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Climate crisis attitudes among financial professionals and climate experts

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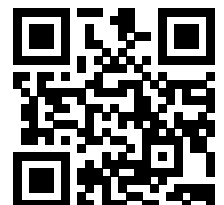


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Climate Crisis Attitudes among Financial Professionals and Climate Experts

Elisabeth Gsottbauer, Michael Kirchler, and Christian König-Kersting*

June 12, 2023

Abstract

Climate change constitutes one of the major challenges to humankind in the 21st century. To address this crisis, it is necessary to transform the economy and reduce greenhouse gas emissions. The finance industry has the potential to play a central role in this transformation by implementing sustainable investment and financing policies. We document climate mitigation preferences and attitudes toward the climate crisis of finance professionals—the key protagonists on financial markets—and climate experts—the key protagonists providing scientific findings. We use an incentivized choice experiment to measure the willingness to forgo individual payout to curb greenhouse gas emissions and survey participants to elicit their attitudes and beliefs toward the climate crisis. To learn how well both groups understand each other, we also ask participants what they believe the other stakeholder group believes. Our results provide suggestive evidence that finance professionals have a lower willingness to curb greenhouse gas emissions, measured through incentivized indifference valuations of carbon offsets, and are also less concerned about climate change compared to climate experts. Additionally, we find that the motivations and priorities of the two groups in addressing the climate crisis differ, with finance professionals being more driven by economic and reputational considerations and climate experts prioritizing the ecological and social consequences of the crisis. Finally, we find that finance professionals are less supportive of a carbon tax. Our findings have implications for policy and communication efforts, highlighting the importance of financial incentives and reputational concerns in motivating finance professionals to address the climate crisis.

Author Contributions: E.G., M.K., and C.K. designed the research, managed the project, and wrote the paper; C.K. analyzed the data; all authors approved the final manuscript.

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Classification: Social Sciences, Economic Sciences, Psychological and Cognitive Sciences.

Keywords: Climate crisis, climate policy, beliefs, experiment, finance.

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Significance Statement

Finance professionals play an important role in the transformation of the economy to curb greenhouse gas emissions. We show suggestive evidence that finance professionals value carbon offsets less than climate experts, are more strongly opposed to hard measures from the government (carbon tax) and from corporations, and are primarily motivated by financial incentives and reputation. Climate experts, on the other hand, place greater importance on environmental and social concerns. Both groups exhibit biased beliefs about the other group, with finance professionals underestimating the importance of carbon taxes to climate experts. Emphasizing benefits of climate change mitigation efforts should match the motivations of stakeholder groups, especially as finance professionals are primarily motivated by financial incentives and reputational motives.

Introduction

The climate crisis constitutes one of the major challenges to humankind with societal, health, economic, and political consequences for all citizens (IPCC, 2021; Ripple et al., 2022). The need for transforming the economy to curb greenhouse gas emissions is evident and posits a strenuous effort in the years to come (e.g., Otto et al., 2020). The finance industry will gain center stage in this decarbonisation of the economy, because of its major role in facilitating sustainable investment and lending, as well as the connection of finance to compliance through environmental, social, and governance (ESG) targets (e.g., Nordhaus, 2019; Sachs et al., 2019; Hong et al., 2020; Krueger et al., 2020; Bolton and Kacperczyk, 2021).

Whether and how the finance industry will handle this role strongly depends on the behavior and attitudes of its main protagonists, i.e., finance professionals (Kirchler et al., 2018; Razen et al., 2020; Holmen et al., 2021). At the same time, the expertise (and attitudes) of climate experts will come into play, as scientific findings and associated consequences will impact public policy and the regulation of the economy in general (IPCC, 2021). Given both stakeholder groups' key roles for the transformation of the economy, it is stunning that no scientific evidence exists measuring differences in preferences, opinions, and second-order beliefs about the future course of action regarding the climate crisis.

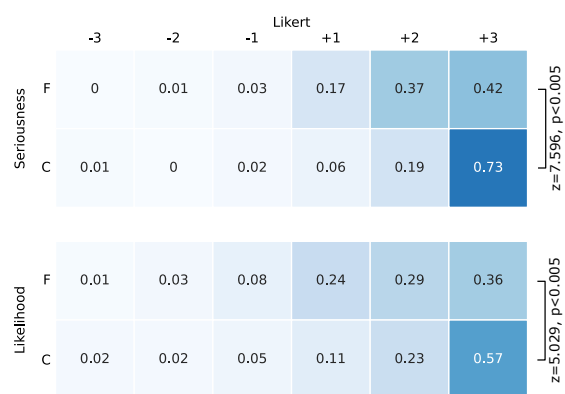
In this paper, we shed light on finance professionals' and climate experts' views on the climate crisis and the role governments and companies should play in its mitigation. Our pre-registered approach is threefold: First, using an incentivized choice experiment with externalities (e.g., Ostrom, 2012; Falk and Szech, 2013; Kirchler et al., 2016), we measure individual willingness to mitigate climate change via the valuation of a 10 ton carbon offset (provided by the verified offsetting partner "South Pole"). Second, we survey respondents' attitudes towards the climate crisis, motivations to tackle it, their perception of priority areas for mitigation measures, and their support for different types of policy interventions. Finally, we elicit participant's second-order beliefs (Mildenberger and Tingley, 2019), i.e., their beliefs about the responses of the other group, to provide insights on how well the two groups understand each other. Our analysis is based on data from 300 finance professionals from the European Union and 305 academic climate experts who have recently published in either a natural science, social science or interdisciplinary science journal on climate change (see "Materials and Methods" and Table A1 in

the Supplementary Information (SI) for details).

Results

View on climate change and valuations of carbon offsets. Participants faced two questions capturing their general view on climate change. We asked (1) how serious of a problem they think climate change is and (2) how likely they think that climate change will have long-term, negative impacts on the growth rate of the global economy. Participants responded on 6-point Likert scales (coded from -3 “not a serious problem at all / very unlikely” to $+3$ (excluding “0”) “a very serious problem / very likely”, numbers not shown in survey). Figure 1, Panel A, shows the distribution of the responses. Most respondents are concerned about climate change and consider it quite likely to have a negative impact on the economy (median ratings of $+2$ on both questions for finance professionals and $+3$ for climate experts, respectively). However, finance professionals consider climate change to be significantly less serious (Mann-Whitney U tests, $z = 7.596$, $p < 0.005$) and consider it less likely to have long-term, negative impacts than climate experts (Mann-Whitney U tests, $z = 5.029$, $p < 0.005$).

Panel A: General Views



Panel B: Valuations and Beliefs

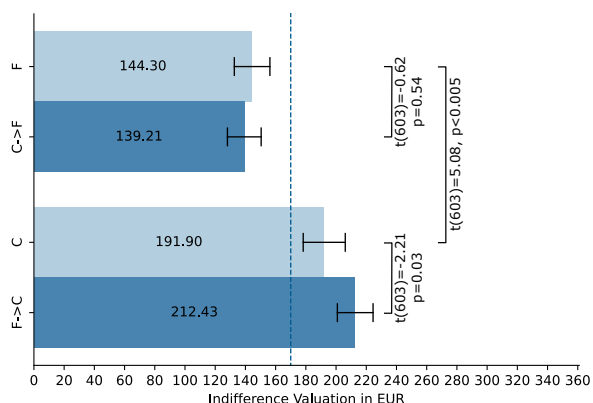


Figure 1: In Panel A, the share of participants that chose the respective Likert response item, separated by samples, for each question is plotted. The Likert scale responses range from -3 (not a serious problem at all / very unlikely) to $+3$ (a very serious problem / very likely). Darker areas indicate a higher share of respondents with the numbers in the areas depicting its share. ‘F’ and ‘C’ stand for finance professionals and climate scientists, respectively. Two-sided Mann-Whitney-U tests are reported. In Panel B, average Euro valuations for a 10 ton carbon offset for each sample and the respective beliefs about the other group are shown. Indifference valuations are calculated as the midpoint between the last payment the respondent still forgoes for the carbon offset and the first payment s/he prefers over the offset. For those individuals always selecting the individual payment or always opting for the carbon offset, valuations of 0 and 360, respectively, are assumed. With respect to second-order beliefs, ‘C->F’, for instance, stands for climate experts’ beliefs about financial professionals’ indifference valuations. The t-statistics and the p-values of two-sided t-tests are shown.

In addition to simply asking participants about their perspectives on climate change, we measured their trade-off decisions between receiving individual monetary payments and reducing negative externalities by curbing greenhouse gas emissions. In the incentivized choice list, respondents repeatedly decided between a monetary payment to themselves and the purchase of a 10 ton carbon offset. While the carbon offset amount remained unchanged for each decision,

the payment to the respondent varied from €0 to €360. The midpoint between the last payment amount that a respondent still forgoes for the offset and the first monetary payment s/he prefers over the carbon offset marks the indifference valuation. For those individuals always selecting the individual payment or opting for the carbon offset, valuations of 0 and 360, respectively, are taken. All else equal, higher valuations indicate a greater willingness to forego personal gain for climate change mitigation actions.

