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JEL Classification: G12, G14, H43, Q54

Keywords: Climate finance, Environment, ESG, SRI, Social discounting

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What do you think about climate finance?*

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Abstract

We survey 861 finance academics, professionals, and public sector regulators and policy economists about climate finance topics. They identify regulatory risk as the top climate risk to businesses and investors over the next five years, but they view physical risks as the top risk over the next 30 years. By an overwhelming margin, respondents believe that asset prices underestimate climate risks rather than overestimate them. We also tabulate opinions about the correlation between growth and climate change; social discount rates appropriate for projects that mitigate the effects of climate change; most influential forces for reducing climate risks; and, most important research topics.

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1. Introduction

The rising appreciation of the risks due to climate change has led to a burst of research in finance. In addition to this volume, special issues on "climate finance" have appeared, or are in progress, in at least five other journals.[1] Giglio, Kelly, and Stroebel (2021) and Hong, Karolyi, and Scheinkman (2020) survey this emerging literature. Here, we report the results of a different type of survey—an anonymous, global survey of select financial economists, finance professionals, and regulators and economists in public institutions such as central banks.

What is the value of such a survey? According to climate scientists, time is short to define research agendas that help us manage the emerging financial and economic risks from climate change.[2] A survey allows researchers to identify areas of agreement and coordinate on promising directions.

There was a strong response to our survey request. Despite receiving just one unsolicited recruitment email with a link to the survey, 861 invited participants completed the survey. The first notable feature of the survey responses was the relative uniformity of opinion on a range of important topics. This general commonality in responses extended across professional roles, geographic regions, degrees of concern about climate change, extent of professional interest in climate finance, and year of graduation.

Given the large sample size and consistency of responses across subgroups, we can offer robust conclusions about respondents' beliefs. We highlight four of them here:

(i) Respondents are at least 20 times more likely to believe that climate risk is currently being underestimated by asset markets as opposed to overestimated.

[1] These include Finance Research Letters, International Review of Financial Analysis, Management Science, Review of Financial Studies, and Sustainability.

[2] IPCC Special Report: "Global Warming of 1.5°C," October 2018.

(ii) Respondents view regulatory risk as the top climate-related risk for investors and firms over the next five years, but consider physical risk the top risk over the next 30 years.

(iii) Pressure from institutional investors is viewed as the most powerful force for change among financial mechanisms. Among non-financial mechanisms, carbon taxes and government subsidies are considered the most potent.

(iv) Most respondents believe that realizations of climate risk are not correlated with economic conditions. Those who believe in a correlation were more likely to see climate change as associated with good rather than bad economic conditions.

We also gathered views on other subjects, such as the social discount rate for climate change mitigation projects and the most important research topics in climate finance going forward. We contrast the latter with actual research trends. Finally, we note the disagreements across subgroups on some questions, which are typically second-order and intuitive.

We hope this survey sheds light on where climate finance is and where respondents believe it should go in the future. We start by reviewing the survey method and characteristics of the respondents, proceed to analyze the responses, and then conclude. Please refer to the Internet Appendix for additional tabulations.

2. Survey Method and Respondents

Our goal was to collect views about climate finance from sophisticated researchers and practitioners around the world. We targeted a reasonably select group of finance academics, finance industry practitioners, and finance-oriented economists within influential regulatory or supranational institutions. These groups may consider the same issues from different perspectives, so both the similarities and differences in their views are interesting.

Specifically, to reach academics, we collected all available email addresses of professors of the top 100 finance departments based on research output.[3] We included tenure track, adjunct, and clinical professors, for a total of 3,570 faculty email addresses. To reach practitioners, we used a sample of 6,921 NYU Stern graduates working in finance.[4] To reach those involved in policy, we identified 17 relevant public-sector institutions and collected 955 emails of researchers or policymakers working in their finance-related groups.[5]

We do not imply that the relative number of email addresses gathered across these groups reflects the relative importance of their views. One might be concerned that conclusions from the pooled sample may be tilted toward one or the other group in ways that do not reflect that group's relative knowledge or influence. For example, it is likely that the collective pressure of financial professionals is more important in addressing climate change than the role of finance academics. At a high level, however, our analysis shows that the responses turn out to be rather similar across most subgroups. The reader may easily compute an equally-weighted average across subgroups of interest. We present additional breakdowns in an Internet Appendix.[6]

We sent a single recruitment email to each potential survey participant, which provided the link to the Qualtrics online survey. The survey informed respondents that we would collect no

[3] We used the list maintained at ASU: https://apps.wpcarey.asu.edu/fin-rankings/rankings/results.cfm. The ranking was based on the total number of articles published from 2010 through 2020 in the Journal of Finance, Journal of Financial Economics, and Review of Financial Studies.

