

Siemroth, Christoph; Hornuf, Lars

Working Paper

Do Retail Investors Value Environmental Impact? A Lab-in-the-Field Experiment with Crowdfunders

CESifo Working Paper, No. 9197

Provided in Cooperation with:

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Siemroth, Christoph; Hornuf, Lars (2021) : Do Retail Investors Value Environmental Impact? A Lab-in-the-Field Experiment with Crowdfunders, CESifo Working Paper, No. 9197, Center for Economic Studies and ifo Institute (CESifo), Munich

This Version is available at:

<https://hdl.handle.net/10419/245378>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

**Do Retail Investors Value
Environmental Impact?
A Lab-in-the-Field Experiment
with Crowdfunders**

Christoph Siemroth, Lars Hornuf

Impressum:

CESifo Working Papers

ISSN 2364-1428 (electronic version)

Publisher and distributor: Munich Society for the Promotion of Economic Research - CESifo GmbH

The international platform of Ludwigs-Maximilians University's Center for Economic Studies and the ifo Institute

Poschingerstr. 5, 81679 Munich, Germany

Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email office@cesifo.de

Editor: Clemens Fuest

<https://www.cesifo.org/en/wp>

An electronic version of the paper may be downloaded

- from the SSRN website: www.SSRN.com
- from the RePEc website: www.RePEc.org
- from the CESifo website: <https://www.cesifo.org/en/wp>

Do Retail Investors Value Environmental Impact? A Lab-in-the-Field Experiment with Crowdfunders

Abstract

Are investors willing to give up a higher return if the investment generates positive environmental impact? We investigate this question with a decision experiment among crowdfunders, where they choose between a higher return or environmental impact. Overall, 65% of investors choose environmental impact at the expense of a higher return for sufficiently large impact, 14% choose impact independent of the magnitude of impact, while 21% choose the higher return independent of impact. Combining the experimental data with historical investments, we find that investors allocate a larger share of funds to green projects if they value environmental impact more, and if they expect green projects to be more profitable. These findings suggest that investors have a preference for positive environmental impact, and satisfy it by investing in green projects. We further show that the preference for environmental impact is distinct from a preference for positive social impact. Finally, we introduce new survey measures of impact for future use, which are experimentally validated and predict field behavior.

JEL-Codes: C930, D140, D900, G320.

Keywords: debt crowdfunding, environmental impact, ESG, green investments, social impact, sustainable finance.

Christoph Siemroth
University of Essex
Department of Economics
United Kingdom – Colchester, CO4 3SQ
christoph.siemroth@essex.ac.uk

Lars Hornuf
University of Bremen
Faculty of Business Studies and Economics
Germany – 28359 Bremen
hornuf@uni-bremen.de

July 14, 2021

We are grateful to Paul Belleflamme, Friederike Mengel, Dennie van Dolder, and Lisa Spantig, as well as seminar participants at Essex and ESCP Berlin for valuable comments. We also thank the representatives of the ROCKETS crowdfunding platforms for their incredible support for this field experiment, in particular Silke Glauninger. This work was supported by the Economic and Social Research Council [grant number ES/T015357/1] and the German Federal Ministry of Education and Research [grant number 031B0781A]. This experiment received ethical approval from the University of Essex, application no. ETH2021-0924. Moreover, we pre-registered the statistical analysis: <https://www.socialscienceregistry.org/trials/7597>.

1 Introduction

Climate change is increasingly seen as a major societal problem. Addressing climate change and reducing greenhouse gas emissions will require substantial changes in the global economy, especially in the energy or transportation sector (e.g., [Unger et al., 2010](#)). These changes will require substantial investments in R&D for new technologies, such as renewable energy or low emission transportation, and in infrastructure, to replace or phase out the existing high emission technology. The capital market plays a central role in the financing of these new technologies, products, and services. If the financing is inefficient, or financing constraints prevent better technologies from being developed and socially desirable projects from being implemented, then the goal to limit climate change and reduce greenhouse gas emissions might not be attainable. Indeed, the conditions in capital markets directly determine how costly addressing climate change will be.

