?, *Quarterly Journal of Economics* 126, 373–416.

Myers, Teresa A., Edward W. Maibach, Connie Roser-Renouf, Karen Akerlof, and Anthony A. Leiserowitz, 2013, The relationship between personal experience and belief in the reality of global warming, *Nature Climate Change* 3, 343–347.

Palme, Mårten, Annika Sunden, and Paul Söderlind, 2007, How do individual accounts work in the Swedish pension system?, *Journal of the European Economic Association* 5, 636–646.

Slovic, Paul, Baruch Fischhoff, and Sarah Lichtenstein, 1982, Facts versus fears: Understanding perceived risk, in Daniel Kahneman, Paul Slovic, and Amos Tversky, ed.: *Judgement under Uncertainty: Heuristics and Biases* . pp. 463–489 (Cambridge University Press: Cambridge, M.A.).

Svensson, Ola, 1981, Are we all less risky and more skillful than our fellow drivers?, *Acta Psychologia* 1, 143–148.

Tversky, Amos, and Daniel Kahneman, 1973, Availability: A heuristic for judging frequency and probability, *Cognitive Psychology* 185, 1124–1131.

——— , 1992, Advances in prospect theory: Cumulative representation of uncertainty, *Journal of Risk and Uncertainty* 5, 297–323.

Table I: Fund Menu, Portfolio Holidings and Rebalances of ESG Funds

This table presents the data obtained from the Swedish Pension Authority (SPA) that we match to our survey data. Panel A display the number of funds within the system along with the number and fraction of ESG labeled funds. Panel B presents the distribution of holdings within the survey sample across number of funds (one to five funds are allowed) in the portfolio and for three definitions of ESG fund holdings, where "Some" refers to a non-zero weight in the retirement portfolio, "Most" a weight exceeding 50% and "All" 100% weight in ESG funds. Panel C repeats this for portfolio changes across number of trades during 2017. There are 3,667 respondents in sample where 2,474 at some point have opted out of the default fund by the end of 2017 of which 1,827 people hold a non-zero weight in ESG labeled funds.

Panel A:	Number of funds / Year							
Type of funds	2010	2011	2012	2013	2014	2015	2016	2017
All available SPA funds	839	873	854	885	886	881	873	892
of which ESG	89	99	99	118	146	187	270	325
Fraction ESG	10.6%	11.3%	11.6%	13.3%	16.5%	21.2%	30.9%	36.4%

Panel B:	Number of funds in portfolio 2017							
Holdings	(0)	(1)	(2)	(3)	(4)	(5)	ESG>0	Total
Default fund		1,193						1,193
Active		865	453	316	307	533	1,827	2,474
Some ESG funds	647	389	343	288	285	522	1,827	2,474
Most ESG funds	1,040	389	292	208	193	352	1,434	2,474
All ESG funds	1,634	389	240	102	57	52	840	2,474

Panel C:	Number of portfolio changes 2017							
Changes	(0)	(1)	(2)	(3)	(4)	(5)	(>5)	Total
Full sample	3,285	264	50	21	11	5	31	3,667
Changed to some ESG funds	65	231	35	14	7	5	25	382
Changed to mostly ESG funds	168	166	27	7	3	3	8	382
Changed to all ESG funds	260	109	8	1	2	1	1	382

Table II: Sample Characteristics

This table reports summary sample proportions in percentage points across some key characteristics of the responses from the survey questions about environmental beliefs as well as ESG pension fund holdings. The first column shows the sample proportions and the second the corresponding population average for Sweden. The six intermediate columns labeled "Green Beliefs" present the percentage proportions of respondents strongly agreeing to the following groups of statements. Climate Calamities takes the value of one if the response to: "Within the next 20 year, how likely do you find the following scenarios?", are followed by strongly agreeing to the following three statements "The average temperature on earth rises by more than one Centigrade," "Shortage of food will increase" and "The world sea level will rise by over one meter" and zero otherwise. Similarly, Recycling takes the value of one if responding "I recycle a great deal more than my neighbors"; Green Products if strongly agreeing to: "I am willing to pay more for environmentally friendly products"; Clean Planet if strongly agreeing to"A clean planet is more important for me than economic welfare"; Green Returns takes the value of one if strongly agreeing to the following statement: "In the long run, environmentally sustainable investments generate higher returns"; High Fees "I am willing to pay higher fees for mutual funds that only make environmentally sustainable investments"; and zero otherwise. The last columns labeled "ESG Holdings" show the proportion of individuals holding ESG funds in the premium pension system, and who actively chose their portfolio of funds sorted into three categories of ESG portfolio intensity. Some denotes a non-zero weight in an ESG labeled fund; Most defines the threshold of the holdings to be over 50%; and All is the reported fraction of investors holding a 100% ESG portfolio at the end of 2017. There are 3,667 individuals in the full sample (first eight columns), of which 2,474 actively chose their portfolio (the last three columns).