Panel B of Figure 1 shows the average amount in Euro at which respondents switch from offsetting 10 tons of CO₂ to taking the individual payment. On average, finance professionals (F) exhibit significantly lower valuations for the carbon offset than climate experts (C) (raw values: F: €144.30 vs. C: €191.90, Table 1, model (1): coeff = -58.84, $p < 0.005$). The results are robust to adding demographic controls (age, gender) and controlling for political orientation and the respondents' general perspective on the climate crisis (Table 1, model (3): coeff = -26.20, $p < 0.05$). Our pre-registered interval regression analysis shows that the valuation of the carbon offset is positively associated with age, being female, and perceiving the climate crisis as a more serious issue.

In a non pre-registered and exploratory multiverse analysis approach Steegen et al. (2016), we show evidence of the robustness of this effect. We took the approach of Simonsohn et al. (2020) and run meaningful specifications by identifying several important analysis forks, such as the selection of the regression model, outlier treatment, and the inclusion of additional covariates. In total, we identified 3360 specifications (see Figure A1 in the Supporting Information for details and results). We find that 42.9% of all specifications yield significant results (p -value < 0.05). The detailed analysis shows that all specifications based on the preferred and pre-registered interval regression model are significant, while other (less suited) regression models yield insignificant results in many cases. Trimming the dataset at various cutoffs and based on different time measurements as well as controlling for the order of presentation of various survey items does not systematically affect the results. Including additional controls for participants' general views on climate change, their political views, and demographics generally slightly reduces the number of statistically significant differences across both samples. This is expected since we capture more of the groups' socio-demographic differences directly. Overall, we consider our results to be reasonably robust to the selection of analysis paths.

Can finance professionals and climate experts accurately estimate the other groups's indifference valuation? Panel B of Figure 1 shows that climate experts are relatively well calibrated regarding the valuations of finance professionals (raw values: F: €144.30 vs. C->F: €139.21, $t(603) = -0.62$, $p = 0.54$, two-sided t -test), but the latter are overly optimistic with respect to climate experts' valuation of 10 tons of carbon offset (raw values: C: €191.90 vs. F->C: €212.43, $t(603) = -2.21$, $p = 0.03$, two-sided t -test). Table A2 in the Supplementary Information shows that the results from the parametric tests are largely confirmed in multivariate interval regressions that include additional demographic characteristics of our participants as well as controls for their general perspective on climate change. Finance professionals hold a distorted view of climate experts' preferences, perceiving them to be more extreme than they actually are.

The first key result of our study can be summarized as follows: Finance professionals are less concerned about the climate crisis and have lower indifference valuations of carbon offsets than climate experts. Moreover, finance professionals have biased beliefs, as they overestimate

Table 1: Indifference Valuations

| | (1) | (2) | (3) |
|-----------------|-------------------|------------------|-----------------|
| Finance Prof. | -58.84*** (11.00) | -28.24* (12.96) | -26.20* (12.94) |
| Age | | 1.82*** (0.58) | 1.63** (0.58) |
| Female | | 37.68** (14.58) | 35.20* (14.43) |
| Political Left | | 69.39* (27.83) | 63.28* (27.58) |
| Political Right | | -13.48 (34.48) | 6.49 (35.36) |
| CC Seriousness | | | 20.23* (8.74) |
| CC Impact Prob. | | | -5.55 (5.30) |
| Constant | 201.56*** (8.72) | 91.59*** (27.46) | 60.78 (32.46) |
| Observations | 605 | 536 | 536 |

Interval regressions. Finance Prof. is an indicator for the sample of finance professionals; Political Left (Right) [0, 1] expresses the strength of the respondent’s political view in the respective direction; CC Seriousness and CC Impact Prob. are 6-point Likert scale responses from -3 to +3, expressing the perceived seriousness of the climate crisis and the likelihood that it will have an impact on the economic situation. Robust standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.005$;

the indifference valuations of climate experts.

Attitudes towards the climate crisis. To get a more comprehensive picture about both groups’ attitudes towards the climate crisis, we asked a series of pre-registered questions about respondent’s underlying motivations or rationales (‘motives’) to act on climate change as well as the impact area (environmental, economics, social, health and governmental) they prioritize (‘priorities’). To prevent participants from giving socially-desired responses, we did not ask about their individual opinion, but asked them to think about their “fellow finance professionals” or their “fellow climate experts”, respectively, throughout the survey.

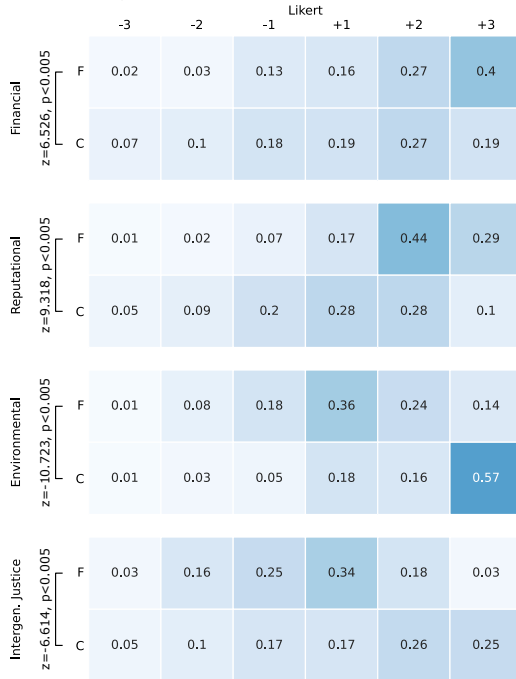
Figure 2, Panel A1, shows the distributions of responses, suggesting that the reasons for climate change mitigation efforts differ substantially. Among finance professionals, “financial” and “reputational” motivations are among the most important reasons to mitigate the climate crisis, higher than among climate experts (Mann-Whitney U tests; economic: $z = 6.526$, $p < 0.005$; reputation: 9.318 , $p < 0.005$). In contrast, climate experts consider non-financial motives concerning the environment and intergenerational justice significantly more important than finance professionals (Mann-Whitney U tests; environment: $z = -10.723$, $p < 0.005$; intergen. justice: -6.614 , $p < 0.005$). These findings can be used to inform communication strategies targeting the finance industry—for example, by strategically emphasizing that climate action can, and particularly will, address financial and reputational risks to banks and the financial system.

Again, we elicited second-order beliefs, i.e. every participant states his/her best guess about what the other group responds on average. Panel A2 of Figure 2 shows the results. We find both finance professionals’ and climate experts’ second-order beliefs to differ significantly from the actual responses by the respective other group. For financial and environmental motives as well as motives of intergenerational justice, both groups believe others’ responses to be more extreme than they actually are. For reputational reasons, median beliefs match actual responses, but the distribution generally indicates large heterogeneity in beliefs.

Therefore, we can summarize our second major finding as follows: Finance professionals and climate experts differ substantially in their primary motives for supporting climate mitigation efforts. While economic and reputational considerations play a more important role among finance professionals, climate experts prioritize environmental and social concerns.