[4] These emails were kindly provided by the NYU Stern Alumni Relations office. We requested emails of Stern MBA graduates that were working in finance and received their degree no more than 30 years ago as well as a sample of emails of graduates of Stern's undergraduate program that were working in finance and received their degree between 10 and 30 years ago (the undergraduates were granted ten years to achieve a practical familiarity with the issues involved).

[5] We gathered email addresses from a range of institutions that made researcher emails accessible on their institutional websites. The institutions are Bank of Canada, Bank of England, Bank of Korea, Deutsche Bundesbank, ECB, the Federal Reserve Banks of Boston, Chicago, Dallas, Minneapolis, New York, Philadelphia, Richmond and San Francisco, IFC, IMF, Reserve Bank of New Zealand, and World Bank.

[6] The Internet Appendix also includes results for an additional 158 respondents who were not contacted directly but instead found the survey via Twitter and LinkedIn postings. This subsample again delivered broadly similar responses.

personally identifiable information and that it would take five to seven minutes to complete. We sent the recruitment emails and collected responses in July 2021.

In total, we received 861 complete responses for an overall response rate of 7.5%. Some 42 respondents, or 4.9% of the pooled sample, did not self-identify their occupation. There were 453 responses from faculty (response rate = 12.7% and share of the pooled sample that self-identified = 55%). There were 294 responses from practitioners (response rate = 4.2% and share of the pooled sample that self-identified = 36%); this segment of the sample suffered from a lack of updated email addresses, but we are not aware of any biases introduced as a result. Finally, there were 72 responses from financial regulators or public-sector employees (response rate = 7.5% and share of the pooled sample that self-identified = 9%).

Overall, and for each of these groups, the response rates compare favorably to those of other unsolicited surveys, e.g., 9% in the CFO survey of Graham and Harvey (2001), 4.3% in the institutional investor survey of McCahery, Sautner, and Starks (2016), and less than 5% in the retail investor survey by Giglio, Maggiori, Stroebel, and Utkus (2021). But any response rate less than 100% leaves the door open to sample selection bias. In our survey, a bias is obvious: Respondents are probably more interested in climate finance than nonrespondents. Depending on the question, this selection bias is not entirely unhelpful, and for most questions, one might prefer the views of those most informed over those of an overall population. At any rate, to explore whether such a selection might bias our results, we collect respondents' concerns about climate change and professional interest in climate finance and examine whether responses differ on these dimensions.

[INSERT TABLE 1 NEAR HERE]

Table 1 contains summary statistics and cross-tabulations of the demographic information reported by respondents. As noted above, over half of the sample are faculty, followed by private-sector professionals. Our respondents' locations tilt toward North America and Europe. The level of climate concern across roles is similar, with around 69% in each group expressing personal concern. The rate of concern is highest among those located in Europe. Our survey respondents align with the general population in this respect.[7] Across roles, a majority of participants claim some professional interest in or connection to "climate finance" (as defined by the respondent), and this rate is somewhat higher among those located in Europe and Asia. Perhaps unsurprisingly, those individuals who work on climate finance topics are generally more concerned about climate change, though causality may go both ways.

Lastly, our participants appear to skew a bit younger, with many receiving their highest degree between 2010 and 2021. Respondents of various age ranges expressed about the same splits in terms of concern about the climate and professional interest in climate finance.

3. Survey Results

The survey consisted of five types of questions. We review them in this section.

3.1. Which climate risks are most important?

Many commentators and policymakers have made predictions about how climate change will affect businesses and investors. But climate change involves a set of emerging risks, whereas empirical academic research usually involves historical data. Therefore, it was natural to begin the

[7] According to the United Nations Development Programme (2021), 65% of U.S. residents believe in climate change as a global emergency. For Western Europe and North America, the number is 72%, whereas 63% of Asia-Pacific residents share this belief. The global average is 64%.

survey with an understanding of what "climate risks" our finance-oriented respondents are most concerned about.

