

<https://doi.org/10.1038/s43247-024-01331-9>

Financial professionals and climate experts have diverging perspectives on climate action

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To address the climate crisis, it is necessary to transform the economy, with the finance industry taking a central role by implementing sustainable investment policies. This study aims to understand the motivations and preferences of its key players—financial professionals and climate experts. Here we use an incentivized experiment to measure the willingness to forgo payout to curb carbon emissions and a survey to elicit attitudes and beliefs toward the climate crisis. We provide suggestive evidence that financial professionals have a lower willingness to curb carbon emissions, are less concerned about climate change, and are less supportive of carbon taxes compared to climate experts. We report differences in motivations and priorities, with financial professionals emphasizing economic and reputational considerations and climate experts prioritizing ecological and social consequences of the crisis. Our findings highlight the importance of financial incentives and reputational concerns in motivating financial professionals to address the climate crisis. Pre-registration: The study was pre-registered on 14 April 2021. The pre-registration is available on OSF at <https://osf.io/7q5du/>.

The climate crisis constitutes one of the major challenges to humankind with societal, health, economic, and political consequences for all citizens^{1,2}. The need for transforming the economy to curb greenhouse gas emissions is evident and posits a strenuous effort in the years to come³. The finance industry will gain center stage in this decarbonization 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^{4–8}.

Whether and how the finance industry will handle this role strongly depends on the behavior and attitudes of its main protagonists—financial professionals^{9–11}. 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 general¹. Importantly, given the acceleration of the climate crisis and the finance industry's efforts to promote green investments and divestment from brown assets, there will likely be the need for more cross-talks between both groups in the upcoming years. This process would entail deeper knowledge of differences and similarities in attitudes and beliefs of both groups to address potential discrepancies via information sharing and discussion. Thus, given both stakeholder groups' key roles for the economy's transformation, it is stunning that no scientific evidence exists measuring

differences in preferences, opinions/attitudes, and second-order beliefs about the future course of action regarding the climate crisis. There are two major reasons, among others, why one could expect differences across groups: First, both groups have distinct priorities in their daily work—that is, maximizing returns and managing risks for financial professionals vs. minimizing climate damage for climate experts. Second, political ideology—including potential differences in attitudes regarding free-market interventions—might differ and could, thus, drive the attitudes and beliefs of both groups as well.

Therefore, this paper aims to measure differences in financial professionals' and climate experts' preferences, opinions, and beliefs regarding the climate crisis and the roles of governments and companies in addressing it. This analysis provides valuable insights into the challenges and opportunities associated with this transformative process. Notably, while previous literature has explored climate experts' opinion on climate policy topics¹², empirical evidence on the (revealed) preferences and beliefs of financial professionals in this regard is absent. Our pre-registered approach is threefold: First, using an incentivized choice experiment with externalities^{13–15}, 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

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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 participants' second-order beliefs¹⁶, that is, their beliefs about the responses of the other group, to provide insights on how well the two groups understand each other. Here, we contribute to the growing body of research emphasizing the importance of second-order beliefs in climate action, particularly when individuals might withhold climate action due to misperceptions about others' opinions¹⁷. Our main analysis is based on data from 300 financial 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 Supplementary Table 1 in 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 believe climate change is and (2) how likely they believe that climate change will have long-term, negative impacts on the global economy's growth rate. 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 1A 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 financial professionals and +3 for climate experts, respectively). However, financial 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, $z = 5.029$, $p < 0.005$).

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 using an incentivized choice list (see Section 5 of the Supplementary Information for a correlational analysis of

the different measures). 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 they prefer over the carbon offset marks the indifference valuation.

Figure 1B shows the average amount in euro at which respondents switch from offsetting 10 tons of CO₂ to taking the individual payment. On average, financial 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): $\text{coeff} = -58.84$, $p < 0.005$). 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): $\text{coeff} = -26.20$, $p < 0.05$). 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 approach¹⁸, we show evidence of the robustness of this effect. We took the approach of ref. 19 and ran meaningful specifications by identifying several important analysis forks, such as the selection of the regression model, outlier treatment, and the inclusion of additional covariates. Overall, we identified 3360 specifications (see Figure A4 in the Supporting Information for details and results). We find that 42.9% of all specifications yield results with a *p*-value lower than 0.05. The detailed analysis, which can be found in Section 3 of the Supplementary Information, shows that all specifications based on the pre-registered interval regression model are significant.

