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What Do Economists Think About the Green Transition? Exploring the Impact of Environmental Awareness

Simona Malovaná, Dominika Ehrenbergerová, and Zuzana Gric *

Abstract

We surveyed economics and finance professionals on the transition to a low-carbon economy, assessing risks, opportunities, and stakeholder responsibilities. Findings reveal that respondents view the transition as an opportunity for the financial sector, with modest increase in banking risks. Most respondents agreed that governments hold primary responsibility for climate mitigation policies, with carbon tax as the favored solution. Additionally, respondents perceived the COVID-19 to have a neutral or positive impact on the transition, while the Ukraine war a strong negative impact. Notably, opinions differ based on environmental awareness and professional roles, with environmentally conscious individuals expressing more optimism.

Abstrakt

Provedli jsme průzkum mezi odborníky na ekonomii a finance ohledně přechodu k nízkouhlíkové ekonomice, přičemž jsme hodnotili rizika, příležitosti a zodpovědnosti zúčastněných stran. Výsledky ukázaly, že respondenti vnímají tento přechod jako příležitost pro finanční sektor, s mírným nárůstem bankovních rizik. Většina respondentů souhlasila, že hlavní zodpovědnost za politiky ke zmírnění dopadu klimatické změny nesou vlády, přičemž jako preferované řešení byla označena uhlíková daň. Kromě toho respondenti vnímali dopady COVID-19 na tento přechod jako neutrální až pozitivní, zatímco dopady války na Ukrajině jako silně negativní. Zajímavé je, že názory se liší na základě environmentálního uvědomění a profesních rolí, přičemž jedinci s větším povědomím o životním prostředí vyjadřují více optimismu.

JEL Codes: G12, G14, Q54.
Keywords: Carbon footprint, climate finance, climate policy, environmental awareness, expert survey.

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1. Introduction

Climate change poses significant challenges to the global economy, the environment, and society. As the world transitions towards a low-carbon economy, understanding the perspectives of those involved in shaping and implementing related policies and strategies is of paramount importance. This paper seeks to contribute to the growing body of research on the subject by examining the opinions of economics and finance professionals, researchers, and public sector regulators on the impact of the transition to a low-carbon economy and the roles of different stakeholders. The motivation for this study stems from the need to comprehend the diverse views of key stakeholders in the transition to a low-carbon economy. Gaining insight into these perspectives can help inform effective policy-making, identify potential areas of agreement and disagreement, and contribute to a more successful and inclusive transition. This paper aims to bridge the gap in the literature by providing a comprehensive analysis of the opinions of professionals from various backgrounds who are directly or indirectly involved in shaping the low-carbon transition.

In our research, we surveyed 286 respondents, including economics and finance professionals, researchers, and public sector regulators. We assessed their views on various aspects of the low-carbon transition, such as the financial sector's role, the responsibilities of different stakeholders, preferred policy tools, and the impact of recent global shocks such as the COVID-19 pandemic and the war in Ukraine. We found a notable degree of consistency in the respondents' opinions across various characteristics such as location, professional role, and political typology. This indicates that the prevailing views on the transition to a low-carbon economy tend to be similar across these different factors. However, despite the overall uniformity in the majority of the responses, our study identifies statistically significant and systematic differences in opinion for specific characteristics.

We discovered that environmental awareness, measured through the respondents' self-reported contribution to reducing the carbon footprint, is the most critical factor driving this heterogeneity. Furthermore, the respondents' positions (researcher vs. non-researcher) and their affiliated institutions (university, central bank, other) also play a significant role in shaping their opinions. We highlight a few key results:

(i) For the financial sector, the respondents consider the transition to a low-carbon economy more an opportunity than a risk. For banking and investment activities, the transition is considered an opportunity 2 times more often than a risk. For insurance activities and pension funds, it is 1.4 times more.

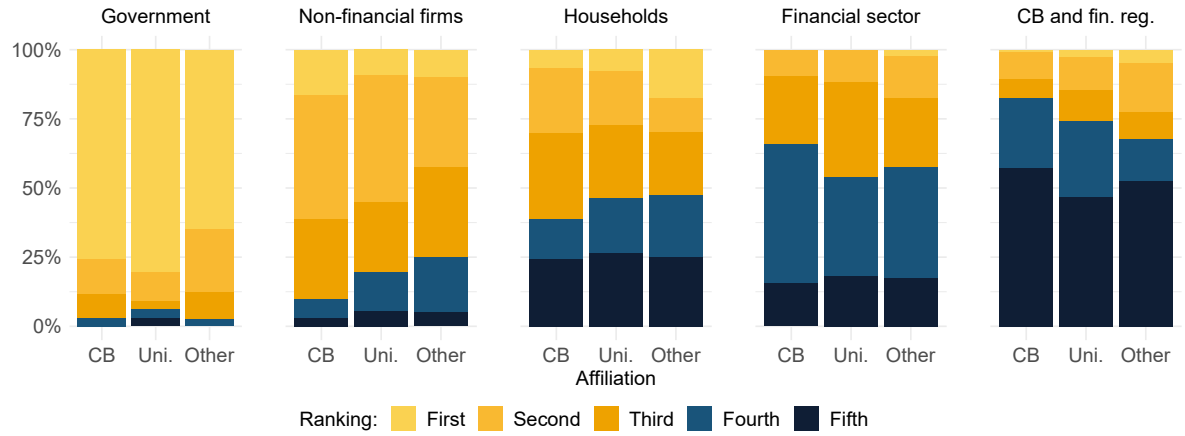
(ii) Of all the potential stakeholders, governments should be the most responsible for climate mitigation policies, and central banks and financial regulators the least responsible. The respondents' expectations of the financial sector's involvement are rather small. This assessment remains fairly consistent across the respondents' affiliations, with central bankers assigning a lower level of responsibility to central banks and the financial sector compared to others (Figure 1).

(iii) The respondents do not expect a large increase in banking risks due to the transition. Most respondents indicate that the transition will not affect liquidity and operational risk and will lead to only some increase in credit and market risk. However, this opinion, like many others, differs between respondents we identified as more and less environmentally conscious.

(iv) While the COVID-19 pandemic is expected to have a neutral or somewhat positive effect on the transition to a low-carbon economy, the war in Ukraine is expected to have a negative impact, significantly contributing to missing climate goals.

(v) According to the majority of the respondents, greenwashing can impact a company's market valuation, but it is sometimes hard to tell what greenwashing is. Worryingly, 64% believe that financial and non-financial institutions engage extensively in greenwashing. Additionally, the respondents, on average, perceive "green" assets to be correctly valued by the market.

Figure 1: Who Should Be Responsible for the Transition to a Low-Carbon Economy? Breakdown by Respondents' Affiliation



Note: The figure presents the distribution of answers to the question "How important should the contributions and responsibility of the following stakeholders be in the transition to a low-carbon economy? Please rank the following sectors from the most important to the least important." for respondents divided based on their affiliation. CB stands for central bank, fin. reg. for financial regulator, and Uni. for university.

In our analysis, we also explore patterns in the respondents' perspectives that can be attributed to climate optimism or financial stability risk concerns. We find that those who view climate goals as achievable are significantly more likely to see the transition as an opportunity than a risk. Additionally, we observe a strong connection between the participants' views on changes in banking risks, the attainability of climate goals, and their evaluation of the transition as a risk or opportunity across various sectors. Specifically, participants anticipating an increase in banking risks are more likely to see the transition as a risk than an opportunity in most sectors. This differentiation does not create a definitive separation, dividing all the respondents into two uniform groups. Instead, it sheds light on other possible factors beyond the respondents' characteristics in evaluating the various anticipated economic and financial consequences of the transition to a low-carbon economy.

This paper contributes to the literature in several ways. First, it offers a comprehensive analysis of the opinions of key stakeholders involved in the transition to a low-carbon economy, building on previous work that explores stakeholder perspectives and the dynamics of the low-carbon transition (Steg et al., 2014; Geels et al., 2017; Stroebel and Wurgler, 2021; van Benthem et al., 2022), the financial implications of climate change (Dietz et al., 2016; Ilhan et al., 2021), the role of the financial sector in supporting the low-carbon transition (Campiglio et al., 2018; Hartzmark and Sussman, 2019), and the integration of ESG factors into investment decisions (Krueger et al., 2020; Engle et al., 2020). Second, it highlights the impact of environmental awareness and professional roles in shaping these opinions, extending the findings of prior research on the factors influencing stakeholder perspectives (Riedl and Smeets, 2017; Choi et al., 2020; Bolton and Kacperczyk, 2021).

Our findings can also be linked to recent developments in the literature on theoretical models of climate finance, such as those by Battiston et al. (2017) and Pástor et al. (2021). Battiston et al. (2017) develop a theoretical framework for climate risks in financial networks, highlighting the importance of direct and indirect exposures. Their research shows that considerable portions of investors' equity portfolios are exposed to climate-policy-relevant sectors, underscoring the importance of well-timed climate policies. These conclusions align with our observation that stakeholders view the low-carbon transition as an opportunity rather than a risk for the financial sector, although they anticipate a rise in banking risks. Pástor et al. (2021) explore how sustainable investing impacts asset pricing and capital reallocation, showing that increased sustainable investing leads to higher valuations for green assets and encourages firms to adopt sustainable practices. This is particularly relevant to our findings, as it supports the idea that respondents perceive the transition to a low-carbon economy more as an opportunity than a risk, particularly in the financial sector. Their prediction is also in line with our observation that the respondents anticipate a shift in financial institutions' portfolios from brown to green assets following pro-climate policy actions such as the 2015 Paris Climate Agreement and President Biden's 2021 decision to rejoin the Agreement.

Moreover, this paper provides valuable insights that can inform policy-making, fostering a more successful and inclusive low-carbon transition. In particular, our findings contribute to the literature on the effectiveness of climate policies in shaping economic outcomes (Bolton et al., 2020), the role of ESG factors in risk management (Ilhan et al., 2021; Bolton and Kacperczyk, 2021), and the growing recognition of the importance of expert surveys in economics and finance (Stroebel and Wurgler, 2021; Malovaná et al., 2023; Ambrocio et al., 2020; Choi and Robertson, 2020). In our survey, we expand upon the work of Stroebel and Wurgler (2021), which focuses on a limited set of questions concerning climate finance, including risk types and asset pricing. In contrast, our survey aims to provide a more comprehensive overview of opinions regarding the risks and opportunities associated with the transition to a low-carbon economy across various sectors, the factors influencing the transition, optimal climate policy design, the response of the financial sector, and the achievability of climate goals. As such, the two surveys should be regarded as complements rather than substitutes. By integrating these diverse perspectives, this study offers a nuanced understanding of the challenges and opportunities associated with the low-carbon transition and its implications for various stakeholders.

In the rest of the paper, we first describe the survey process, methods, and respondent characteristics. Next, we analyze the prevailing opinions and highlight significant differences between respondent groups. After that, we examine selected factors more rigorously using probability models and cluster analysis, and then we conclude.

2. Survey Method and Respondents

We aimed to gather the views of finance and economics academics, professionals, and public sector regulators on the impact of the transition to a low-carbon economy and on the roles of different stakeholders.[1] We acknowledge that this is a complex and interdisciplinary issue, opinions on which can be strongly influenced by the sociodemographic characteristics and subjective beliefs of each respondent. Therefore, we designed the questionnaire to take into account various aspects and maintain a balance between the level of detail, clarity, and simplicity of the questions asked. Given

[1] We are aware that survey methodologies have some caveats stemming from the fact that we cannot ensure the respondents' honesty. However, if this measurement error resembles white noise, the final ranking of the importance of the answers will be informative.

the complexity of the issues analyzed, the survey questionnaire was pilot-tested several times. The resulting questionnaire consisted of 10 questions about the impact of the transition to a low-carbon economy and another seven optional questions about the respondent's background, behavior, and beliefs. The complete questionnaire is in the appendix.

We distributed the survey among respondents from academia and policy institutions due to our desire to obtain the views of both groups. While we expect the opinions of academics to encompass the latest research findings, the expert opinions of professionals should draw on the practical experience gained from decision-making processes within policy institutions. We created a list of about 10,000 email addresses based on the respondents' expertise and affiliations using the IDEAS/RePEc database.[2] By limiting ourselves to this database, we may be omitting the potentially valuable opinions of experts who do not have any research publications or those who have chosen not to be listed in the database. Therefore, we encouraged the respondents addressed to forward the questionnaire to their colleagues who may potentially be interested in participating. Because the survey contains questions on the respondents' professional backgrounds, we can filter the responses afterward and are not limited by the distribution of our initial list of respondents.

The survey was launched online on June 22, 2022, and closed after one month on July 22, 2022. We sent three reminders, on July 13, July 18, and July 20. We received 566 questionnaires, of which 286 had answers to all ten climate questions, and we thus included them in our study. This gave us an overall response rate of about 3%.[3] In some of these questionnaires, answers to optional demographic questions are missing. The response rate to our questionnaire lies at the lower end of the response rate for unsolicited surveys in the financial literature, for example, 7.5% in the survey among academics and public sector regulators by Stroebel and Wurgler (2021), less than 4% in the survey among academics and central bankers by Malovaná et al. (2023), 11% in the academic survey by Ambrocio et al. (2020), less than 5% in the retail investor survey by Giglio et al. (2021), and 4.3% in the institutional investor survey of McCahery et al. (2016). Securing a high number of survey responses is always a challenge. However, given that the topics covered in the survey are rather specific to the economics profession and the questionnaire is relatively comprehensive, we believe the resulting number of responses is reasonable. We conducted the survey anonymously to increase the likelihood of participation and to facilitate honesty while answering.

Sample selection bias should be a concern for any such survey. In our case, the main concern was that those more interested or knowledgeable in climate finance might be more likely to fill out the questionnaire. Depending on the question, this selection bias is not entirely unhelpful, and for most questions, one might prefer the views of the best informed over those of the overall population. A bigger concern would be if only the environmentally aware or those optimistic about climate solutions filled out the questionnaire. To explore whether such selection might bias our results, we collected the respondents' self-reported contributions to reducing the carbon footprint and their opinions about climate change and the search for a solution, among other demographic and socioeconomic characteristics. We then examined whether the responses differed in these dimensions.

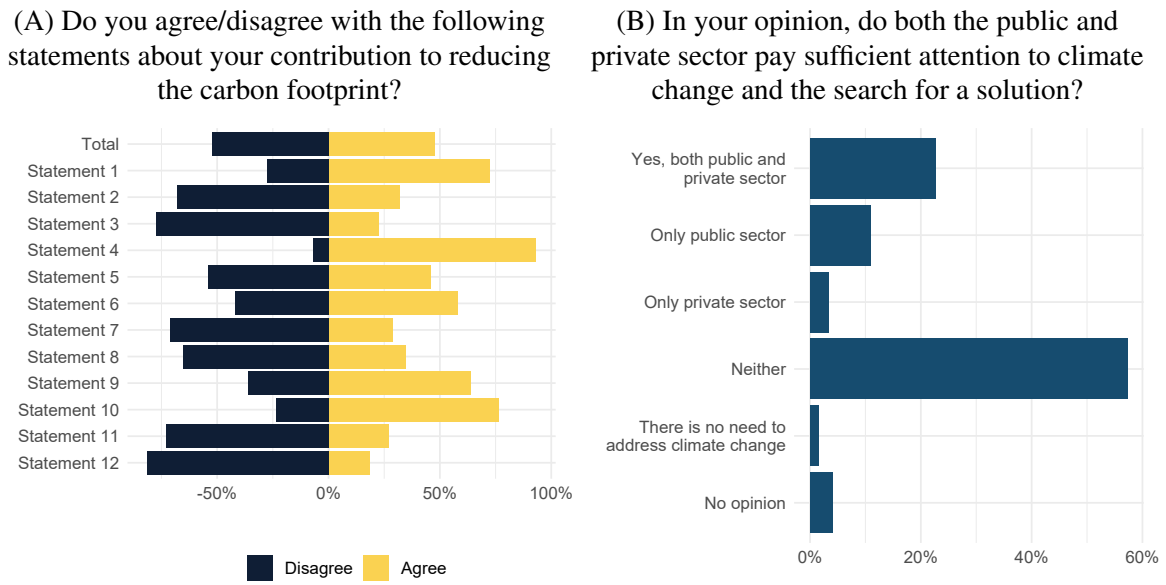
Reassuringly, the distribution of respondents is fairly even between those who contribute and those who do not contribute to reducing the carbon footprint (for example, through consumption behavior,

[2] For more details on the construction of our list of emails, see Malovaná et al. (2023).

[3] The majority of the remaining 280 questionnaires, which were started but not submitted, were abandoned by the respondents at an early stage. As such, they do not provide significant additional information, and we did not include them in the analysis.

financial decisions, and environmental activism; refer to Panel A of Figure 2). Only around 30% indicate that their job position is directly or indirectly related to combating climate change, reducing the carbon footprint, or advocating for relevant activities (Statement 7). Moreover, nearly 60% believe that neither the public nor the private sector pays adequate attention to climate change and the pursuit of a solution, while the remaining 40% agree that at least one of them does (Panel B of Figure 2).

Figure 2: Respondents' Environmental Consciousness and Views on Climate Change and Solutions



Note: The table shows the distribution of answers to two questions regarding the respondents' environmental consciousness (Panel A) and opinions on climate change and the search for a solution (Panel B). Statement 1: "I primarily walk or use public transport, a bicycle and/or an electric car/scooter for commuting." Statement 2: "I am vegetarian/vegan, or I limit my meat/dairy intake significantly." Statement 3: "My house/apartment is equipped with solar panels, heat pumps or other alternative sources for electricity/cooling/heat (at least partially)." Statement 4: "I recycle most of my waste and/or I actively try to minimize my waste." Statement 5: "When travelling, I actively consider my carbon footprint and, for example, reduce the number of flights I take." Statement 6: "I actively try to reduce my consumption for environmental reasons." Statement 7: "My work position relates directly or indirectly to fighting climate change or reducing the carbon footprint, or advocating for activities leading to that." Statement 8: "In the last five years, I have given money to an environmental group, taken part in a climate protest, or signed an environmental petition." Statement 9: "I have voted for political parties supporting environmental/green policies in elections." Statement 10: "I actively educate myself independently or in my institution in the area of environmental protection/climate change." Statement 11: "I invest in (e.g. hold shares of) environmentally sustainable companies." Statement 12: "I do not actively try to reduce my carbon footprint."

Although the questionnaire is anonymous, the survey platform allows us to obtain a list of respondents who have completed the questionnaire, without assigning any specific response to a particular respondent.[4] To better understand who responded to our survey and the informativeness of the results, we sought additional information about these respondents. Specifically, we collected information from resumes, university websites, and personal websites about their home institution, position, and publication activity (Table 1). As for job position, almost a quarter of our respondents are university professors, mostly economics professors. An additional 10% are associate professors and 7% are assistant professors. Next, about 14% of the respondents hold a leading position, such as director, deputy director, or head. Almost 20% of the respondents work as (senior) economists

[4] We cannot assign a specific response to a specific questionnaire; we can only see who of the 10,000 respondents filled out the questionnaire. At the same time, we can see a list of only 262 respondents (out of the 286 included in the analysis) who answered all the questions and clicked the send button at the end of the questionnaire.

and an additional about 20% as (senior) researchers, advisors, or analysts. The remaining few respondents work as lecturers. If we focus on publication activity, more than three quarters of our respondents published their research in the top 25% of economics and finance journals (Q1). In addition, a fifth of the respondents published their research in at least one of the top 15 economics and finance journals. Furthermore, about 80% of our respondents published in economics or finance journals in the last three years, showing that our sample consists primarily of active researchers. The average and median period between the first and the last journal publication is 16.5 and 15 years, respectively, indicating that our respondents have solid research experience.[5]

Table 1: Respondents' Job Position and Publication Activity

Job position (%)	
Professor	24
Associate Professor	7
Assistant Professor	10
Lecturer	5
Director, Deputy Director, or Head	14
(Senior) Economists	20
(Senior) Advisors	5
(Senior) Researchers	9
(Senior) Analysts	7

Publication activity (%)	
Top 25% journals (Q1)	76
Top 15 journals	19
Publication during the last three years (2020–2022)	76

Years between first and last publication	
Average	16.5
Median	15.0

Note: The table presents a breakdown of the respondents by their characteristics collected from resumes, university websites, and personal websites about their home institution, position, and publication activity. The breakdown is based on 262 out of the 286 respondents, for whom we were able to collect additional information. To classify a journal as Q1, we used the journal rank provided by the Scimago website. The top 15 economics and finance journals are QJE, AER, JPE, Journal of Finance, Econometrica, JFE, JEL, JEP, RFS, REStud, REStat, AEJ: Macroeconomics, AEJ: Applied Economics, JME, JEconGrowth. We created this list as a cross between the past and present journal rank on the Scimago and IDEAS/RePEc websites.