Specifically, we asked respondents to rank the relative importance of five types of risks often expressed in general discussions of climate finance (e.g., Krueger, Sautner, and Starks, 2020; Climate-Related Market Risk Subcommittee, 2020; Rudebusch, 2021). In addition, given that climate changes and business responses will evolve over time, we asked respondents to judge the importance of the various climate risks over both the next five years and the next thirty years.

[INSERT TABLE 2 NEAR HERE]

The results show a widely-held belief that the primary climate risk over the next five years involves regulatory activity along the transition path to a low-carbon economy. Such transition risks can include, for example, the risk to various businesses models in the energy and transportation sectors from increased regulation of carbon emissions. In the pooled sample, regulatory risk was ranked a full position higher, on average, than the second-most-cited risk. Its perceived importance as the first-order risk over the coming five years is consistent across all subgroups. The second most highly ranked short-run risk from climate change, in particular among private-sector respondents, was identified as stakeholder risk—a risk that includes changing preferences of employees and customers. As a notable exception, public-sector professionals already viewed physical risk as the second most important risk in the next five years.

Over the next 30 years, however, almost all respondents judged physical risks as the most important—this risk captures the direct risks from rising sea levels, wildfires, and other physical changes to the planet as a result of climate change. One hopes the prediction is incorrect, but

physical risk was the most-cited long-term climate risk among all subgroups except (predictably) among those relatively unconcerned about climate change. They continued to view regulatory interventions to combat climate change as the most important risk to businesses over the thirty-year horizon.

3.2. Are asset markets pricing climate risks correctly?

With some understanding of the nature of climate risks in hand, we turned to the extent to which they are currently being incorporated into asset prices. Asset markets where climate risks are often salient include the equities, real estate, and insurance markets. Indeed, a sizable literature has documented that equity markets, bond markets, real estate markets, and derivatives markets appear to incorporate climate risk in asset prices.[8] However, little research has been done to explore whether asset prices reflect climate risk to the correct degree—a question that is substantially more difficult than rejecting the null hypothesis that climate risk is not priced at all. Notable exceptions include Hong, Li, and Xu (2019), who argue that food stock prices may have underreacted to droughts, and Shlenker and Taylor (2021), who find that weather derivatives have marched roughly in alignment with temperature trends over the past two decades.

[INSERT TABLE 3 NEAR HERE]

Our survey reveals a substantial consensus on this question. According to Table 3, respondents overwhelmingly believed that asset prices do not, at present, sufficiently reflect

[8] See, for example, Baldauf, Garlappi, and Yannelis, 2020; Bernstein, Gustafson, and Lewis, 2020; Bolton and Kacperczyk, 2021; Choi, Gao, and Jiang, 2020; Engle et al., 2020; Giglio et al., 2021; Goldsmith-Pinkham et al., 2021; Eichholtz, Steiner, and Yonder, 2019; Ilhan, Sautner, and Vilkov, 2021; Painter, 2020.

climate risks. For example, those who think that stock prices reflect climate risks "not enough" outnumber those who believe that stock prices reflect climate risks "too much" by a factor of twenty to one (60:3 in the pooled sample in Table 3)! With respect to real estate, the outnumbering is sixty-seven to one (67:1), and for insurance, the outnumbering is twenty-one to one (42:2). Respondents have highly correlated beliefs across settings: Those who believe climate risks are not sufficiently reflected in equity markets also generally believe they are not sufficiently reflected in real estate and insurance markets.

Is this really a consensus or merely an artifact of a sample biased toward those more concerned about climate change? Pointing toward consensus, this belief is apparent in every subgroup. Even respondents who have low concern about climate change themselves are far more likely to believe that asset markets are underpricing the risks of climate change rather than that they are overpricing them, perhaps consistent with those respondents worrying about potentially underpriced transition risks due to regulatory interventions. Either the widespread belief that asset prices and insurance markets insufficiently price climate risk is way off, or these markets have a lot catching up to do.

Nevertheless, we observe a number of important differences across groups. Those individuals with a professional interest in climate finance—in other words, those individuals with perhaps the most informed views—are even more convinced that asset markets do not yet reflect climate risks accurately. When comparing across professional roles, private market participants were 22 percentage points more likely to believe that climate risks were underpriced than academics (73% of private-sector respondents vs. 51% of academics). In contrast, academic researchers were more likely to believe these risks to be accurately priced, perhaps a result of a stronger belief among finance academics in the efficiency of markets.