For these reasons, it is important to understand how investors evaluate investments in “green” projects that have a positive environmental impact, compared to conventional projects that have no or even a negative environmental impact. On the one hand, investments in new green technologies may be more risky or less profitable, as many new technologies and products fail. Thus, risk averse investors might be hesitant to invest in such projects. On the other hand, investors might have a preference for doing something positive for the environment, effectively increasing their utility from investing in a green project, while also expecting a return on investment. Such preferences might make green projects more attractive than conventional projects, keeping all other factors such as expected returns, risk, and liquidity equal.

In this paper, we study investors from a group of crowdfunding platforms that offers both green investment projects and conventional investment projects. This allows us to investigate why investors choose green projects over conventional projects. The main question is whether investors invest because they believe green projects are more profitable in expectation, or whether they invest because they also have a preference to achieve a positive environmental impact.

Testing the hypothesis that investors value environmental impact is difficult, because measuring the true preferences for impact is not straightforward. One approach is to ask investors directly whether it is important to them to achieve a positive environmental impact. However, given that questions of environmental policies and climate change have been met with increasing polarization in recent years (e.g., [Farrell, 2016](#); [Chinn et al., 2020](#)), there is a concern that answers to such survey questions would be biased. In particular, social desirability bias might favor answers that let the investor appear as caring about the environment and wanting to achieve positive environmental impact, even if they do not have such preferences. Because survey answers do not have material consequences, there is little cost to investors in giving the socially desired rather than true answer, which might lead to biased measures.

We address the potential problem with self-reporting and the social desirability bias by conducting an online “lab in the field” decision experiment. This allows us to use an incentivized preference elicitation method to find out how much the investors truly value environmental impact when making investment decisions. Our method—a menu-based Becker-DeGroot-Marschak (BDM) mechanism

(Becker et al., 1964)—achieves this by introducing an explicit trade-off. In the decision experiment, investors can either receive a higher expected investment return by choosing a voucher to be used for *non-green* investment projects. Or, instead, they can give this money to an environmental cause, thus achieving environmental impact, but getting no higher investment return. Consequently, investors cannot merely claim to care about environmental impact without consequence; they would have to give up a higher investment return to do so, which makes our lab measures of the importance of environmental impact more credible. The voucher can later be used by the investors on a real estate project of their choice, but not on green projects, which ensures the clean trade-off between higher investment return or environmental impact, but not both.

We asked all investors for their willingness to donate to each of two organizations to capture environmental impact. First, a carbon offsetting firm, which uses the donation to reduce greenhouse gas emissions, for example by substituting fossil fuel energy sources with renewable energy sources. And second, Greenpeace, the most well known and most donated to environmental organization in the country we study. A donation to either of these two organizations implies environmental impact, and by using donations to both organizations our measure of environmental impact is broader than just carbon offsetting.

Our BDM procedure allows us to determine—for each investor and each organization—the donation amount for which the investor just prefers the donation to the specific organization over the investment voucher for themselves. Hence, the BDM procedure produces a fine measure of the importance of environmental impact. Investors who choose the voucher for themselves, no matter how large the donation amount, reveal themselves as not attaching any importance to environmental impact. Investors who forgo the investment voucher for a smaller donation amount, on the other hand, attach a larger importance to environmental impact.

About 21% of investors choose the voucher independent of the donation amount to the environmental organizations, and hence reveal they do not value environmental impact. At the other extreme, about 14% of investors are willing to give up the voucher for any donation amount, and hence reveal a very strong preference for environmental impact. The remaining 65% are willing to give up the voucher only for a sufficiently large donation, with a large variation in the indifference point. These numbers suggest that a large portion of investors might be willing to accept slightly lower investment returns from green projects if the environmental impact is sufficiently large. Among the two environmental organizations, carbon offsetting is valued more by investors than a donation to Greenpeace.