	Total, %		Green Beliefs, %						ESG holdings, %		
	Sample Prop.	Pop. Prop.	Clim. Calam.	Re-cycling	Green Prod.	Clean Planet	Green Returns	High Fees	Some	Most	All
Overall	100.0	100.0	47.0	14.8	29.1	25.7	13.4	9.2	73.8	58.0	34.0
Pop. Wtd.	.	.	48.8	15.0	27.6	25.3	14.7	8.9	71.8	56.6	34.1
Gender											
Men	48.7	51.1	45.3	13.3	26.3	22.7	12.2	8.0	75.1	56.4	31.8
Women	51.3	48.9	48.5	16.2	31.7	28.7	14.6	10.4	72.5	59.5	36.1
Age											
18-24	4.2	15.5	61.3	12.9	18.1	22.6	11.0	10.3	100.0	100.0	100.0
25-34	15.2	22.9	59.6	14.5	37.2	25.9	16.2	12.4	56.6	47.6	30.3
35-44	19.6	20.8	50.8	14.4	36.3	30.4	15.8	11.2	73.8	56.3	32.8
45-54	27.0	22.0	41.6	14.6	26.8	23.6	12.1	8.9	77.4	59.1	32.0
55-65	34.0	18.9	41.6	15.5	24.5	25.1	12.2	6.8	73.4	59.1	36.3
Income											
0-111	8.5	25.0	56.5	17.4	31.0	32.9	16.1	11.9	71.4	53.6	25.0
111-287	34.1	24.9	48.2	17.3	26.5	26.6	15.3	9.3	69.8	57.1	37.7
287-399	31.2	25.2	44.8	12.7	28.1	24.5	13.1	9.1	74.4	56.8	33.6
399+	25.6	25.0	44.7	13.3	33.0	23.5	10.3	8.3	77.5	60.7	31.8
Education											
Some school	5.4	17.4	49.5	16.2	21.2	18.7	16.2	9.6	68.9	57.0	34.1
High school	39.2	44.0	45.4	15.0	20.5	21.1	12.5	5.4	70.4	55.1	34.3
College	55.0	38.6	47.8	14.6	35.9	29.7	13.8	11.9	77.0	60.2	33.7
Studied Env/Bio	1.9	.	59.4	29.0	53.6	34.8	18.8	17.4	75.0	60.0	37.5
Studied Econ/Bus	10.3	.	41.3	16.9	26.5	22.5	14.3	9.0	70.9	54.3	31.6
Location											
Urban	34.1	.	50.9	12.0	34.9	29.2	14.4	12.4	77.6	60.4	34.8
Rural	65.9	.	44.9	16.2	26.0	23.9	12.9	7.6	72.1	56.9	33.6

Table III: Survey Questions

This table tabulates three sets of questions used in the survey tool. Panel A reports the responses to our three question about Climate Calamities ranging from "Very Likely" to "Very Unlikely" on a five-point Likert scale. Similarly, Panel B reports the results for our three questions about Green Behaviors ranging from "Strongly Agree" to "Strongly Disagree", and Panel C the two questions about Green Finance. "Don't Know" responses are reported separately. There are 3,667 survey responses in sample.

Panel A: Climate Calamities	Very Likely	Likely	Neither nor	Unlikely	Very Unlikely	Don't Know
"Within the next 20 years, how likely do you find the following scenarios?"						
Temperature Rise "The average temperature on earth rises by more than one Centigrade"	38.7%	41.4%	10.7%	4.3%	2.2%	2.8%
Food Shortage "Shortage of food will increase"	24.7%	40.0%	19.7%	10.5%	2.9%	2.1%
Sea Level "The world sea level will rise by over one meter"	12.9%	34.2%	20.5%	17.6%	11.5%	3.2%
Panel B: Green Behaviors	Strongly Agree	Agree	Neither nor	Disagree	Strongly Disagree	Don't Know
Recycling "I recycle a great deal more than my neighbors"	14.8%	29.1%	46.5%	5.5%	1.1%	3.0%
Green Products "I am willing to pay more for environmentally friendly products"	29.1%	40.7%	17.8%	6.7%	3.9%	1.8%
Clean Planet "A clean planet is more important to me than economic welfare"	25.7%	39.4%	25.2%	4.8%	2.2%	2.5%
Panel C: Green Finance	Strongly Agree	Agree	Neither nor	Disagree	Strongly Disagree	Don't Know
Green Returns "Environmental sustainable investments generete higher returns in the long run"	13.4%	30.2%	37.6%	7.9%	5.0%	5.9%
Higher Fees "I am willing to pay higher fees for a mutual fund that only make environmentally friendly investments"	9.3%	31.6%	31.0%	11.4%	8.3%	8.3%

Table IV: Climate Calamities and Weather Disruptions

This table reports the results of Probit regressions where the dependent variable Climate Calamities takes the value of one if the response to: "Within the next 20 year, how likely do you find the following scenarios?", are followed by strongly agreeing to the following three statements "The average temperature on earth rises by more than one Centigrade", "Shortage of food will increase" and "The world sea level will rise by over one meter" and zero otherwise. Independent variables in columns (2) through (5) include an indicator variable taking the value one for the regions experiencing heat records in 2014 and onwards (labeled "Temperature Record"), and zero otherwise. Warnings Class 1 and 2 counts the total number of weather warnings in 2014 (Class 2 "Snow Warnings" reported separately) across counties. Financial and Environmental literacy denote score on a five question test. Log income refers to disposal income, Age is divided by ten and Female denotes a dummy equal to one for women, zero otherwise. Urban and Green Party denote population density and the share of Green Party voters in the municipality of the respondent. University, ECON and ECO student are education indicator variables for subjects having a university degree or having studied Economics/Business or Biology/Geography/Environmental science at any level since high school. There are 493 Class 1 and 28 Class 2 warnings in sample. Sampling weights are used. Point estimates represent marginal probabilities.