Moreover, Figure 1B investigates whether financial professionals and climate experts accurately estimate the other groups' indifference valuation. We find that climate experts are relatively well calibrated regarding the valuations of financial 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).

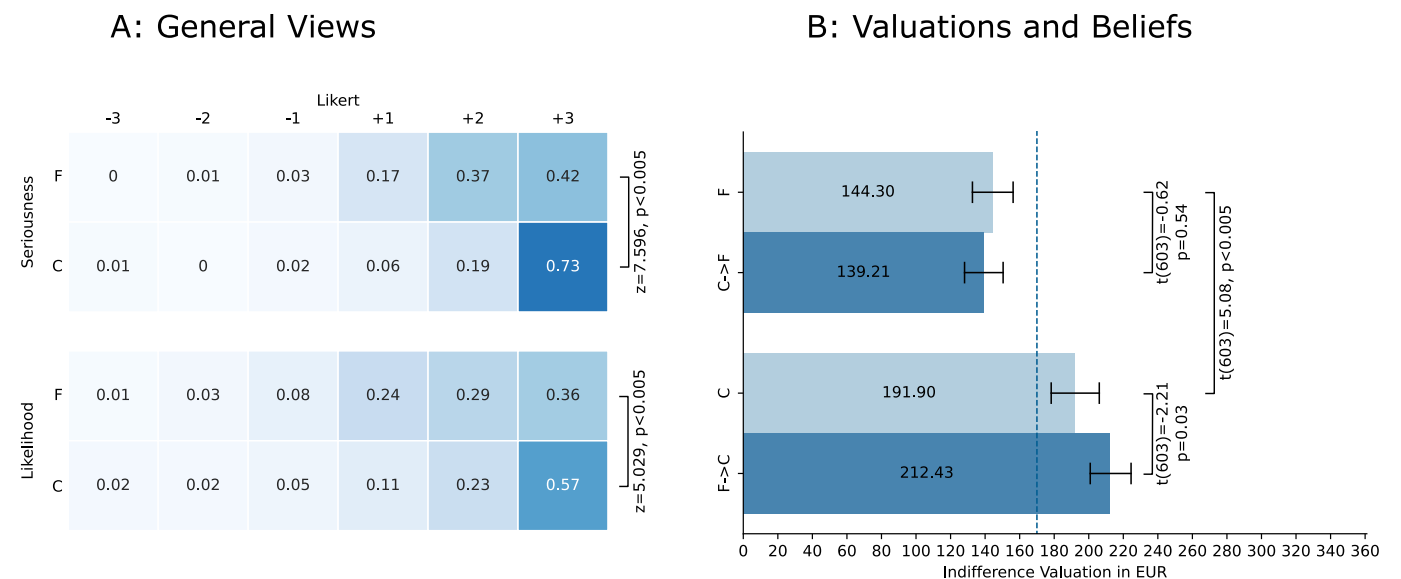


Fig. 1 | General views on climate change and indifference valuations. In A, the share of participants that chose the respective Likert response item, separated by samples, for each question is plotted. The Likert scale responses range from -3 (not a serious problem at all/very unlikely) to +3 (a very 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 financial professionals and climate experts, respectively. Two-sided Mann-Whitney *U*-tests are reported. In B, average euro valuations for a 10 ton carbon offset for each sample, the associated 95% confidence

interval, 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 they prefer 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.

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 financial 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 * $p < 0.05$, ** $p < 0.01$, *** $p < 0.005$;

two-sided *t*-test). Supplementary Table 4 in Section 4 of 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 and controls for their general perspective on climate change. Financial 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: Financial professionals are less concerned about the climate crisis and have lower indifference valuations of carbon offsets than climate experts. Moreover, financial professionals have biased beliefs, as they overestimate the indifference valuations of climate experts.

Attitudes towards the climate crisis

To obtain a more comprehensive picture about both groups' attitudes towards the climate crisis, we asked a series of pre-registered questions about respondents' 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). An overview of the summary statistics for the individual items is included in Section 6 of the Supplementary Information. To prevent participants from giving socially desired responses, we did not ask about their individual opinion, but asked them to think about their fellow financial professionals or their fellow climate experts, respectively, throughout the survey.