We next investigate to what degree green investments in the field are driven by a preference for environmental impact. A field observation of an investment in a green project is not enough to conclude that it is motivated by environmental impact, or that investors have preferences for such impact. For example, the investor might not value environmental impact, but believe the green project is more profitable than the alternative non-green projects. In order to distinguish these motives, we combine our incentivized measure of the importance of environmental impact with beliefs about the profitability of green projects and with the investment history of the investor. Thus, we can test whether expected returns, importance of environmental impact, or a combination of these motives explain why investors choose green projects.

Our main finding is that investors invest more in green projects if they believe green projects to be more profitable and if they attach more importance to environmental impact. Consequently, investors who are more willing to give up higher investment returns via the voucher for environmental impact are also those who invest more in green projects. These findings are consistent with investors having a preference for environmental impact, which is fulfilled by investing in green projects, and not merely with investing because they expect better returns from green projects.

We also separate “green” investors who initially signed up to the crowdfunding platform for green projects, and more “conventional” investors who initially signed up for non-green projects.¹ Even among the subset of conventional investors, both higher return expectations of green projects and the higher importance of environmental impact significantly increase the share of investments in green projects, mirroring the result for the full sample. Hence, our finding that environmental impact affects investment decisions is not driven solely by ideological green investors.

We next ask whether investors choose green projects because they value helping the environment *per se*, or rather because they value helping the environment since it ultimately helps other people. For example, a reduction in some emissions might keep pollution levels in cities down or keep global sea levels stable, thus benefiting city and island inhabitants. Hence, helping the environment might be instrumental in helping other people, but not an intrinsic goal. Indeed, [Riedl and Smeets \(2017\)](#) recently concluded that socially responsible investments—which include green investments and more—can be best explained by social preferences.

To answer this question, we additionally elicit a measure of the importance of social impact for each investor in the experiment. Consequently, besides the two environmental organizations, we also ask for each investor’s willingness to donate to the Red Cross via BDM. A donation to the Red Cross captures social but not environmental impact, by providing care to the elderly or sheltering the homeless, among other things. We find that investors on average value environmental impact slightly more than social impact in the experiment, i.e., are more willing to give up the voucher for a donation with environmental impact than for social impact. Nevertheless, 13% of investors are willing to forgo the voucher for any donation amount to the Red Cross, 62% are willing to give up the voucher for a sufficiently large donation, and 25% are not willing to give up the voucher for any donation amount.

We then explain the share of green investments via regressions jointly with return expectations, with importance of environmental impact and with importance of social impact. We find that both return expectations and importance of environmental impact, but not importance of social impact, are significant predictors of the share of investments in green projects. That is, investors who value social impact more do not invest more in green projects, holding return expectations and importance of environmental impact constant. This suggests that investors choose green projects because they are optimistic about the expected returns and because they want to achieve environmental impact, but they behave as if green projects do not have a positive social impact beyond the environmental

¹This is because investing in green projects requires a separate registration on the green platform, whereas for example investments in real estate projects require a separate registration on the real estate platform. Hence, we can infer why investors first came to the crowdfunding platform and use the original registration to categorize them.

impact. Hence, unlike findings in earlier studies, the motivation to invest in green projects appears to be more consistent with a desire to achieve environmental impact rather than with social preferences.²

Finally, we also investigate which other individual investor variables explain green investments. The demographics of investors, such as gender, age, income, or employment status, do not significantly change the propensity to invest in green projects. Instead, attitudes towards the environment, such as a stronger belief that something should be done to address climate change, increase the share of investments in green projects.

Additional survey evidence confirms the findings from the experimental and field data. Out of 11 options, investors view a high interest rate and environmental impact as the two most important characteristics of a potential investment project when they decide whether to invest or not. An interesting new finding from the survey is that investors use crowdfunding, rather than stocks, bonds, funds, or other investment alternatives, because it allows them to pick the specific project that will receive the money, which is not possible with mutual funds or even stocks of large firms. Hence, these investors appear to value the control they have over what their money is actually used for.