	(1)	(2)	(3)	(4)	(5)
Warnings 2			0.012**	0.015**	0.013**
			(0.006)	(0.006)	(0.006)
Warnings 1			0.000	0.001	0.000
			(0.001)	(0.001)	(0.001)
Snow warnings				-0.194***	-0.192***
				(0.040)	(0.041)
Temp. record		0.045*			0.031
		(0.023)			(0.025)
Env. Lit.	0.022**	0.022**	0.021**	0.022**	0.022**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Fin. Lit.	0.024***	0.024***	0.024***	0.024***	0.024***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Log Income	-0.037***	-0.038***	-0.037***	-0.038***	-0.038***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Age	-0.048***	-0.048***	-0.048***	-0.048***	-0.048***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Female	0.053***	0.053***	0.053***	0.057***	0.057***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Urban	0.008	0.005	0.002	-0.010	-0.011
	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)
Green Party	0.001	0.001	0.003	0.005	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
University	-0.023	-0.023	-0.027	-0.018	-0.018
	(0.069)	(0.068)	(0.068)	(0.068)	(0.068)
ECO student	0.069	0.065	0.065	0.054	0.053
	(0.074)	(0.074)	(0.073)	(0.073)	(0.073)
ECON student	-0.071**	-0.069**	-0.070**	-0.072**	-0.071**
	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)
Observations	3,667	3,667	3,667	3,667	3,667

Standard errors in parentheses

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

Table V: Green Behaviors and Green Finance

This table reports the results of Probit regressions where the dependent variable takes the value of one if the response Strongly Agree to the statements: "I recycle much more than my neighbors" (Recycle More, columns 1 and 2); "I am willing to pay more for environmentally friendly products" (Green Products, columns 3 and 4); "A clean planet is more important for me than economic welfare" (Clean Planet, columns 5 and 6); "Environmental sustainable investments generate higher returns in the long run" (Green Returns, columns 7 and 8); and "It is worth paying higher fees for a mutual fund that only make environmentally sustainable investments" (Fees, columns 9 through 11). The variable Climate Calamities is defined in Table IV. Financial and environmental literacy denote score on a five question test. Log income refers to disposal income, Age is divided by ten and Female denotes a dummy equal to one for women, zero otherwise. Urban and Green Party denote population density and the share of green party voters in the municipality of the respondent. University, ECON and ECO student are education indicator variables for subjects having a university degree or having studied Economics/Business or Biology/Geography/Environmental science at any level since high school. Sampling weights are used. Point estimates represent marginal probabilities.

	Recycle More		Green Products		Clean Planet		Green Returns		Higher Fees		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Clim. Calamities		0.067***		0.167***		0.150***		0.131***		0.082***	0.061***
		(0.014)		(0.017)		(0.017)		(0.014)		(0.011)	(0.010)
Green Returns											0.141***
											(0.022)
Env. Lit.	0.026***	0.024***	0.037***	0.034***	0.041***	0.038***	0.022***	0.018***	0.011**	0.008*	0.005
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.005)	(0.005)	(0.005)
Fin. Lit.	-0.005	-0.007	0.032***	0.029***	0.004	0.001	-0.003	-0.007	0.008	0.006	0.008*
	(0.006)	(0.006)	(0.008)	(0.008)	(0.008)	(0.008)	(0.006)	(0.006)	(0.005)	(0.005)	(0.004)
Log Income	0.007	0.009	-0.005	0.000	-0.036***	-0.031***	-0.011*	-0.007	-0.009**	-0.007*	-0.006
	(0.006)	(0.006)	(0.008)	(0.008)	(0.008)	(0.008)	(0.006)	(0.005)	(0.004)	(0.003)	(0.004)
Age	0.004	0.008	-0.027***	-0.017**	0.010	0.018***	-0.004	0.002	-0.008*	-0.005	-0.005
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)
Female	0.031**	0.027*	0.068***	0.060***	0.062***	0.055***	0.024*	0.016	0.008	0.002	0.002
	(0.014)	(0.014)	(0.017)	(0.017)	(0.017)	(0.017)	(0.014)	(0.014)	(0.011)	(0.011)	(0.010)
Urban	0.001	0.000	0.005	0.004	0.009	0.007	0.006	0.005	0.006	0.005	0.004
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)
Green Party	-0.006**	-0.006**	0.007**	0.007**	0.007**	0.007**	0.001	0.001	0.002	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
University	0.018	0.018	0.088	0.090	0.044	0.049	0.010	0.012	0.025	0.028	0.028
	(0.051)	(0.052)	(0.066)	(0.065)	(0.064)	(0.066)	(0.048)	(0.049)	(0.040)	(0.042)	(0.041)
ECO student	0.157**	0.150**	0.252***	0.245***	0.060	0.048	0.069	0.058	0.056	0.045	0.031
	(0.066)	(0.064)	(0.073)	(0.074)	(0.064)	(0.063)	(0.062)	(0.059)	(0.047)	(0.043)	(0.038)
ECON student	0.039*	0.044*	-0.018	-0.006	-0.021	-0.012	0.016	0.028	-0.000	0.004	-0.002
	(0.024)	(0.024)	(0.028)	(0.029)	(0.027)	(0.027)	(0.024)	(0.024)	(0.017)	(0.017)	(0.015)
Observations	3,667	3,667	3,667	3,667	3,667	3,667	3,667	3,667	3,667	3,667	3,667

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table VI: Holding Green Mutual Funds in 2017

This table reports the results of regressions where the dependent variable represent different measures of ESG portfolio holdings in the Swedish government pension premium savings account. In columns (1) and (2) we report OLS regressions where the dependent variable is the weight of ESG funds as a fraction of total holdings. Columns (3) and (4) reports results from Probit regressions where the dependent variable takes the value of one if the holdings are non-zero (ESG Some); columns (5) and (6) if respondent has more than 50% of their government premium pension savings invested in ESG labelled funds (Most); and columns (7) and (8) if the holdings are all ESG funds (ESG All); zero otherwise. The independent variables follow those from Table IV. The sample represents the 2,277 respondents who were not in the default fund at the end of 2017. Independent variables follow those of Table V. Fund controls include portfolio weights in four fund categories: Equities, Mixed, Bond and Target funds and fund fees calculated on the individual portfolio level. Data of portfolio changes and fund holdings are obtained from the SPA. Sampling weights are used. Point estimates represent marginal probabilities in columns (3) through (8).