What types of risks do individuals believe to be underpriced? Comparing answers of the same individuals across questions, we find that respondents who think climate risks are not priced sufficiently in asset markets rank the importance of physical risk substantially higher over both the five and thirty-year horizons.

3.3. How should investors and governments discount climate risks?

We then turn to the normative issue of how current costs of mitigating climate risks should be traded off against their potentially uncertain future benefits. The degree to which realizations of climate risks (and, in particular, the physical realizations of climate risk) correlate with economic conditions is an important input to this calculation for both investors and social planners since this correlation determines whether such investments should command a positive or a negative risk premium.

We first asked respondents whether a hypothetical climate-change mitigation project would tend to "pay off" in good economic times, bad economic times, or independent of economic times. This was an effort to get at the covariance between realizations of climate risk and economic activity and address a fundamental debate in the literature on how to model climate change: As a tax on consumption which increases with economic growth and the associated carbon emissions (e.g., as in Nordhaus, 2008); or, as a potentially disastrous event that, once realized, creates a deep economic downturn (e.g., as in Barro, 2013 and Weitzman, 2012, 2014).[9] Giglio et al. (2021) construct a model that nests both approaches and highlights the implications for discount rates: If

[9] Other important questions relating to how to incorporate climate change into general equilibrium models that allow for the pricing of financial assets is which preferences to use and how to incorporate model uncertainty about the transmission mechanism of economic activity to climate change (see Bansal, Kiku, and Ochoa, 2018; Barnett, Brock, and Hansen, 2020; Daniel, Litterman, and Wagner, 2019). Giglio, Kelly, and Stroebel (2021) summarize these issues.

climate change is more costly in good economic times, then investments to mitigate climate change pay off disproportionately in those times and deserve a positive risk premium. On the other hand, if investments to mitigate climate change pay of largely in bad economic times, they should be considered hedges that command a negative risk premium.

[INSERT TABLE 4 NEAR HERE]

As documented in Table 4, respondents were most likely to state that the payoffs for projects to mitigate climate risks would be independent of economic times. This may reflect beliefs about the global nature of climate change versus the comparatively local nature of economic fluctuations or the different horizons at which climate and economic shocks operate. Still, respondents were three times as likely to believe that mitigation payoffs occur primarily in good economic times than in bad economic times, more consistent with the Nordhous view. Asian respondents have a particularly strong belief in this covariance; this may reflect the salient coincidence of worsening climate and rapid growth in developing Asia in recent decades, and the substantial contributions of coal-based energy production in Asia to global carbon emissions.

Interestingly, we find that respondents who are less concerned about climate change per se (and those that worry more about regulatory than physical climate risks) are more likely to respond that mitigating climate change will largely pay off in good economic times. This belief is consistent with those respondents perceiving climate change itself is not problematic enough to be an independent driver of economic downturns.

Many governments are now making immediate practical decisions that involve calculating the present discounted values of investments to mitigate climate risks. We asked our survey

participants to put themselves in policymaking shoes and suggest a single, suitable discount rate for a hypothetical investment in climate-change mitigation whose benefits would materialize 50 years from now, a horizon for which private market returns are hard to come by.[10] "Benefits" was phrased broadly so as to include all economic and social benefits, including externalities.[11] The median respondent suggested discounting an investment with certain (risk-free) benefits at 4% per year, and suggested discounting an investment with uncertain (i.e., expected) benefits at 7% per year. The gap reflects a median risk premium for investments in climate change abatement of 3%, directionally consistent with the view that economic conditions and climate change are positively correlated. Implied risk premia for investments in climate mitigation were the largest, at a median of 4%, for private-sector respondents, and the smallest, at 1%, for public-sector respondents. Directionally, risk premia were lowest among respondents who believe that investments in climate mitigation paid off largely in bad times, though even in this group, respondents assigned a positive risk premium on average.

3.4. What are the biggest forces for change?

The next question asked respondents which economic and financial mechanisms are most promising in moving corporations to reduce their climate risk exposures and carbon footprints. We inquired about pressures from various financial stakeholders, including banks and creditors, individual investors, and institutional investors; non-financial stakeholders, including customers

[10] A recent exception is Giglio, Maggiori, and Stroebel (2015), who calculate discount rates in the housing market over hundreds of years. See Gollier (2002), Gollier and Weitzman (2012), Dietz, Gollier, and Kessler (2018), Giglio et al. (2021) and Lemoine (2020) for additional discussions on discount rates in the context of climate change mitigation.