On a methodological level, our incentive compatible lab measures of the importance of environmental and social impact prove to be useful in explaining field behavior, and can therefore be used in the future to categorize investors. In this study, we also introduce two new non-incentivized survey questions of the importance of environmental impact, and one of the importance of social impact. We show these new survey measures are experimentally valid, i.e., are significantly correlated with our incentivized lab measures, which justifies future use.³ In fact, one of our two survey measures of the importance of environmental impact is a stronger predictor of field behavior—the share of funds invested in green projects—than the incentivized lab measure. The strong correlation between field behavior and survey measures can be taken as evidence that social desirability bias—for the survey questions we used—are not a major problem when measuring the importance of environmental impact.

The platforms we study are part of the Austrian ROCKETS Group, which consists of multiple crowdfunding platforms with specialization. The platform GREEN ROCKET has exclusively green investment projects, with an environmental or sustainability focus, such as renewable energy projects or funding of electric bikes. HOME ROCKET has exclusively real estate projects, and LION ROCKET funds small firms. The investors are mostly from Austria, Germany, and Switzerland.

Projects that seek funding on the platforms typically offer a debt contract to investors (Hornuf et al., 2021), which specifies among others the duration and interest rate of the project. Only rarely, an additional profit-sharing component is included in the contract, so that more money is paid out if the firm/project exceeds a certain threshold by a predefined date. If investors collectively pledge enough and reach the project funding goal by the end of the funding period, the funds are transferred to the project, otherwise they are returned to the investors. The typical duration of the crowdfunded

²However, these earlier studies such as Riedl and Smeets (2017) often investigated socially responsible investments that included investments with positive social impact, and not specifically investments with positive environmental impact as we do. Hence, these findings are not necessarily in conflict. Rather, our conclusion applies to green projects specifically, whereas theirs applies to a broader class of investments.

³See a related literature on survey measures for risk and time preferences (Dohmen et al., 2011; Falk et al., 2016), various social preferences (Falk et al., 2018), and preferences for competition (Buser et al., 2021).

loan is between 2-6 years. The project team provides details about a project on the platform website, including the project description, previous funding experience, business plan, and sometimes the possibility to directly contact the project initiator.

A sometimes-raised concern with similar experiments is that decisions would have been different if the stakes had been higher. We do not believe that this is an issue in our study. Our experimental measure of the importance of environmental impact is highly predictive of field behavior, so it evidently captures at least part of the motivation to invest in green projects.

The paper is structured as follows. Section 1.1 reviews the relevant literature. Section 2 explains the experimental design and the elicited responses. Section 3 describes the data and section 4 presents the results. Finally, section A in the appendix gives a formal example of preferences for impact and how our experimental measures capture them. The experimental instructions are in the appendix.

1.1 Literature

ESG investment motives

The existing theoretical literature has investigated the risk and return consequences for investor portfolios solely considering assets that have a positive environmental, social, and governance (ESG) impact. [Heinkel et al. \(2001\)](#) were among the first to develop an equilibrium model showing that non-green firms confront higher costs of capital, because green investors avoid these firms and overall fewer investors demand non-green assets. Consequently, investors not having ESG preferences earn a premium because others avoid non-green firms. More recently, [Luo and Balvers \(2017\)](#) and [Zerbib \(2020\)](#) have confirmed that, in equilibrium, segmented markets lead to higher expected returns for investors who include non-green firms in their portfolios. Thus, in theory, investors that have only risk and return motives should also hold non-ESG assets and consider so-called sin stocks (alcohol, gaming, tobacco, and weapons), because doing so increases the diversification potential of their portfolio ([Renneboog et al., 2008](#)).

The results of empirical research that analyses whether ESG portfolios under-perform or over-perform the market are mixed. Although theoretical research does not predict that stocks with low ESG scores should outperform the market (although portfolios also including non-ESG stocks should outperform pure ESG portfolios), [Hong and Kacperczyk \(2009\)](#) find that over the period from 1962 to 2006 sin stocks trading on the NYSE, Amex, and Nasdaq generated positive abnormal returns. In contrast, [Gompers et al. \(2003\)](#) and [Edmans \(2011\)](#) find evidence that higher scores on certain ESG criteria—such as worker satisfaction—correlate with higher firm profits. [Bolton and Kacperczyk \(2021\)](#) evidence that institutional investors screen assets for their emission intensity and that, in line with theoretical predictions, firms with higher total carbon dioxide emissions earn higher returns. Furthermore, a meta study investigating more than 2000 empirical studies on ESG performance concludes that the majority of articles find a positive ESG impact on corporate financial performance, which appears robust over time ([Friede et al., 2015](#)).