Table 2 contains summary statistics of the demographic information reported by the survey participants. Half of our respondents come from academia, another 36% from central banks, and the remaining 14% from other institutions. Regarding job position, researchers predominate over non-research professionals in our sample. Naturally, the vast majority of the researchers (71%) work at universities, followed by central banks (24%). Furthermore, the respondents working in central banks are divided relatively evenly between researchers (44%) and non-researchers (56%).

Regarding location, the respondents reside mainly in Europe – both the North-West (37%) and the South-East (33%). About 12% come from North America and 10% from the rest of the world. The respondents are distributed relatively evenly by their environmental awareness, with about 45% being more environmentally conscious than the other 55%.[6] In terms of political typology, most of the respondents would describe themselves as right-wing and liberal.

[5] We offer a comparison with a related study by Stroebel and Wurgler (2021), who surveyed professors from the top 100 finance departments, among others. These departments were chosen based on their research publications from 2010 to 2020 in the Journal of Finance, Journal of Financial Economics, and Review of Financial Studies. According to this criterion, approximately 6% of our respondents work in these top finance departments. We thus cover a more diverse sample of respondents than Stroebel and Wurgler (2021).

[6] We evaluate the respondents' environmental awareness based on their self-reported personal contribution to reducing the carbon footprint. Specifically, we consider a respondent to be environmentally conscious if the number of her agreeing answers to question (e) in the demographic part of the questionnaire is higher than the number of disagreeing answers.

Table 2: Composition of Survey Respondents

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Location (%)																
N&W Europe	37	100	0	0	0	43	38	12	40	38	52	29	40	37	49	39
S&E Europe	33	0	100	0	0	28	45	20	32	43	21	39	38	32	31	35
Northern America	12	0	0	100	0	15	6	12	13	11	15	10	13	11	14	11
ROW	10	0	0	0	100	12	8	8	12	6	10	10	7	14	4	11
Institution (%)																
University	50	58	43	67	61	100	0	0	71	13	58	46	52	57	55	51
Central Bank	36	37	49	18	29	0	100	0	24	71	33	37	40	39	35	43
Other	14	5	9	15	11	0	0	100	5	16	9	17	8	4	10	6
Position (%)																
Researcher	65	71	63	73	82	92	44	22	100	0	70	63	73	68	69	70
Non-researcher	29	29	37	27	18	8	56	32	0	100	30	28	27	32	31	30
Environmentally conscious (%)																
Yes	45	57	39	52	43	48	46	30	46	51	100	0	54	37	61	43
No	55	43	61	48	57	52	54	70	54	49	0	100	46	63	39	57
Political typology (%)																
Right	46	50	53	52	32	48	50	28	51	44	58	40	100	0	65	54
Left	34	34	33	33	50	38	37	10	35	38	26	38	0	100	31	44
Authoritarian	18	24	17	21	7	20	17	12	19	20	24	14	25	16	100	0
Libertarian	59	63	64	58	64	61	71	25	64	62	58	60	69	77	0	100

Note: The percentage breakdown in the table should be read in columns in blocks. The total number of respondents is 286. Each respondent answered each of the first ten (climate) questions, but not all of the demographic and background questions. The table shows the distribution among all the respondents (even if they did not answer some of the demographic questions); therefore, the sum in each block may not always be 100%.

3. Bird's Eye View of Survey Results

The survey consists of ten questions, which we categorize into five thematic groups that we examine in the following five sub-sections. To summarize and compare the respondents' opinions effectively, we plot the percentage shares of the responses for the full sample alongside the quantified mean responses for various subgroups of respondents based on their characteristics.

Given that the answer options in our questionnaire are verbal, we have to convert them to numerical values. We quantify the response options on a discrete scale between -1 and 1, with positive values assigned to responses that agree or are positive in some other sense (e.g., "increase", "overvalued" or "achievable"). On the other hand, we assigned negative values to responses that disagree or are otherwise negative (e.g., "decrease", "undervalued" or "not achievable"). The average of these numerical values (the quantified mean responses) then gives us information about the average opinion on a given question and allows us to compare the answers to individual questions as well as the opinions of selected groups of respondents.

Furthermore, we conduct two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to determine if there are important differences between respondent groups. Based on these tests, we discover that environmental awareness, measured as the respondents' self-reported contribution to reducing the carbon footprint, is the most significant factor contributing to variations in the responses. This is followed by the respondents' roles (researcher vs. non-researcher) and affiliations (university, central bank, other). As a result, we display the quantified mean responses for these groups to emphasize the most crucial differences.

We summarize the quantification of the individual answers in the appendix. The appendix also contains a detailed overview of the percentages of all the respondents' answers across various characteristics and the full tables of the quantified mean responses.

3.1 Is the Transition to a Low-Carbon Economy an Opportunity or a Risk?

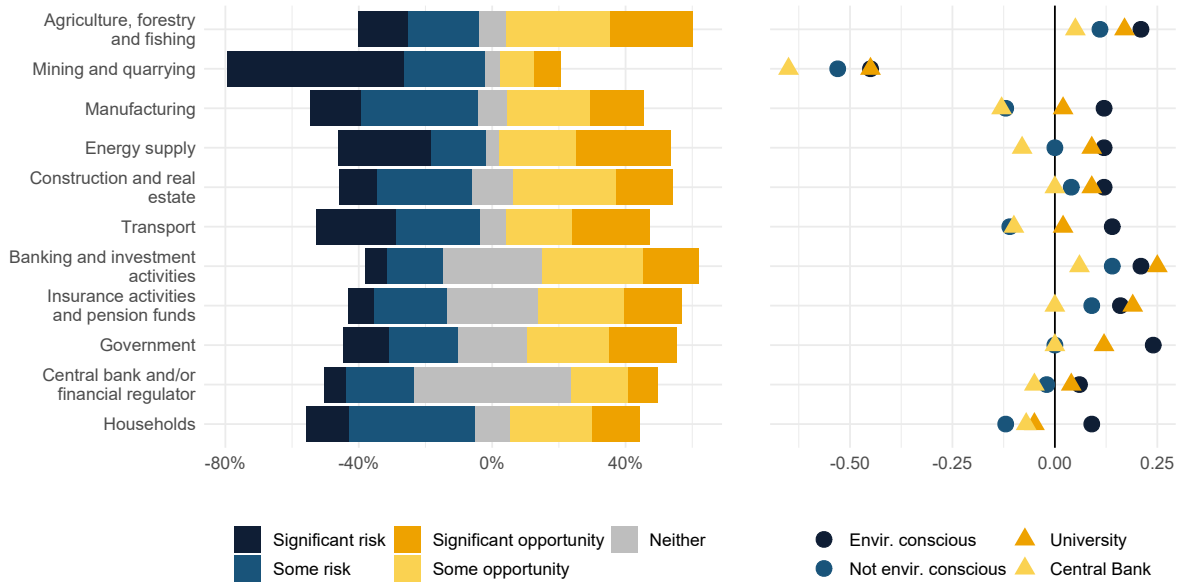
Numerous studies have confirmed that climate change reduces well-being by negatively affecting the economy's future potential growth and labor productivity and diverting resources from investment in productive capital to climate change adaptation (Dafermos et al., 2018; IMF, 2018; Burke and Emerick, 2016; Burke et al., 2015). Different regions and industries have different degrees of sensitivity to climate change (NGFS, 2018; OECD, 2015). Agriculture and carbon-intensive industries are often cited as the most affected due to both physical risks from climate events and transition risks from tightening climate change policies. However, financial institutions are also increasingly exposed to both categories of risks. If not anticipated, materialization of these risks may potentially lead to significant revaluation losses on financial assets (Dietz et al., 2016).

Climate change and the transition to a low-carbon economy can also provide opportunities. Tightening environmental regulations can induce efficiency and encourage innovations that help improve commercial competitiveness (Zeqiraj et al., 2020). This is the "Porter Hypothesis," which was formulated in the mid-1990s (Porter and Van Der Linde, 1995). We are already seeing some sectors developing rapidly, such as research into new energy sources, carbon capture and storage systems, new types of energy storage systems, including batteries, and new types of building

materials (for a detailed review, see, for example, Napp et al., 2017).[7] The new technologies also provide an opportunity for financial market outreach and expansion. The funding of the transition to a low-carbon economy may partially compensate for the negative impact of the risks mentioned above.[8]

In our questionnaire, we asked the respondents to evaluate whether the transition to a low-carbon economy is an opportunity or a risk (significant or some) for different financial and non-financial sectors (Figure 3). On average, the respondents recognize the transition to a low-carbon economy as an opportunity for the financial sector (both banks and non-banks, such as investment funds and insurance and pension companies) and agriculture, forestry, and fishing. On the other hand, the respondents clearly recognize the transition as a risk for mining and quarrying. For the rest of the sectors, the respondents are fairly evenly divided between those recognizing opportunities and those recognizing risks, bringing the quantified mean response close to zero.

Figure 3: Is the Transition to a Low-Carbon Economy an Opportunity or a Risk for the Following Sectors?



Note: The left panel presents the percentage breakdown of all the respondents' answers. The right panel shows the quantified mean responses of selected groups of respondents. The answers to this question were quantified as follows: significant opportunity (1); some opportunity (0.5); neither (0); some risk (-0.5); significant risk (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in the appendix.

Regarding cross-sectional heterogeneity, the opinions are more or less consistent across the respondents' locations. However, the opinions differ concerning the respondents' professional roles. Specifically, respondents from central banks and those working in non-research positions are generally more pessimistic, recognizing more risks than opportunities across all sectors (light yellow symbols, right panel). On the other hand, respondents from universities and researchers are

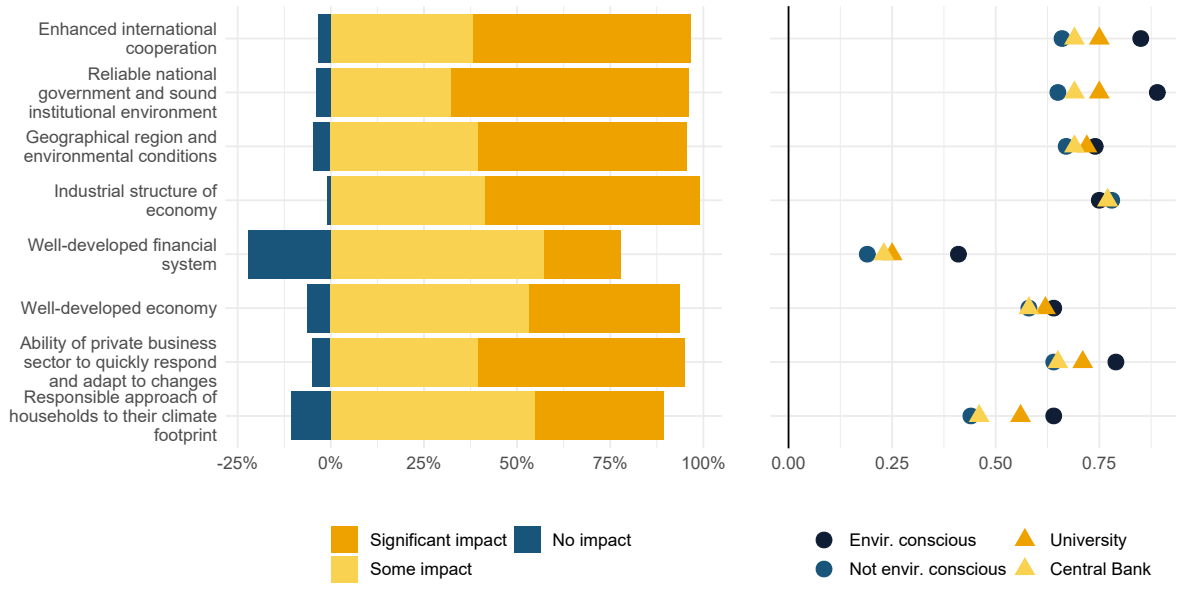
[7] An increase in temperatures in some polar areas could also provide additional agricultural land and access to the exploitation of raw materials that was not possible before.

[8] If we do not sufficiently consider the benefits of climate mitigation, the current climate commitments may not be sufficient (Krogstrup and Oman, 2019). The benefits of climate policies may include, for example, better health through reduced air pollution, green innovation supporting economic growth, increased energy security, and reduced climate-related migration (Heine and Black, 2018; Arezki et al., 2016; Parry et al., 2015).

more optimistic, their quantified mean response being more positive across all sectors. The difference between these two groups of respondents is statistically significant, especially for the financial sector, but to a lesser extent for other sectors as well. Another characteristic that plays a vital role is whether the respondent is considered to be environmentally conscious. Those categorized as more conscious are generally more optimistic, i.e., recognizing the transition as more of an opportunity than a risk across all sectors (dark blue symbols, right panel).

As an accompanying question to the previous one, we asked what impact the selected factors will have on the transition to a low-carbon economy in a given country or region (Figure 4). On average, most of the listed factors received high scores, identifying them as significant influences. The respondents attach the greatest weight to the industrial structure of the economy, reliable national government, a sound institutional environment, and enhanced international cooperation. They also rank highly the geographical location and overall environmental conditions and the ability of the private business sector to respond and adapt to changes quickly. On the other hand, they see a lower influence of households' approach to their carbon footprint and financial system development, although not a negligible one. The heterogeneity among the respondents is driven primarily by their environmental consciousness, with more environmentally conscious individuals placing greater importance on the listed factors and less environmentally conscious respondents more frequently choosing options indicating some or no impact (dark vs. light blue symbols, right panel).

Figure 4: What Impact Will the Following Factors Have on the Transition to a Low-Carbon Economy in a Given Country or Region?



Note: The left panel presents the percentage breakdown of all the respondents' answers. The right panel shows the quantified mean responses of selected groups of respondents. The answers to this question were quantified as follows: significant impact (1); some impact (0.5); no impact (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in the appendix.

3.2 How Important Should the Contributions and Responsibility of Different Sectors Be?

To be successful and timely, the transition to a low-carbon economy will require not only changes in relative prices and large-scale public and private investment in new technologies and practices, but also changes in consumer behavior, production, land use, and agricultural processes (IPCC, 2018). Fiscal policy naturally offers itself as one of the central policies for this transition, as it has a wide range of instruments at its disposal. Carbon pricing policies, such as carbon taxes and cap-and-trade systems, are critical to any successful climate mitigation strategy. However, the cost of carbon emissions is highly uncertain and extremely difficult to quantify (Barnett et al., 2020; Gollier, 2012). Nevertheless, carbon taxes and emissions trading schemes seem to effectively reduce carbon emissions and generate significant revenues for the national budget (Farid et al., 2016). Carbon pricing then motivates private firms to innovate more in clean technologies (Aghion et al., 2016).

Financial flows play a vital role in transitioning to a low-carbon economy, as they drive technological transformations. Public investment is necessary, but private investment in production capacity, infrastructure, and research and development is crucial. Financial policy measures that may be needed to change the structure and flow of financial assets could aim at changing the demand for green and carbon-intensive investments and relative prices. Monetary and regulatory policy instruments can also play a role in promoting private climate finance. Some options are within most central bank mandates (consideration of climate risks in asset purchase programs or eligible collateral). In contrast, others may be more controversial (green asset purchases, credit allocation policies, and adjustment of monetary policy frameworks). Financial and regulatory measures can, for example, consider the possible underestimation of physical and transitional risks and mitigate deficiencies in the transparency of climate risk reporting in financial markets and regulatory prudential frameworks.

The existing literature offers little on the appropriate mix of climate mitigation policies. However, it points out that policy coordination will be crucial in this regard (Fay et al., 2015). This view is consistent with some recent studies that deal with the general principles of macroeconomic policy coordination. For example, Bernanke (2019) states that central banks should coordinate their policies with the government in certain situations, which would not necessarily be inconsistent with maintaining central bank independence. The unprecedented nature and scale of the climate policies needed could justify this approach (Rodrik and Sabel, 2019; WB, 2018).

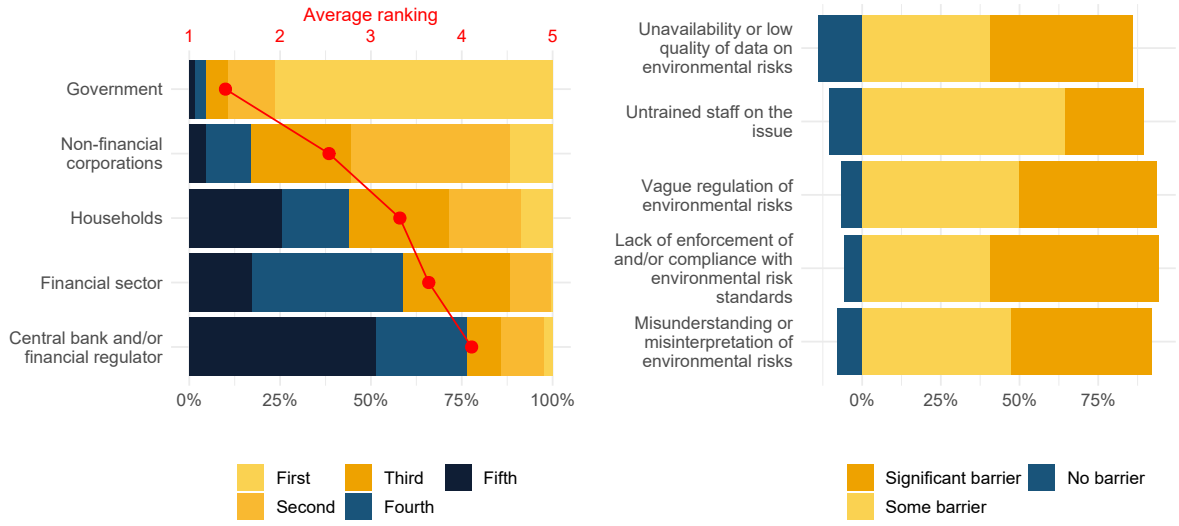
Reflecting on this complex and vital issue, we asked our respondents how significant the contribution and responsibility of selected sectors – government, non-financial corporations, households, financial industry, and central bank/financial regulator – should be in the transition to a low-carbon economy. Specifically, we asked them to rank the sectors from the most to the least important. In a follow-up question, we asked the respondents what were the most effective measures taken by the sector they ranked first. They were allowed to choose up to three listed measures (see the appendix for a detailed list).

The vast majority of the respondents believe that government should be the primary sector responsible for, and the main contributor to, the low-carbon transition (the left panel of Figure 5). About 77% of the respondents ranked government first, while only 13% ranked it second, usually after non-financial corporations. Likewise, the respondents were consistent in their opinion of which government measure is the most effective in supporting the transition. More than 60% of respondents stated that carbon taxes are the most effective. At the same time, an additional 40% voted for cap-and-trade systems and regulatory policies for the non-financial sector, such as limits on car emissions. Only 18% believe enforcing disclosures of climate-related activities could be an

effective measure, and only 8% would opt for issuing sovereign green bonds. These views are relatively consistent across the respondents' characteristics.

The second most important stakeholder contributing to mitigating the impact of climate change should be non-financial corporations, most respondents believe. About 45% ranked this sector second after government, while an additional 28% ranked it third, and 12% ranked it first. Reducing firms' carbon footprint and investing in innovation in climate technologies are considered the most effective measures taken by non-financial firms. As for the remaining stakeholders, households and the financial sector ranked, on average, third and fourth, respectively, while the central bank and the financial regulator ended at the bottom of the list.[9] We do not see much heterogeneity among the respondents. Interestingly, respondents from central banks ranked the central bank lower and non-financial corporations higher than the other respondents.