[11] In light of the various respondent types, the reader can see that our questions had to balance simplicity with sophistication. For example, our request for a static rate prohibited the ability to suggest a stochastic rate or one that falls as the horizon lengthens. On the latter points, our request boils down to asking for a point estimate of a discount rate for a "lump sum" net benefit realized 50 years from now.

and employees; and policy mechanisms, including carbon taxes (and emissions trading systems which tax companies for exceeding limits), various government subsidies, or financial or non-financial regulation.

[INSERT TABLE 5 NEAR HERE]

Table 5 indicates that the pooled sample viewed carbon taxes and institutional investors as the two most important forces for change, with government subsidies and pressures from customers not far behind.[12] Europeans, with the most extensive systems for pricing carbon, had the strongest belief in carbon taxes; across roles, faculty and public-sector policymakers and economists are the strongest supporters. Private-sector respondents are more skeptical of relatively hypothetical policies or mechanisms. They viewed institutional investors and customers, whose pressures they already face, as the two most important forces for change.[13] Despite C-suite rhetoric, *not one* respondent was optimistic that voluntary behavior by corporations (including, or especially, private sector respondents) would be a significant force; at the same time, no respondent was pessimistic enough to view meaningful change as impossible.

Among regulatory mechanisms, academics and public sector respondents viewed non-financial regulation as the more powerful tool, while our financial market respondents believed financial regulation to be more effective, perhaps because those respondents are already seeing the

[12] A mechanism here could be institutional investor preferences or catering to sentiment that reduces the cost of capital for firms and governments pursuing green projects. See Baker, Bergstresser, Serafeim and Wurgler (2022) for evidence from green bonds, and Pastor, Stambaugh, and Taylor (2021) and Pedersen, Fitzgibbons, Pomorski (2021) on the stock market. See Flammer (2021) for negative evidence from corporate green bonds. Another direct mechanism would be institutional shareholder engagement, as in Azar, Duro, Kadach, and Ormazabal (2021).

[13] Krueger, Sautner, and Starks (2020) survey institutional investors about their approaches to managing climate risk, and document that many of these investors regularly engage with portfolio companies on issues related to climate risk, providing a second mechanism through which institutional investors might affect firm behavior.

impact of efforts by financial regulators to understand and reduce the implications of climate risk for the financial sector; see Rudebusch (2021) for a summary of some of these efforts.

The forces for change identified by individuals correlate in reasonable ways with their responses to other questions. For example, respondents who believe that carbon taxes are a particularly important force for change ranked regulatory risks as more relevant in Table 2, while respondents who viewed customers and employees as the biggest influence also ranked stakeholder risk more strongly.

3.5. What are the most important research topics? Are researchers working on them?

The last question asked respondents to identify the most important research topics in climate finance. We proposed thirteen topic areas motivated by the literature.

[INSERT TABLE 6 NEAR HERE]

The topic area garnering most enthusiasm in the pooled sample was the effects of government incentives to mitigate or adapt to climate change; such a research priority is consistent with the previous question's result that carbon taxes and government subsidies are among the most important perceived forces for change. The other topic at the top of the list was to understand the pricing of climate risk in financial assets. This research priority is consistent with the earlier finding that many respondents think that markets are currently underpricing climate risks—and indeed, we found that this research priority was particularly strong among respondents who perceived climate risk to be underpriced in asset markets. Public-sector policymakers and economists, many from central banks, felt that understanding the possible systemic risks generated by climate change

was a critical topic for further research. Reassuringly, those with a professional interest in climate finance have the same ranking of the top four research priorities as those without such an interest.

Perhaps surprisingly, respondents did not believe that a better understanding of climate risks in insurance markets should be a research priority, even though 30% of respondents had suggested that they had "no opinion" on whether insurance markets accurately priced climate risks at the moment.

How does this line up with the research actually done at the moment? To answer this question, we analyzed all uploaded finance publications on SSRN (that is, to the FEN journal) within the last three years that contain "climate" in their title or abstract in a relevant respect. We manually classified each of these works as relating to up to three of the topic areas. Then, we determined the relative frequency of each topic among the publications that spoke to at least one of the research areas.

The Spearman rank correlation between topics that the pooled set of respondents find important and the topics that appear in SSRN-FEN working papers is 0.85. While the survey respondents viewed the effect of government incentives to mitigate or adapt to climate change as the most important research topic, it is also the second most popular topic on SSRN-FEN, even though some papers on this topic may often fall beyond traditional finance (i.e., FEN) boundaries.