Panel A: Motives

A1: Self-reports

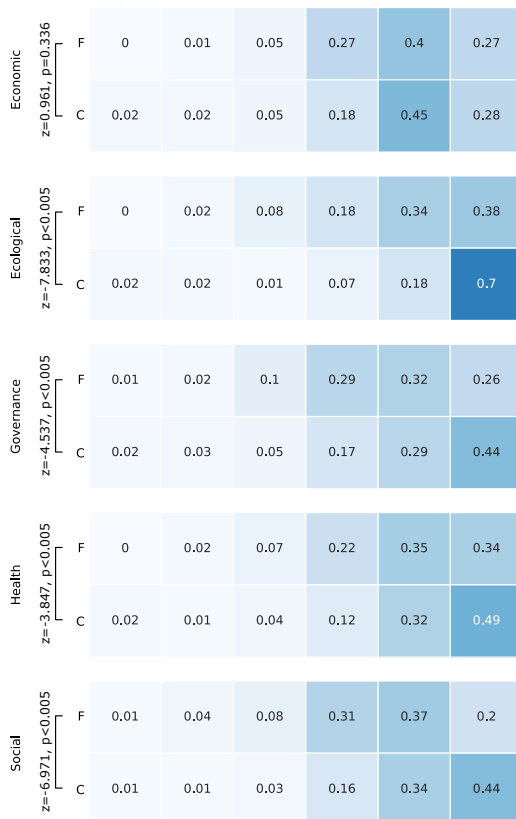


A2: Beliefs



Panel B: Priorities

B1: Self-reports



B2: Beliefs

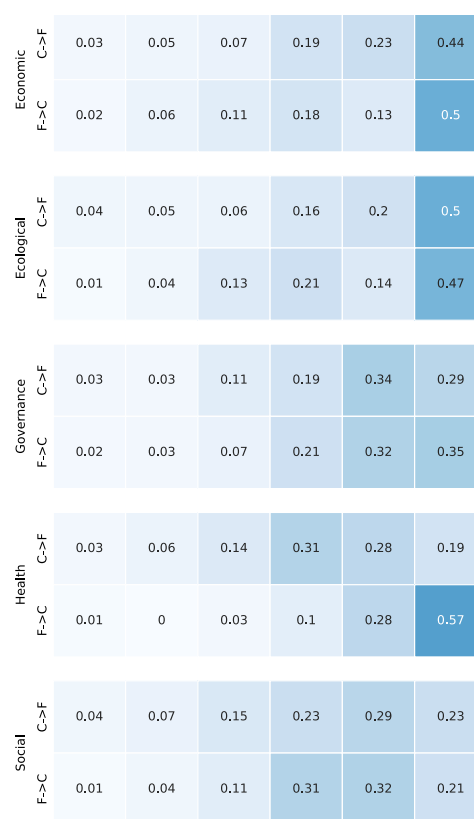


Figure 2: The Likert scale responses range from -3 (very unlikely / very unimportant) to +3 (very likely / very important) for individual attitudes (left panels) and beliefs about the other group (right panel) regarding motives and priorities for climate change mitigation efforts. For each question, the share of participants that chose the respective Likert response item, separated by samples, are plotted. Darker colors indicate a higher fraction of respondents within a certain item. “F” and “C” stand for financial professionals and climate scientists, respectively. The z-statistics and the p-values of two-sided Mann-Whitney-U tests are shown.

With respect to the priorities of climate change mitigation efforts, Figure 2, Panel B1, summarizes how respondents think about certain priority areas. It is striking that all priorities are considered very important by both groups, as median Likert responses are generally +2 or above. Economic aspects, such as the costs of mitigation and insurance demand, are approximately equally important to finance professionals and climate experts (Mann-Whitney U test, $z = 0.961$, $p = 0.336$). For all other priority areas, covering topics ranging from social unrest to extreme weather phenomena, food and water security, and commitment to climate change mitigation goals, we find significant differences between finance professionals and climate experts. Finance professionals consistently consider these aspects less important than climate experts (ecological: $z = -7.833$, $p < 0.005$; governance: $z = -4.537$, $p < 0.005$; health: $z = -3.847$, $p < 0.005$; social: $z = -6.971$, $p < 0.005$).

Both groups hold quite accurate beliefs when it comes to the importance of prioritizing economic aspects of climate change mitigation (F vs C->F: $z = -1.758$, $p = 0.079$; C vs F->C: $z = -1.520$, $p = 0.129$). In most other areas, the distribution of beliefs is significantly different from the distribution of actual responses (the only tests not statistically significantly different at $p = 0.005$ are: ecological: F vs C->F: $z = -1.132$, $p = 0.258$; social: F vs C->F: $z = 1.741$, $p = 0.082$). With few exceptions, the belief distributions are more dispersed than the actual responses.

We summarize our third finding, which focuses on priorities for taking actions to mitigate climate change, as follows: Finance professionals and climate experts have different views about the priorities for addressing the climate crisis. While finance professionals place greater emphasis on economic considerations, climate experts prioritize ecological and social aspects.

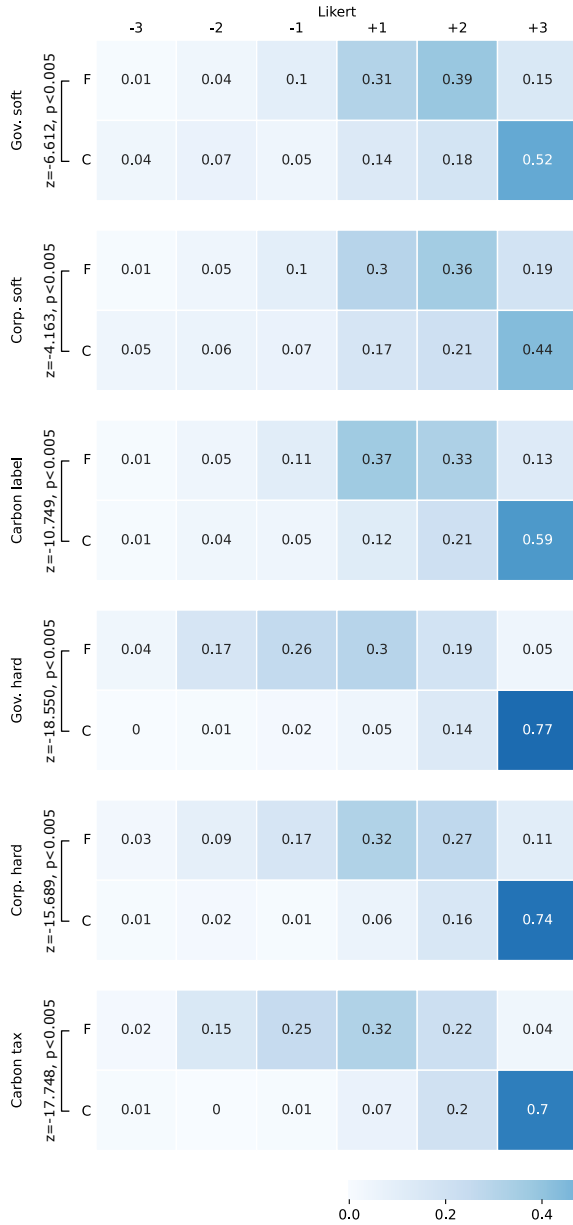
Policy support. Finally, we asked respondents to report their opinions about hard and soft mitigation policy measures to be implemented by governments or corporations and intended to reduce greenhouse gas emissions. Figure 3, Panel A, reveals the details and essentially depicts the largest disagreement between both groups. In general, finance professionals tend to be much less in favor of hard government policy measures and hard corporate climate mitigation strategies. Conversely, climate experts overwhelmingly support hard measures, both from governments and corporations. While a majority of finance professionals and climate experts support a carbon tax, climate experts show, on average, much higher support (Mann-Whitney U test, government: $z = 18.550$, $p < 0.005$; corporate: $z = 15.689$, $p < 0.0001$; carbon tax: $z = 17.748$, $p < 0.0001$). We also show that the differences for soft measures point into the same direction, but are less pronounced in magnitude (Mann-Whitney U test, government: $z = 6.612$, $p < 0.0001$; corporate: $z = 4.163$, $p < 0.0001$, carbon labels: $z = 10.749$, $p < 0.0001$).

Again, we elicited respondents' second-order beliefs—i.e., what they think the other group believes about climate policy measures—providing us insights into how accurate respondents are in their perception about others (Figure 3, Panel B). Finance professionals hold inaccurate perceptions of climate experts' view about supporting hard (i.e. carbon tax) and soft (i.e. carbon label) climate policies as they underestimate how strongly climate experts are in favor of such policies.

In sum, our fourth major finding is that climate experts are significantly more supportive of climate change mitigation policies than finance professionals: Finance professionals generally show less support for hard (e.g. carbon tax) and soft (e.g. carbon labels) policy measures to

Measures

A: Self-reports



B: Beliefs

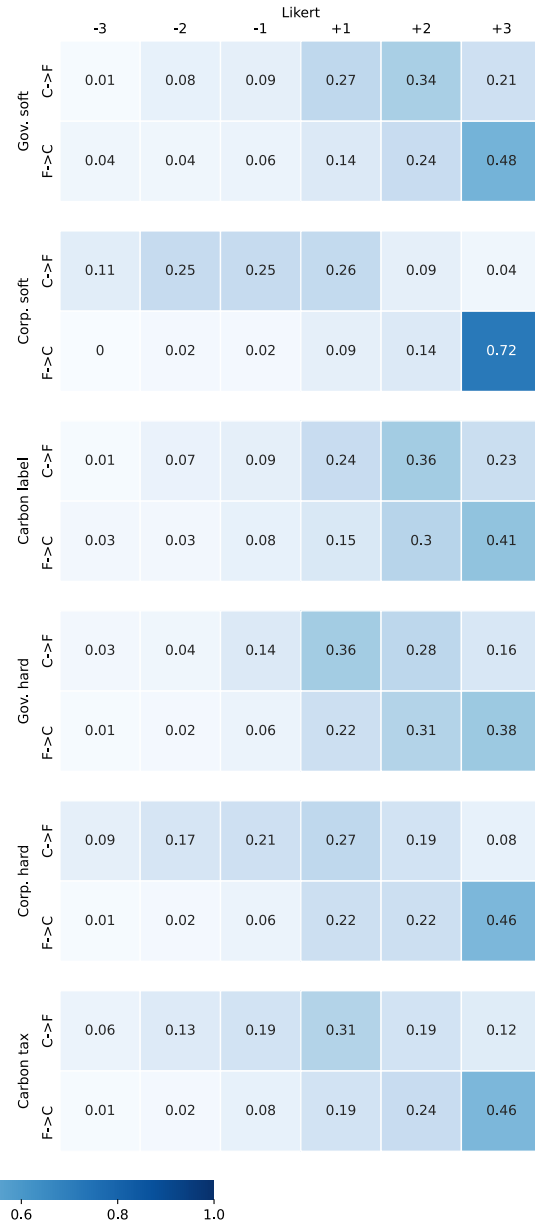


Figure 3: The Likert scale responses range from -3 (strongly against) to +3 (strongly in favor) for individual attitudes (left panels) and beliefs about the other group (right panel) regarding measures that have to be taken for climate change mitigation efforts. For each question, the share of participants that chose the respective Likert response item, separated by samples, are plotted. Darker colors indicate a higher fraction of respondents within a certain item. ‘F’ and ‘C’ stand for finance professionals and climate scientists, respectively. The z-statistics and the p-values of two-sided Mann-Whitney-U tests are shown.