[Pedersen et al. \(2021\)](#) recently provided nuanced empirical evidence how costly ESG preferences

are, if investors incorporate such criteria into their portfolios. When measuring ESG by governance based on accruals, the costs of ethical investing are rather small. When imposing more realistic constraints on ESG portfolios, a steeper reduction in the ESG Sharpe ratio frontier results, as theory predicts. Finally, when removing assets with extremely low ESG ratings, green investors who maximize their Sharpe ratio might choose portfolios with even lower ESG portfolio scores than unconstrained investors, who can also invest in these low-ESG score assets. This is because unconstrained investors can short low ESG score assets to hedge risks which constrained investors cannot. [Barber et al. \(2021\)](#) find that investors in impact funds accept about 3 percentage points lower rates of return than investors in traditional venture capital funds. [Bauer et al. \(2021\)](#) find that pension fund members vote for a more sustainable investment policy due to social preferences rather than higher expected returns.

Experimental research on the topic, which promises more information on investors, is rarer. In a seminal contribution, [Døskeland and Pedersen \(2015\)](#) study how wealth concerns and moral concerns influence the decision to invest responsibly. Theirs is a framing experiment, which selectively emphasizes information (financial vs moral) and thus affects subjects, whereas ours is a decision experiment that directly calls for a decision. They find that a wealth framing is more effective than a moral framing of the investment for both information search and investment behavior. [Døskeland and Pedersen \(2015\)](#) thus suggests investors choose green assets more for financial than environmental reasons. A recent paper that is closely related to ours is [Heeb et al. \(2021\)](#). They conduct a lab-in-the-field experiment to see how investors adapt their willingness-to-pay (WTP) for a mutual funds investment if the impact of this investment in the form of CO₂ reductions changes. While investors are willing to pay for a minimum level of impact, their evidence shows that investors have no higher WTP for an investment with more impact. The authors conclude that investors are motivated by a desire to achieve a “warm glow.” Our contribution relative to [Heeb et al. \(2021\)](#) is that we combine the experimental choice data with return expectations and historical investments to explain why investors choose green projects in the field, thus demonstrating the external validity of our experimental measures. Moreover, our environmental impact measure is arguably broader, as it includes and goes beyond carbon offsetting, and we also measure social impact. [Riedl and Smeets \(2017\)](#)’s important study shows that financial motives play a smaller role and pro-social preferences—as measured by the receiver decision in a trust game—best explain the decision to make a socially responsible investment, in a sample of mutual fund investors. Their experimental task elicits social preferences, whereas we focus on environmental impact and social impact. But as in our study, they show that investors who are willing to give up money in the experiment for others are also more likely to make socially responsible investments.

Crowdfunding investment motives

Crowdfunding platforms have gained increasing popularity during the last decade. Debt-based crowdfunding that we investigate has been by far the largest market sub-segment ([Cumming and Hornuf, 2018](#)). These platforms can often secure funding for firms and projects which get turned down by traditional financiers, because they are too risky for banks and too small for venture capitalists to

step in. Empirical evidence shows that entrepreneurs turn more often to equity crowdfunding if banks are in distress (Blaseg et al., 2021). Bertsch et al. (2020) show that bank misconduct, as measured by consumer complaints, led to debt-based crowdfunding becoming more prevalent in the United States. In a similar vein, research by Saiedi et al. (2020) reports that debt-based crowdfunding is more popular among consumers who distrust banks. A novelty of crowdfunding is that it allows new firms and projects to obtain information about demand for their product from investors before the start-up enters the market, because investments are an effective signals (Strausz, 2017; Grüner and Siemroth, 2019). However, little is known about the ESG preferences of crowdfunders.