Overall, climate change's effect on systematic risk, real effects of socially responsible investment, new climate-related financial instruments such as green bonds or catastrophe bonds (see Baker et al., 2018), and a few other topics were not being pursued in proportion to their perceived importance. Public sector respondents in particular were disproportionately concerned about systemic risks, stress tests, and pricing of climate risk in real estate and insurance, so their own perceptions of research needs correlated less well with the recent work on SSRN.

Of course, many of those who post papers to SSRN are in our sample themselves, and presumably, the topics they find important are the topics they write about. As a result, it is worth reviewing the opinions of those who have no professional interest in climate finance. The rank correlation between the SSRN-FEN topic frequency and the topic-importance percentage of the "outsiders" is 0.64, still high but clearly lower than the 0.91 rank correlation for the "insiders." The outsiders would like to see additional work on climate risk pricing in real estate markets and insurance markets as opposed to research on pricing in financial markets or topics in green finance.

4. Conclusions

Scientists often describe climate change with superlatives. *Urgent*. *Dire*. *Existential*. The superlatives are all bad. Encouragingly, financial economists are devoting more and more attention to the intersection of climate and finance. Our survey aims to further this momentum by identifying points of agreement, disagreement, and promising research topics.

Our 861 anonymous respondents are selected from finance academia, the public sector, and the private sector. They are located around the world and differ in their concern about the climate and their interest in climate finance. Despite these differences, respondent subgroups agreed on a majority of questions. For example, respondents tend to view regulatory risks as the most important climate risk to businesses and investors over the next five years, but physical climate risks as the most important over the next 30 years. In addition, an order of magnitude more respondents believe that asset markets are underestimating climate risks as opposed to overestimating them. As with other aspects of climate change, time will tell whether these beliefs are justified.

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Table 1
Composition of survey respondents

The percentage breakdowns in the table are to be read in columns within blocks. For example, the share of faculty among respondents in North America is 51%, while the share of North American respondents among faculty is 70%. The total number of respondents is 861. Not every respondent answered every question, but all questions achieved a response rate of at least 95% among respondents who finished the survey. The table shows the distribution among respondents who answered the question of interest.

		Role			**Location**				**Climate Concern**		**Works in Climate Finance**	
	Share Sample	Faculty	Public Sector	Private Sector	North America	Europe	Asia	ROW	High	Low	Yes	No
Role (%)												
Faculty	55	100	0	0	51	76	60	41	55	54	57	53
Public Sector	9	0	100	0	8	12	6	9	9	7	9	8
Private Sector	36	0	0	100	40	12	34	45	35	37	34	39
Location (%)												
North America	72	70	72	85	100	0	0	0	73	80	71	82
Europe	14	20	19	5	0	100	0	0	16	11	17	10
Asia	7	8	6	7	0	0	100	0	8	7	9	5
ROW	7	2	3	3	0	0	0	100	3	2	3	2
Climate Concern (%)												
High	69	70	73	68	67	77	69	76	100	0	78	56
Low	31	30	27	32	33	23	31	24	0	100	22	44
Works Climate Finance (%)												
Yes	59	61	62	56	55	71	73	67	67	42	100	0
No	41	39	38	44	45	29	27	33	33	58	0	100
Graduation Year (%)												
< 2000	26	33	13	17	28	24	14	10	26	25	26	25
2000-2009	29	24	19	41	29	28	31	45	30	27	28	31
2010+	45	43	68	42	43	48	56	45	44	48	46	44

Table 2
Identifying short- and long-term climate risks

Participants were asked: "Please rank the general importance of these climate-related risks to typical businesses and investors over the next *X* years. [1 = Most Important; 5 = Least Important]", where *X* is either 5 or 30. Possible responses were ordered randomly. They are listed below in order of their rank in the pooled sample.