address the climate crisis compared to climate experts. Both groups have misconceptions of the other group’s view on climate policy, as particularly finance professionals underestimate the importance of hard measures and carbon taxes among climate experts.

Discussion

Climate change is a significant challenge that requires a transformation of the economy to reduce greenhouse gas emissions (Lenton et al., 2008; Will et al., 2018). In this paper, we explore the differing perspectives of finance professionals and climate experts on how to address the climate crisis.

We show that finance professionals are less concerned about the climate crisis and we provide suggestive evidence that they value carbon offsets less than climate experts in a choice experiment. Although these findings may not be surprising, we exhibit further insights by pointing at the differing primary motives for supporting climate mitigation efforts. Economic and reputational considerations are important to finance professionals, while environmental and social concerns are more important to climate experts. This is in line with the different foci on priorities across both stakeholder groups. While differences between stakeholder groups are minimal when it comes to economic aspects, finance professionals place less emphasis on all other priority areas than climate experts do. These differing priorities lead to opposing views on the importance of policy interventions, with finance professionals particularly supporting hard measures from the government (carbon tax) and from corporations less than climate experts.

It is unclear why finance professionals perceive the climate crisis as less serious than climate experts, but still, according to our study, they view the crisis as significant. In addition, it is possible that finance professionals have a stronger preference for minimal interference in market functioning, leading them to oppose interventions into the system more strongly (Chater and Loewenstein, 2022). The political orientation of finance professionals, which is on average center-right, may explain such behavior (Ehret et al., 2017; Ballew et al., 2020; Grandin et al., 2022)(continuous scale from -1 to $+1$, climate experts mean: -0.320 , finance professionals mean 0.066 , $p < 0.0001$, two-sided t-test). Generally, supporters of those parties prefer a smaller role for the state and are less supportive of interventions than supporters of other political ideologies. However, even when controlling for the political views of the respondents, the significantly lower levels of indifference valuations for carbon offsets among finance professionals prevail in our pre-registered specification.

One important aspect for future communication efforts is that both stakeholder groups hold biased beliefs about the other group. It is particularly revealing that climate experts tend to have a too pessimistic view of finance professionals, while finance professionals especially underestimate the importance that climate experts place on hard measures like carbon taxes. Thus, to facilitate climate change action, it is important to align the motivations of specific stakeholder groups. Our findings suggest that climate experts are primarily motivated by social and environmental concerns and, not surprisingly, have a strong intrinsic motivation in contributing to climate change mitigation efforts. Finance professionals, instead, are more likely motivated by financial incentives and reputation. Future climate change mitigation efforts should accommodate those different channels, particularly for finance professionals.

Finally, these incentives and reputational motives, but also finance professionals’ general

attitudes on climate action, might influence financial innovation in supporting companies' innovation and patent activities. For instance, green bonds (Flammer, 2021) and related financial products are emerging and the future intensity of financial innovation on green investments might be higher in case of aligned incentives and awareness of the seriousness of the climate crisis among finance professionals.

Material and Methods

Experimental design

Overview. The experimental survey is structured in three main parts: (i) an incentivized choice task eliciting respondent’s valuation of carbon offsets, (ii) a survey on attitudes and opinions about the climate crisis and policy actions to take, and (iii) questions on respondent’s socio-demographic background.

Incentivized choice task. We measured individual willingness to address climate change, using an incentivized offset paradigm. Respondents were first asked to make a series of decisions where each decision involved the choice between a monetary payment to themselves and the purchase of a carbon offset of 10 tons which are provided by a well-known offset provider (i.e. South Pole Carbon). We presented the series of choices in form of a choice list. The list is ordered by the amount paid to the participant in ascending order. In total, there are 19 decisions covering the range from €0 to €360 (both included) in steps of €20. The list is centered around the price of the 10 ton carbon offset (€170). We enforce consistency and a single switching point from the carbon offset to the individual payment in the software. The choice lists yields the indifference valuation of the participant with respect to the carbon offset of 10 tons. We define this indifference valuation as the midpoint between the two valuations at the row where the participant switches from the carbon offset to the individual payment. Example: A participant chooses the carbon offset for all individual payments up to €100, then switches to the individual payment from €120 onward. In this case, we set the indifference valuation to €110 $((100+120)/2)$. For those individuals always selecting the individual payment or opting for the carbon offset, valuations of 0 and 360, respectively, are taken. All else equal, higher valuations indicate a greater willingness to forego personal gain for climate change mitigation. As such, the task reflects an important element of climate change action, namely the trade-off between maximizing individual monetary utility and the reduction of negative externalities. Participants were also informed that one of the decisions would be selected at random and become relevant for their potential payout. Depending on the participant’s choice in the randomly selected decision, we either conducted the carbon offset or made the payment to the participant. See the Supplementary Information for screenshots of the choice list as presented in the survey software.

We also elicited respondents’ beliefs about the climate preferences of the respective other participant group. In particular, we elicited respondent’s best guess (belief) of the average switching point (indifference valuation) of the other group. Guesses were also incentivized and respondents received an additional €25 if their guess matches the actual average switching point (rounded to the nearest integer). The incentive scheme of the incentivized tasks was probabilistic: there was a 10% chance for a respondent to be randomly selected for payment. Payments were handled by a company specializing in international payments, allowing respondents to stay completely anonymous to the experimenters.

Survey overview. To gain a broader picture into stakeholders’ attitudes and opinions about the climate crisis and policy actions to take, we ran an accompanying questionnaire. The questionnaire consisted of four modules, which we detail below. In each module, participants reported their opinions using six-point scales. To avoid participants giving socially-desired responses, we

did not ask about their individual opinion, but asked them to think about their “fellow finance professionals” or “fellow climate experts”, respectively.

Module 1: General views. The first module included two items targeting general views about climate change and its long-term impact on the economy. First, respondents were asked to indicate on a six-point scale if they consider climate change a problem (from “not a serious problem” to “a very serious problem”). Second, they had to indicate the likelihood that climate change will have a negative impact on the global economy (from “very unlikely” to “very likely”).

Module 2: Motives. The second module aimed at capturing the degree to which different motives for climate change mitigation play a role for the participants. We collected ratings along the four dimensions of financial, intergenerational justice, reputational, and environmental motives. Participants answered on six-point scales ranging from “very unlikely” to “very likely” for each of the four motives. In module 2, we also elicited second-order beliefs from participants. That is, we first asked them to think of the group of professionals they belong to themselves before asking them for their best guess on how the other group of participants might answer the question.

Module 3: Priorities. The third module asked about the relative importance of different aspects of climate change mitigation efforts. We presented five items covering social (social unrest, migration, etc.), economic (costs of mitigation, insurance demand, etc.), ecological (extreme weather phenomena, loss of species, rising sea levels, etc.), health (food and water security, respiratory and cardiovascular diseases, zoonotic diseases, etc.), and governance (commitment to goals, reaching global agreements, etc.) related issues which are direct consequences of a failure to tackle the climate crisis. The assessments were elicited by means of a six-point scale ranging from “very unimportant” to “very important”. Respondents were first asked to consider the group of professionals they belong to themselves (“Think of your fellow [financial professionals, climate scientists]: Which aspects deserve their particular attention?”). Next, they were then asked to give their best guess about how the other stakeholder group answered the same question.

Module 4: Policy Support The fourth module focused on *how* climate change mitigation efforts can be most effective and thereby touched upon stakeholders’ support for intervention involving soft and hard measures from both governments and corporations. We define hard measures as policies that typically include elements of force, like regulation, taxation, bans etc. Soft measures are defined as being less direct including, for example, communication, education, labeling and nudges. We included items on two levels of abstraction: First, we asked participants about whether they are in favor or against hard and soft measures to reduce the effects of climate change. Second, we asked about the two specific measures of carbon taxation (hard measure) and carbon labeling (soft measure).