Figure 5: How Important Should the Responsibility of Different Sectors Be, and What Are the Barriers to the Assessment and Mitigation of Environmental Risks?



Note: The figure presents the percentage breakdown of all the respondents' answers. The left panel presents the distribution of answers to the following question: "How important should the contributions and responsibility of the following stakeholders be in the transition to a low-carbon economy? Please rank the following options from the most important to the least important." The right panel presents the distribution of answers to the following question: "Which of the following are barriers for the public and/or private sector in the assessment and mitigation of environmental risks?"

As an accompanying question to the previous two, we asked what could be the barriers for the public and private sectors in the assessment and mitigation of environmental risks. We gave the respondents five options (the right panel of Figure 5). These options received, on average, very similar ratings, with quantified mean responses ranging between 0.45 and 0.66. The respondents identified lack of enforcement of and compliance with environmental risk standards as the most significant barrier, followed by vague regulation of environmental risks and misunderstanding and misrepresentation of environmental risks. Unavailability or low quality of data and untrained staff are perceived as less severe barriers. As for heterogeneity, we can see some statistically significant differences among the groups of respondents, but with no clear pattern and interpretation.

[9] Because the respondents could choose the most effective measures only for the sector they ranked first, we limited the potential actions the last three sectors could take. However, the most frequent option chosen for households was to lower their carbon footprint.

3.3 Bank Risks, Asset Valuation, and Portfolio Reallocation – Does the Low-Carbon Transition Matter?

As we mentioned earlier, the financial sector and its behavior will play a vital role in the impact of climate change on the global economy and the effectiveness of climate mitigation policies. For instance, financing projects that will speed up the transition to a low-carbon economy will make alternatives to fossil fuels more attractive (Mazzucato and Perez, 2014; Krueger et al., 2020). However, financial institutions are also increasingly exposed to both physical and transition risks, which may potentially lead to significant revaluation losses on financial assets. We can therefore expect reallocation from financial investments with high environmental risks to more climate-friendly investments with lower risks. Various events may trigger such reallocation, such as the announcement of new climate policies, increasing public awareness, and large unexpected shocks, such as the COVID-19 pandemic or the war in Ukraine.

Carbon risk, or the financial risk associated with carbon emissions, affects carbon-intensive firms due to the anticipated adoption of climate policies. For example, some fossil fuel firms may face devaluation if they cannot utilize their existing fossil fuel reserves (McGlade and Ekins, 2015). However, carbon risk extends beyond fossil fuel companies to any firm with a high carbon footprint. A transition risk premium has been observed in equity and options markets, particularly during periods of heightened climate change awareness (Ilhan et al., 2021; Bolton and Kacperczyk, 2021; Ramelli et al., 2021b). Additionally, Kleimeier and Viehs (2016) found that firms voluntarily disclosing carbon dioxide emissions enjoy lower credit costs than their non-disclosing counterparts.

The existing literature confirms that climate-related policy events, such as the Paris Climate Agreement of 2015 (COP21) and the UN Climate Action Summit in 2019 and related protests, affect the financial sector's decisions. COP21 increased banks' awareness of carbon risk (Krueger et al., 2020) and drew their credit away from polluting firms (Reghezza et al., 2022). Furthermore, Delis et al. (2018) show that banks have begun pricing the risk of stranded fossil fuel reserves after COP21. The first global climate strike in March 2019[10] caused a decrease in the stock prices of carbon-intensive firms and led to a downgrade of longer-term earnings forecasts on carbon-intensive firms (Ramelli et al., 2021a).

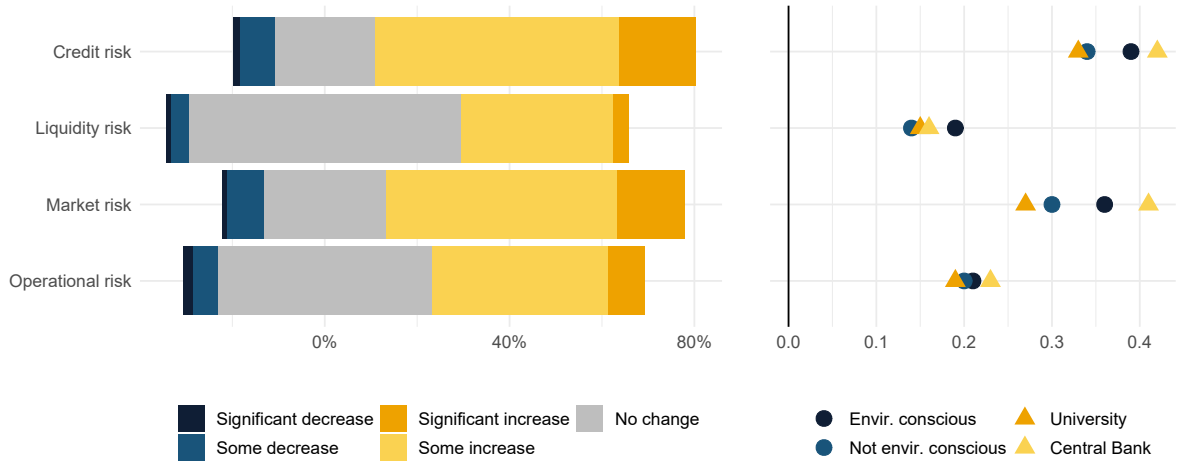
Regarding the COVID-19 pandemic and the war in Ukraine, we still have only limited evidence of their long-term impact on the transition to a low-carbon economy and sustainable investing. Such unexpected shocks can cause governments and investors to lose sight of their environmental awareness and reevaluate their climate change policy commitment, which inevitably increases (climate policy) uncertainty. Recent studies show that higher political uncertainty is associated with lower equity returns and higher volatility (Brogaard and Detzel, 2015; Brogaard et al., 2020). However, some studies show that sustainable stocks experienced lower volatility (Shields et al., 2021) and higher resilience (Engelhardt et al., 2021; Albuquerque et al., 2020) during the COVID-19 period. There are several possible reasons why investors in turbulent times prefer to hold shares of more sustainable firms and limit their exposure to stocks of less sustainable firms. For instance, investors may place higher trust in sustainable firms (Lins et al., 2017), be more loyal to them (Albuquerque et al., 2020; Broadstock et al., 2021), or simply have a higher preference for sustainable funds (Hartzmark and Sussman, 2019; Riedl and Smeets, 2017).

[10] The UN Climate Action Summit of 2019 and the accompanying global strikes dramatically increased public awareness and attention to climate activism.

In what follows, we reflect on the existing literature to examine the respondents' views on the relationship between the financial sector and climate mitigation policies. We focus on their expectations regarding banks' risks, their assessment of green financial asset valuations, and whether financial institutions have altered their asset allocations in response to particular (climate policy) events.

Regarding banks' risks, we asked how the transition to a low-carbon economy will affect credit, liquidity, market, and operational risks. On average, the respondents expect a modest increase in all bank risks, with credit and market risks increasing more than operational and liquidity risks (Figure 6). About 50% of the respondents expect credit and market risks to increase somewhat, while approximately 20–25% anticipate no change. Conversely, 55% and 43% foresee no change in liquidity and operational risks, respectively, and around one-third expect a slight increase in these risks. These views remain consistent across the respondents' characteristics, except for environmental consciousness and professional roles, where more environmentally conscious respondents (dark blue symbol, right panel) and central bankers (light yellow symbol, right panel) expect a larger increase in banks' risks due to the transition, with a statistically significant difference for market and liquidity risks.

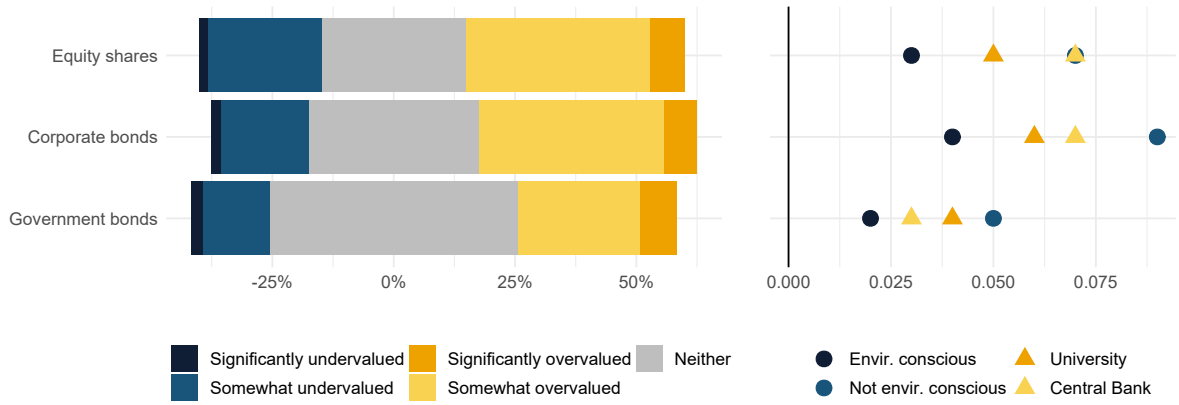
Figure 6: How Will the Transition to a Low-Carbon Economy Affect Banks' Risks?



Note: The left panel presents the percentage breakdown of all the respondents' answers. The right panel quantifies the mean responses of selected groups of respondents. The answers to this question were quantified as follows: significant decrease (-1); some decrease (-0.5); no change (0); some increase (0.5); significant increase (1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in the appendix.

Next, we asked how the respondents would generally describe the market valuation of green financial assets, i.e., assets that investors perceive as environmentally sustainable. According to Figure 7, the respondents, on average, believe that green financial assets (equities, corporate bonds, and government bonds) are more or less correctly valued or only slightly overvalued. We found this opinion consistent across the respondents' characteristics, except for environmental consciousness. Less environmentally conscious respondents are more likely to perceive green financial assets as overvalued, with a statistically significant difference for equities and corporate bonds but not for government bonds.

Figure 7: How Would You Generally Describe the Market Valuation of Green Financial Assets?

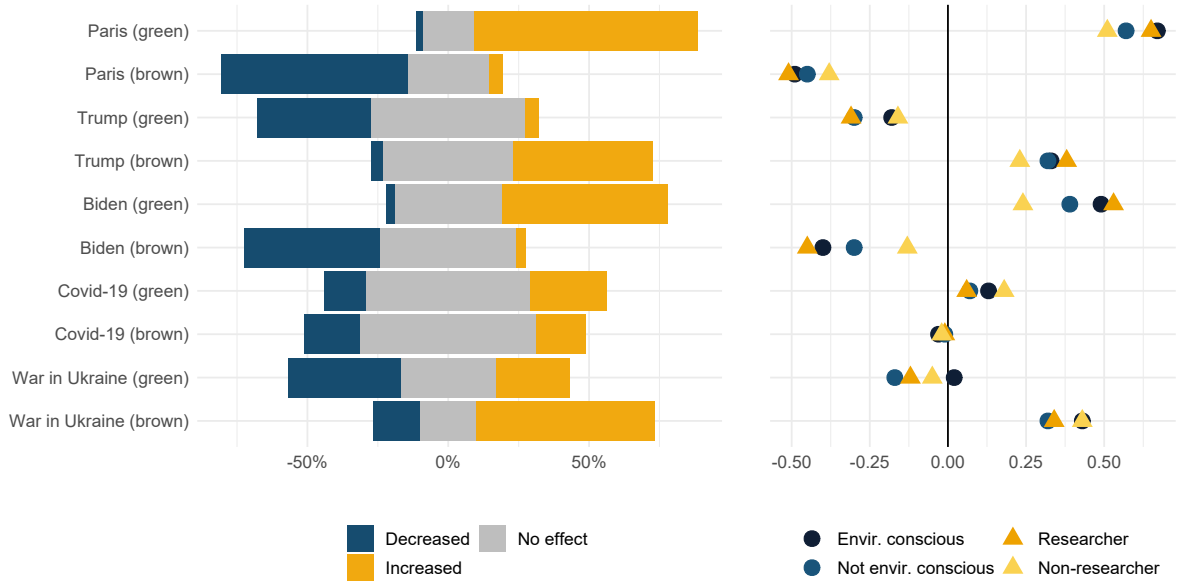


Note: The left panel presents the percentage breakdown of all the respondents' answers. The right panel quantifies the mean responses of selected groups of respondents. The answers to this question were quantified as follows: significantly undervalued (-1); somewhat undervalued (-0.5); neither (0); somewhat overvalued (0.5); significantly overvalued (1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in the appendix.

Last but not least, we asked how financial institutions likely altered their exposure to green and brown firms in response to specific climate policy events (COP21, President Trump's withdrawal from COP21, and President Biden's rejoining of COP21), the COVID-19 pandemic, and the war in Ukraine. As shown in Figure 8, the respondents' beliefs generally align with intuition for climate policy events. They assume that exposure to green firms increased following COP21 and President Biden's announcement, and decreased after President Trump's withdrawal. Conversely, exposure to brown firms is believed to have decreased after COP21 and President Biden's announcement, and increased following President Trump's withdrawal.

Interestingly, contrasting expectations exist for the impact of the COVID-19 pandemic and the war in Ukraine. The respondents believe the pandemic had a neutral or slightly positive effect on the transition, increasing exposure to green firms and reducing exposure to brown firms, whereas the war in Ukraine is expected to have a strongly negative impact, with a prevailing belief that exposure to brown firms has increased and/or will increase. The respondents' opinions significantly differ based on their environmental awareness and professional roles, with more environmentally conscious respondents (dark blue symbol, right panel) and researchers (orange symbol, right panel) expecting more pronounced portfolio reallocation after climate events.

Figure 8: How Have Financial Institutions Changed Their Exposure to Green and Brown Non-Financial Corporations in Response to the Following Events?



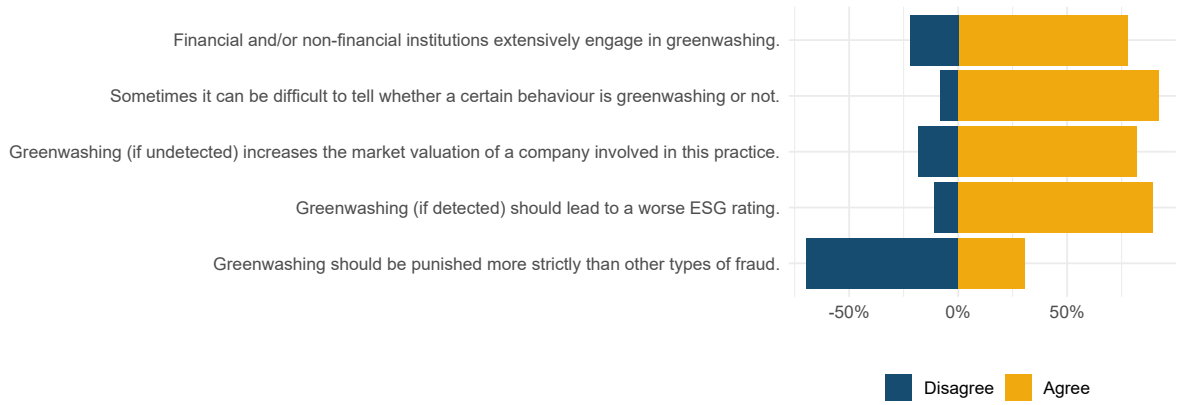
Note: The left panel presents the percentage breakdown of all the respondents' answers. The right panel quantifies the mean responses of selected groups of respondents. The answers to this question were quantified as follows: significant decrease (-1); some decrease (-0.5); no change (0); some increase (0.5); significant increase (1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in the appendix.

3.4 How Big is the Problem of Greenwashing?

We usually understand greenwashing to mean a form of marketing used deceptively to convince the public that an organization's products, goals, and policies are environmentally friendly. With the increasing demand for green products and responsible investments in recent years, some companies may have resorted to greenwashing. The literature shows that better ESG performance improves firm reputation (Martínez-Ferrero et al., 2016), access to capital (Cheng et al., 2014; El Ghoul et al., 2011), and firm value (Ferrell et al., 2016). Although the proportion of companies reporting ESG activities has grown, ESG data in sustainability reports often lack auditing. As for the extent of the problem, for example, Dumitrescu et al. (2022) show that 24% of mutual funds in the US market engage in greenwashing. However, the authors stress that while retail investors do not differentiate between greenwashers and genuine ESG funds, institutional investors do. Retail investors' susceptibility to greenwashing may be due to their non-monetary preference for sustainability (Kleffel and Muck, 2022). Despite the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations, many authors argue for better ESG disclosure regulations, particularly for funds targeting retail investors (Bingler et al., 2022; Arouri et al., 2021).

To gauge our respondents' opinions on the prevalence and significance of greenwashing, we asked them to agree or disagree with various statements. The results in Figure 9 reveal that 90% find it difficult to recognize greenwashing, 81% believe undetected greenwashing increases a company's market valuation, and 71% think detected greenwashing should lead to a worse ESG rating. While 60% feel that institutions extensively engage in greenwashing, only 26% support stricter punishment for it compared to other types of fraud.

Figure 9: Do You Agree With the Following Statements Regarding Greenwashing?



Note: The figure presents the percentage breakdown of all the respondents' answers.

3.5 How Will the COVID-19 Pandemic and the War in Ukraine Affect the Achievement of Climate Goals?

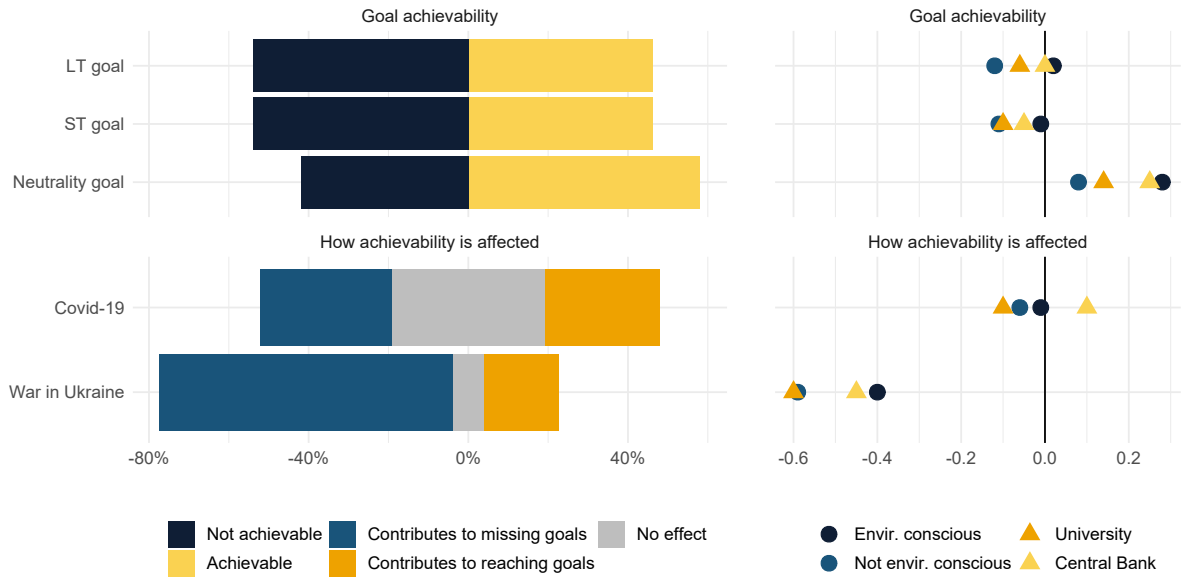
As mentioned previously, unanticipated shocks such as the COVID-19 pandemic and the war in Ukraine heighten economic and political uncertainty, including climate policy uncertainty. Consequently, predicting the long-term financial impacts of these events on the achievement of climate goals and a successful low-carbon transition is challenging. To put all the other questions into a broader context, we asked the respondents to evaluate the achievability of climate policy goals and the impact of the COVID-19 pandemic and the war in Ukraine on the ability to achieve these goals. The answers should help us see if our respondents perceive the existing climate goals as realistic in light of recent developments. We were interested in the respondents' opinions on the attainability of three goals: (i) the long-term goal of keeping the increase in the global average temperature to well below two degrees Celsius above pre-industrial levels, (ii) the short-term goal of reducing emissions by more than 50% by 2030 (relative to 1990 levels for the EU and relative to 2005 levels for the US), and (iii) the goal of climate neutrality by 2050 (EU and US goal).