		Role			**Location**				**Climate Concern**		**Works in Climate Finance**	
	Pooled	Faculty	Public Sector	Private Sector	North America	Europe	Asia	ROW	High	Low	Yes	No
Top Risks Next 5 Years (Average Rank)												
Regulatory	1.9	1.7	2.1	2.1	2.0	1.8	1.7	1.8	2.0	1.7	1.9	1.9
Stakeholder	2.9	3.0	3.2	2.7	2.9	3.0	2.7	3.2	2.9	2.9	2.9	3.0
Physical	3.1	3.3	2.8	2.9	3.0	3.4	3.6	3.1	2.9	3.7	3.1	3.1
Technological	3.4	3.4	3.1	3.6	3.5	3.1	3.5	3.3	3.4	3.4	3.4	3.5
Legal	3.6	3.6	3.8	3.6	3.7	3.6	3.5	3.6	3.8	3.3	3.7	3.5
Top Risks Next 30 Years (Average Rank)												
Physical	2.2	2.3	1.9	2.2	2.2	2.3	2.4	2.3	1.9	3.0	2.1	2.3
Regulatory	2.6	2.5	2.6	2.7	2.5	2.8	2.6	2.7	2.7	2.2	2.6	2.5
Technological	3.0	2.8	3.0	3.3	3.1	2.6	2.8	3.2	3.0	3.0	3.0	3.0
Stakeholder	3.5	3.7	3.8	3.2	3.5	3.5	3.5	3.3	3.6	3.3	3.6	3.4
Legal	3.7	3.7	3.7	3.6	3.7	3.8	3.8	3.5	3.8	3.5	3.7	3.7

Table 3
Current pricing of climate risks in asset markets

Participants were asked: "In the *X* most familiar to you, how do prices currently reflect climate-related risks?", where *X* is either "stock markets", "real estate markets", or "insurance markets". Possible responses were ordered as below.

		Role			Location				Climate Concern		Works in Climate Finance	
	Pooled	Faculty	Public Sector	Private Sector	North America	Europe	Asia	ROW	High	Low	Yes	No
Pricing Stock Markets (% picked)												
Too Much	3	3	0	4	3	1	5	0	1	8	2	3
Correct	21	26	19	13	22	18	8	19	12	40	16	27
Not enough	60	51	64	73	58	65	75	71	74	29	68	49
No opinion	16	20	17	10	17	16	12	10	13	24	14	20
Pricing Real Estate Markets (%)												
Too Much	1	0	0	1	1	0	2	0	0	2	0	1
Correct	17	21	12	13	18	15	12	14	10	33	15	21
Not enough	67	61	78	75	67	64	70	71	76	46	71	61
No opinion	15	18	10	12	14	21	17	14	14	19	14	17
Pricing Insurance Markets (%)												
Too Much	2	2	0	3	3	2	0	0	2	4	1	4
Correct	25	25	19	26	25	28	18	43	21	35	26	25
Not enough	42	37	57	47	42	39	55	29	49	27	45	38
No opinion	30	35	25	23	30	31	27	29	28	34	28	34

Table 4

Covariance of climate risk with economic conditions and social discount rates

Two questions were asked involving the connection between climate risk and economic conditions. In the first, participants were asked: "Consider an investment project that mitigates the effects of climate change. In general, would you expect this project to pay off primarily in good economic times, primarily in bad economic times, or similarly across both good and bad economic times?" Possible responses were ordered randomly. In the second, participants were asked: "What discount rate (in percent per year) should governments use to evaluate the certain (risk-free) benefits of an investment in climate change abatement materializing in 50 years?" and "What discount rate (in percent per year) should governments use to evaluate the uncertain expected benefits of an investment in climate change abatement materializing in 50 years?" The median discount rates and median risk premium are reported here.

		Role			**Location**				**Climate Concern**		**Works in Climate Finance**	
	Pooled	Faculty	Public Sector	Private Sector	North America	Europe	Asia	ROW	High	Low	Yes	No
Payoff of Climate Investment (%)												
Good economic times	32	28	40	35	33	22	43	24	28	41	33	31
Bad economic times	13	16	19	8	12	19	16	10	14	12	14	12
Equally in good and bad times	55	56	40	57	55	59	41	67	58	48	53	57
Discount Rates (Median, %)												
Risk-Free Investment	4	3	2	5	4	2	4	5	3	4	3	4
Climate Mitigation Investment	7	6	4	9	7	5	5	10	6	8	6	8
Risk Premium	3	3	1	4	3	3	2	6	3	5	3	4

Table 5
Most influential forces for change.

Participants were asked: "Which mechanisms do you think are most important in moving corporations to reduce their climate risk exposures and/or carbon footprints? [Choose at most three]." Possible responses were ordered randomly, and listed below in order of their rank in the pooled sample.