A seminal article by Belleflamme et al. (2014) shows theoretically that building a community is an important factor for crowdfunding success, which indicates that investment motives might go beyond a pure risk and return orientation. Empirical research has assessed how campaign characteristics affect investment decisions (Ahlers et al., 2015; Hornuf and Schwienbacher, 2018). These articles provide evidence, for example, that if entrepreneurs retain equity and if other crowdfunders invest larger amounts, crowdfunders are more likely to engage and to finance a venture. In line with research studying traditional stock markets, Agrawal et al. (2015) and Lin and Viswanathan (2016) show that the crowd has a preference for local investments. Recent research has shown that investors in debt-based crowdfunding have a preference for sensation seeking, by shifting from crowdfunding to lotteries when jackpots are large (Demir et al., 2021). With regard to ESG preferences, Calic and Mosakowski (2016) investigate technology and film/video campaigns on Kickstarter, and show that the sustainability orientation of a project positively impacts campaign success. Hörisch (2015) analyzes campaigns on Indiegogo and does not find any evidence that more ESG-oriented campaigns have a higher probability of funding success. Finally, Cholakova and Clarysse (2015) study the Dutch equity crowdfunding platform Symbid. They too find no evidence that motives besides risk and return play a significant role with regard to funding success. While all of these studies are based on observational data, we enrich the existing literature with experimental evidence. Importantly, we introduce new individual measures of how important ESG impact is to the investor, whereas the previous studies on environmental or social motives in crowdfunding observe only variation in investment projects.

2 Experimental design

2.1 Experimental task

The main objective of the experiment was to obtain robust and incentivized measures of how important social or environmental impact is to the investor. While such information might be easier to obtain via survey questions, the potential presence of social desirability bias or other biases makes actual choices with material consequences, rather than stated preferences, more credible.⁴

In this experiment, we use a customized version of the BDM mechanism to elicit the importance of social and environmental impact to investors. The BDM mechanism is customized, because the

⁴That is, it is desirable to be seen as caring about the environment, even if one does not. Hence, surveys might introduce biases towards answering that the environment is important or that the respondent is environmentally responsible.

presentation of the method to investors is “menu-based”, i.e., presented as a series of binary decisions (e.g., [Holt and Smith, 2016](#); [Healy, 2018](#)) and hence easier to understand than the classical BDM. BDM is incentive compatible independent of the degree of risk aversion of the investor, which makes it one of the most robust elicitation techniques. It has also been shown to be the best in horse races against other techniques (e.g., [Holt and Smith, 2016](#)).

The experimental task works as follows. Investors choose between a 25 Euro voucher, which they can use to invest *in a non-green real estate project*, and a donation. Choosing the 25 Euro voucher effectively increases the expected investment return of the investor, but rules out that there is an environmental impact from the voucher.⁵ If investors choose the donation, we (the researchers) promised to donate an amount x to one of three organizations, which create either social or environmental impact with that donation.⁶ In essence, investors can choose between a higher investment return *or* social/environmental impact via the donation. The choice, therefore, reveals how important social/environmental impact is to the investor. This choice is not just a stated preference: Choosing an environmental impact donation means forgoing a higher return by using the voucher.⁷

The BDM procedure requires the investor to choose the willingness to accept (WTA) the donation in Euro at and above which they would prefer the donation to the 25 Euro voucher. To make this choice incentive compatible, the computer draws a random number $x \in [1, 50]$ after the choice by the investor, and the donation in the amount of x is made if and only if $x \geq \text{WTA}$, i.e., if and only if the randomly chosen donation amount weakly exceeds the indifference threshold WTA by the investor.⁸

All integers in the interval $x \in [1, 50]$ were chosen with a positive and equal probability by the computer. If an investor never wants to donate and always wants the voucher, they only had to choose $\text{WTA} > 50$. If they always wanted the donation, they only had to choose $\text{WTA} = 1$. The BDM procedure was explained in detail to the investors in the experiment. If chosen, the voucher code was given to investors immediately after finishing the experiment, and also sent to them via email later. Alternatively, we made the donations on behalf of the investors to the three organizations, and sent proof of the donations a week after closing the experiment, as announced in the experimental instructions.