The results in Figure 10 show that respondents are generally more optimistic about achieving the climate neutrality goal than the other two goals. Specifically, about 55% consider it possible to achieve climate neutrality, while about 40% do not. On the other hand, 51% perceive the other two goals as unattainable and about 44% as attainable. All in all, our respondent pool is split roughly half and half on the issue of climate goals. This opinion is relatively consistent across the respondents' characteristics, with a few exceptions. More environmentally conscious respondents (dark blue symbol, right panel) and central bankers (light yellow symbol, right panel) are more optimistic about the attainability of climate goals, though the difference is not statistically significant.

Regarding the impact of the COVID-19 pandemic and the war in Ukraine, the respondents, on average, expect the war in Ukraine to contribute to missing the climate goals. In contrast, the COVID-19 pandemic is expected to have a limited to no effect. There are notable differences in opinion between respondents from different regions. Respondents in South and East Europe are generally more pessimistic about the impact of the war in Ukraine, with 78% stating that the war will contribute to missing the climate goals. This result is expected, given the high energy demand of industry in these regions. On the other hand, the impact of the COVID-19 pandemic on

climate goals is perceived more negatively in North America than in other regions. Surprisingly, respondents from central banks are more optimistic about the impact of both COVID-19 and the war in Ukraine relative to their peers, although they still expect the war to contribute to missing the goals. Environmentally conscious respondents are also, on average, more optimistic, consistent with the pattern seen for other questions.

Figure 10: Are the Following Goals Achievable? How Will the COVID-19 Pandemic and the War in Ukraine Affect the Achievement of These Goals?



Note: The left panel presents the percentage breakdown of all the respondents' answers. The right panel quantifies the mean responses of selected groups of respondents. The answers to this question were quantified as follows. Goal achievability: achievable (1); not achievable (-1); no opinion (NA). How achievability is affected: contributes to reaching goals (1); no effect (0); contributes to missing goals (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in the appendix. LT goal: "Long-term goal of keeping increase in global average temperature to well below 2°C above pre-industrial levels." ST goal: "Reducing emissions by more than 50% by 2030 (relative to 1990 levels for EU and relative to 2005 levels for US)." Neutrality goal: "Climate neutrality by 2050 (EU and US goal)."

4. Empirical Analysis

In the previous section, we revealed the non-negligible heterogeneity of the respondents' answers with regard to their demographic and socioeconomic profiles. However, we only looked at these differences individually. In order to reveal underlying patterns based on multiple demographic characteristics, we perform a cluster analysis where we let the data "speak for itself" in terms of identifying related groups of respondents. This approach can uncover additional insights that might not be apparent when each variable is considered individually. We perform hierarchical agglomerative clustering and use different statistics to determine the number of clusters.[11] We use the respondents' demographic characteristics as inputs into the cluster analysis and identify four clusters, with 124, 77, 68, and 17 respondents, respectively. Table 3 compares the demographic characteristics of the respondents in the four clusters.

[11] We calculated different measures for the similarity of observations within clusters (compactness) and the dissimilarity of observations between clusters (separation). They all provide consistent results, which are available upon request.

Table 3: Cluster Analysis – Respondents' Characteristics

Predominant characteristics:	Cluster 1 Environmentally Unaware Researchers	Cluster 2 Environmentally Aware Researchers	Cluster 3 Central Bank Non-Researchers	Cluster 4 Authoritarian Central Bankers
Location (%)				
N&W Europe	31	44	31	76
S&E Europe	36	18	46	24
Northern America	6	22	13	0
ROW	9	16	7	0
Institution (%)				
Central Bank	27	12	68	88
University	54	84	13	12
Other	19	4	19	0
Position (%)				
Researcher	85	100	0	18
Non-researcher	0	0	100	82
Environmentally conscious (%)				
No	100	14	63	53
Yes	0	86	37	47
Political typology (%)				
Left-wing	40	18	38	41
Right-wing	34	69	44	35
Libertarian	60	57	75	0
Authoritarian	10	26	6	82
No. of respondents	124	77	68	17

Note: The table presents the percentage shares of the demographic characteristics in each cluster.

At first glance, it is evident that the division into clusters significantly reflects the respondents' environmental awareness and professional role. The first cluster is populated exclusively by respondents identified as being not environmentally conscious, while the second is populated mostly by respondents who are. The first two clusters are populated exclusively by researchers, who work mainly but not entirely at universities. The third cluster consists exclusively of non-researchers, who work mainly in central banks. We do not see such a sharp division based on other characteristics. This supports our previous finding that the respondents' environmental awareness and professional role are the most critical factors driving the heterogeneity. Therefore, as a next step, we establish testable hypotheses and formally examine the role of these characteristics in the context of all the respondents' characteristics. The two first hypotheses relate to these characteristics:

Hypothesis 1: Environmentally conscious respondents are generally more optimistic in evaluating the impact of the transition to a low-carbon economy while being aware of the risks.

Hypothesis 2: The professional role of the respondents systematically affects their opinion on the impact of the transition to a low-carbon economy.

On top of the respondents' characteristics, we hope to shed more light on the recorded heterogeneity stemming from the cross-dependency of the individual answers. To identify any

systematic patterns in the responses that go beyond demographic and socioeconomic characteristics, we take a two-step approach. Firstly, we evaluate the dependency between the responses to pairs of questions using Pearson's Chi-squared contingency coefficients and associated p-values. The contingency coefficient serves as a non-parametric counterpart to the correlation coefficient, specifically for categorical data, and quantifies the level of association between two variables on a scale of 0 (no association) to 1 (perfect association). However, unlike the correlation coefficient, the contingency coefficient can only determine the strength of the relationship and not its direction. Therefore, we use it to suggest associations between responses for generating testable hypotheses.

Secondly, to verify these hypotheses, we supplement the contingency analysis with a linear probability model in the following sub-sections, estimating the probability of participants answering two specific questions in a particular way, while controlling for other characteristics. This approach allows us to detect how the probability shifts (i.e., declines or rises) based on the various answer choices of the respondents. The appendix contains further information on the contingency coefficients.

The contingency analysis reveals that the respondents generally exhibit consistency in their opinions within one question. For example, they consistently perceive the transition to a low-carbon economy as a risk or opportunity across sectors. Similarly, they maintain coherence in assessing individual bank risks, the overvaluation of different asset classes, portfolio rebalancing in response to different events, and the achievability of different climate goals. To put it differently, if the respondents view one goal as attainable, they are likely to see others similarly, or if they expect changes in credit risk, they are likely to anticipate similar shifts in liquidity, market, and operational risk. We also identify a notable interdependence among certain question groups, such as between evaluating the low-carbon transition as a risk or opportunity and the expected change in banking risks. Additionally, we observe a dependence between the expected change in banking risks and portfolio reallocation, and between the views on the attainability of climate goals and the impact of COVID-19 and the war in Ukraine.

In terms of the direction of the dependence between the answers, two distinct lines of the respondents' views may emerge – a more optimistic perspective on climate issues and their solutions or a comparatively pessimistic view highlighting financial stability risk concerns. We do not directly measure the climate optimism of our respondents or the financial stability risks they perceive to be associated with the transition. However, we can derive this from a combination of patterns identified in their answers. For instance, we can assume that those more climate optimistic are more likely to perceive the transition to a low-carbon economy as an opportunity than a risk. We also expect these respondents to hold a rather more optimistic attitude toward the impact of the transition across multiple questions in our survey. Similarly, we can assume that respondents having financial stability risk concerns are more likely to perceive the transition as a risk and, at the same time, hold a more pessimistic view of other areas connected with the impact on the financial sector. Additionally, we expect these patterns to explain the variability in the answers on top of the respondents' demographic and socioeconomic characteristics, notwithstanding their environmental consciousness.

Based on these dependencies, we define two additional hypotheses to clarify the direction of the association between the responses. We then formally test the probability of answering pairs of questions in such a way that would be consistent with climate optimism (*Hypothesis 3*) and financial stability risk concerns (*Hypothesis 4*):

Hypothesis 3: Respondents who are more optimistic about the potential of climate solutions are more likely to have positive attitudes toward the transition to a low-carbon economy.

Hypothesis 4: Respondents who are more pessimistic about the potential of climate solutions are more likely to have financial stability concerns about the transition to a low-carbon economy.

In the next part, we test all four hypotheses formally using a linear probability model.

4.1 Is It All About Environmental Awareness?

We start by examining the first two hypotheses, which connect the respondents' opinions on the economic impact of the transition to their demographic and socioeconomic characteristics. We estimate the impact of these characteristics on the probability of specific answers according to equation (1).

$$BinaryAnswer_i^q = \alpha^q + \beta^q EnvinConscious_i + \gamma_1^q Position_i + \gamma_2^q Institution_i + \delta^q X_i + \varepsilon_i^q \qquad (1)$$

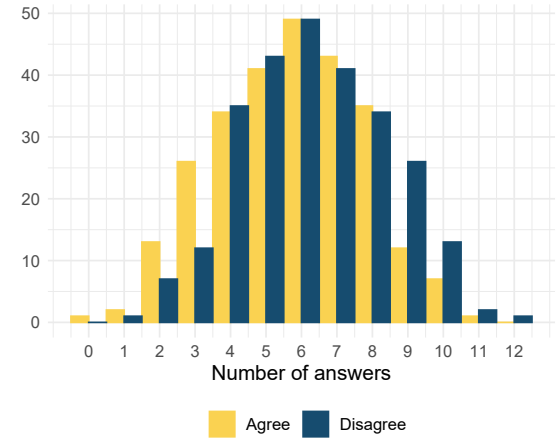
The dependent variable $BinaryAnswer_i^q$ is a binary indicator equal to one if the answer of respondent i to question q is "agree" or positive in some other sense (e.g., "increase", "overvalued" or "achievable"). In other words, responses that were assigned positive values in our calculation of the quantified mean response are now assigned a value of one. The variable $EnvinConscious_i$ is our measure of environmental consciousness, a characteristic that emerged as a statistically significant determinant in most questions. The variables $Position_i$ and $Institution_i$ are dummy-coded variables for the respondent's primary position (researcher vs. non-researcher) and institution (university, central bank, other). The vector X_i contains all the remaining dummy-coded demographic variables. We estimate the model only for selected questions where we have identified significant heterogeneity. Coefficient β^q allows us to verify *Hypothesis 1*, while coefficients γ_1^q and γ_2^q help us to evaluate *Hypothesis 2*.

In the previous sections, we divided our respondents into two groups based on their self-reported personal contribution to reducing the carbon footprint. For this purpose, we asked them to express whether they agreed or disagreed with twelve statements describing different ways of reducing the carbon footprint (e.g., through their consumption behavior, financial decisions, and environmental activism; see Panel A of Figure 11). For a detailed list of these statements, see the appendix. We defined a respondent as environmentally conscious if the number of her "agree" answers was higher than the number of "disagree" answers. We now take a different approach when constructing the variable $EnvinConscious_i$. The previous analysis shows that the simple division into two groups significantly affects the respondents' answers. We therefore now focus more on the intensity of this relationship and define the variable $EnvinConscious_i$ not as a binary indicator but as the number of "agree" responses minus the number of "disagree" responses. We then show the distribution of such answers in Panel B of Figure 11.

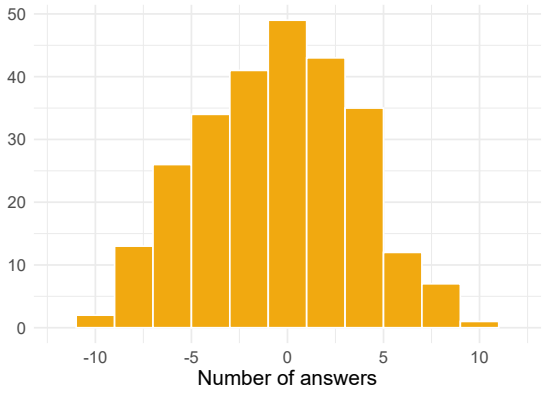
The results of the linear probability model are presented in Figure 12. Each sub-chart visually presents the estimated coefficient β^q on the relationship between the respondents' environmental consciousness and the quantified answer to question q together with 90% confidence intervals. The full regression results are given in the appendix.

Figure 11: Respondents' Contribution to Reducing the Carbon Footprint

(A) Number of "Agree" and "Disagree" Answers to Twelve Statements About Carbon Footprint Reduction



(B) Difference Between the Number of "Agree" and "Disagree" Answers



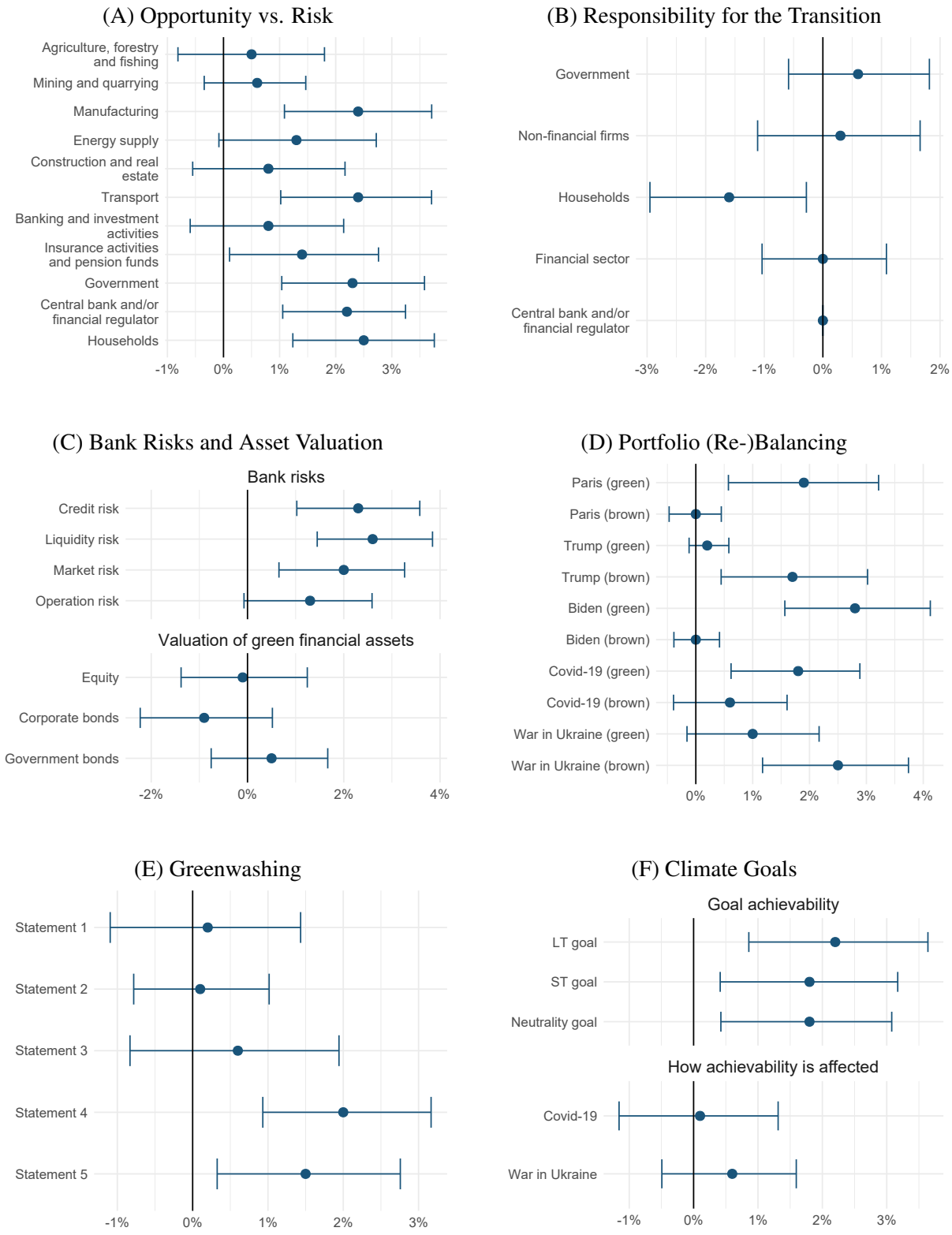
Note: The figure presents the distribution of answers to the question "Do you agree/disagree with the following statements about your contribution to reducing the carbon footprint?". Respondents were asked to rate twelve statements about their contribution to reducing the carbon footprint (e.g., through their consumption behavior, financial decisions, and environmental activism) and to answer whether they agreed or disagreed with these statements.

Firstly, the full regression results confirm that environmental awareness is the most crucial determinant of the differences in the respondents' opinions, with $EnvinConscious_i$ usually being the most significant determinant across all questions (*Hypothesis 1*). In section 3.1, we find that environmentally conscious respondents are generally more optimistic, as they are more likely to view climate protection policies as an opportunity than a risk. In Panel A of Figure 13, we show that this remains true across multiple industries even if we account for the "intensity" of this consciousness. Specifically, one more "agree" answer to one of the twelve statements about reducing one's personal carbon footprint translates to about a 1–2% higher probability of seeing the transition as an opportunity. Regarding responsibility for the transition, more environmentally aware respondents are more likely to rank the contribution of households lower than other respondents (Panel B). The ranking of other sectors, however, remains very similar across the majority of respondents, regardless of their characteristics.

Furthermore, more environmentally aware respondents are more likely to expect an increase in bank risks due to the transition to a low carbon economy (Panel C) and a stronger reallocation of financial assets between green and brown industries in response to specific (climate policy) events (Panel D). The opinion about the market valuation of green financial assets is not significantly affected by the respondents' environmental consciousness (Panel C). Regarding the statements about greenwashing, environmentally conscious respondents are more inclined to impose stricter penalties for greenwashing and are also more likely to concur that detected greenwashing should result in a lower ESG rating (Panel E). Last but not least, environmentally aware respondents are more likely to see climate goals as achievable (Panel F).

Secondly, the full regression results stored in the appendix confirm the important role of the respondents' profession in some questions, even though it turns out to be significantly much less frequent than environmental awareness (*Hypothesis 2*). Similarly to what we found in section 3, when we only looked at the respondents' characteristics individually, central bankers are more likely to identify the transition as a risk than an opportunity (Table D1) and expect an increase in bank risks in response to the transition (Table D2). They are also much less likely to punish greenwashing more strictly than other types of fraud (Table D4).

Figure 12: Linear Probability Model – Effect of Environmental Consciousness



Note: The figures present the regression results of the linear probability model in equation (1). Each sub-chart visually presents the estimated coefficient γ^q on the relationship between the respondents' environmental consciousness and the quantified answer to question q together with 90% confidence intervals. The full regression results are given in the appendix. The statements in Panel E read as follows. Statement 1: "Financial and/or non-financial institutions extensively engage in greenwashing." Statement 2: "Sometimes it can be difficult to tell whether a certain behaviour is greenwashing or not." Statement 3: "Greenwashing (if undetected) increases the market valuation of a company involved in this practice." Statement 4: "Greenwashing (if detected) should lead to a worse ESG rating." Statement 5: "Greenwashing should be punished more strictly than other types of fraud."

4.2 Climate Optimism vs. Financial Stability Risk Concerns

In the next step, we extend the right-hand side of equation (1) by including answers to additional questions from the survey so that we can study the relationship between pairs of those questions. This allows us to identify patterns in respondents' opinions that might be consistent with hypotheses 3 and 4. The extended specification is in equation (2).

$$BinaryAnswer_i^{q_m} = \alpha^q + \beta^q QuantifiedAnswer_i^{q_l} + \gamma^q X_i + \varepsilon_i^q \tag{2}$$

The dependent variable $BinaryAnswer_i^{q_m}$ remains a binary indicator equal to one if the answer of respondent i to question q_m is "agree" or positive in some other sense (e.g., "increase", "overvalued" or "achievable"). The new variable $QuantifiedAnswer_i^{q_l}$ is the answer of respondent i to question q_l quantified on a discrete scale between -1 and 1 according to Table B1 in the appendix, with "agree" or positive answers (e.g., "increase", "overvalued" or "achievable") being assigned positive values. The vector X_i contains all the dummy-coded demographic variables, including the respondent's environmental awareness and professional role. Similarly to equation (2), we estimate the model only for selected pairs of questions where we have identified significant cross-dependencies based on the contingency coefficient.