	ESG Wgt.		Some ESG		$> 50\%$ ESG		All ESG	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Clim. Calamities	0.030*	0.027	0.030	0.024	0.051**	0.048*	0.044*	0.044*
	(0.018)	(0.018)	(0.022)	(0.022)	(0.025)	(0.026)	(0.023)	(0.024)
Green Returns		0.025		0.019		0.035		0.044
		(0.029)		(0.034)		(0.041)		(0.039)
Clean Planet		0.000		0.034		-0.010		-0.037
		(0.022)		(0.027)		(0.032)		(0.028)
Env. Lit.	-0.005	-0.005	-0.004	-0.006	-0.001	-0.001	-0.007	-0.006
	(0.009)	(0.009)	(0.011)	(0.011)	(0.013)	(0.013)	(0.012)	(0.012)
Fin. Lit.	-0.013*	-0.013*	-0.009	-0.009	-0.016	-0.017	-0.013	-0.014
	(0.008)	(0.008)	(0.010)	(0.010)	(0.012)	(0.012)	(0.011)	(0.011)
Log Income	0.015	0.015	0.016	0.018	0.017	0.017	0.012	0.012
	(0.010)	(0.010)	(0.013)	(0.013)	(0.015)	(0.015)	(0.014)	(0.014)
Age	0.033***	0.033***	0.041***	0.040***	0.040***	0.041***	0.027**	0.027**
	(0.010)	(0.010)	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)	(0.012)
Female	0.002	0.001	-0.025	-0.027	0.023	0.023	0.016	0.017
	(0.018)	(0.018)	(0.022)	(0.022)	(0.026)	(0.026)	(0.024)	(0.024)
Urban	0.015**	0.015**	0.029***	0.029***	0.021**	0.021**	0.001	0.001
	(0.007)	(0.007)	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)
Green Party	0.002	0.003	0.000	-0.000	0.002	0.002	0.007*	0.007*
	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)
University	0.051	0.049	0.050	0.049	0.139*	0.137*	0.008	0.011
	(0.050)	(0.051)	(0.064)	(0.065)	(0.071)	(0.072)	(0.082)	(0.082)
ECO student	0.033	0.034	0.075	0.069	-0.012	-0.011	0.070	0.075
	(0.073)	(0.074)	(0.062)	(0.063)	(0.122)	(0.122)	(0.097)	(0.098)
ECON student	-0.024	-0.024	-0.013	-0.012	-0.018	-0.019	-0.017	-0.019
	(0.028)	(0.028)	(0.034)	(0.034)	(0.038)	(0.038)	(0.035)	(0.035)
Observations	2,474	2,474	2,474	2,474	2,474	2,474	2,474	2,474
R-squared	0.205	0.206						
Fund controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table VII: Choosing Green Mutual Funds in 2017

This table reports the results of Probit regressions where the dependent variable takes the value of one if the respondents have rebalanced their portfolio in 2017. In columns (1) and (2), estimated using the full data set, the dependent variable takes the value of one for the 382 respondents that made at least one rebalancing of their portfolio, zero otherwise. Columns (3) through (8) displays displays the same regression estimated using the 382 respondents that made at least one trade. In column (3) and (4) he dependent variable takes the value of one if the respondent rebalanced their portfolio to a portfolio consisting of a nonzero weight of ESG funds. In column (4) and (5), the indicator variable takes the value of one if the rebalancing into a portfolio of at least 50% ESG labeled funds, and column (7) and (8) if to an all ESG portfolio. Individual characteristics follow those from Table V and VI but educational dummies are dropped due to collinearity. Fund controls include portfolio weights in four fund categories: Equities, Mixed, Bond and Target funds and difference in fees between the portfolio purchased and the portfolio sold calculated on the individual portfolio level. Data of portfolio changes and fund holdings are obtained from the SPA. Sampling weights are used. Point estimates represent marginal probabilities.

	All trades		Some ESG		$> 50\%$ ESG		All ESG	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Clim. Calamities	0.003	0.006	-0.008	-0.001	0.147**	0.143**	0.129**	0.137**
	(0.010)	(0.010)	(0.041)	(0.043)	(0.058)	(0.060)	(0.057)	(0.059)
Green Returns		0.005		-0.016		0.097		0.039
		(0.015)		(0.059)		(0.091)		(0.096)
Clean Planet		-0.026**		-0.042		-0.112		-0.122*
		(0.011)		(0.062)		(0.085)		(0.072)
Env. Lit.	-0.005	-0.004	-0.001	0.001	0.015	0.014	0.001	0.004
	(0.005)	(0.005)	(0.023)	(0.024)	(0.033)	(0.033)	(0.030)	(0.030)
Fin. Lit.	0.015***	0.015***	0.008	0.007	-0.000	-0.001	-0.053**	-0.053**
	(0.004)	(0.005)	(0.016)	(0.016)	(0.027)	(0.027)	(0.027)	(0.026)
Log Income	0.016***	0.015**	-0.088**	-0.086**	-0.106*	-0.112*	-0.079	-0.080
	(0.006)	(0.006)	(0.042)	(0.042)	(0.059)	(0.060)	(0.052)	(0.053)
Age	0.024***	0.024***	0.043*	0.043*	-0.010	-0.010	0.012	0.013
	(0.004)	(0.004)	(0.023)	(0.022)	(0.031)	(0.030)	(0.029)	(0.028)
Female	-0.025**	-0.024**	-0.061	-0.058	-0.014	-0.016	0.021	0.024
	(0.010)	(0.010)	(0.043)	(0.043)	(0.065)	(0.065)	(0.064)	(0.064)
Urban	-0.001	-0.001	0.019	0.019	0.016	0.017	-0.038	-0.038
	(0.004)	(0.004)	(0.015)	(0.015)	(0.024)	(0.023)	(0.024)	(0.024)
Green Party	-0.002	-0.002	0.003	0.003	0.000	0.000	0.017	0.017
	(0.002)	(0.002)	(0.009)	(0.008)	(0.012)	(0.011)	(0.011)	(0.011)
Observations	3,667	3,667	382	382	382	382	382	382
Fund controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table VIII: ESG Holdings and Trades Before and After the 2014 Heat Wave