⁵If we had allowed the voucher to be used for green projects, then the choice between voucher and donation does not unambiguously have more environmental impact for the voucher or donation. After all, investment in a green project can potentially yield environmental impact, whereas investment in a non-green project cannot. Hence, it was crucial not to give out cash as payment, but rather a voucher that allowed us to control what the money could be invested in or spent on.

⁶It was important for us rather than the investors to make the donation, so that we can be sure that the money is in fact donated and not used for a different purpose. A positive side effect is that it also reduces the hassle for investors.

⁷One might argue that an investor could choose the voucher, invest the money, and then donate the returns, thus achieving environmental or social impact. However, this is implausible for two reasons. First, investment returns in crowdfunding are far below 50%, whereas the experiment allowed the donation to be up to 200% of the voucher value. Second, investments take years to get fully repaid, so there is a severe delay and potential risk in impact.

⁸To see why this procedure is incentive compatible, suppose you prefer a donation of at least 40 Euro to the 25 Euro voucher, hence $\text{WTA} = 40$. By choosing 40 in the experiment, you will always get the voucher if the randomly chosen donation amount is below 40—just like you prefer—and always get the donation if it is at least 40—also just like you prefer. You cannot do better by choosing a lower amount in the experiment: Suppose you choose 35 and the computer randomly draws $x = 37$. This results in the donation of 37 Euro, even though by construction you preferred the voucher over a 37 Euro donation. You also cannot do better by choosing a higher amount, say 45. If the computer draws $x = 44$, then you get the voucher even though you would have preferred the donation of 44 Euro to go to the organization.

We selected the following three organizations that best represent environmental or social impact. First, we wanted a carbon offset organization, which would use the donation to replace coal energy or plant trees in order to reduce greenhouse gas emissions. We selected carbonfootprint.com, which is one of the most efficient carbon offset organizations according to [Guardian \(2019\)](#). Second, because not everybody agrees that carbon offset is the best way to help the environment, we chose Greenpeace as a well-known environmental organization, whose activities go beyond reducing greenhouse gas emissions. Greenpeace is the organization with the 7th most donations in the country we study, and the environmental organization with the most donations ([Public Opinion, 2019](#)). These two organizations capture “environmental impact”: A donation to them either reduces greenhouse gas emissions or promotes environmental activism. As third organization we chose the local chapter of the Red Cross, which represents social impact. The Red Cross is active in areas such as care for the elderly, the homeless, and other social activities. It is the organization with the most donations in the country we study ([Public Opinion, 2019](#)).

In the experiment, we ask investors to state a WTA for each of the three organizations. The computer then randomly chose one of the three organizations $o \in \{\text{CarbonOffset}, \text{Greenpeace}, \text{RedCross}\}$, then randomly drew the donation amount $x \in [0, 50]$ and then selected the donation to organization o if $\text{WTA}(o) \geq x$, and otherwise gave the investor the voucher after the experiment. Thus, we received an incentive compatible WTA for each of the three organizations, but at most made a donation to the one that was selected by the computer. WTA is censored above at 51 Euro, so we do not distinguish very large WTAs.⁹ A lower WTA indicates a higher importance of environmental or social impact, because the investor is willing to make the donation and forgo the voucher for themselves for a lower donation.¹⁰ See section A in the appendix for a formal example illustrating this and how preferences for impact are reflected in the WTA we elicit.

We furthermore asked survey questions about the investor’s situation such as income and their attitudes towards crowdfunding (see section 3 for the respective variables). The order of the experimental block and the survey block was randomized to account for order effects. Overall, the survey and experiment together took investors about 15 minutes to complete, which makes the payment per hour—in case the voucher was chosen—relatively high compared to standard lab experiments.