The results are shown in Figures 13 and 14.[12] Each sub-chart visually presents the estimated coefficients β_q of equation (2) together with 90% confidence intervals. The first figure shows the links between questions more in support of the climate optimism hypothesis (*Hypothesis 3*), while the second figure presents results more indicative of the opinions reflecting the financial stability risks associated with the transition to a low-carbon economy (*Hypothesis 4*).

Regarding climate optimism, we found a positive link between the perceived attainability of climate objectives and viewing the transition as an opportunity. Specifically, individuals who believe climate goals are achievable tend to see the transition as an opportunity rather than a risk, with the likelihood reaching 10% (as seen in Panel A of Figure 13). This is particularly evident in the energy supply, construction and real estate, transportation, and financial sectors.

Similar insights emerge from the relationship between portfolio reallocation following some climate policy events. For example, respondents who believe that the COVID-19 pandemic has contributed to achieving climate goals are more likely to consider an increase in green exposures and a reduction in brown exposures after both COVID-19 and the war in Ukraine (Panel C of Figure 13). Likewise, those who think the war in Ukraine will help reach climate objectives are more likely to anticipate a rise in green exposures and a fall in brown exposures after the conflict. However, in absolute terms, only a few respondents believe the war will positively impact the attainability of climate goals.

Additionally, those who assume a decline in green exposures after Trump's withdrawal from COP21 are more likely to view the transition as an opportunity across industries. This suggests that these individuals are more climate optimistic (Panel B of Figure 13). Conversely, those anticipating a decrease in brown exposures following COP21 and Biden's rejoining of COP21 are more inclined to see the transition as a risk than an opportunity. This implies that these respondents are rather pessimistic about the low-carbon transition.

Regarding financial stability risk concerns, we observe a strong connection between participants' views on changes in banking risks, the attainability of climate goals, and their evaluation of the transition as a risk or opportunity across various sectors. Specifically, participants anticipating an

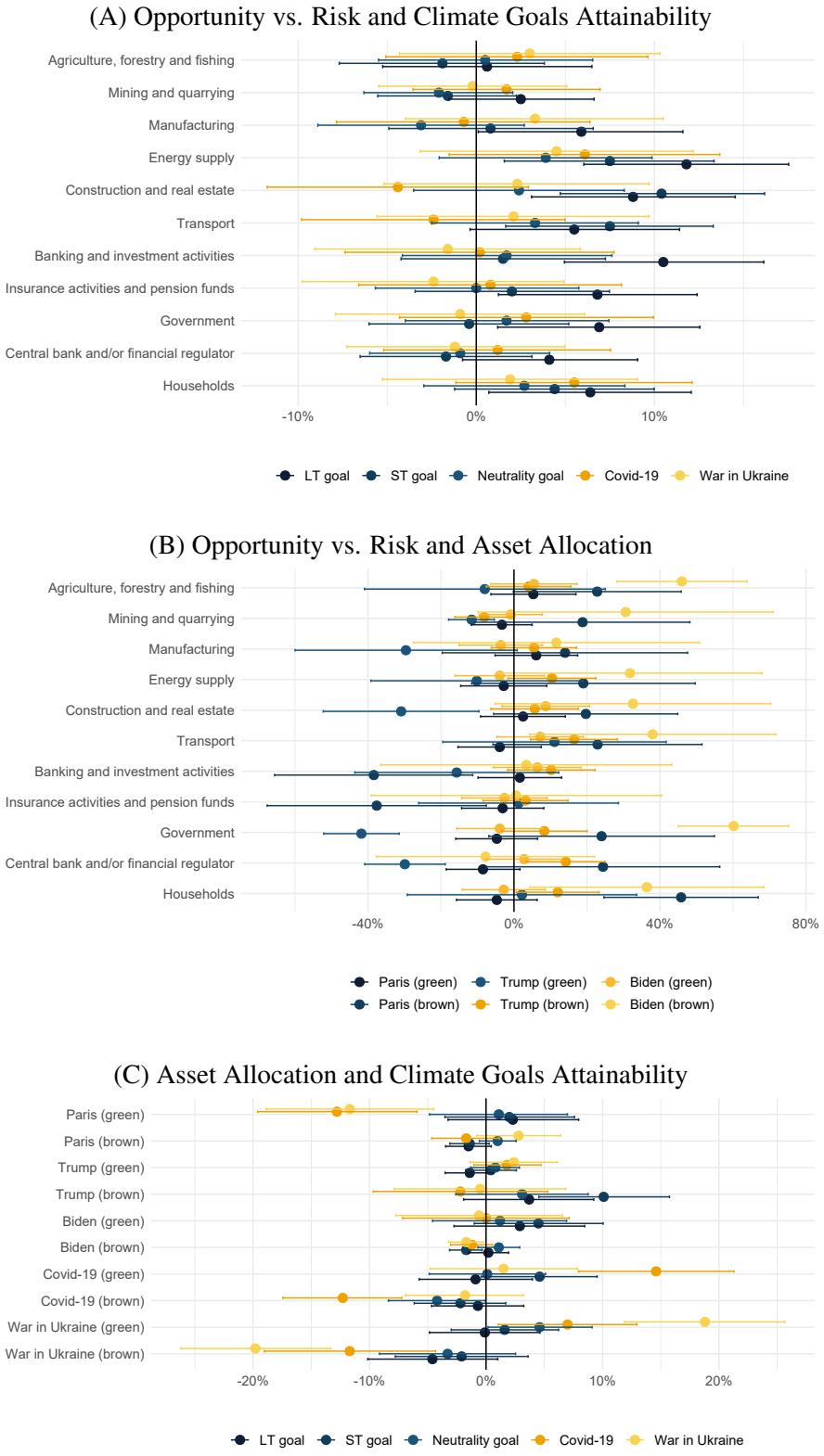
[12] Full regression results are available upon request.

increase in banking risks are more inclined to see the transition as a risk than an opportunity in most sectors, with the likelihood reaching 20% (Panel A of Figure 14). Moreover, those who regard the neutrality climate goal as achievable are more likely to expect heightened banking risks (Panel B of Figure 14).

However, respondents who believe the COVID-19 pandemic has contributed to achieving climate goals are more likely to expect a decline in banking risks, which supports the climate optimism hypothesis. This is consistent with the evaluation of the COVID-19 pandemic's effect on portfolio reallocation, as discussed above. Another indication of perceived climate pessimism is the link to opinions on greenwashing. Namely, respondents who view greenwashing as a widespread issue (64% of respondents) and difficult to detect (90% of respondents) are also more likely to consider the transition to a low-carbon economy to be a risk than an opportunity (Panel C of Figure 14). This suggests a more pessimistic evaluation of the transition and its economic and financial impacts. In contrast, participants who would penalize greenwashing more severely than other types of fraud (26% of respondents) view the transition more likely as an opportunity.

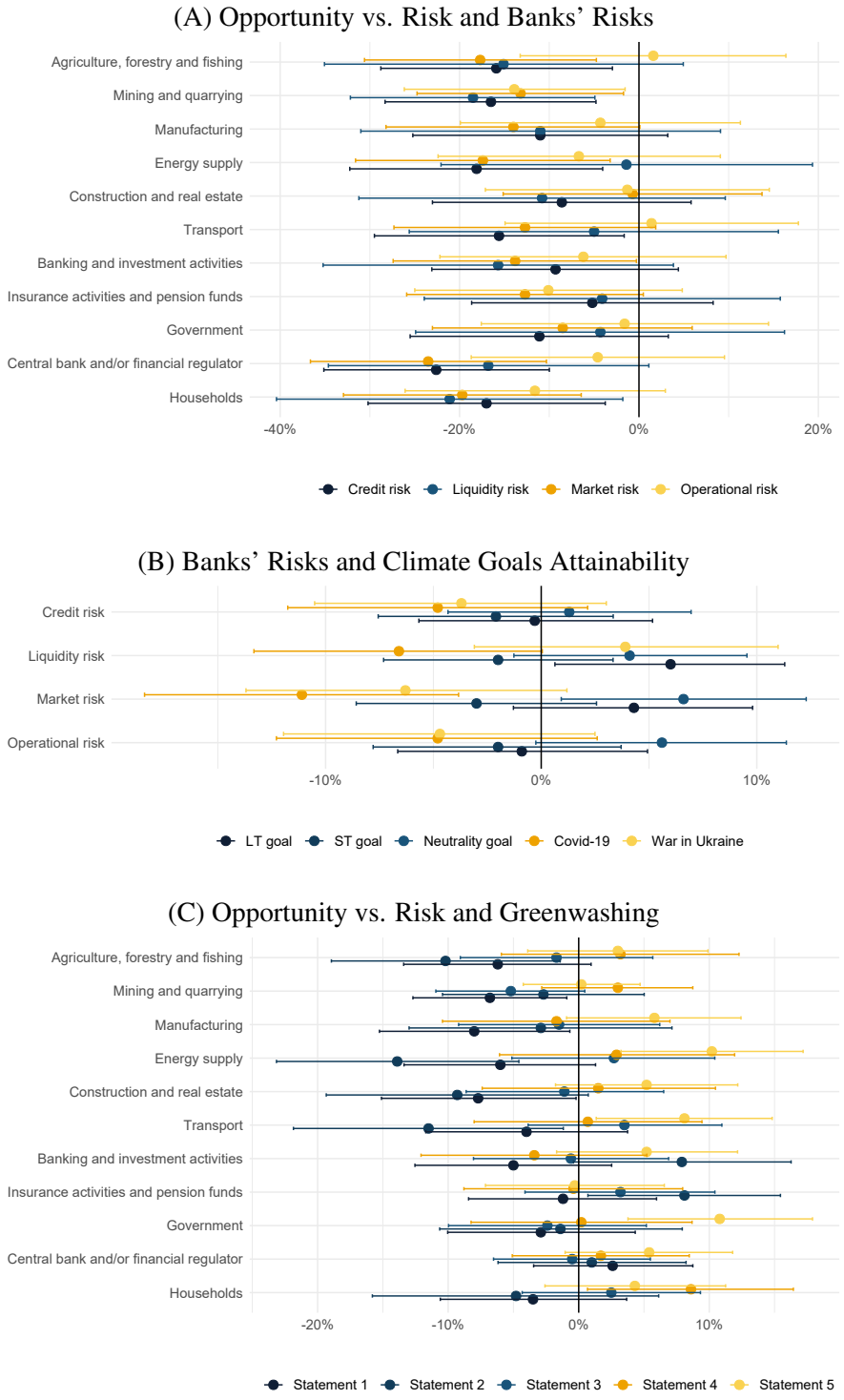
In summary, we identified patterns in the respondents' perspectives that extend beyond their individual characteristics and can be ascribed to either an optimistic stance on the transition's impact (*Hypothesis 3*) or a more careful viewpoint with indications of financial stability risk concerns (*Hypothesis 4*). This differentiation does not create a definitive separation dividing all the respondents into two uniform groups. Instead, it sheds light on possible factors and connections in evaluating the various anticipated economic and financial consequences of the transition to a low-carbon economy. Understanding the perspectives of our respondents – academics, central bank staff, and other economics and finance experts – can be important for shaping policies and financial decisions. A recent study by Morris et al. (2020) suggests that pessimistic messages about climate change may lead to higher engagement with the issue than optimistic ones. Therefore, if these stakeholders have a more pessimistic outlook on climate change, they may be more proactive in implementing policies to mitigate climate-related risks and promote green finance, as they perceive a greater risk and urgency. However, it is crucial to strike the right balance between pessimism and optimism to avoid paralyzing anxiety or complacency. Tailoring messages and interventions to the specific outlooks and needs of different stakeholders, including governments, central banks, and financial institutions, may lead to a more effective response to climate-related challenges, ultimately contributing to financial stability.

Figure 13: Linear Probability Model – Climate Optimism



Note: Each sub-chart visually presents the estimated coefficients β_q of equation (2) together with 90% confidence intervals. The full regression results are available upon request.

Figure 14: Linear Probability Model – Financial Stability Risk Concerns



Note: Each sub-chart visually presents the estimated coefficients β_q of equation (2) together with 90% confidence intervals. The full regression results are available upon request. The statements in Panel C read as follows. Statement 1: "Financial and/or non-financial institutions extensively engage in greenwashing." Statement 2: "Sometimes it can be difficult to tell whether a certain behaviour is greenwashing or not." Statement 3: "Greenwashing (if undetected) increases the market valuation of a company involved in this practice." Statement 4: "Greenwashing (if detected) should lead to a worse ESG rating." Statement 5: "Greenwashing should be punished more strictly than other types of fraud."

5. Conclusions

The transition to a low-carbon economy is a pressing and complex issue that demands the attention and collaboration of finance professionals, policy economists, researchers, and public sector regulators. It is essential to understand the factors that shape expert opinions on this topic, as these perspectives can significantly influence policy decisions and implementation strategies.

This paper contributes to the existing literature by providing a comprehensive analysis of the opinions of 286 economics and finance professionals, researchers, and public sector regulators on the transition to a low-carbon economy. It highlights the impact of environmental awareness, professional roles, and institutional affiliations on shaping these opinions, offering valuable insights for policymakers and various stakeholders involved in the low-carbon transition.

Our results reveal notable consistency in the respondents' opinions across various characteristics. The transition to a low-carbon economy is considered to be more of an opportunity than a risk for the financial sector, with the respondents expecting only a modest increase in banking risks. The majority of the respondents agree that governments should bear the most responsibility for climate mitigation policies, with carbon taxes being the preferred policy instrument. As for recent shocks, the COVID-19 pandemic is expected to have had a neutral or somewhat positive effect on the transition, while the war in Ukraine is believed to have a strong negative impact, potentially causing climate goals to be missed.

However, we also identify significant and systematic differences in opinions based on the respondents' environmental awareness and professional roles. More environmentally aware respondents tend to be more optimistic about various climate issues, and central bankers generally exhibit a more pessimistic outlook than those working in academia and other institutions. Additionally, our analysis uncovers patterns in the respondents' views that extend beyond their characteristics and environmental awareness, connecting their opinions on the achievability of climate goals and changes in banking risks, and their evaluation of the transition as a risk or opportunity across sectors. These patterns can be attributed to the climate optimism of our respondents or their heightened financial stability risk concerns.

Our findings can help policymakers and stakeholders better understand the nuances of expert opinions and anticipate potential challenges and opportunities associated with the low-carbon transition. By understanding the factors that shape expert opinions, they can develop more targeted, effective, and inclusive policies that address the concerns and priorities of various stakeholders. The policy implications derived from our analysis emphasize the importance of promoting environmental awareness, including a diverse range of stakeholders in policy discussions, and addressing key concerns regarding financial stability risks.

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Appendix A: Complete Questionnaire

Czech National Bank Survey on Risks and Opportunities of Decarbonisation

We would like to invite you to participate in the Czech National Bank Survey on Risks and Opportunities of Decarbonisation. The purpose of the survey is to collect the views of academic and professional experts on the impact of the transition to a low-carbon economy, and the role and response of different economic sectors. The survey was designed by Czech National Bank researchers. You can find out more about our survey team and access the answers to some frequently asked questions on the survey webpage.

The survey consists of 10 questions which should not take you more than 10 minutes to answer. Please submit your responses by 22 July 2022.

Please answer all the questions based on your own opinion and expertise. We understand that it may be difficult to provide answers to some questions in this survey without further qualification. We encourage you to use the feedback section at the end of the survey to expand on your answers if necessary. Your participation is essential for the success of this research study and we would greatly appreciate it.

A short summary of the results and a detailed Working Paper will be freely available on the Czech National Bank website in the next few months. If you have questions at any time about the survey or the research paper, or if you want to be removed from the mailing list of invited survey respondents, please contact us by email at CNBsurvey@cnb.cz.

1. Is the transition to a low-carbon economy an opportunity or a risk for the following sectors?
   Please answer based on your own opinion and expertise.

	Significant opportunity	Some opportunity	Neither	Some risk	Significant risk	No opinion
Agriculture, forestry and fishing						
Mining and quarrying						
Manufacturing						
Energy supply						
Construction and real estate						
Transportation						
Banking and investment activities						
Insurance activities and pension funds						
Government						
Central bank and/or financial regulator						
Households						

2. What impact will the following factors have on the transition to a low-carbon economy in a given country or region?
Please answer based on your own opinion and expertise.

	Significant impact	Some impact	No impact	No opinion
Enhanced international cooperation				
Reliable national government and sound institutional environment*				
Geographical region and environmental conditions				
Industrial structure of economy**				
Well-developed financial system				
Well-developed economy				
Ability of private business sector to quickly respond and adapt to changes				
Responsible approach of households to their climate footprint				

* By sound institutional environment, we mean enforceable environmental laws, efficient public authorities, etc.
** The industrial structure of the economy can be described by the share of the three main sectors (agriculture, manufacturing and services) in a country's GDP.

3. How important should the contributions and responsibility of the following stakeholders be in the transition to a low-carbon economy?
Please answer based on your own opinion and expertise.
Please rank the following options from the most important to the least important.

	Your ranking
Government	
Central bank and/or financial regulator	
Financial sector	
Non-financial corporations	
Households	

In question 4, we asked respondents what are the most effective measures taken by the sector that they ranked first in question 3.

4a. What are the most effective measures taken by the government in supporting the transition to a low-carbon economy?

(a) Carbon tax
(b) Cap-and-trade system*
(c) Government subsidies for green projects
(d) Regulatory policies for non-financial sector (e.g. limits on car emissions)
(e) Enforcing disclosure of climate-related activities by financial and/or non-financial sector
(f) Issuing sovereign green bonds

* A cap-and-trade system is a regulatory programme in which the government issues companies with a set amount of permits that comprise a cap on allowed carbon dioxide emissions. Companies that cut their emissions may sell or trade unused credits.

4b. What are the most effective measures taken by the central bank and/or financial regulator in supporting the transition to a low-carbon economy?

(a) Enforcing disclosure of climate-related activities by supervised institutions
(b) Additional capital requirements for climate risk for supervised institutions
(c) Buying green bonds as part of central bank asset purchase programme
(d) Proposing regulation of specific financial products* (e.g. green bonds)
(e) Actively measuring, analyzing and communicating climate-related risks

* Such regulation is intended to lay down uniform requirements for issuers who want to signal to investors that their product meets certain environmental standards.

4c. What are the most effective measures taken by the financial sector in supporting the transition to a low-carbon economy?

(a) Favorable lending to sustainable businesses
(b) Investing in sustainable sectors (e.g. green energy companies)
(c) Divesting from non-sustainable sectors (e.g. fossil fuel companies)
(d) Enforcing disclosure of climate-related activities by corporate clients
(e) Establishing new climate-related investment products (e.g. green investment funds)

4d. What are the most effective measures taken by non-financial corporations in supporting the transition to a low-carbon economy?

(a) Investing in R&D and innovation in climate technologies
(b) Reducing firm's carbon footprint (reducing energy consumption, waste etc.)
(c) Choosing sustainable suppliers
(d) Issuing private green bonds
(e) Supporting environmental policies and political parties

4e. What are the most effective measures taken by households in supporting the transition to a low-carbon economy?

(a) Reducing personal carbon footprint
(b) Supporting environmental policies and political parties
(c) Taking part in climate protests
(d) Giving money to environmental groups
(e) Working for company that contributes to transition to low-carbon economy

5. Which of the following are barriers for the public and/or private sector in the assessment and mitigation of environmental risks?
   Please answer based on your own opinion and expertise.

	Significant barrier	Some barrier	No barrier	No opinion
Unavailability or low quality of data on environmental risks				
Untrained staff on the issue				
Vague regulation of environmental risks				
Lack of enforcement of and/or compliance with environmental risk standards				
Misunderstanding or misinterpretation of environmental risks				

6. How will the transition to a low-carbon economy affect banks' risks?
   Please answer based on your own opinion and expertise.

	Significant decrease	Some decrease	No change	Some increase	Significant increase	No opinion
Credit risk*						
Liquidity risk*						
Market risk*						
Operational risk*						

* Credit risk is the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. Liquidity risk is the potential that a bank will lose the ability to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses. Market risk is the risk of losses arising from movements in market prices. Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events.