This table reports the results of pooled Probit regressions where the dependent variable takes the value of one if the respondents held or rebalanced their portfolio into ESG labeled funds during the years 2012 through 2017. The dummy variable After Heat Wave (AHW) equals one for the years 2015 through 2017 and zero otherwise, which is also interacted with the dummy variable Climate Calamities (CC). The dependent variable in columns (1) through (3) presents the results for holdings and columns (4) through (6) for trades for three different intensities of ESG holdings: Some ESG takes the value of one for respondents holding or trading their portfolio into ESG (>0%), at least 50% ESG, or an All (100%) ESG portfolio; and zero otherwise. Investor Characteristics, Knowledge and Fund portfolio controls follow those in Table VI and VII. Year fixed effects are included in all specifications. The bottom row reports the probability from a *t*-test for the sum of the two Climate Calamity coefficients to be greater than zero. Data of portfolio holdings, changes and classifications are obtained from the SPA. Sampling weights are used. Point estimates represent marginal probabilities.

	Holdings 2012-2017			Trades 2012-2017		
	Some ESG	$> 50\%$ ESG	All ESG	Some ESG	$> 50\%$ ESG	All ESG
	(1)	(2)	(3)	(4)	(5)	(6)
After Heat Wave (AHW)	0.341***	0.324***	0.169***	0.403***	0.202***	0.103***
	(0.017)	(0.015)	(0.013)	(0.046)	(0.034)	(0.026)
Clim. Calamities (CC)	0.012	0.022	-0.005	-0.097**	-0.040*	-0.050***
	(0.026)	(0.021)	(0.016)	(0.042)	(0.024)	(0.017)
AHW $\times$ CC	0.003	0.015	0.028	0.108*	0.098**	0.113***
	(0.027)	(0.025)	(0.019)	(0.058)	(0.042)	(0.042)
Green Returns	-0.015	0.022	0.032	-0.012	0.035	0.017
	(0.031)	(0.025)	(0.020)	(0.055)	(0.029)	(0.018)
Clean Planet	0.038	0.017	-0.010	0.063	-0.005	-0.016
	(0.025)	(0.019)	(0.012)	(0.042)	(0.018)	(0.010)
Observations	14,580	14,580	14,580	2,460	2,460	2,460
Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Knowledge controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
p(Calamities=0)	0.55	0.87	0.06	0.89	0.03	0.05

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1: July temperatures in Sweden 2012-2017

This figure display heat maps of differences from average temperatures over Sweden in July for the years 2012 to 2017. Yellow denotes normal, blue to purple below, and orange to red above average temperatures.The maps are obtained from the Swedish Meteorological and Hydrological Institute, downloaded from www.smhi.se.