The section on hard and soft measures were also counterbalanced. That is, about half of the participants were first presented with the questions regarding hard measures followed by the questions on soft measures, while the other half of participants encountered the two parts of this section in reversed order. For both types of policy measures, participants were always asked to consider them in (i) the context of the government taking the respective measures, and

(ii) in the context of corporations taking the measures. We always asked for the government perspective first and the corporation perspective second to avoid further branching. Note that participants were also provided with brief descriptions of hard and soft measures in government and corporation contexts at the top of the page to facilitate their assessments. Assessments were elicited by means of a six-point scale with the extremes being labeled ‘strongly against’ and ‘strongly in favor’. Again, we elicited second-order beliefs from respondents for all items.

In addition, respondents were also asked about their views about two specific policy measures to mitigate climate change. We consider a carbon tax as an example for a hard measure and carbon labels as an example of a soft measure. Participants were again asked to indicate the extent to which each group of participants is – according to their opinion – in favor or against the use of the respective measure in an effort to mitigate climate change. We use the same six-point Likert scale as in the previous questions.

Demographics. Finally, we collected detailed information on individual demographic characteristics and on their professional background. Those include age, gender, country of residence, and the highest level of education attained. We also asked participants to place themselves on the continuous political spectrum on a continuous scale ranging from “far left” to “far right” ($[-1, +1]$), but with the option to not state the political view.

Sample specific questions. Depending on the sample of participants, we asked further questions on participants’ professional background. Financial professionals were asked about the job title and whether they were actively involved in making investment decisions (e.g. as a decision maker, analyst, advisor, etc.). Climate experts were asked for the type of institution they work for (University, research institute, industry, other), their field of research, and their academic level (PhD Student, Post Doc, Professor, other).

Participants

Financial professionals. Financial professionals represent the financial industry perspective and have been argued to be directly responsible for enabling climate change mitigation by steering capital flows. Our sample works at various European financial institutions and consists mostly of fund managers, portfolio managers, traders, private bankers, and financial advisors. We contacted financial professionals via our proprietary subject pool BEFORE (www.before.world) and via several professional finance organizations throughout the European Union. Summary statistics for this sample of participants are available in the Supplementary Information in Section A.1.

Climate experts. Climate experts (climate scientists) represent the scientific expert perspective on the issue of climate change. Many of the proposed mechanisms to slow down climate change ultimately originate from research conducted by this group of scientists. To target these experts, we have identified a set of natural science, social science and interdisciplinary science journals in which research on the issue of climate change is commonly published. The list is included in the Supplementary Information. We then retrieved email addresses of corresponding authors who have published in at least one of these outlets in the past three years as the target

sample for our study. Summary statistics for this sample of participants are available in the Supplementary Information in Section A.1.

Procedures

Invitations. Invitation emails to take part in the study were sent from an institutional email account in the name of one co-author. Invitations to the experiment took place in two waves. While the availability of financial professionals was relatively limited compared to the large database of climate experts contact details, we decided to first launch an initial test-wave by sending out invitations to 500 randomly selected climate experts from our contact list. We use this first wave to gauge the response rate in this sample and test our software for automatized sending of emails. In a second step, we invited all remaining climate experts and also contacted all financial professionals in order collect observations: emails to climate experts were sent over a period of two weeks in May 2021 due to mail server limitations on outgoing emails; emails to financial professionals were sent during the same time period to the BEFORE email list; emails to our contacts points at financial institutions who were encouraged to distribute the invitation for our study among their staff were sent in May 2021 as well.

In the invitation email participants were asked to participate in a study including a climate change opinion survey and a decision-making experiment. The emails also contained link to the online study. The email invitation templates used display minimal differences between the samples taking into account their different professional backgrounds. The exact wording of the invitation emails can be found in the Supplementary Information in Section A.5.

Participants clicking on the survey link included in the invitation email where first re-directed to the website of the University of Innsbruck before they were connected with the actual study platform. This was done to both reduce the likelihood of our invitations being classified as spam and as a trust-building measure for participants. A Landing Page presented a brief overview of the study and also included a consent form which had to be filled before participants could start the study.

The study was available online for two weeks starting from the day we send out invitations in the main wave. Participants were free to participate at any time during this two-weeks interval. Due to budget limitations, we pre-registered to stop data collection once we reach a maximum number of 300 completes in a particular subject pool. Originally, 697 participants completed our survey (305 from the climate expert contact list and 300 from the BEFORE contact list). The difference to the reported 605 subjects from the paper is that 92 financial market regulators also took part in the experimental survey. Although we pre-registered the recruitment of regulators for the same experimental survey protocol, we refrained from adding those subjects to this paper due to space constraints. We will, however, write a second paper, focusing on the preferences, attitudes and beliefs about the other groups of the regulators. Summary statistics of the demographic variables collected across samples can be found in the Supplementary Information in Section A.1.

Payments. The incentive scheme of the decision-making experiment on the willingness to address climate change was probabilistic: there was a 10% chance that a respondent was randomly selected for payment. If selected, the decisions from the experimental part were implemented accordingly. The random draw was computerized. If the randomly selected participant agreed

to receive the payment and provided a valid email address at the end of the survey, s/he received the payment in the weeks after all data had been collected. Payments were handled by a company specializing in international payments. Using an external company to handle payments allowed us to never handle banking details ourselves. While this enhanced privacy and reduced our data security requirements, it also allowed respondents to stay completely anonymous to the researcher by providing a non-telling email address for the payment process.

Carbon offsets. Finally, carbon offsets were handled by South Pole. Specifically, we purchased carbon offsets in the “Lacandon Forests for Life” project (<https://market.southpole.com/home/offset-emissions/project-details/55>). Each ton costs €17 to offset. The company provided a certificate stating the total amount of offset which is available online (<https://www.uibk.ac.at/ibf/cfstudy/certificates.html.en>) at our university website and which was public knowledge to the subjects at the beginning of the experiment.

Statistical methods

When testing hypotheses based on Likert scale data we use non-parametric Mann-Whitney U tests. For testing differences in valuations and beliefs about valuations we use two-sided, two-sample *t*-tests. In addition we employ interval regressions with robust standard errors to incorporate control variables.

To indirectly control for multiple hypothesis testing, we report “lower than standard” α -thresholds and primarily address significant results only when they fall below the 0.5% significance level following (Benjamin et al., 2018).

Pre-registration and ethics approval

The study was pre-registered on 14 April 2021. The pre-registration is available on OSF at https://osf.io/7q5du/?view_only=5fee6f2cb19941ea9f0ee4a9e240ec29.

The study was approved by the IRB of the University of Innsbruck (No. 11/2021).

Data and code availability

Experimental software, data, and analysis files are available on OSF at https://osf.io/7q5du/?view_only=5fee6f2cb19941ea9f0ee4a9e240ec29.

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Supporting Information

Climate Crisis Attitudes among Finance Professionals and Climate Experts

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A.1 Summary Statistics

Table A1: Summary Statistics

| | mean | sd | min | median | max |
|--|-------|------|------|--------|-----|
| <i>Financial Professionals (N = 300)</i> | | | | | |
| Age | 38 | 9.5 | 23 | 36 | 65 |
| Male | .84 | .37 | 0 | 1 | 1 |
| Female | .16 | .37 | 0 | 0 | 1 |
| Gender withheld | .0033 | .058 | 0 | 0 | 1 |
| Political view (left to right) | .066 | .33 | -.94 | .06 | 1 |
| Political view withheld | .11 | .31 | 0 | 0 | 1 |
| Education | 5.8 | .97 | 1 | 6 | 7 |
| <i>Climate Scientists (N = 305)</i> | | | | | |
| Age | 42 | 10 | 22 | 40 | 78 |
| Male | .77 | .42 | 0 | 1 | 1 |
| Female | .22 | .41 | 0 | 0 | 1 |
| Gender withheld | .016 | .13 | 0 | 0 | 1 |
| Political view (left to right) | -.32 | .35 | -.98 | -.36 | .98 |
| Political view withheld | .12 | .32 | 0 | 0 | 1 |
| Education | 6.8 | .58 | 1 | 7 | 7 |

A.2 Multiverse Analysis

We conduct a multiverse analysis (non pre-registered) based on the main analysis in Table 1. The approach of Simonsohn et al. (2020) is applied and 3360 meaningful specifications are run. Figure A1 shows the corresponding specification curve. We consider the following forks:

- Regression models.
 - interval: Interval regression;
 - ols: Ordinary Least Squares;
 - ologit: Ordered Logit;
 - oprobit: Ordered Probit.
- Dependent variable specifications.