7. Are the following goals achievable? How will the COVID-19 pandemic and the war in Ukraine affect reaching these goals?
   Please answer based on your own opinion and expertise.

   Achievability of goals:

	Achievable	Not achievable	No opinion
Long-term goal of keeping increase in global average temperature to well below 2°C above pre-industrial levels.			
Reducing emissions by more than 50% by 2030 (relative to 1990 levels for EU and relative to 2005 levels for US).			
Climate neutrality by 2050 (EU and US goal).			

How achievability is affected:

	Contributes to reaching goals	Does not affect reaching or missing goals	Contributes to missing goals	No opinion
COVID-19 pandemic				
War in Ukraine				

8. How would you generally describe the market valuation of "green financial assets" (i.e. assets that are perceived by investors as environmentally sustainable)?
Please answer based on your own opinion and expertise.

	Significantly undervalued	Somewhat undervalued	Neither	Somewhat overvalued	Significantly overvalued	No opinion
Equity shares						
Corporate bonds						
Government bonds						

9. How have financial institutions changed their exposure to "green" and "brown" non-financial corporations in response to the following events?
Please answer based on your own opinion and expertise.

	Paris Agreement (12/2015)	Trump's withdrawal from Paris Agreement (6/2017)	Biden's re-joining Paris Agreement (1/2021)	COVID-19 pandemic	War in Ukraine
Exposure to "green" firms*					
Increased					
Decreased					
No effect					
No opinion					
Exposure to "brown" firms*					
Increased					
Decreased					
No effect					
No opinion					

* By exposure, we mean provision of loans or holdings of debt and equity securities.
By "green" firms, we mean environmentally sustainable firms (e.g. green energy companies).
By "brown" firms, we mean environmentally non-sustainable firms (e.g. fossil fuel companies).

10. Do you agree with the following statements regarding greenwashing*?
Please answer based on your own opinion and expertise.

	Agree	Disagree	No opinion
Financial and/or non-financial institutions extensively engage in greenwashing.			
Sometimes it can be difficult to tell whether a certain behaviour is greenwashing or not.			
Greenwashing (if undetected) increases the market valuation of a company involved in this practice.			
Greenwashing (if detected) should lead to a worse ESG rating.			
Greenwashing should be punished more strictly than other types of fraud.			

* Greenwashing is a form of marketing used deceptively to persuade the public that an organisation's products, aims and policies are environmentally friendly.

Please use the space below to further express your views and elaborate on your answers (optional).

Demographic and Background Questions (optional)

Thank you very much for your responses. We would greatly appreciate it if you could spend an extra minute or two answering some demographic questions. Your answers will help us analyse the drivers of heterogeneity in the responses collected. If you are uncomfortable answering any of these questions, you can always select the option "Prefer not to answer".

(a) What gender do you identify as?
- ○ Male
- ○ Female
- ○ Non-conforming
- ○ Prefer not to answer

(b) What is your age?
- ○ 20-24
- ○ 25-29
- ○ 30-34
- ○ 35-39
- ○ 40-44
- ○ 45-49
- ○ 50-54
- ○ 55-59
- ○ 60-64

- ○ Over 64
- ○ Prefer not to answer

(c) Please indicate the country in which you currently reside.

(d) Please indicate which position and institution/sector combination best describes your current primary professional placement.

Institution/sector:

- ○ Governmental institution
- ○ Central bank and/or financial regulator
- ○ Financial sector
- ○ Non-financial sector
- ○ Academic or non-profit institution
- ○ Prefer not to answer

Position:

- ○ Expert/analyst
- ○ Researcher
- ○ Policy-maker/management
- ○ Prefer not to answer

(e) Do you agree/disagree with the following statements about your contribution to reducing the carbon footprint?

	Agree	Disagree
I primarily walk or use public transport, a bicycle and/or an electric car/scooter for commuting.		
I am vegetarian/vegan, or I limit my meat/dairy intake significantly.		
My house/apartment is equipped with solar panels, heat pumps or other alternative sources for electricity/cooling/heat (at least partially).		
I recycle most of my waste and/or I actively try to minimize my waste.		
When travelling, I actively consider my carbon footprint and, for example, reduce the number of flights I take.		
I actively try to reduce my consumption for environmental reasons.		
My work position relates directly or indirectly to fighting climate change or reducing the carbon footprint, or advocating for activities leading to that.		
In the last five years, I have given money to an environmental group, taken part in a climate protest, or signed an environmental petition.		
I have voted for political parties supporting environmental/green policies in elections.		
I actively educate myself independently or in my institution in the area of environmental protection/climate change.		
I invest in (e.g. hold shares of) environmentally sustainable companies.		
I do not actively try to reduce my carbon footprint.		

(f) In your opinion, do both the public and private sector pay sufficient attention to climate change and the search for a solution?

- ○ Yes, both public and private sector
- ○ Only public sector
- ○ Only private sector
- ○ Neither
- ○ There is no need to address climate change
- ○ No opinion

(g) Where would you place yourself in terms of political typology*?

	Social scale (1 – Authoritarian, 10 – Libertarian)	Economic scale (1 – Left, 10 – Right)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Prefer not to answer		

* Libertarianism is viewed as the belief that personal freedom should be maximised, while authoritarianism prescribes that individuals should obey authority.

Thank you for participating in our survey.

The results will be analysed and published as a Czech National Bank Working Paper and will be freely available on the Czech National Bank website in the next few months.

If you have any questions or comments, or would simply like to reach out to the survey team, please do not hesitate to get in touch. We welcome any comments, suggestions and queries you might have and will get back to you as soon as we can. You can reach us at the following email address: CNBsurvey@cnb.cz.

Appendix B: Quantified Mean Responses and Statistical Test of Differences Between Groups

Table B1: Quantification of Verbal Responses to Numerical Values

Question		Response	Coding
Q1	Is the transition to a low-carbon economy an opportunity or a risk for the following sectors?	a. Significant opportunity	1
		b. Some opportunity	0.5
		c. Neither	0
		d. Some risk	-0.5
		e. Significant risk	-1
		f. No opinion	NA
Q2	What impact will the following factors have on the transition to a low-carbon economy in a given country or region?	a. Significant impact	1
		b. Some impact	0.5
		c. No impact	-1
		d. No opinion	NA
Q5	Which of the following are barriers for the public and/or private sector in the assessment and mitigation of environmental risks?	a. Significant barrier	1
		b. Some barrier	0.5
		c. No barrier	-1
		d. No opinion	NA
Q6	How will the transition to a low-carbon economy affect banks' risks?	a. Significant decrease	-1
		b. Some decrease	-0.5
		c. No change	0
		d. Some increase	0.5
		e. Significant increase	1
		f. No opinion	NA
Q7	Are the following goals achievable? How will the COVID-19 pandemic and the war in Ukraine affect reaching these goals?	a. Achievable	1
		b. Not achievable	-1
		c. No opinion	NA
		a. Contributes to reaching goals	1
		b. Does not affect reaching or missing goals	0
		c. Contributes to missing goals	-1
		d. No opinion	NA
Q8	How would you generally describe the market valuation of "green financial assets" (i.e. assets that are perceived by investors as environmentally sustainable)?	a. Significant undervalued	-1
		b. Somewhat undervalued	-0.5
		c. Neither	0
		d. Somewhat overvalued	0.5
		e. Significant overvalued	1
		f. No opinion	NA
Q9	How have financial institutions changed their exposure to "green" and "brown" non-financial corporations in response to the following events?	a. Increased	1
		b. Decreased	-1
		c. No effect	0
		d. No opinion	NA
Q10	Do you agree with the following statements regarding greenwashing	a. Agree	1
		b. Disagree	-1
		c. No opinion	NA

Table B2: Quantified Mean Responses: Is the Transition to a Low-Carbon Economy an Opportunity or a Risk for the Following Sectors?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Agriculture, forestry and fishing	0.14	0.09	0.12	0.06	0.54***	0.17	0.05**	0.28	0.18	0.05	0.21	0.11	0.21	0.06	0.09	0.12
Mining and quarrying	-0.5	-0.52	-0.53	-0.53	-0.5	-0.45	-0.65***	-0.3	-0.52	-0.55	-0.45	-0.53	-0.54	-0.57	-0.6	-0.55
Manufacturing	-0.04	0.01	-0.11	0.05	-0.02	0.02	-0.13**	-0.01	-0.01	-0.12	0.12***	-0.12***	0.01**	-0.13**	-0.01	-0.07
Energy supply	0.04	0.09	-0.02	-0.02	0.09	0.09	-0.08**	0.16	0.06	-0.06	0.12	0	0.14***	-0.12***	-0.02	0
Construction and real estate	0.07	0	0.19***	0	0	0.09	0	0.16	0.09	-0.02	0.12	0.04	0.08	-0.01	0.02	0.02
Transport	-0.03	0.01	-0.02	-0.12	-0.04	0.02	-0.1	-0.04	0.02	-0.16**	0.14***	-0.11***	0.08***	-0.15***	0.06	-0.08
Banking and investment activities	0.16	0.18	0.15	0.11	0.34	0.25***	0.06***	0.1	0.21**	0.07**	0.21	0.14	0.2	0.1	0.21	0.12
Insurance activities and pension funds	0.11	0.08	0.15	0.09	0.3**	0.19***	0***	0.12	0.16***	0***	0.16	0.09	0.16	0.05	0.31***	0.02***
Government	0.08	0.09	0.05	0.11	0.29**	0.12	0**	0.17	0.1	0.06	0.24***	0***	0.16**	0.02**	0.18	0.05
Central bank and/or financial regulator	0.01	0.01	0.04	-0.05	0.11	0.04	-0.05	0.06	0.02	-0.01	0.06	-0.02	0.04	-0.04	0.02	-0.01
Households	-0.05	-0.08	-0.02	-0.23**	0.27***	-0.05	-0.07	-0.01	-0.02	-0.12	0.09***	-0.12***	0	-0.07	-0.12	-0.05

Note: The table presents the quantified mean responses to the question "Is the transition to a low-carbon economy an opportunity or a risk for the following sectors?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows: significant opportunity (1); some opportunity (0.5); neither (0); some risk (-0.5); significant risk (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B3: Quantified Mean Responses: What Impact Will the Following Factors Have on the Transition to a Low-Carbon Economy in a Given Country or Region?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Enhanced international cooperation	0.73	0.78	0.64***	0.83	0.75	0.75	0.69	0.74	0.76	0.66	0.85***	0.66***	0.72	0.69	0.8	0.67
Reliable national government and sound institutional environment	0.74	0.77**	0.68***	0.85	0.71	0.75	0.69	0.79	0.75	0.7	0.89***	0.65***	0.74	0.76	0.76	0.72
Geographical region and environmental conditions	0.7	0.67	0.72	0.7	0.84	0.72	0.69	0.64**	0.72	0.66	0.74	0.67	0.65	0.77	0.75	0.69
Industrial structure of economy	0.77	0.76	0.79	0.77	0.75	0.77	0.77	0.76	0.77	0.77	0.75	0.78	0.76**	0.78**	0.78	0.76
Well-developed financial system	0.26	0.33	0.17	0.08	0.43	0.25	0.23	0.4	0.27	0.22	0.41***	0.19***	0.2	0.23	0.15	0.24
Well-developed economy	0.6	0.63	0.57	0.53	0.7	0.62	0.58	0.55	0.59	0.62	0.64	0.58	0.58	0.63	0.66	0.57
Ability of private business sector to quickly respond and adapt to changes	0.69	0.67	0.68	0.76	0.7	0.71	0.65	0.74	0.7	0.66	0.79***	0.64***	0.68	0.65	0.75	0.64
Responsible approach of households to their climate footprint	0.51	0.51	0.51	0.55	0.62	0.56	0.46	0.44	0.58***	0.34***	0.64***	0.44***	0.54	0.46	0.7***	0.45***

Note: The table presents the quantified mean responses to the question "What impact will the following factors have on the transition to a low-carbon economy in a given country or region?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows: significant impact (1); some impact (0.5); no impact (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B4: Quantified Mean Responses: How Important Should the Contributions and Responsibility of the Following Stakeholders Be in the Transition to a Low-Carbon Economy?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Government	1.4	1.42	1.35	1.36	1.5	1.38	1.39	1.5**	1.43	1.35	1.44	1.32	1.43	1.44	1.39	1.46
Central bank and/or financial regulator	4.11	4.17	4.14	4.39	3.79***	4.03	4.28**	3.92	4.1	4.27**	4.13	4.06	4.08**	4.34**	4.06	4.21
Financial sector	3.64	3.73	3.53	3.64	3.68	3.6	3.72	3.55	3.69	3.51	3.64	3.63	3.56	3.74	3.49	3.69
Non-financial corporations	2.54	2.47	2.48	2.61	2.68	2.61	2.35***	2.78**	2.53	2.46	2.53	2.55	2.55	2.37	2.65	2.4
Households	3.32	3.21	3.5**	3	3.36	3.38	3.26	3.25	3.25	3.4	3.25	3.44	3.38	3.1	3.41	3.24

Note: The table presents the average ranking of the sectors in response to the question "How important should the contributions and responsibility of the following stakeholders be in the transition to a low-carbon economy?" across different categories of the respondents' demographic characteristics. We asked the respondents to rank the sectors from the most important (1) to the least important (5). We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B5: Quantified Mean Responses: Which of the Following are Barriers for the Public and/or Private Sector in the Assessment and Mitigation of Environmental Risks?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Unavailability or low quality of data on environmental risks	0.51	0.41***	0.61**	0.39	0.7**	0.46	0.61	0.42	0.48	0.54	0.42	0.55	0.45	0.48	0.44	0.49
Untrained staff on the issue	0.45	0.44	0.46	0.39	0.64***	0.48***	0.43	0.4	0.47**	0.37***	0.5	0.42	0.43	0.44	0.38	0.44
Vague regulation of environmental risks	0.6	0.6	0.56**	0.67	0.73	0.62	0.62	0.44**	0.62	0.56	0.64***	0.57***	0.63	0.57	0.64	0.59
Lack of enforcement of and/or compliance with environmental risk standards	0.66	0.72	0.65	0.62	0.66	0.68	0.7	0.5***	0.7**	0.59	0.75**	0.61**	0.68	0.62	0.71	0.63
Misunderstanding or misinterpretation of environmental risks	0.58	0.52***	0.64	0.67	0.55	0.59	0.62	0.44***	0.61	0.54	0.58	0.58	0.61	0.55	0.55	0.58

Note: The table presents the quantified mean responses to the question "Which of the following are barriers for the public and/or private sector in the assessment and mitigation of environmental risks?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows: significant barrier (1); some barrier (0.5); no barrier (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B6: Quantified Mean Responses: How Will the Transition to a Low-Carbon Economy Affect Banks' Risks?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Credit risk	0.36	0.35	0.39	0.35	0.32	0.33	0.42	0.3	0.34	0.42	0.39	0.34	0.38	0.35	0.34	0.39
Liquidity risk	0.16	0.16	0.14	0.14	0.21	0.15	0.16	0.19	0.15	0.16	0.19**	0.14**	0.14	0.16	0.18	0.14
Market risk	0.32	0.31	0.35	0.38	0.2	0.27***	0.41***	0.3	0.3	0.38	0.36	0.3	0.35	0.29	0.31	0.33
Operation risk	0.2	0.17	0.28***	0.15	0.16	0.19	0.23	0.2	0.2	0.21	0.21	0.2	0.2	0.18	0.24	0.18

Note: The table presents the quantified mean responses to the question "How will the transition to a low-carbon economy affect banks' risks?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows: significant decrease (-1); some decrease (-0.5); no change (0); some increase (0.5); significant increase (1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B7: Quantified Mean Responses: How Would You Generally Describe the Market Valuation of "Green Financial Assets" (i.e., Assets That Are Perceived by Investors as Environmentally Sustainable)?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Equity	0.05	0.07	0.06	0.02	0	0.05	0.07	0.01	0.06	0.03	0.03	0.07	0.05	0.07	0.02	0.07
Corporate bonds	0.07	0.08	0.07	0.12	0	0.06	0.07	0.1	0.06	0.08	0.04	0.09	0.06	0.09	0.04	0.08
Government bonds	0.04	0.04	0.03	0.03	0.09	0.04	0.03	0.07	0.05	0.02	0.02	0.05	0.02	0.06	0.03	0.04

Note: The table presents the quantified mean responses to the question "How would you generally describe the market valuation of 'green financial assets' (i.e. assets that are perceived by investors as environmentally sustainable)?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows: significantly undervalued (-1); somewhat undervalued (-0.5); neither (0); somewhat overvalued (0.5); significantly overvalued (1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B8: Quantified Mean Responses: How Have Financial Institutions Changed Their Exposure to "Green" and "Brown" Non-Financial Corporations in Response to the Following Events?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Paris (green)	0.6	0.61	0.54	0.67	0.75**	0.6	0.64	0.5	0.65***	0.51**	0.67	0.57	0.6	0.6	0.59	0.59
Paris (brown)	-0.47	-0.46	-0.47	-0.52	-0.46	-0.45	-0.5	-0.4	-0.51**	-0.38**	-0.49	-0.45	-0.49	-0.47	-0.57	-0.45
Trump (green)	-0.26	-0.19***	-0.3	-0.27	-0.46***	-0.32***	-0.22	-0.12**	-0.31***	-0.16***	-0.18**	-0.3**	-0.24	-0.28	-0.22	-0.27
Trump (brown)	0.33	0.33	0.34	0.39	0.36	0.37	0.33	0.15***	0.38***	0.23***	0.33	0.32	0.37	0.31	0.33	0.37
Biden (green)	0.43	0.42	0.46	0.45	0.54	0.46	0.45	0.25***	0.53***	0.24***	0.49	0.39	0.47	0.42	0.37	0.47
Biden (brown)	-0.34	-0.33	-0.4	-0.36	-0.32	-0.38	-0.37	-0.12***	-0.45***	-0.13***	-0.4	-0.3	-0.4	-0.35	-0.35	-0.38
COVID-19 (green)	0.09	0.18**	0.14	-0.06**	-0.11**	0.08	0.17**	-0.07***	0.06	0.18**	0.13	0.07	0.14	0.07	0.14	0.11
COVID-19 (brown)	-0.02	-0.06	-0.03	0.12	0.07	-0.03	0.01	-0.03	-0.01	-0.02	-0.03	-0.01	-0.05	-0.03	-0.1	-0.02
War in Ukraine (green)	-0.1	-0.01**	-0.18	-0.12	-0.14	-0.1	-0.09	-0.17	-0.12	-0.05	0.02***	-0.17***	-0.15	-0.1	-0.02	-0.12
War in Ukraine (brown)	0.36	0.37	0.44	0.39	0.21	0.31	0.47***	0.25	0.34	0.43	0.43	0.32	0.39	0.37	0.31	0.41

Note: The table presents the quantified mean responses to the question "How have financial institutions changed their exposure to 'green' and 'brown' non-financial corporations in response to the following events?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows: significant decrease (-1); some decrease (-0.5); no change (0); some increase (0.5); significant increase (1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B9: Quantified Mean Responses: Are the Following Goals Achievable? How Will the COVID-19 Pandemic and the War in Ukraine Affect Reaching These Goals?

Achievability of goals

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
LT goal	-0.07	-0.11	0.02	0	0	-0.06	0	-0.32**	-0.1	0.06	0.02	-0.12	0	-0.06	0	-0.04
ST goal	-0.07	0.01	-0.06	-0.12	-0.25	-0.1	-0.05	-0.03	-0.11	0.01	-0.01	-0.11	0.14***	-0.29***	0	-0.06
Neutrality goal	0.15	0.15	0.16	0.24	0.39	0.14	0.25	-0.07**	0.2	0.12	0.28**	0.08**	0.24	0.08	0.2	0.14

How achievability is affected

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
COVID-19	-0.04	0.08**	0.01	-0.33***	-0.18	-0.1	0.1***	-0.2	-0.04	-0.04	-0.01	-0.06	0.05**	-0.14**	0.18***	-0.07***
War in Ukraine	-0.52	-0.48	-0.65***	-0.52	-0.21**	-0.6**	-0.45	-0.45	-0.56	-0.43	-0.4**	-0.59**	-0.54	-0.56	-0.43	-0.57

Note: The table presents the quantified mean responses to the question "Are the following goals achievable? How will the COVID-19 pandemic and the war in Ukraine affect reaching these goals?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows. Panel A: achievable (1); not achievable (-1); no opinion (NA). Panel B: contributes to reaching goals (1); does not affect reaching or missing goals (0); contributes to missing goals (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B10: Quantified Mean Responses: Do You Agree with the Following Statements Regarding Greenwashing?