Figure 2A(i) shows the distributions of responses, suggesting that the reasons for climate change mitigation efforts differ substantially. Among financial 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 financial 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—that is, every participant states their best guess about how the other group responds on average. Figure 2A(ii) shows the results. We find both financial professionals' and climate experts' second-order beliefs to differ significantly from the actual responses by the respective other group. For financial and environmental motives and 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: Financial 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 financial professionals, climate experts prioritize environmental and social concerns.

With respect to the priorities of climate change mitigation efforts, Figure 2B(i) 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 financial 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 financial professionals and climate experts. Financial 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 (Panel B(ii)) 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: $z = -1.132$, $p = 0.258$; and 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: Financial professionals and climate experts have different views about the priorities for addressing the climate crisis. While financial 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 3A reveals the details and essentially depicts the largest disagreement between both groups. In general, financial 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 many financial 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—that is, what they think the other group believes about climate policy measures—providing us insights into how accurate respondents are in their perception about others (Fig. 3B). Financial 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 summary, our fourth major finding is that climate experts are significantly more supportive of climate change mitigation policies than financial professionals. Financial professionals generally show less support

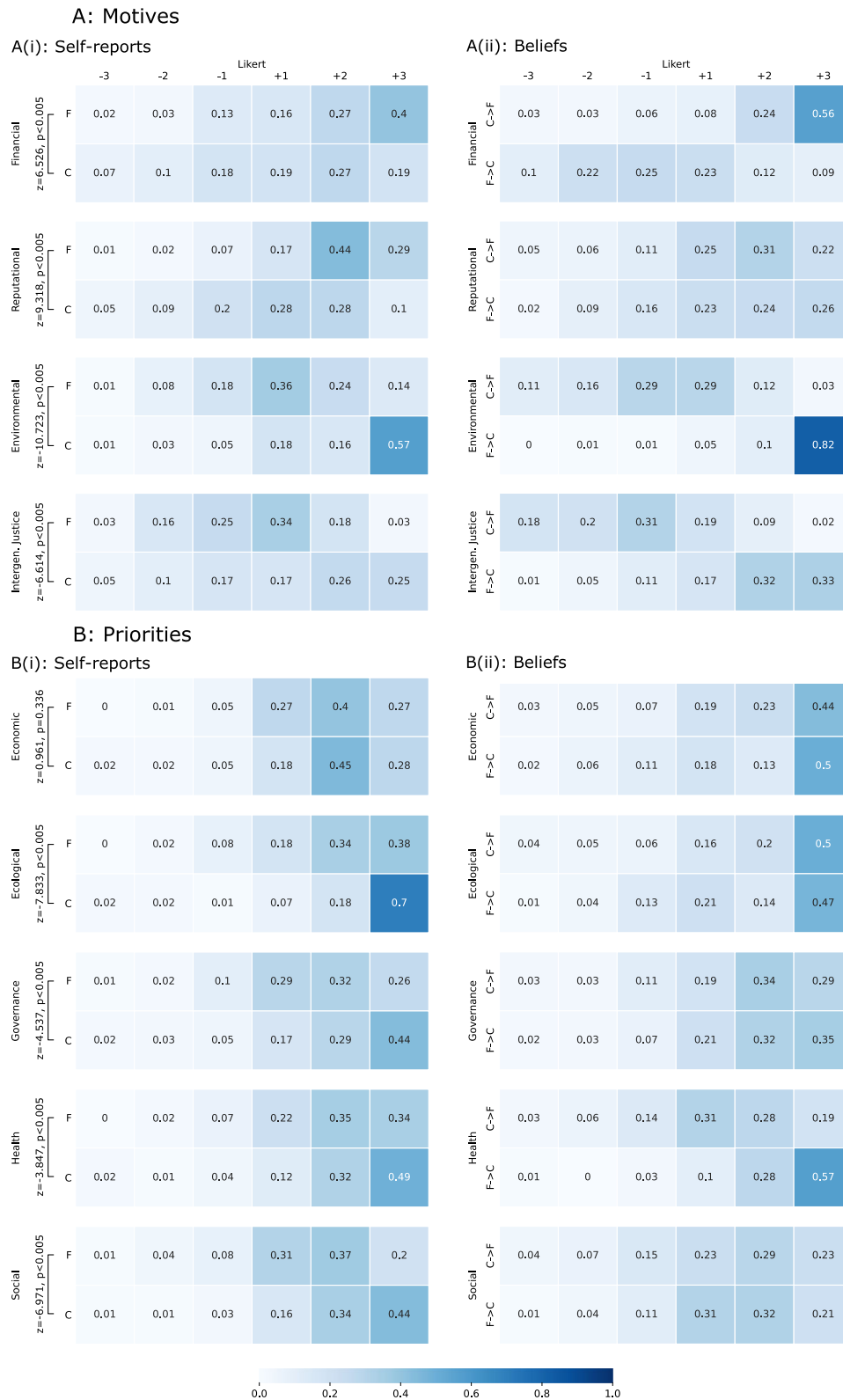
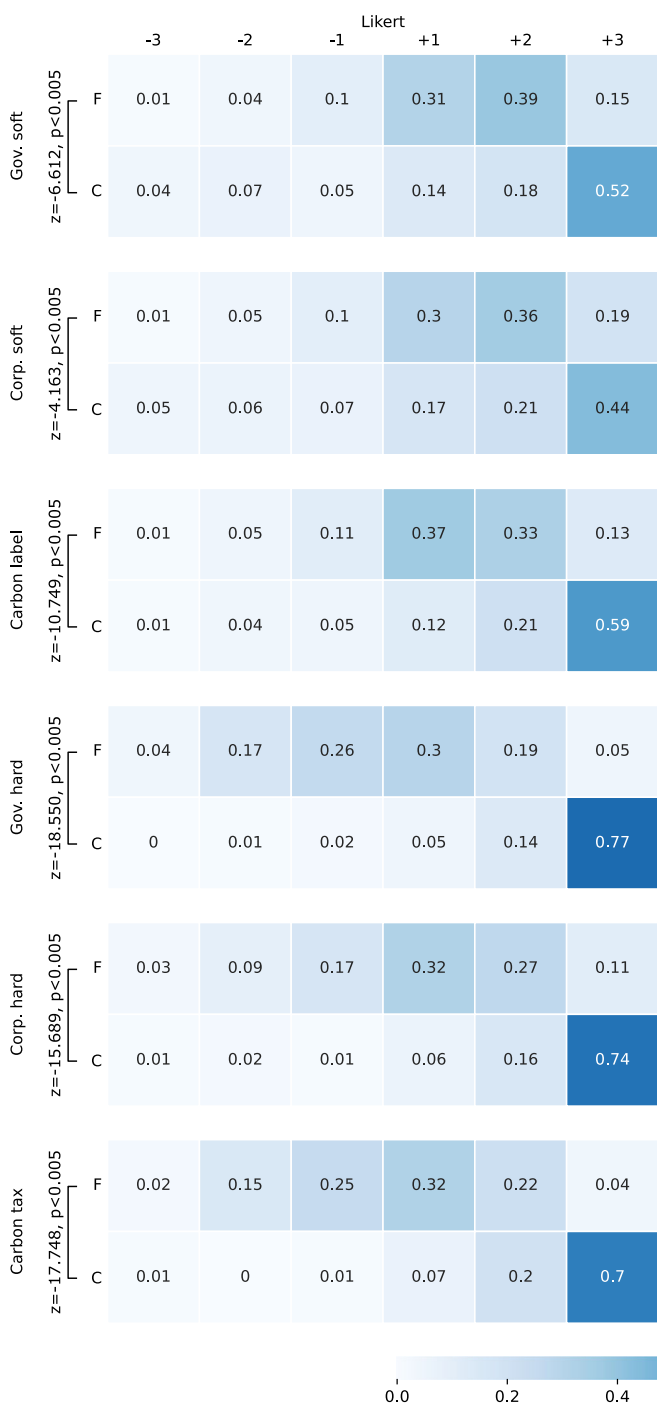


Fig. 2 | Motives and priorities of climate mitigation efforts. The Likert scale responses range from -3 (very unlikely / very unimportant) to $+3$ (very likely / very important) for individual attitudes (A(i) and B(i)) and beliefs about the other group (A(ii) and B(ii)) regarding motives and priorities 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 experts, respectively. The z -statistics and the p -values of two-sided Mann-Whitney U-tests are shown.