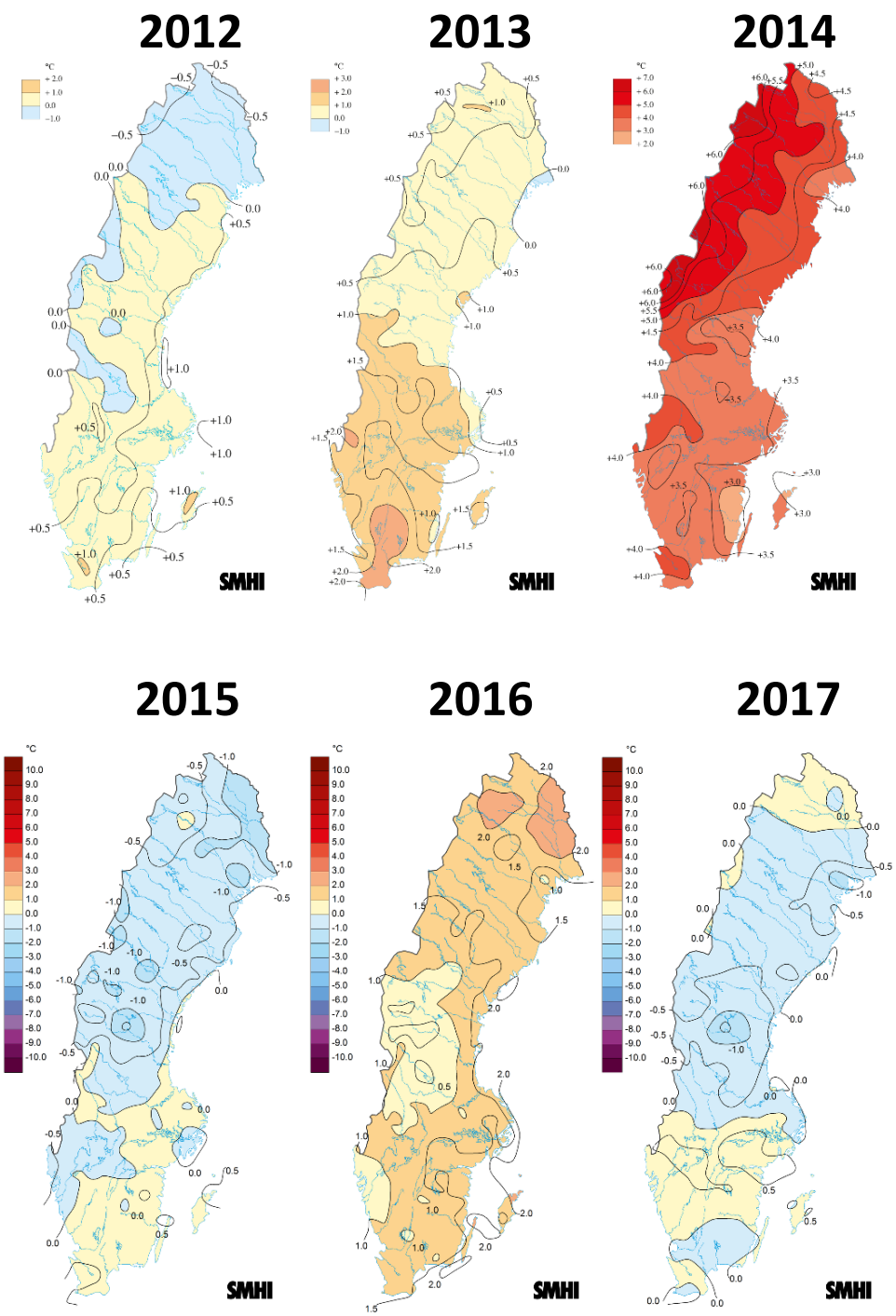


Figure 2: The Emergence of ESG Funds Over Time

This figure shows how ESG mutual funds have proliferated over time in the Swedish Premium Pension System as per December each year as presented in the PPA fond brochure. The bars show total number of funds, split up in percent of ESG and non-ESG funds in the offering. The ESG label was introduced in 2004. The grey line depicts the number of news items from the four largest newspapers in Sweden (Aftonbladet, Dagens Nyheter, Expressen and Svenska Dagbladet) every year containing the word "Climate change". The data for funds are collected from the SPA fund catalogues and webpage. The data on news coverage is from the National Library of Sweden (www.tidningar.kb.se).