		Location				Institution			Position		Environmentally conscious		Political typology			
	Total	N&W Europe	S&E Europe	North America	ROW	University	Central Bank	Other	Researcher	Non-researcher	Yes	No	Right	Left	Authori-tarian	Liber-tarian
Financial and/or non-financial institutions extensively engage in greenwashing.	0.46	0.5	0.4	0.7**	0.32	0.5	0.38	0.52	0.49	0.4	0.46	0.46	0.6***	0.26***	0.45	0.47
Sometimes it can be difficult to tell whether a certain behaviour is greenwashing or not.	0.81	0.83	0.84	0.94	0.54***	0.83	0.83	0.75	0.82	0.79	0.84	0.8	0.85	0.75	0.86	0.79
Greenwashing (if undetected) increases the market valuation of a company involved in this practice.	0.56	0.56	0.62	0.48	0.61	0.55	0.56	0.58	0.59	0.5	0.56	0.56	0.63	0.49	0.57	0.55
Greenwashing (if detected) should lead to a worse ESG rating.	0.71	0.78	0.69	0.76	0.5	0.7	0.75	0.65	0.7	0.73	0.84***	0.64***	0.77**	0.6**	0.63	0.71
Greenwashing should be punished more strictly than other types of fraud.	-0.33	-0.39	-0.29	-0.45	-0.07	-0.27	-0.5***	-0.1***	-0.37	-0.28	-0.2**	-0.4**	-0.34	-0.43	-0.24	-0.46

Note: The table presents the quantified mean responses to the question "Do you agree with the following statements regarding greenwashing?" across different categories of the respondents' demographic characteristics. The quantification of the responses means that we converted verbal answers into numerical values on a discrete scale between 1 and -1, with positive numbers usually assigned to agreeing responses and negative numbers to disagreeing responses. The answers to this question were quantified as follows: agree (1); disagree (-1); no opinion (NA). We summarize the conversion of verbal answers to numerical ones for all questions in Table B1 in the Appendix. We perform two non-parametric statistical tests, the Mann-Whitney-Wilcoxon test and the Kruskal-Wallis test, to decide whether there are significant differences between the groups of respondents. The two tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the p-value is less than the significance level, we can conclude that there are significant differences between the groups. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix C: Contingency Coefficients

Table C1: Contingency Coefficients: Is the Transition to a Low-Carbon Economy an Opportunity or a Risk for the Following Sectors?

	(1) Agriculture, forestry and fishing	(2) Mining and quarrying	(3) Manu-facturing	(4) Energy supply	(5) Construc-tion and real estate	(6) Transport	(7) Banking and investment activities	(8) Insurance activities and pension funds	(9) Govern-ment	(10) Central bank and financial regulator	(11) House-holds
Opportunity vs. risk											
Agriculture, forestry and fishing											
Mining and quarrying	0.52***										
Manufacturing	0.5***	0.55***									
Energy supply	0.57***	0.44***	0.68***								
Construction and real estate	0.51***	0.55***	0.66***	0.64***							
Transport	0.49***	0.48***	0.67***	0.69***	0.7***						
Banking and investment activities	0.45***	0.34**	0.52***	0.5***	0.5***	0.42***					
Insurance activities and pension funds	0.47***	0.37***	0.53***	0.48***	0.55***	0.47***	0.87***				
Government	0.55***	0.35**	0.56***	0.52***	0.53***	0.55***	0.64***	0.64***			
Central bank and/or financial regulator	0.48***	0.46***	0.55***	0.46***	0.61***	0.53***	0.7***	0.69***	0.7***		
Households	0.56***	0.47***	0.6***	0.59***	0.61***	0.65***	0.56***	0.59***	0.66***	0.67***	
Banks' risks											
Credit risk	0.32*	0.33**	0.41***	0.31*	0.35**	0.34**	0.44***	0.44***	0.38***	0.45***	0.37***
Liquidity risk	0.22	0.25	0.26	0.27	0.34**	0.33**	0.27	0.3	0.41***	0.38***	0.36***
Market risk	0.31*	0.22	0.31*	0.26	0.29	0.3	0.45***	0.38***	0.39***	0.45***	0.37***
Operation risk	0.32*	0.23	0.28	0.27	0.28	0.33**	0.31*	0.28	0.31*	0.32*	0.35***
Market valuation of "green" assets											
Equity	0.2	0.27*	0.19	0.23	0.28**	0.14	0.3**	0.19	0.24	0.26	0.19
Corporate bonds	0.16	0.19	0.16	0.27*	0.22	0.19	0.28*	0.23	0.23	0.27*	0.27*
Government bonds	0.21	0.26*	0.16	0.24	0.22	0.24	0.3**	0.27*	0.24	0.27*	0.33***
Portfolio re-balancing after (climate) events											
Paris (green)	0.2	0.19	0.17	0.15	0.18	0.17	0.21	0.19	0.16	0.26	0.29**
Paris (brown)	0.17	0.22	0.15	0.21	0.16	0.18	0.21	0.21	0.19	0.2	0.26*
Trump (green)	0.26*	0.15	0.21	0.24	0.21	0.16	0.26*	0.27*	0.19	0.21	0.25
Trump (brown)	0.27*	0.19	0.27*	0.27*	0.25	0.33***	0.26*	0.24	0.24	0.3**	0.31**
Biden (green)	0.24	0.13	0.17	0.18	0.27*	0.18	0.25	0.22	0.24	0.18	0.24
Biden (brown)	0.24	0.22	0.21	0.19	0.24	0.19	0.2	0.17	0.18	0.17	0.24
COVID-19 (green)	0.25	0.23	0.2	0.28**	0.23	0.12	0.11	0.14	0.17	0.24	0.18
COVID-19 (brown)	0.22	0.16	0.18	0.25	0.28**	0.14	0.24	0.18	0.23	0.19	0.21
War in Ukraine (green)	0.19	0.22	0.26*	0.23	0.17	0.21	0.29**	0.22	0.24	0.24	0.27*
War in Ukraine (brown)	0.32***	0.16	0.27*	0.28**	0.24	0.24	0.27*	0.3**	0.25	0.14	0.24
Climate goals and their achievability											
LT goal	0.28*	0.22	0.33***	0.32***	0.24	0.27*	0.22	0.25	0.26	0.24	0.3**
ST goal	0.26	0.2	0.19	0.26	0.27*	0.23	0.19	0.29**	0.19	0.27*	0.31**
Neutrality goal	0.2	0.3**	0.23	0.21	0.16	0.21	0.19	0.2	0.25	0.24	0.3**
COVID-19	0.19	0.2	0.24	0.25	0.16	0.2	0.24	0.21	0.22	0.17	0.17
War in Ukraine	0.25	0.2	0.31**	0.27*	0.21	0.23	0.27*	0.23	0.27*	0.21	0.25
Greenwashing											
Statement 1	0.21	0.26*	0.21	0.18	0.21	0.16	0.15	0.19	0.09	0.17	0.22
Statement 2	0.2	0.17	0.19	0.21	0.19	0.17	0.22	0.27*	0.16	0.21	0.27*
Statement 3	0.21	0.22	0.24	0.22	0.23	0.24	0.21	0.21	0.29**	0.15	0.24
Statement 4	0.18	0.27*	0.33***	0.21	0.2	0.18	0.18	0.11	0.22	0.21	0.28**
Statement 5	0.2	0.15	0.23	0.33***	0.28**	0.25	0.26*	0.15	0.3**	0.26*	0.27*

Note: The table presents Pearson's Chi-squared contingency coefficient and the p-value of Pearson's Chi-squared test. The null hypothesis of the test states that the variables and their categories are independent. The contingency coefficient is standardized and corrected to lie between 0 and 1 so that it is independent of both the sample size and the number of categories (responses to individual questions), i.e., a higher coefficient means higher dependency. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table C2: Contingency Coefficients: How Will the Transition to a Low-Carbon Economy Affect Banks' Risks?

	(1) Credit risk	(2) Liquidity risk	(3) Market risk	(4) Operation risk
Banks' risks				
Credit risk				
Liquidity risk	0.85***			
Market risk	0.81***	0.75***		
Operation risk	0.79***	0.77***	0.74***	
Opportunity vs. risk				
Agriculture, forestry and fishing	0.32*	0.22	0.31*	0.32*
Mining and quarrying	0.33**	0.25	0.22	0.23
Manufacturing	0.41***	0.26	0.31*	0.28
Energy supply	0.31*	0.27	0.26	0.27
Construction and real estate	0.35**	0.34**	0.29	0.28
Transport	0.34**	0.33**	0.3	0.33**
Banking and investment activities	0.44***	0.27	0.45***	0.31*
Insurance activities and pension funds	0.44***	0.3	0.38***	0.28
Government	0.38***	0.41***	0.39***	0.31*
Central bank and/or financial regulator	0.45***	0.38***	0.45***	0.32*
Households	0.37***	0.36***	0.37***	0.35***
Market valuation of "green" assets				
Equity	0.29**	0.16	0.31**	0.22
Corporate bonds	0.31**	0.24	0.31**	0.19
Government bonds	0.28**	0.23	0.25	0.12
Portfolio re-balancing after (climate) events				
Paris (green)	0.25	0.2	0.21	0.26
Paris (brown)	0.27*	0.27*	0.23	0.3**
Trump (green)	0.37***	0.35***	0.26	0.32***
Trump (brown)	0.47***	0.46***	0.31***	0.42***
Biden (green)	0.27*	0.27*	0.19	0.3**
Biden (brown)	0.26*	0.28*	0.16	0.26
COVID-19 (green)	0.2	0.17	0.18	0.17
COVID-19 (brown)	0.18	0.23	0.25	0.18
War in Ukraine (green)	0.26	0.3**	0.17	0.26
War in Ukraine (brown)	0.18	0.19	0.19	0.27*
Climate goals and their achievability				
LT goal	0.13	0.16	0.25	0.14
ST goal	0.23	0.24	0.21	0.2
Neutrality goal	0.19	0.21	0.24	0.19
COVID-19	0.24	0.24	0.21	0.21
War in Ukraine	0.18	0.16	0.24	0.3**
Greenwashing				
Statement 1	0.22	0.2	0.17	0.3**
Statement 2	0.3**	0.11	0.28**	0.28**
Statement 3	0.2	0.23	0.2	0.23
Statement 4	0.27*	0.21	0.28**	0.16
Statement 5	0.39***	0.37***	0.29**	0.31**

Note: The table presents Pearson's Chi-squared contingency coefficient and the p-value of Pearson's Chi-squared test. The null hypothesis of the test states that the variables and their categories are independent. The contingency coefficient is standardized and corrected to lie between 0 and 1 so that it is independent of both the sample size and the number of categories (responses to individual questions), i.e., a higher coefficient means higher dependency. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table C3: Contingency Coefficients: How Would You Generally Describe the Market Valuation of "Green Financial Assets" (i.e., Assets That Are Perceived by Investors as Environmentally Sustainable)?

	(1) Equity	(2) Corporate bonds	(3) Government bonds
Market valuation of "green" assets			
Equity			
Corporate bonds	0.85***		
Government bonds	0.68***	0.8***	
Opportunity vs. risk			
Agriculture, forestry and fishing	0.2	0.16	0.21
Mining and quarrying	0.27*	0.19	0.26*
Manufacturing	0.19	0.16	0.16
Energy supply	0.23	0.27*	0.24
Construction and real estate	0.28**	0.22	0.22
Transport	0.14	0.19	0.24
Banking and investment activities	0.3**	0.28*	0.3**
Insurance activities and pension funds	0.19	0.23	0.27*
Government	0.24	0.23	0.24
Central bank and/or financial regulator	0.26	0.27*	0.27*
Households	0.19	0.27*	0.33***
Banks' risks			
Credit risk	0.29**	0.31**	0.28**
Liquidity risk	0.16	0.24	0.23
Market risk	0.31**	0.31**	0.25
Operation risk	0.22	0.19	0.12
Portfolio re-balancing after (climate) events			
Paris (green)	0.17	0.19	0.27***
Paris (brown)	0.2	0.13	0.17
Trump (green)	0.13	0.2*	0.08
Trump (brown)	0.14	0.21*	0.08
Biden (green)	0.2	0.16	0.23**
Biden (brown)	0.07	0.15	0.23**
COVID-19 (green)	0.14	0.18	0.2*
COVID-19 (brown)	0.18	0.18	0.19
War in Ukraine (green)	0.23**	0.22**	0.13
War in Ukraine (brown)	0.19	0.24**	0.14
Climate goals and their achievability			
LT goal	0.13	0.17	0.11
ST goal	0.13	0.15	0.18
Neutrality goal	0.21*	0.16	0.17
COVID-19	0.12	0.08	0.15
War in Ukraine	0.14	0.11	0.15
Greenwashing			
Statement 1	0.29***	0.26***	0.18
Statement 2	0.09	0.11	0.12
Statement 3	0.19	0.23**	0.12
Statement 4	0.13	0.12	0.12
Statement 5	0.18	0.19	0.27***

Note: The table presents Pearson's Chi-squared contingency coefficient and the p-value of Pearson's Chi-squared test. The null hypothesis of the test states that the variables and their categories are independent. The contingency coefficient is standardized and corrected to lie between 0 and 1 so that it is independent of both the sample size and the number of categories (responses to individual questions), i.e., a higher coefficient means higher dependency. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table C4: Contingency Coefficients: How Have Financial Institutions Changed Their Exposure to "Green" and "Brown" Non-Financial Corporations in Response to the Following Events?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Paris Climate Agreement		President Trump's withdrawal from COP21		President Biden's rejoining of COP21		COVID-19		War in Ukraine	
	Green exposures	Brown exposures	Green exposures	Brown exposures	Green exposures	Brown exposures	Green exposures	Brown exposures	Green exposures	Brown exposures
Portfolio re-balancing after (climate) events										
Paris (green)										
Paris (brown)	0.82***									
Trump (green)	0.44***	0.46***								
Trump (brown)	0.52***	0.51***	0.75***							
Biden (green)	0.65***	0.5***	0.61***	0.6***						
Biden (brown)	0.62***	0.54***	0.52***	0.68***	0.78***					
COVID-19 (green)	0.22**	0.16	0.26**	0.31***	0.29***	0.19				
COVID-19 (brown)	0.08	0.1	0.15	0.24**	0.16	0.05	0.77***			
War in Ukraine (green)	0.39***	0.43***	0.56***	0.44***	0.49***	0.39***	0.48***	0.41***		
War in Ukraine (brown)	0.45***	0.36***	0.3***	0.45***	0.35***	0.4***	0.34***	0.46***	0.73***	
Opportunity vs. risk										
Agriculture, forestry and fishing	0.2	0.17	0.26*	0.27*	0.24	0.24	0.25	0.22	0.19	0.32***
Mining and quarrying	0.19	0.22	0.15	0.19	0.13	0.22	0.23	0.16	0.22	0.16
Manufacturing	0.17	0.15	0.21	0.27*	0.17	0.21	0.2	0.18	0.26*	0.27*
Energy supply	0.15	0.21	0.24	0.27*	0.18	0.19	0.28**	0.25	0.23	0.28**
Construction and real estate	0.18	0.16	0.21	0.25	0.27*	0.24	0.23	0.28**	0.17	0.24
Transport	0.17	0.18	0.16	0.33***	0.18	0.19	0.12	0.14	0.21	0.24
Banking and investment activities	0.21	0.21	0.26*	0.26*	0.25	0.2	0.11	0.24	0.29**	0.27*
Insurance activities and pension funds	0.19	0.21	0.27*	0.24	0.22	0.17	0.14	0.18	0.22	0.3**
Government	0.16	0.19	0.19	0.24	0.24	0.18	0.17	0.23	0.24	0.25
Central bank and/or financial regulator	0.26	0.2	0.21	0.3**	0.18	0.17	0.24	0.19	0.24	0.14
Households	0.29**	0.26*	0.25	0.31**	0.24	0.24	0.18	0.21	0.27*	0.24
Banks' risks										
Credit risk	0.25	0.27*	0.37***	0.47***	0.27*	0.26*	0.2	0.18	0.26	0.18
Liquidity risk	0.2	0.27*	0.35***	0.46***	0.27*	0.28*	0.17	0.23	0.3**	0.19
Market risk	0.21	0.23	0.26	0.31***	0.19	0.16	0.18	0.25	0.17	0.19
Operation risk	0.26	0.3**	0.32***	0.42***	0.3**	0.26	0.17	0.18	0.26	0.27*
Market valuation of "green" assets										
Equity	0.17	0.2	0.13	0.14	0.2	0.07	0.14	0.18	0.23**	0.19
Corporate bonds	0.19	0.13	0.2*	0.21*	0.16	0.15	0.18	0.18	0.22**	0.24**
Government bonds	0.27***	0.17	0.08	0.08	0.23**	0.23**	0.2*	0.19	0.13	0.14
Climate goals and their achievability										
LT goal	0.21*	0.21*	0.11	0.17	0.18	0.15	0.08	0.06	0.03	0.18
ST goal	0.3***	0.23**	0.1	0.22**	0.14	0.13	0.2	0.15	0.14	0.2*
Neutrality goal	0.22*	0.15	0.07	0.13	0.11	0.16	0.16	0.11	0.12	0.15
COVID-19	0.23**	0.18	0.13	0.05	0.14	0.07	0.47***	0.41***	0.21*	0.16
War in Ukraine	0.18	0.23**	0.22**	0.13	0.18	0.21*	0.15	0.09	0.51***	0.42***
Greenwashing										
Statement 1	0.1	0.09	0.05	0.18	0.22**	0.15	0.14	0.13	0.11	0.15
Statement 2	0.15	0.18	0.14	0.12	0.19	0.21*	0.16	0.17	0.1	0.08
Statement 3	0.18	0.16	0.28***	0.34***	0.28***	0.27***	0.13	0.15	0.17	0.19
Statement 4	0.16	0.12	0.13	0.11	0.21*	0.19	0.22*	0.11	0.09	0.11
Statement 5	0.15	0.15	0.19	0.25**	0.19	0.2	0.15	0.17	0.16	0.13

Note: The table presents Pearson's Chi-squared contingency coefficient and the p-value of Pearson's Chi-squared test. The null hypothesis of the test states that the variables and their categories are independent. The contingency coefficient is standardized and corrected to lie between 0 and 1 so that it is independent of both the sample size and the number of categories (responses to individual questions), i.e., a higher coefficient means higher dependency. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table C5: Contingency Coefficients: Are the Following Goals Achievable? How Will the COVID-19 Pandemic and the War in Ukraine Affect Reaching These Goals?