Measures

A: Self-reports



B: Beliefs

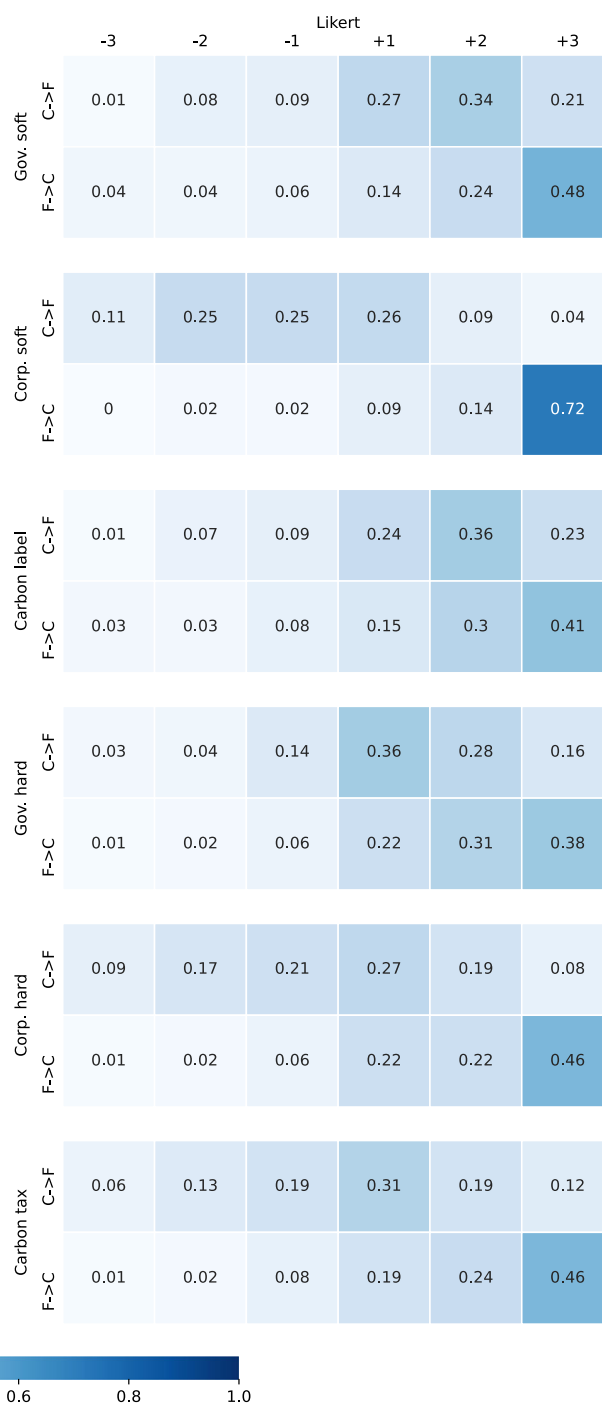


Fig. 3 | Measures of climate change mitigation efforts. The Likert scale responses range from -3 (strongly against) to $+3$ (strongly in favor) for individual attitudes (A) and beliefs about the other group (B) regarding measures that have to be taken for climate change mitigation efforts. For each question, 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 financial professionals and climate experts, respectively. The z-statistics and the p-values of two-sided Mann-Whitney U-tests are shown.

for hard (e.g., carbon tax) and soft (e.g., carbon labels) policy measures to address the climate crisis compared to climate experts. Both groups have misconceptions of the other group’s view on climate policy, as particularly financial professionals underestimate the importance of hard measures and carbon taxes among climate experts.

Addendum: financial regulators

An important question is whether other stakeholder groups show similar or distinct pro-environmental preferences and attitudes regarding climate change mitigation policies. In a pre-registered—but exploratory—part, we analyze the choices and attitudes of 92 financial regulators. They were

recruited from several European central banks and regulation authorities, and more than half are actively involved in policy decisions. With the regulators, we ran the same experimental protocol at the same time as we did with the financial professionals and climate experts. Regulators are of particular interest, because they serve in a moderating position—that is, policies on green finance instruments are primarily drafted, introduced, and supervised by regulators. For brevity, we focus on regulators' indifference valuations and preference for soft and hard policy measures. We provide more details and significance tests on all variables elicited for financial regulators in Supplementary Information, Supplementary Figs. 1–3.

We find that regulators' indifference valuations do not differ from those of climate experts (R: €207 vs. C: €192, $t = 1.016$, $p = 0.31$, two-sided t -test) but are significantly higher than those of financial professionals (R: €207 vs. F: €144, $t = 4.786$, $p < 0.005$, two-sided t -test). In this regard, regulators' attitudes seem to be more in line with the climate experts' than with the financial professionals'.