- interval: Indifference interval (only for interval regression);
 - midpoint: midpoint of indifference interval with missing values for those that never switch (only for OLS);
 - alt: midpoint of indifference interval with 0 and 360 set for those that never switch (only for OLS);
 - factor: switching point as factor variables with missing values for those that never switch (only for ordered logit and ordered probit);
 - alt_factor: switching point as factor variables with 0 and 360 set for those that never switch (only for OLS).
- Trimming of dataset based on outliers.
 - none: no trimming;
 - one_pct: slowest and fastest 1 percent;
 - two_five_pct: slowest and fastest 2.5 percent;
 - five_pct: slowest and fastest 5 percent.
 - Basis for calculation of outliers:
 - none: no trimming;
 - overall: overall time in experiment;
 - excl_payment: time over all pages except the final payment page (often left open);
 - decisions: time on decision page; instructions: time on instruction pages.
 - Controlling for the order of soft and hard policy measure questions.
 - none: not controlled;
 - controlled: order indicator variable included.
 - General views.
 - none: not included;
 - base: questions on general view on climate change and likelihood of serious effects included.
 - Political views.
 - none: not included;
 - continuous: one measure based on $[-1, +1]$ included;
 - separate: two variables included, one for left-wing and one for right-wing orientation. Both are in $[0, 1]$.
 - Demographics.
 - none: not included;
 - age + gender: age and gender included.

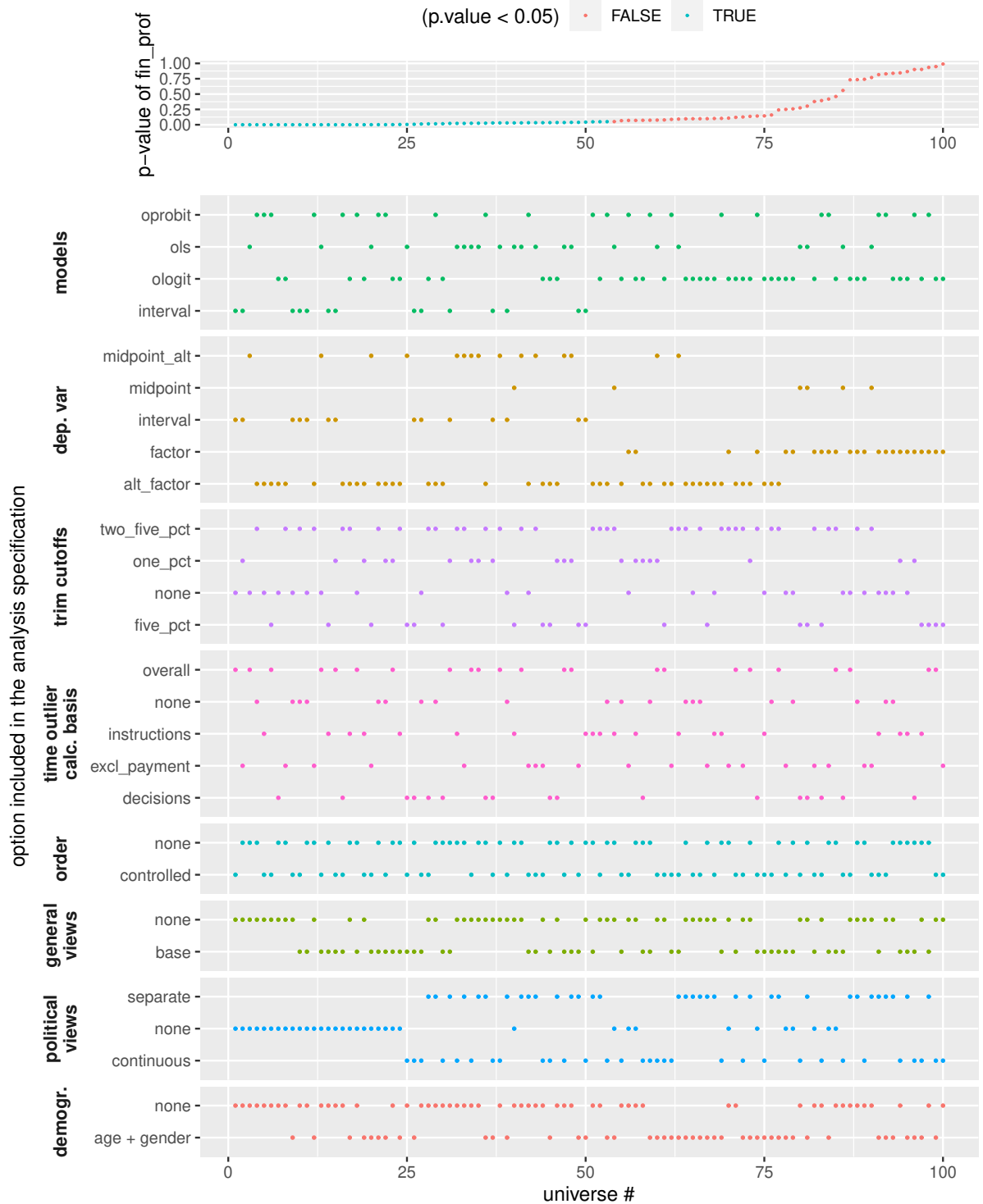


Figure A1: The top panel outlines the p-values of the coefficient of the main variable of interest—i.e., the dummy of finance professionals with climate scientists serving as base category (constant in the regression models). The bottom panel depicts the various selections of the analysis forks in the multiverse. Due to space constraints, the figure shows 100 randomly selected specification out of all 3360 specifications.

A.3 Regression Analysis of Beliefs

Table A2: Accuracy of Beliefs

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------------|---------------------|----------------------|---------------------|---------------------|----------------------|----------------------|
| | Climate | Climate | Climate | Finance | Finance | Finance |
| Finance Prof. | 20.42 (11.26) | 45.24*** (12.81) | 46.39*** (12.88) | | | |
| Climate Sci. | | | | -4.03 (8.84) | -11.41 (11.21) | -12.17 (11.14) |
| Age | | 1.36* (0.57) | 1.23* (0.58) | | 0.45 (0.48) | 0.29 (0.48) |
| Female | | 37.05* (14.84) | 35.67* (14.78) | | 15.71 (11.11) | 14.82 (11.10) |
| Political Left | | 59.62* (27.90) | 55.85* (27.81) | | -6.57 (20.35) | -11.53 (20.14) |
| Political Right | | 19.62 (37.55) | 32.21 (39.17) | | -41.10 (30.60) | -30.21 (31.02) |
| CC Seriousness | | | 12.70 (8.13) | | | 18.98* (7.50) |
| CC Impact Prob. | | | -3.86 (5.14) | | | -11.43** (4.37) |
| Constant | 201.92*** (8.78) | 113.27*** (27.07) | 94.88*** (31.44) | 143.09*** (6.59) | 131.37*** (20.30) | 115.79*** (23.73) |
| Observations | 605 | 536 | 536 | 605 | 536 | 536 |

Interval regressions. Finance Prof. and Climate Sci. are indicators for the sample of finance professionals and climate scientists, respectively; Political Left (Right) [0, 1] expresses the strength of the respondent's political view in the respective direction; CC Seriousness and CC Impact Prob. are 6-point Likert scale responses from -3 to +3, expressing the perceived seriousness of the climate crisis and the likelihood that it will have an impact on the economic situation. Robust standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.005$;

A.4 Journal List

- Climatic Change
- Climate Dynamics
- Climate Policy
- Ecological Economics
- Energy Policy
- Environmental and Resource Economics
- Global and Planetary Change
- Global Change Biology
- Global Environmental Change
- Journal of Environmental Management and Economics
- Nature Climate Change
- WIREs Climate change

A.5 Invitation Emails

Financial Professionals

[salutation],

We would like to invite you to participate in a short decision-making experiment investigating climate change and economic decisions. It takes approximately 15-20 minutes and will be remunerated. In particular, each participant is paid out with 10% probability and payments of up to 385 Euro are possible. Participation is voluntary and data analyses and presentation of results are fully anonymous! Sorry for cross-postings, please only participate in this study once!

You can start the experiment here:

[link to study]

If the link is not active in your e-mail, please copy and paste it to your browser. The experiment includes content that is not displayed optimally on smartphones. We therefore ask you to answer the survey on a **desktop computer, laptop or tablet**, if possible.

Thank you very much for your contribution to science and good luck in the experiment!

[Researcher 1]

[Researcher 2]

[Researcher 3]

Additional information:

Payments will be made no later than 12 weeks after the experiment is closed and Wise will handle payments. The experiment is open for the upcoming 2 weeks. If the maximum number of participants has been reached before this deadline, we will close the experiment. As always, individual data will not be shared with third parties and used solely for research and experimental payment. For research publications and presentations aggregated and anonymized data will be made public in a way that does not allow for inferences about participating individuals, countries and institutions.