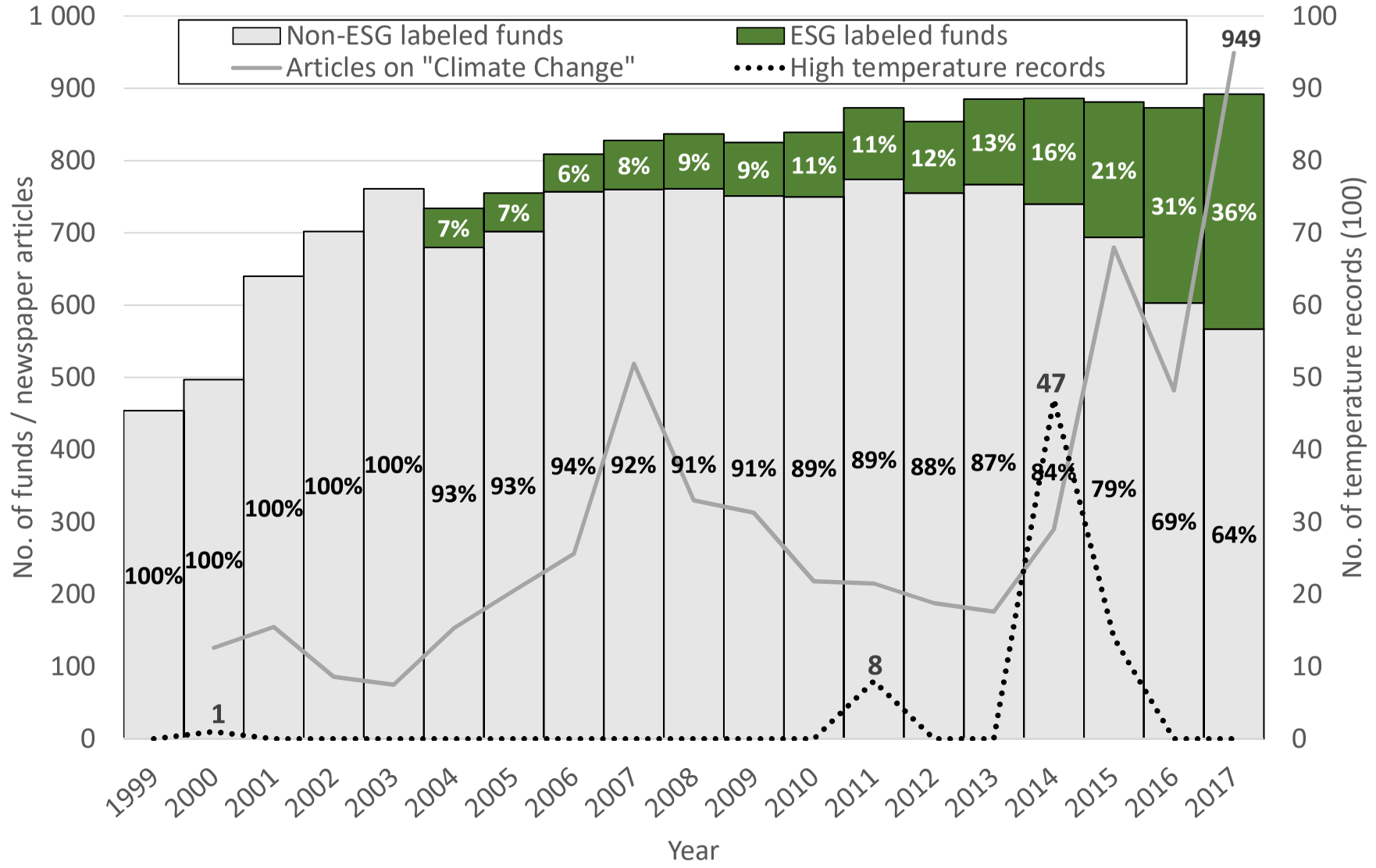
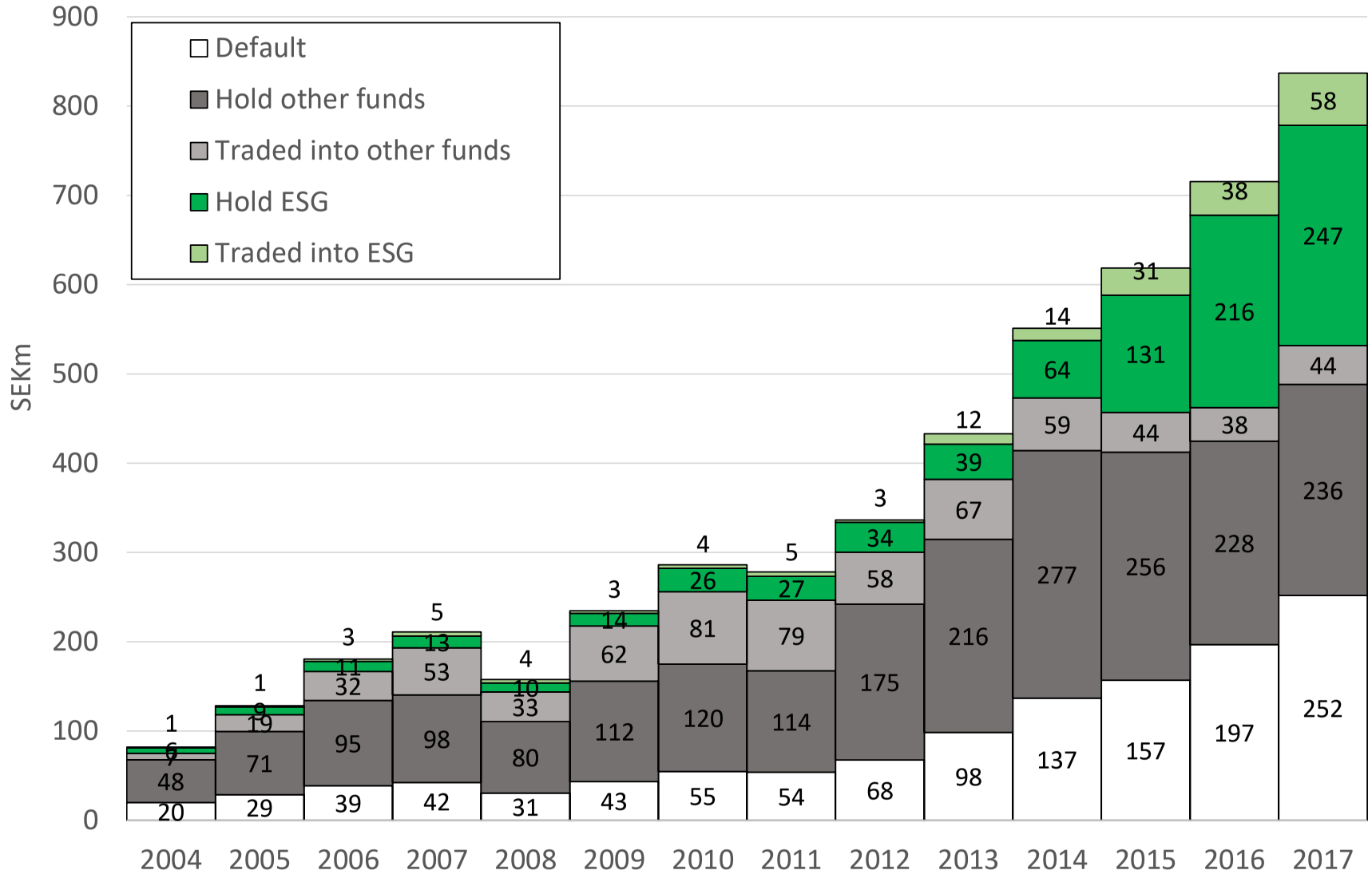


Figure 3: Total Pension Savings and ESG Holdiings

This figure shows the sample holdings funds divided into ESG and non-ESG and the default fund (also an ESG labelled fund). The holdings are split up in the amounts traded into each category every year.



A Appendix

This appendix presents the literacy test and meteorological data in detail. The distribution of answers to the environmental and financial literacy tests displayed in Table A.1 and in Table A.2. The distribution of weather warnings across counties and type of warning is presented in Table A.3.

Table A.1: Five Environmental Literacy Questions

Below are the five environmental literacy questions used in the study and corresponding frequency responses and fractions for each item within parenthesis. Correct answers are highlighted in boldface. The questions have been translated from Swedish into English.