Turning to the different types of policy measures, we observe that hard measures are significantly more popular among regulators than among financial professionals, but less popular than among climate experts (see Supplementary Fig. 3 in Supplementary Information for test statistics). When zooming in on carbon taxes, we see that climate experts are significantly more in favor of carbon taxes than regulators, and regulators are significantly more in favor of this measure than financial professionals (C vs. R: $z = -6.558$, $p < 0.005$; F vs. R: $z = -9.113$, $p < 0.005$, Mann–Whitney U tests).

With respect to soft measures, differences between regulators and climate experts vanish, and both stakeholder groups express a significantly stronger preference for their use than financial professionals. In particular, for carbon labels, differences between climate experts and regulators disappear while regulators (and climate experts) are still significantly more in favor of this soft measure than financial professionals (C vs. R: $z = 1.662$, $p < 0.105$; F vs. R: $z = -6.355$, $p < 0.005$, Mann–Whitney U tests).

It seems that regulators are—to a certain degree—located between both other stakeholder groups, as they show behavior and attitudes that sometimes mimic financial professionals and sometimes mimic climate experts.

Discussion

Climate change is a significant challenge that requires a transformation of the economy to reduce greenhouse gas emissions^{20,21}. In this paper, we explore the differing perspectives of financial professionals and climate experts on how to address the climate crisis.

We show that financial 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 appear to be surprising, we present further insights by pointing out the differing primary motives for supporting climate mitigation efforts. Economic and reputational considerations are important to financial 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, financial 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 financial professionals particularly supporting hard measures from the government (carbon tax) and corporations less than climate experts.

Our findings on heterogeneous perspectives between financial professionals and climate experts build more broadly upon the vast previous literature on attitudes on climate change and policy among the public, which has explored heterogeneity mainly across countries and time^{22,23} yet not across different important stakeholder groups, including experts. There is only little research focusing on experts or other specific subgroups. Examples include a survey among experts on carbon pricing²⁴ or the outcomes of climate negotiations²⁵. Few studies provide comparative analysis, as we do,

such as Rapeli and Koskimaa²⁶, contrasting policymakers and the public attitudes towards climate change.

Our study has several limitations. First, it focuses primarily on the differences between financial professionals and climate experts in their pro-environmental preferences, attitudes, and second-order beliefs. Thus, future work could focus more on ways to improve communication between groups and to particularly account for more climate-related knowledge in the finance industry. Second, the choice list task is a classical elicitation method widely used in behavioral economics e.g.,^{14,15} with potential weaknesses. However, given that both groups were exposed to the same choice list, we do not expect a systematic bias for one group, allowing us to draw inferences from the group differences. Third, the method of asking respondents about opinions of peers—as done in our study—may reduce social desirability bias, but it could also lead to the tendency to perceive peers in a biased light. However, we still believe that accounting for social desirability bias is crucial for this topic. Finally, we can only make claims about financial professionals, climate experts, and—to a lesser degree—financial regulators, even though other stakeholder groups are important as well. Future research could try to focus on analyzing pro-environmental preferences and climate change mitigation attitudes of other stakeholders such as politicians and top-level executives.

Given these limitations, our study offers the following implications. In general, it is unclear why financial professionals perceive the climate crisis as less serious than climate experts. Nevertheless, our study shows that they consider the crisis significant. In addition, it is possible that financial professionals have a stronger preference for minimal interference in market functioning, leading them to oppose interventions into the system more strongly²⁷. The political orientation of financial professionals, which is, based on our findings, on average center-right, may explain such behavior^{28–30} (continuous scale from -1 to $+1$, climate experts mean: -0.320 , financial professionals mean: 0.066 , $p < 0.0001$, two-sided t -test). Generally, supporters of center-right political 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 financial professionals prevail in our pre-registered specification. In Section 7 of the Supplementary Information, we explore how political orientation affects the responses to our survey items.

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 financial professionals, while financial professionals especially underestimate the importance that climate experts place on hard measures like carbon taxes. Hence, addressing biased beliefs and misperceptions between these stakeholder groups is essential for productive communication. Carefully designed efforts to correct inaccurate perceptions between both stakeholder groups could motivate mobilization around the climate issue³¹. Research on reducing polarization between groups suggests additional solutions like creating opportunities for informal discussions and conversations between climate experts and financial professionals^{32–34}. For example, climate experts could lead workshops for banks focusing on establishing such interpersonal closeness and understanding between groups. Structured activities could prompt each side to consider the other's viewpoint in perspective-taking exercises³⁵. More broadly, another potential avenue for sensitizing the finance industry could involve the implementation of educational interventions such as carbon literacy workshops. These workshops could aim to enhance financial professionals' understanding of climate science and the economic implications of climate change. Based on our survey data, this would particularly entail spreading scientific knowledge about the benefits of government interventions in terms of hard government measures, such as the carbon taxes that financial professionals oppose to a certain degree. This could impact the finance industry's climate action with the consequence of moderating financial innovation and

thereby supporting companies' innovation and patent activities. For instance, green bonds³⁶ and related financial products are emerging, and the future intensity of financial innovation on green investments might be higher in the case of aligned incentives and financial professionals' awareness of the seriousness of the climate crisis.