Climate Scientists

[salutation],

We would like to invite you to participate in a short decision-making experiment investigating climate change and economic decisions. It takes approximately 15-20 minutes and will be remunerated. In particular, each participant is paid out with 10% probability and payments of up to 385 Euro are possible. Participation is voluntary and data analyses and presentation of results are fully anonymous!

You can start the experiment here:

[link to study]

If the link is not active in your e-mail, please copy and paste it to your browser. The experiment includes content that is not displayed optimally on smartphones. We therefore ask you to answer the survey on a **desktop computer, laptop or tablet**, if possible.

**Thank you very much for your contribution to science and
good luck in the experiment!**

[Researcher 1]

[Researcher 2]

[Researcher 3]

Additional information:

Payments will be made no later than 12 weeks after the experiment is closed and Wise will handle payments. The experiment is open for the upcoming 2 weeks. If the maximum number of participants has been reached before this deadline, we will close the experiment. As always, individual data will not be shared with third parties and used solely for research and experimental payment. For research publications and presentations aggregated and anonymized data will be made public in a way that does not allow for inferences about participating individuals, countries and institutions.

A.6 Instructions of the Experimental Survey



5%

Welcome

Dear participant,

We are researchers from the [University of Innsbruck \(Austria\)](#) and we would like to welcome you in this decision-making experiment.

The experiment is intended to take about 10-20 minutes and you have the chance to be paid in Euro according to your decisions. In particular, each participant is paid out with 10% probability and payments of up to €385 are possible. Note that all information in the experiment is true! This means that the monetary consequences in Euro explained in the experiment are real and there is a chance that you will receive a substantial payment. You will find more information on the monetary consequences on the upcoming screens. The study is financed by the [Austrian Science Fund \(FWF\)](#).

The purpose of this experiment and the accompanying survey questions is to get a better understanding of the dynamic relationship between the economy and climate change. The entire experiment is divided into two parts. Your decisions in the experimental tasks in the first part are relevant for your final payment. The second part contains several survey questions, which do not imply any payments.

All data will be coded and no individual results will be disclosed publicly or to other participants of the experiment. We guarantee that we do not trace back experimental decisions to participants' identities at any stage of the data analysis. For the reason of anonymity, the payments will be handled by our payment provider [Wise](#). We cannot match your decisions to your name.

You can stop your participation at any time but please note that you have to complete both parts in order to receive your payment. It is not possible to skip some questions and it is not recommended to take a break and continue later. The experiment is optimized to be run on PCs, laptops, and tablets and we kindly ask you to select such a device.

We wish you an insightful experiment and thank you for your invaluable contribution to Science!

Ass.-Prof. Elisabeth Gsottbauer, PhD (University of Innsbruck)

Prof. Dr. Michael Kirchler (University of Innsbruck)

Ass.-Prof. Dr. Christian König genannt Kersting (University of Innsbruck)

I have read the introduction and want to take part in the experiment.

Start Study

Part 1a: Instructions

In this experiment you will make a series of decisions. Each decision consists of the following two alternatives:

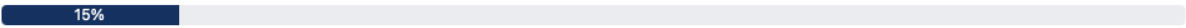
- Alternative A is an amount of money that varies and that will be paid to you.
- Alternative B is a CO2 emission offset of 10 tons.

One of your decisions will be randomly selected for payment.

If you opted for Alternative A in this randomly selected decision, you will receive the respective amount in euros via bank transfer. If you instead opted for Alternative B, we offset 10 tons of CO2 emissions costing €170.

Note: Carbon offsets are handled by our partner South Pole who will be paying smallholder farmers in developing countries for planting and maintaining trees, which capture and store CO2 emissions. A payment of €170 offsets 10 tons of CO2 emissions which is equivalent to the average yearly carbon footprint for a person living in Europe. You can find more information on the project on this [website](#) which provides a detailed description of the CO2 emission offset project. A confirmation of all payments made in to offset CO2 missions will be published on this [university website](#) after the study has concluded. Consider bookmarking the page to check back later and verify the process.

Next



Part 1a: Your decisions

The following table shows the series of decisions. In every row, you decide between the two alternatives: If you prefer the payment to you, select Alternative A. If you prefer the CO2 emission offset, select Alternative B.

| ↙ | Alternative A payment to you | Alternative B CO2 emission offset | ↘ |
|-----------------------|---------------------------------|--------------------------------------|-----------------------|
| <input type="radio"/> | €0 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €20 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €40 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €60 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €80 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €100 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €120 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €140 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €160 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €180 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €200 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €220 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €240 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €260 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €280 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €300 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €320 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €340 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €360 | 10 tons of CO2 offset | <input type="radio"/> |

Confirm Decisions

Part 1b: Instructions

This study is conducted with professionals from the finance industry, climate scientists, and regulators from central banks in the EU. We provide brief descriptions of the different groups participating in this study below.

- The financial professionals are individuals who mainly work as traders, fund managers, analysts, financial advisors, private bankers, and/or work in the top- or middle management at European financial companies.
- Climate scientists are individuals who are actively conducting research on issues of worldwide climate. They are from public and private research institutions across the European Union.
- Financial regulators are from national central banks, national regulation authorities, as well as the European Central Bank and work in areas such as supervision of financial institutions, supervision of financial markets and macroprudential policy.

We are now interested in **your best guess**:

Where did Central Bankers and Climate Scientists on average switch from the CO2 emission offset (Alternative B) to an individual payment (Alternative A)?

On the next screens, we will show you two more choice lists, similar to the one you have seen before. In each one, your task is to select the row where you guess the respective other group on average switched from Alternative B (CO2 emission offset) to Alternative A (individual payment).

To determine your payment for this task, the computer randomly selects one of the two groups (Central Bankers or Climate Scientists). If your guess for the selected group matches the average switching point of the selected group, you will receive another €25 in addition to your payment from Part 1a.

Next

Part 1b: Your first guess

Think of **Central Bankers**:

Where do you think **Central Bankers** on average switched from Alternative B (CO2 emission offset) to Alternative A (individual payment)?

| ↓ | Alternative A payment to them | Alternative B CO2 emission offset | ↓ |
|-----------------------|----------------------------------|--------------------------------------|-----------------------|
| <input type="radio"/> | €0 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €20 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €40 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €60 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €80 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €100 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €120 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €140 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €160 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €180 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €200 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €220 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €240 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €260 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €280 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €300 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €320 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €340 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €360 | 10 tons of CO2 offset | <input type="radio"/> |

Confirm Guess

Part 1b: Your second guess

Think of **Climate Scientists**:

Where do you think **Climate Scientists** on average switched from Alternative B (CO2 emission offset) to Alternative A (individual payment)?

| ↓ | Alternative A payment to them | Alternative B CO2 emission offset | ↓ |
|-----------------------|----------------------------------|--------------------------------------|-----------------------|
| <input type="radio"/> | €0 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €20 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €40 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €60 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €80 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €100 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €120 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €140 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €160 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €180 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €200 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €220 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €240 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €260 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €280 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €300 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €320 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €340 | 10 tons of CO2 offset | <input type="radio"/> |
| <input type="radio"/> | €360 | 10 tons of CO2 offset | <input type="radio"/> |

Confirm Guess

Part 2: Survey

The purpose of this survey is to get a better understanding of the dynamic relationship between the economy and climate change. Note that this relationship is viewed from a global and not a regional perspective in the survey questions.

Which of the following best describes your views about climate change?

- not a serious problem at all
- not a serious problem
- rather not a serious problem
- rather a serious problem
- a serious problem
- a very serious problem

How likely do you think it is that climate change will have long-term, negative impact on the growth rate of the global economy?

- very unlikely
- unlikely
- rather unlikely
- rather likely
- likely
- very likely

Next

Part 2: Your priorities

Reconciling economic interests and climate change mitigation efforts can be a challenge.

Think of **your fellow Financial Professionals**:

In your opinion, which aspects deserve their particular attention?

| | very unimportant | unimportant | rather unimportant | rather important | important | very important |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Social (social unrest, migration, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Economic (costs of mitigation, insurance demand, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ecological (extreme weather phenomena, loss of species, rising sea levels, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Health (food and water security, respiratory and cardiovascular diseases, zoonotic diseases, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Governance (commitment to goals, reaching global agreements, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Next

Part 2: Priorities of Central Bankers

Think of **Central Bankers**:

In your opinion, which aspects deserve **their** particular attention?

| | very unimportant | unimportant | rather unimportant | rather important | important | very important |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Social (social unrest, migration, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Economic (costs of mitigation, insurance demand, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ecological (extreme weather phenomena, loss of species, rising sea levels, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Health (food and water security, respiratory and cardiovascular diseases, zoonotic diseases, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Governance (commitment to goals, reaching global agreements, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Next

Part 2: Priorities of Climate Scientists

Think of **Climate Scientists**:

In your opinion, which aspects deserve **their** particular attention?

| | very unimportant | unimportant | rather unimportant | rather important | important | very important |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Social (social unrest, migration, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Economic (costs of mitigation, insurance demand, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ecological (extreme weather phenomena, loss of species, rising sea levels, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Health (food and water security, respiratory and cardiovascular diseases, zoonotic diseases, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Governance (commitment to goals, reaching global agreements, etc.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Next

Part 2: Hard measures

Several interventions have been proposed for the mitigation of climate change. These can generally be categorized as *hard* or *soft*. Hard measures typically include elements of force, e.g., regulation, taxation, divestment, bans, etc.