		Role			Location				Climate Concern		Works in Climate Finance	
	Pooled	Faculty	Public Sector	Private Sector	North America	Europe	Asia	ROW	High	Low	Yes	No
Biggest force for change (% in top-3)												
Carbon Taxes	52	59	65	37	51	59	49	33	56	42	52	50
Institutional Investors	48	45	37	56	47	52	53	52	51	42	51	44
Government Subsidies	43	44	43	42	45	39	39	29	42	47	43	44
Customers	41	33	35	53	42	39	29	52	40	42	38	43
Non-financial regulation	27	34	31	15	25	35	27	38	28	24	27	28
Financial regulation	22	20	21	26	22	22	24	29	24	19	26	16
Banks/Creditors	16	12	21	20	15	15	22	10	17	13	19	10
Employees	6	5	4	8	6	4	10	14	6	6	5	8
Individual Investors	5	5	4	5	6	1	2	14	5	5	5	5
Voluntary	0	0	0	0	0	0	0	0	0	0	0	0
Nothing will lead to change	0	0	0	0	0	0	0	0	0	0	0	0

Table 6

Most important climate finance research topics vs. SSRN topic frequency.

Participants were asked: "Which of the following research areas do you find most important? [Choose at most three]." Possible responses were ordered randomly and listed below in order of their rank in the pooled sample. The phrasing of options shown to respondents were: "Effects of government incentives for innovation in climate change mitigation and adaptation"; "Pricing of climate risk in financial markets"; "Understanding systemic risks to the financial system from climate change"; "Real effects of socially responsible investment initiatives"; "Design of new financial instruments to manage climate risk"; "General equilibrium modeling of the interaction of climate risk and economy"; "Effects of green finance (e.g., green bonds) on the transition toward a sustainable economy"; "Measurement of asset-level climate risk exposure"; "Pricing of climate risk in housing and mortgage markets"; "Understanding climate risk for the insurance sector"; "Design of climate stress test scenarios"; "Refinement of ESG-type ratings"; and, "Role of access to finance in reducing social disparities caused by climate change." The last column shows the distribution of topic coverage by SSRN papers uploaded within the last three years. We restricted the sample to finance papers containing the word "climate" in their abstract or title. Excluding revisions and reuploads, our sample consists of 420 publications. Papers were manually classified to belong to none, one, or up to three of the research topics. The distribution is shown for the subset of papers that speak to at least one of the topics. The last three rows show the Pearson, Spearman (rank), and Kendall's tau correlation of the distribution over topics for the pooled sample and each subgroup with the SSRN topic frequency.

		Role			**Location**				**Climate Concern**		**Works in Climate Finance**		
	Pooled	Faculty	Public Sector	Private Sector	North America	Europe	Asia	ROW	High	Low	Yes	No	SSRN Topic Frequency
Important Research Topics (% in top-3)													
Effects of gov incentives to mitigate/adapt	35	36	39	37	38	34	34	8	39	30	38	35	22
Pricing climate risk in financial markets	34	33	34	36	35	30	31	52	36	30	37	30	36
Climate change effect on systemic risk	28	23	47	29	28	27	22	38	30	21	29	26	15
Real effects of SRI	23	22	9	27	21	22	36	29	22	24	23	22	8
New financial instruments	21	23	22	19	22	20	17	19	22	21	23	19	7
GE modeling of climate change & economy	19	20	22	17	19	25	15	19	18	22	18	21	6
Effects of green finance on transition	19	17	18	21	16	27	31	29	21	13	22	14	9
Measuring asset-level climate exposure	15	15	16	16	15	15	17	19	13	21	17	13	11
Pricing climate risk in real estate markets	17	15	29	16	19	10	7	14	17	16	15	20	6
Climate risk in the insurance sector	13	14	21	10	15	10	5	14	13	14	10	17	3
Developing climate stress tests	13	10	19	17	14	9	14	14	14	10	12	14	4
Refinement of ESG-type ratings	12	13	3	13	11	11	19	10	12	11	14	9	5
Finance address social disparities from CC	10	10	4	12	10	12	12	0	13	5	10	10	4
Correlation: Survey vs. SSRN Topic Freq.													
Pearson	.86	.83	.60	.86	.85	.72	.61	.67	.85	.75	.88	.75	
Spearman (rank) correlation	.85	.84	.52	.84	.78	.85	.78	.59	.77	.75	.91	.64	
Kendall's tau	.67	.64	.32	.72	.58	.67	.59	.50	.62	.59	.77	.45	