	(1)	(2)	(3)	(4)	(5)
		Achievability of goals		How achievability is affected	
	LT goal	ST goal	Neutrality goal	COVID-19	War in Ukraine
Climate goals and their achievability					
LT goal					
ST goal	0.57***				
Neutrality goal	0.52***	0.59***			
COVID-19	0.12	0.13	0.18		
War in Ukraine	0.18	0.28***	0.22*	0.33***	
Opportunity vs. risk					
Agriculture, forestry and fishing	0.28*	0.26	0.2	0.19	0.25
Mining and quarrying	0.22	0.2	0.3**	0.2	0.2
Manufacturing	0.33***	0.19	0.23	0.24	0.31**
Energy supply	0.32***	0.26	0.21	0.25	0.27*
Construction and real estate	0.24	0.27*	0.16	0.16	0.21
Transport	0.27*	0.23	0.21	0.2	0.23
Banking and investment activities	0.22	0.19	0.19	0.24	0.27*
Insurance activities and pension funds	0.25	0.29**	0.2	0.21	0.23
Government	0.26	0.19	0.25	0.22	0.27*
Central bank and/or financial regulator	0.24	0.27*	0.24	0.17	0.21
Households	0.3**	0.31**	0.3**	0.17	0.25
Banks' risks					
Credit risk	0.13	0.23	0.19	0.24	0.18
Liquidity risk	0.16	0.24	0.21	0.24	0.16
Market risk	0.25	0.21	0.24	0.21	0.24
Operation risk	0.14	0.2	0.19	0.21	0.3**
Market valuation of "green" assets					
Equity	0.13	0.13	0.21*	0.12	0.14
Corporate bonds	0.17	0.15	0.16	0.08	0.11
Government bonds	0.11	0.18	0.17	0.15	0.15
Portfolio re-balancing after (climate) events					
Paris (green)	0.21*	0.3***	0.22*	0.23**	0.18
Paris (brown)	0.21*	0.23**	0.15	0.18	0.23**
Trump (green)	0.11	0.1	0.07	0.13	0.22**
Trump (brown)	0.17	0.22**	0.13	0.05	0.13
Biden (green)	0.18	0.14	0.11	0.14	0.18
Biden (brown)	0.15	0.13	0.16	0.07	0.21*
COVID-19 (green)	0.08	0.2	0.16	0.47***	0.15
COVID-19 (brown)	0.06	0.15	0.11	0.41***	0.09
War in Ukraine (green)	0.03	0.14	0.12	0.21*	0.51***
War in Ukraine (brown)	0.18	0.2*	0.15	0.16	0.42***
Greenwashing					
Statement 1	0.13	0.16	0.16	0.18	0.15
Statement 2	0.31***	0.32***	0.17	0.12	0.24**
Statement 3	0.21*	0.26**	0.27***	0.13	0.2*
Statement 4	0.19	0.21*	0.32***	0.11	0.13
Statement 5	0.12	0.2	0.19	0.1	0.17

Note: The table presents Pearson's Chi-squared contingency coefficient and the p-value of Pearson's Chi-squared test. The null hypothesis of the test states that the variables and their categories are independent. The contingency coefficient is standardized and corrected to lie between 0 and 1 so that it is independent of both the sample size and the number of categories (responses to individual questions), i.e., a higher coefficient means higher dependency. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table C6: Contingency Coefficients: Do You Agree with the Following Statements Regarding Greenwashing?

	(1) Financial and/or non-financial institutions extensively engage in greenwashing.	(2) Sometimes it can be difficult to tell whether a certain behaviour is greenwashing or not.	(3) Greenwashing (if undetected) increases the market valuation of a company involved in this practice.	(4) Greenwashing (if detected) should lead to a worse ESG rating.	(5) Greenwashing should be punished more strictly than other types of fraud.
Greenwashing					
Statement 1					
Statement 2	0.25**				
Statement 3	0.26***	0.27***			
Statement 4	0.31***	0.34***	0.46***		
Statement 5	0.28***	0.17	0.26***	0.34***	
Opportunity vs. risk					
Agriculture, forestry and fishing	0.21	0.2	0.21	0.18	0.2
Mining and quarrying	0.26*	0.17	0.22	0.27*	0.15
Manufacturing	0.21	0.19	0.24	0.33***	0.23
Energy supply	0.18	0.21	0.22	0.21	0.33***
Construction and real estate	0.21	0.19	0.23	0.2	0.28**
Transport	0.16	0.17	0.24	0.18	0.25
Banking and investment activities	0.15	0.22	0.21	0.18	0.26*
Insurance activities and pension funds	0.19	0.27*	0.21	0.11	0.15
Government	0.09	0.16	0.29**	0.22	0.3**
Central bank and/or financial regulator	0.17	0.21	0.15	0.21	0.26*
Households	0.22	0.27*	0.24	0.28**	0.27*
Banks' risks					
Credit risk	0.22	0.3**	0.2	0.27*	0.39***
Liquidity risk	0.2	0.11	0.23	0.21	0.37***
Market risk	0.17	0.28**	0.2	0.28**	0.29**
Operation risk	0.3**	0.28**	0.23	0.16	0.31**
Market valuation of "green" assets					
Equity	0.29***	0.09	0.19	0.13	0.18
Corporate bonds	0.26***	0.11	0.23**	0.12	0.19
Government bonds	0.18	0.12	0.12	0.12	0.27***
Portfolio re-balancing after (climate) events					
Paris (green)	0.1	0.15	0.18	0.16	0.15
Paris (brown)	0.09	0.18	0.16	0.12	0.15
Trump (green)	0.05	0.14	0.28***	0.13	0.19
Trump (brown)	0.18	0.12	0.34***	0.11	0.25**
Biden (green)	0.22**	0.19	0.28***	0.21*	0.19
Biden (brown)	0.15	0.21*	0.27***	0.19	0.2
COVID-19 (green)	0.14	0.16	0.13	0.22*	0.15
COVID-19 (brown)	0.13	0.17	0.15	0.11	0.17
War in Ukraine (green)	0.11	0.1	0.17	0.09	0.16
War in Ukraine (brown)	0.15	0.08	0.19	0.11	0.13
Climate goals and their achievability					
LT goal	0.13	0.31***	0.21*	0.19	0.12
ST goal	0.16	0.32***	0.26**	0.21*	0.2
Neutrality goal	0.16	0.17	0.27***	0.32***	0.19
COVID-19	0.18	0.12	0.13	0.11	0.1
War in Ukraine	0.15	0.24**	0.2*	0.13	0.17

Note: The table presents Pearson's Chi-squared contingency coefficient and the p-value of Pearson's Chi-squared test. The null hypothesis of the test states that the variables and their categories are independent. The contingency coefficient is standardized and corrected to lie between 0 and 1 so that it is independent of both the sample size and the number of categories (responses to individual questions), i.e., a higher coefficient means higher dependency. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix D: Linear Probability Model – Full Results

Table D1: Linear Probability Model: Is the Transition to a Low-Carbon Economy an Opportunity or a Risk for the Following Sectors?

	(1) Agriculture, forestry and fishing	(2) Mining and quarrying	(3) Manu-facturing	(4) Energy supply	(5) Construc-tion and real estate	(6) Transport	(7) Banking and investment activities	(8) Insurance activities and pension funds	(9) Govern-ment	(10) Central bank and financial regulator	(11) House-holds
Constant	0.868***	0.099	0.518***	0.735***	0.284	0.363**	0.555***	0.772***	0.657***	0.502***	0.231
	(0.199)	(0.152)	(0.202)	(0.212)	(0.206)	(0.212)	(0.207)	(0.207)	(0.21)	(0.174)	(0.21)
Envir. conscious	0.005	0.006	0.024***	0.013	0.008	0.024***	0.008	0.014**	0.023***	0.022***	0.025***
	(0.008)	(0.005)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)
N&W Europe	-0.343***	0.014	-0.081	-0.075	0.173**	0.001	-0.101	-0.205**	-0.23**	-0.116	-0.17
	(0.106)	(0.083)	(0.116)	(0.121)	(0.104)	(0.124)	(0.118)	(0.119)	(0.126)	(0.111)	(0.114)
S&E Europe	-0.268***	0.068	-0.117	-0.114	0.346***	0.112	0.032	-0.031	-0.22**	-0.047	-0.084
	(0.106)	(0.084)	(0.117)	(0.12)	(0.108)	(0.124)	(0.12)	(0.12)	(0.127)	(0.112)	(0.115)
North America	-0.289***	-0.003	-0.075	-0.125	0.161	-0.067	-0.149	-0.204	-0.18	-0.316***	-0.312***
	(0.13)	(0.099)	(0.136)	(0.141)	(0.132)	(0.139)	(0.139)	(0.138)	(0.147)	(0.112)	(0.129)
Central Bank	-0.055	-0.16***	-0.02	-0.041	-0.077	-0.032	-0.134**	-0.099	-0.12	-0.14***	-0.02
	(0.078)	(0.048)	(0.078)	(0.077)	(0.075)	(0.076)	(0.075)	(0.073)	(0.074)	(0.063)	(0.073)
Researcher	0.035	-0.003	0.063	0.003	0.045	0.101	0.069	0.085	-0.051	0.009	0.125
	(0.082)	(0.056)	(0.084)	(0.082)	(0.081)	(0.081)	(0.079)	(0.077)	(0.078)	(0.066)	(0.079)
Left-wing	-0.029**	0.006	-0.008	-0.045***	-0.022	-0.023	-0.023	-0.024	-0.039***	-0.02	0.006
	(0.016)	(0.013)	(0.017)	(0.015)	(0.016)	(0.016)	(0.016)	(0.015)	(0.016)	(0.014)	(0.016)
Authoritarian	0.017	0.008	-0.002	0.018	0.011	0.015	0.011	-0.018	0.041***	0.002	0.03**
	(0.018)	(0.012)	(0.017)	(0.018)	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.015)	(0.017)

Note: The table presents the regression results of the linear probability model of equation (1). The dependent variable is a binary indicator equal to one if the answer of respondent *i* to the question "Is the transition to a low-carbon economy an opportunity or a risk for the following sectors?" is "Significant opportunity" or "Some opportunity". We estimate heteroskedasticity robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D2: Linear Probability Model: How Would You Generally Describe the Market Valuation of "Green Financial Assets" (i.e., Assets That Are Perceived by Investors as Environmentally Sustainable)?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Bank risk				Asset Valuation	
	Credit risk	Liquidity risk	Market risk	Operation risk	Equity	Corporate bonds	Government bonds
Constant	0.556***	0.424***	0.25	0.38**	0.459***	0.453***	0.209
	(0.204)	(0.187)	(0.207)	(0.204)	(0.209)	(0.202)	(0.185)
Envir. conscious	0.023***	0.026***	0.02***	0.013	-0.001	-0.009	0.005
	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)
N&W Europe	0.062	-0.129	0.112	-0.007	-0.154	-0.102	-0.228***
	(0.111)	(0.111)	(0.12)	(0.114)	(0.118)	(0.116)	(0.114)
S&E Europe	0.093	-0.122	0.215**	0.134	-0.121	-0.051	-0.174
	(0.11)	(0.114)	(0.118)	(0.116)	(0.119)	(0.119)	(0.115)
North America	0.001	-0.142	0.14	-0.093	-0.169	-0.068	-0.271***
	(0.137)	(0.13)	(0.142)	(0.133)	(0.136)	(0.135)	(0.122)
Central Bank	0.185***	0.076	0.138**	0.096	0.035	-0.048	-0.034
	(0.073)	(0.07)	(0.074)	(0.076)	(0.07)	(0.069)	(0.059)
Researcher	0.109	0.074	0.107	0.133**	0.044	-0.064	0.058
	(0.08)	(0.073)	(0.079)	(0.08)	(0.078)	(0.077)	(0.063)
Left-wing	0	0.017	0	-0.004	-0.012	0.005	0.028***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)	(0.015)	(0.012)
Authoritarian	-0.015	-0.021	0.015	-0.015	-0.003	-0.009	-0.001
	(0.018)	(0.017)	(0.018)	(0.018)	(0.017)	(0.017)	(0.014)

Note: The table presents the regression results of the linear probability model of equation (1). The dependent variable is a binary indicator equal to one if the answer of respondent *i* to the question "How would you generally describe the market valuation of "green financial assets" (i.e., assets that are perceived by investors as environmentally sustainable)?" is "Significant overvalued" or "Somewhat overvalued". We estimate heteroskedasticity robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D3: Linear Probability Model: How Have Financial Institutions Changed Their Exposure to "Green" and "Brown" Non-Financial Corporations in Response to the Following Events?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Paris Climate Agreement		President Trump's withdrawal from COP21		President Biden's rejoining of COP21		COVID-19		War in Ukraine	
	Green exposures	Brown exposures	Green exposures	Brown exposures	Green exposures	Brown exposures	Green exposures	Brown exposures	Green exposures	Brown exposures
Constant	0.387**	0.099**	0.039	0.356**	-0.129	0.15***	0.239	0.23	0.434***	0.302
	(0.199)	(0.054)	(0.072)	(0.198)	(0.185)	(0.076)	(0.159)	(0.141)	(0.175)	(0.206)
Envir. conscious	0.019***	0	0.002	0.017***	0.028***	0	0.018***	0.006	0.01	0.025***
	(0.008)	(0.003)	(0.002)	(0.008)	(0.008)	(0.002)	(0.007)	(0.006)	(0.007)	(0.008)
N&W Europe	-0.095	-0.042	0.042**	0.055	0.002	-0.031	0.116	-0.141	-0.135	0.103
	(0.104)	(0.041)	(0.025)	(0.115)	(0.114)	(0.044)	(0.081)	(0.095)	(0.111)	(0.115)
S&E Europe	-0.124	-0.003	0.016	0.134	0.085	-0.024	0.126	-0.104	-0.19**	0.214**
	(0.107)	(0.051)	(0.012)	(0.116)	(0.114)	(0.047)	(0.079)	(0.096)	(0.11)	(0.114)
North America	-0.024	-0.022	-0.003	0.08	0.003	-0.057	-0.033	-0.06	-0.152	0.089
	(0.123)	(0.055)	(0.012)	(0.134)	(0.135)	(0.045)	(0.084)	(0.117)	(0.123)	(0.134)
Central Bank	0.161***	-0.022	0.033	0.07	0.188***	-0.067***	0.018	0.032	0.053	0.09
	(0.07)	(0.032)	(0.028)	(0.071)	(0.069)	(0.031)	(0.062)	(0.057)	(0.06)	(0.075)
Researcher	0.227***	-0.011	0.022	0.225***	0.42***	-0.066**	-0.036	0.017	-0.049	-0.015
	(0.077)	(0.03)	(0.029)	(0.071)	(0.066)	(0.038)	(0.066)	(0.06)	(0.065)	(0.08)
Left-wing	0.023	-0.008	0	-0.02	0.031***	-0.001	-0.013	-0.004	0.008	0.021
	(0.015)	(0.008)	(0.006)	(0.016)	(0.015)	(0.006)	(0.014)	(0.013)	(0.013)	(0.016)
Authoritarian	-0.001	0.002	-0.009	-0.018	0.01	-0.003	-0.001	0.001	-0.016	-0.005
	(0.017)	(0.007)	(0.007)	(0.017)	(0.017)	(0.007)	(0.015)	(0.012)	(0.014)	(0.019)

Note: The table presents the regression results of the linear probability model of equation (1). The dependent variable is a binary indicator equal to one if the answer of respondent *i* to the question "How have financial institutions changed their exposure to "green" and "brown" non-financial corporations in response to the following events?" is "Increased". We estimate heteroskedasticity robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D4: Linear Probability Model: Do You Agree with the Following Statements Regarding Greenwashing?

	(1) Financial and/or non-financial institutions extensively engage in greenwashing.	(2) Sometimes it can be difficult to tell whether a certain behaviour is greenwashing or not.	(3) Greenwashing (if undetected) increases the market valuation of a company involved in this practice.	(4) Greenwashing (if detected) should lead to a worse ESG rating.	(5) Greenwashing should be punished more strictly than other types of fraud.
Constant	0.894***	0.642***	0.658***	0.721***	0.8***
	(0.196)	(0.175)	(0.194)	(0.167)	(0.198)
Envir. conscious	0.002	0.001	0.006	0.02***	0.015***
	(0.008)	(0.005)	(0.008)	(0.007)	(0.007)
N&W Europe	0.01	0.165	0.081	0.017	-0.255***
	(0.118)	(0.104)	(0.121)	(0.09)	(0.113)
S&E Europe	-0.014	0.205***	0.045	-0.025	-0.156
	(0.119)	(0.102)	(0.12)	(0.094)	(0.118)
North America	0.115	0.247***	-0.089	0.006	-0.367***
	(0.132)	(0.103)	(0.144)	(0.108)	(0.117)
Central Bank	-0.074	0.028	0.024	0.077	-0.162***
	(0.07)	(0.055)	(0.065)	(0.06)	(0.062)
Researcher	-0.029	0.083	0.094	0.049	-0.141**
	(0.077)	(0.067)	(0.073)	(0.067)	(0.072)
Left-wing	-0.056***	0.004	-0.01	-0.016	-0.01
	(0.014)	(0.011)	(0.015)	(0.012)	(0.014)
Authoritarian	0.013	-0.002	0.002	0.018	-0.018
	(0.016)	(0.011)	(0.016)	(0.014)	(0.018)

Note: The table presents the regression results of the linear probability model of equation (1). The dependent variable is a binary indicator equal to one if the answer of respondent *i* to the question "Do you agree with the following statements regarding greenwashing?" is "Agree". We estimate heteroskedasticity robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D5: Linear Probability Model: Are the Following Goals Achievable? How Will the COVID-19 Pandemic and the War in Ukraine Affect Reaching These Goals?

	(1)	(2)	(3)	(4)	(5)
	Achievability of goals			How achievability is affected	
	LT goal	ST goal	Neutrality goal	COVID-19	War in Ukraine
Constant	0.429***	0.499***	0.611***	0.399***	0.475***
	(0.211)	(0.21)	(0.209)	(0.185)	(0.178)
Envir. conscious	0.022***	0.018***	0.018***	0.001	0.006
	(0.008)	(0.008)	(0.008)	(0.007)	(0.006)
N&W Europe	-0.201**	0.009	-0.156	0.086	-0.208**
	(0.117)	(0.114)	(0.11)	(0.104)	(0.113)
S&E Europe	-0.086	-0.006	-0.162	0.025	-0.268***
	(0.119)	(0.115)	(0.113)	(0.105)	(0.112)
North America	-0.136	-0.047	-0.108	-0.07	-0.273***
	(0.137)	(0.139)	(0.132)	(0.114)	(0.121)
Central Bank	0.05	0.002	0.097	0.092	0.053
	(0.079)	(0.076)	(0.075)	(0.072)	(0.056)
Researcher	0.029	0.024	0.146**	0.011	-0.055
	(0.084)	(0.081)	(0.081)	(0.075)	(0.061)
Left-wing	0.016	-0.033***	-0.017	-0.017	-0.003
	(0.016)	(0.016)	(0.016)	(0.015)	(0.013)
Authoritarian	0.009	0.018	0.008	-0.013	-0.007
	(0.018)	(0.017)	(0.018)	(0.017)	(0.014)

Note: The table presents the regression results of the linear probability model of equation (1). The dependent variable is a binary indicator equal to one if the answer of respondent *i* to the question "Are the following goals achievable? How will the COVID-19 pandemic and the war in Ukraine affect reaching these goals?" is "Achievable" and "Contributes to reaching goals". We estimate heteroskedasticity robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D6: Linear Probability Model: How Important Should the Contributions and Responsibility of the Following Stakeholders Be in the Transition to a Low-Carbon Economy?

	(1) Government	(2) Financial sector	(3) Households	(4) Non-financial firms
Constant	0.785***	0.913***	0.144	0.299
	(0.186)	(0.14)	(0.209)	(0.214)
Envir. conscious	0.006	0.000	-0.016***	0.003
	(0.007)	(0.006)	(0.008)	(0.008)
N&W Europe	0.061	0.028	0.163	0.021
	(0.109)	(0.097)	(0.114)	(0.12)
S&E Europe	0.051	0.099	0.018	0.013
	(0.111)	(0.095)	(0.118)	(0.122)
North America	0.165	0.07	0.132	-0.021
	(0.117)	(0.108)	(0.139)	(0.146)
Central Bank	-0.049	-0.005	0.078	0.055
	(0.069)	(0.051)	(0.075)	(0.077)
Researcher	-0.067	-0.026	0.018	0.005
	(0.075)	(0.055)	(0.08)	(0.083)
Left-wing	-0.032***	-0.007	0.022	0.023
	(0.013)	(0.01)	(0.017)	(0.016)
Authoritarian	0.019	-0.01	0.027	0.018
	(0.016)	(0.011)	(0.018)	(0.018)

Note: The table presents the regression results of the linear probability model of equation (1). The dependent variable is a binary indicator equal to one if respondent *i* in response to the question "How important should the contributions and responsibility of the following stakeholders be in the transition to a low-carbon economy?" ranked the specific sector higher than the majority of the other respondents. We do not report estimates for "Central bank and/or financial regulator", because the majority of the respondents ranked it first. We estimate heteroskedasticity robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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