In a government context such measures include traditional regulatory approaches, sometimes labelled 'command-and-control measures', for example emission standards and bans of toxic substances; and market-based instruments such as environmental taxes and greenhouse gas emission trading.

Think of **your fellow Financial Professionals**:

To what extent are they in favor or against **the government** taking hard measures to reduce climate change?

strongly against strongly in favor

Think of **Central Bankers**:

To what extent are they in favor or against **the government** taking hard measures to reduce climate change?

strongly against strongly in favor

Think of **Climate Scientists**:

To what extent are they in favor or against **the government** taking hard measures to reduce climate change?

strongly against strongly in favor

Next

Part 2: Hard measures

In a corporate context such measures include fossil fuel divestments and capital investments in technology and green infrastructure such as the increase the efficiency of energy usage, and shifting energy usage towards renewable sources.

Think of **your fellow Financial Professionals**:

To what extent are they in favor or against **corporations** taking hard measures to reduce climate change?

strongly against strongly in favor

Think of **Central Bankers**:

To what extent are they in favor or against **corporations** taking hard measures to reduce climate change?

strongly against strongly in favor

Think of **Climate Scientists**:

To what extent are they in favor or against **corporations** taking hard measures to reduce climate change?

strongly against strongly in favor

Next

Part 2: Soft measures

Several interventions have been proposed for the mitigation of climate change. These can generally be categorized as *hard* or *soft* measures. Soft measures are less direct and include communications, education, labeling, nudges, etc.

In a government context such measures include awareness raising and information dissemination including for example energy efficiency labels and communication campaigns.

Think of **your fellow Financial Professionals**:

To what extent are they in favor or against **the government** taking soft measures to reduce climate change?

strongly against strongly in favor

Think of **Central Bankers**:

To what extent are they in favor or against **the government** taking soft measures to reduce climate change?

strongly against strongly in favor

Think of **Climate Scientists**:

To what extent are they in favor or against **the government** taking soft measures to reduce climate change?

strongly against strongly in favor

Next

Part 2: Soft measures

In a corporate context such measures include planning and de-risking processes, financial risk assessments, knowledge generation and information flows, human resources development, and/or supply chain measures, as substantive yet physically intangible responses to climate impacts.

Think of **your fellow Financial Professionals**:

To what extent are they in favor or against **corporations** taking soft measures to reduce climate change?

strongly against strongly in favor

Think of **Central Bankers**:

To what extent are they in favor or against **corporations** taking soft measures to reduce climate change?

strongly against strongly in favor

Think of **Climate Scientists**:

To what extent are they in favor or against **corporations** taking soft measures to reduce climate change?

strongly against strongly in favor

Next

Part 2: Specific measures

One of the **hard measures** that is discussed is a **carbon tax**. The main idea is that a carbon tax reduces carbon dioxide emissions by increasing the price of and decreasing the demand for fossil fuels.

Think of **your fellow Financial Professionals**:

To what extent are **they** in favor or against increasing taxes on fossil fuels, such as oil, gas, and coal to reduce climate change?

strongly against strongly in favor

Think of **Central Bankers**:

To which extent are **they** in favor or against increasing taxes on fossil fuels, such as oil, gas, and coal] to reduce climate change?

strongly against strongly in favor

Think of **Climate Scientists**:

To which extent are **they** in favor or against increasing taxes on fossil fuels, such as oil, gas, and coal] to reduce climate change?

strongly against strongly in favor

One of the **soft measures** that is discussed is information provision in the form of **labeling** (i.e., carbon labels). The main idea is that environmental labels offer information on a product's environmental footprint with respect to resource consumption and environmental impacts and can thus guide sustainable consumption decisions.

Think of **your fellow Financial Professionals**:

To what extent are **they** in favor or against adding carbon labels to products to reduce climate change?

strongly against strongly in favor

Think of **Central Bankers**:

To which extent are **they** in favor or against adding carbon labels to products to reduce climate change?

strongly against strongly in favor

Think of **Climate Scientists**:

To which extent are **they** in favor or against adding carbon labels to products to reduce climate change?

strongly against strongly in favor

Next

Part 2: Motives

Climate change mitigation efforts in any area can be driven by different motives. These include financial reasons, reasons of intergenerational justice, image- or reputational concerns, and environmental reasons.

Think of **your fellow Financial Professionals**:

How likely do you think it is for climate change mitigation efforts to be undertaken because of...

| | very unlikely | unlikely | rather unlikely | rather likely | likely | very likely |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Financial reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Intergenerational justice reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reputation reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Environmental reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Next

Part 2: Motives of Central bankers

Think of most **Central Bankers**:

How likely do **they** think it is for climate change mitigation efforts to be undertaken because of...

| | very unlikely | unlikely | rather unlikely | rather likely | likely | very likely |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Financial reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Intergenerational justice reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reputation reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Environmental reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Next

Part 2: Motives of Climate scientists

Think of most **Climate Scientists**:

How likely do **they** think it is for climate change mitigation efforts to be undertaken because of...

| | very unlikely | unlikely | rather unlikely | rather likely | likely | very likely |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Financial reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Intergenerational justice reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reputation reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Environmental reasons: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Next

Demographics

How old are you?

What is your gender?

- female male other I prefer not to tell

Please indicate your country of residence:

When referring to different political views, people often talk about "left" and "right". Think about your own political views: Where would you place yourself?

far left  far right

- I prefer not to state my political view

Please indicate your highest level of education

- some secondary school or vocational/technical school
 A-levels (or equivalent)
 Bachelor's degree
 Master's degree
 Doctorate degree

What is your job title?

Are you actively involved in investment decisions (as a decision maker, analyst, advisor, etc.)?

- Yes No

Next

Payments

Thank you very much for your participation. You have successfully completed all tasks.

You have been randomly selected for payment. In Part 1a the following decision was randomly selected:

| ↙ | Alternative A payment to you | Alternative B CO2 emission offset | ↘ |
|----------------------------------|--|---|-----------------------|
| <input checked="" type="radio"/> | €320 | 10 tons of CO2 offset | <input type="radio"/> |

Accordingly you will receive €320.

As the study is still running, your payment for Part 1b (the guesses) has not yet been determined. As soon as everyone has completed the study, we will determine your additional payment and add it to your payment for Part 1a. You will receive your entire payment within 3 months.

Payments will be handled by [TransferWise](#) and only require your email address at this time. Our payment provider will send you an email to request your bank details. This step ensures that you can stay anonymous by providing an email address which does not reveal your name to us.

Please enter your email address below. Make sure that it is correct. If it is not, we will be unable to initiate your payment.

Please enter your email address:

Please enter your email address again:

- I do not want to receive my payment.
 I would like to be contacted about future studies.

Do you have any comments about this study?

Finish Study

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Elisabeth Gsottbauer, Michael Kirchler, and Christian König-Kersting

Climate Crisis Attitudes among Financial Professionals and Climate Experts

Abstract

Climate change constitutes one of the major challenges to humankind in the 21st century. To address this crisis, it is necessary to transform the economy and reduce greenhouse gas emissions. The finance industry has the potential to play a central role in this transformation by implementing sustainable investment and financing policies. We document climate mitigation preferences and attitudes toward the climate crisis of finance professionals — the key protagonists on financial markets — and climate experts — the key protagonists providing scientific findings. We use an incentivized choice experiment to measure the willingness to forgo individual payout to curb greenhouse gas emissions and survey participants to elicit their attitudes and beliefs toward the climate crisis. To learn how well both groups understand each other, we also ask participants what they believe the other stakeholder group believes. Our results provide suggestive evidence that finance professionals have a lower willingness to curb greenhouse gas emissions, measured through incentivized indifference valuations of carbon offsets, and are also less concerned about climate change compared to climate experts. Additionally, we find that the motivations and priorities of the two groups in addressing the climate crisis differ, with finance professionals being more driven by economic and reputational considerations and climate experts prioritizing the ecological and social consequences of the crisis. Finally, we find that finance professionals are less supportive of a carbon tax. Our findings have implications for policy and communication efforts, highlighting the importance of financial incentives and reputational concerns in motivating finance professionals to address the climate crisis.

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