Methods and protocols

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 presented with a series of 19 decisions, each involving a choice between a monetary payment to themselves or the purchase of a 10-ton carbon offset provided by a well-known offset provider. These decisions ranged 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. The indifference valuation was calculated where they switched from the offset to the payment. For those 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.

Comparable methodologies have been employed in previous research to assess risk preferences³⁷ and social/distributional preferences³⁸. Furthermore, recent studies have adopted incentivized choice tasks to measure participants' willingness to address climate change^{39,40}. Among others, an incentivized choice experiment helps ensure more honest and accurate responses by motivating participants to make careful decisions and minimizing the impact of hypothetical bias on overestimating willingness to pay^{41,42}. It is worth noting that participants may hold varying opinions about the efficacy of offsets in emission mitigation, and these beliefs could impact their valuations. However, recent research suggests that many consumers exhibit a limited sensitivity to the perceived effectiveness of offsets, as indicated by their relatively stable willingness to pay, regardless of their assessment of offset impact⁴³.

We also elicited respondents' beliefs about the climate preferences of the respective other participant group, specifically their 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 involved a 10% chance of random selection 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 financial 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 experts]: 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). Regulators were asked to state their job title and whether they were actively involved in designing regulatory frameworks (as a decision maker, analyst, advisor, etc.).

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 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 1.

Climate experts. Climate experts 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 Section 8 of the Supplementary Information. We then retrieved email addresses of corresponding authors who have published in at least one of these outlets in the past 3 years as the target sample for our study. Summary statistics for this sample of participants are available in the Supplementary Information in Section 1.

Financial regulators (exploratory analyses). Financial regulators represent the regulators’ perspective on the issue of climate change. Our sample consists of high-ranking officials as well as regular employees of the European Central Bank, several national central banks and national regulation authorities from the European Union. They work in areas such as supervision of financial institutions, supervision of financial markets and macro-prudential policy. Recruitment took place via contact points at different central banks in Europe. Overall, 92 financial regulators completed the online survey. Summary statistics and further information on findings for this sample of participants are available in the Supplementary Information in Section 2.

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 2 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 9.

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 2 weeks starting from the day we send out invitations in the main wave. Participants were free to participate at any time during this 2-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. 697 participants completed our survey (305 from the climate expert contact list, 300 from the BEFORE contact list, and 92 regulators). Summary statistics of the demographic variables collected across samples can be found in the Supplementary Information in Section 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 following⁴⁴.

Reporting summary

Further information on research design is available in the Nature Portfolio Reporting Summary linked to this article.

Data availability

The data is available on OSF at <https://osf.io/7q5du/>.

Code availability

The experimental software, analysis files as well as the complete experimental instructions and survey items are available on OSF at <https://osf.io/7q5du/>.

Received: 13 July 2023; Accepted: 19 March 2024;

Published online: 27 March 2024

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Acknowledgements

We thank the Editor, Alessandro Rubino, PhD, and three anonymous reviewers for very valuable comments. We also thank Esther Blanco, Sebastien Duchene, Sarah Flecke, Jürgen Huber, Rene Schwaiger, Paul Smeets, Thomas Sterner for helpful comments on earlier versions of this manuscript. Financial support from the Austrian Science Fund (SFB F63), Länsförsäkringar project P2.19, and the Austrian National Bank (grant 17788) is gratefully acknowledged.

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.

Competing interests

The authors declare no competing interests.

Ethics approval

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

Additional information

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1038/s43247-024-01331-9>.

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Peer review information *Communications Earth & Environment* thanks Thomas Brudermann, Mark Hurlstone and the other, anonymous, reviewer(s) for their contribution to the peer review of this work. Primary Handling Editors: Alessandro Rubino and Martina Grecequet. A peer review file is available.

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