1. A low-energy (CFL or LED) lightbulb costs more than a regular lightbulb but uses less energy. About how long does one last?
   (a) About the same as a regular lightbulb (51; 1.4%)
   (b) **About 10 times as long as a regular lightbulb** (1,575; 43.0%)
   (c) About 100 times as long as a regular lightbulb (1,588; 43.3%)
   (d) Don't know (438; 11.9%)
   (e) Prefer not to say (15; 0.4%)
2. The ozone layer filters what harmful substance?
   (a) Acid rain (22; 0.6%)
   (b) **UV radiation** (3,211; 87.6%)
   (c) Sewage (45; 1.2%)
   (d) The Greenhouse Effect (160; 4.4%)
   (e) Don't know (211; 5.8%)
   (f) Prefer not to say (18; 0.5%)
3. According to the UN, around 30% of the world's food is wasted each year. When does this occur?
   (a) **Most food is wasted before it reaches the supermarket** (405; 11.0%)
   (b) Most food is discarded at the supermarket before it is sold (642; 17.5%)
   (c) Most food is wasted after it is purchased from the supermarket (2,320; 63.3%)
   (d) Don't know (285; 7.8%)
   (e) Prefer not to say (15; 0.4%)
4. Does the world spend more energy on heating homes or cooling them?
   (a) **More energy on heating** (971; 26.5%)
   (b) More energy on cooling (1,524; 41.6%)
   (c) About the same amount on both (507; 13.8%)
   (d) Don't know (650; 17.7%)
   (e) Prefer not to say (15; 0.4%)
5. Why don't polar bears eat penguins?
   (a) They have both been driven out of their natural environment (406; 11.1%)
   (b) Polar bears do not eat meat (76; 2.1%)
   (c) Penguins are only active when polar bears hibernate (112; 3.1%)
   (d) **None of the above** (2,167; 59.1%)
   (e) Don't know (887; 24.2%)
   (f) Prefer not to say (19; 0.5%)

Table A.2: Five Modified Financial Literacy Questions

Below are the five ("Big 5") financial literacy questions used in the study and corresponding frequency responses and fractions for each item within parenthesis. Correct answers are highlighted in boldface. The questions have been translated from Swedish into English.

1. *Compounding*. Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? Please select one.
   - **More than $102 (3,363; 91.7%)**
   - Exactly $102 (60; 1.6%)
   - Less than $102 (88; 2.4%)
   - Don't know (887; 3.0%)
   - Prefer not to say (44; 1.2%)
   - (1%)
2. *Inflation*. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? Please select one.
   - More than today (180; 4.9%)
   - **Less than today (2,855; 77.9%)**
   - Exactly the same as today (124; 3.4%)
   - Don't know (446; 12.2%)
   - Prefer not to say (62; 1.7%)
3. *Diversification*. Buying a single company's stock usually provides a safer return than a stock mutual fund. Please select one.
   - True (194; 5.3%)
   - **False (3,043; 83.0%)**
   - Don't know (385; 10.5%)
   - Prefer not to say (45; 1.2%)
4. *Saving*. Suppose you were given 10,000 as a gift and wanted to double the amount by saving the money ten years without having to touch it. What interest rate would you require to achieve this goal? Please select one.
   - About 15% annual interest rate (233; 6.4%)
   - About 10% annual interest rate (1,432; 39.0%)
   - **About 7% annual interest rate (1,640; 44.7%)**
   - Don't know (297; 8.1%)
   - Prefer not to say (65; 1.8%)
5. *Bond Pricing*. If interest rates fall, what should happen to bond prices? Please select one.
   - **They will rise (602; 16.4%)**
   - They will fall (777; 21.2%)
   - They will stay the same (1,572; 42.9%)
   - Don't know (656; 17.9%)
   - Prefer not to say (60; 1.6%)

Table A.3: 2014 Weather Warnings in Sweden

This table presents the weather warnings issued in Sweden across 21 regional counties during 2014. The warnings are presented separately Class1 (some risks and disturbances to transport and other parts of society) and Class 2 (danger, damage and larger disturbances) warnings. There are five weather categories: Heat (H), Rain (R), Snow (S), Wind (W) and Thunderstorm (T). Data is collected from the Swedish Meteorological and Hydrological Institute, SMHI. Counties are ordered (approximately) from north to south.

	Class 1					Sum	Class 2					Sum	Sum
County	H	R	S	W	T	Class 1	H	R	S	W	T	Class 2	All
Norrbotten	1	3	23	3	5	35	1	0	0	0	0	1	36
Västerbotten	1	2	23	3	4	33	1	0	1	0	0	2	35
Jämtland	0	7	23	2	3	35	0	0	1	0	0	1	36
Västernorrland	1	4	10	2	0	17	1	0	1	0	0	2	19
Gävleborg	2	4	10	1	0	17	2	0	0	0	0	2	19
Dalarna	1	4	18	0	2	25	1	0	0	0	0	1	26
Värmland	1	5	5	0	2	13	1	0	0	0	0	1	14
Uppsala	2	5	13	1	8	29	2	0	0	0	0	2	31
Västmanland	1	2	11	0	0	14	1	0	0	0	0	1	15
Örebro	1	3	7	0	1	12	1	0	0	0	0	1	13
Stockholm	2	7	11	1	7	28	2	0	0	0	0	2	30
Södermanland	1	2	5	0	2	10	1	0	0	0	0	1	11
Östergötland	1	3	4	0	0	8	0	0	0	0	0	0	8
Västra Götaland	5	19	12	6	21	63	0	0	0	0	0	0	63
Jönköping	0	8	12	6	16	42	0	0	0	0	0	0	42
Gotland	0	1	1	6	2	10	0	0	0	1	1	2	12
Kalmar	0	4	2	7	3	16	0	0	0	1	0	1	17
Halland	0	4	2	5	6	17	0	0	0	1	0	1	18
Kronoberg	0	6	5	6	11	28	0	0	0	1	0	1	29
Blekinge	0	4	3	3	2	12	0	0	0	0	0	0	12
Skåne	0	6	4	12	7	29	0	0	0	6	0	6	35
Total	20	103	204	64	102	493	14	0	3	10	1	28	521