2.2 Implementation

Both the survey and experimental part were implemented in the online survey software qualtrics. The crowdfunding platform sent email invitations for our qualtrics experiment in two waves to in total 4771 investors, on April 26 and April 29, 2021. The platform had conducted online surveys on their own before, so our study was not unusual for these investors.

We selected only registered investors that had invested before to receive the invitation, because re-

⁹Making larger values of WTA incentive compatible would have required us to donate more than 50 Euro per investor with positive probability, but these larger amounts would have been problematic in light of the university’s regulations on subject payments.

¹⁰Note that a lower WTA *does not* imply a lower donation. Instead, it means a donation is made more often; i.e., for smaller random draws x , but does not actually change the donation amount, which is determined by the computer.

sponses from registered, but inactive investors are not as insightful. Both investors that first registered on the green platform, which only features green investment projects, and those who first registered on the real estate platform that only features investments in real estate, were invited to take part in the experiment, so that we would get a mix of investors. We pre-registered the design and the statistical analysis before starting data collection, to commit ourselves to the analyses to be run and to rule out data mining.¹¹

Of the 399 participants, 258 (65%) made choices so that they received the voucher, for the remaining investors we donated on behalf of them to each of the three organizations.¹²

3 Data

In the experimental sample we investigate, 399 users finished both the survey and the experimental part, which is close to the 400 users we planned to get according to our pre-registration. Hence, the response rate was 8.4%.

We can test for non-response bias based on three variables, age, gender, and whether the investor first signed up on the GREEN ROCKET platform, which we received for the entire sample of invitees from the platform. A two-sample t-test between participants and non-participants shows no significant difference in the mean age of respondents ($t = 1.3594$, $df = 4764$, $p = 0.1741$).¹³ Moreover, a t-test shows no significant difference in gender representation ($t = -1.6339$, $df = 4769$, $p = 0.1023$), nor in green vs real estate investors ($t = -0.5052$, $df = 4769$, $p = 0.6134$). At least based on these observables, we have no evidence of a non-response bias.

As committed to in our pre-registration, we drop all observations where the respondent answered that they did not understand the experimental BDM procedure well, which we defined as the lowest response on a four point Likert scale. This is the case for 47 respondents. The subsequent analysis is carried out on the remaining 352 investors.

Table 1 displays the summary statistics. InvestShareGreen is the share of money invested in green projects, relative to all money invested on any of the platforms. The average share in our sample is 44%, but there is a large group of green investors who almost exclusively invest in green projects (slightly above 25%). There is also a large group that never invests in green projects (also slightly above 25%). In this sense, we have a balanced sample of exclusive green and non-green investors.

WTA-CarbonOffset, WTA-Greenpeace and WTA-RedCross are the willingnesses to accept the donation to the respective organization and forgo the investment voucher from our experiment. The response $WTA > 50$ is coded as 51. If the computer randomly draws a donation amount above WTA, the investor forgoes the 25 Euro voucher and chooses the donation instead. As our main incentivized

¹¹The pre-registration can be found at <https://www.socialscisceregistry.org/trials/7597>.

¹²Overall, we donated 1515 Euro for carbon offsetting, 1136 Euro to Greenpeace, and 1574 Euro to the Red Cross. The proof of donation was sent to all participants within two weeks of finishing the experiment by email, as promised in the experiment.

¹³We dropped five observations because the respective age was almost certainly incorrect; i.e., ages considerably below 18 or above 100.

Table 1: Summary statistics

	Mean	SD	1st Quartile	3rd Quartile	N
InvestShareGreen	0.44	0.40	0.00	1.00	352
WTA-CarbonOffset	32.25	18.29	20.00	50.00	352
WTA-Greenpeace	34.53	18.38	25.00	51.00	352
WTA-RedCross	32.99	18.36	25.00	51.00	352
WTA-Green	31.25	18.43	20.00	50.00	352
ImportanceGreen	0.45	0.66	0.00	1.00	352
ImportanceSocial	0.22	0.70	0.00	1.00	352
IndiffInterestGreen	2.67	3.13	1.00	3.00	352
PreferenceRiskSeeking	6.15	1.83	5.00	7.00	352
PreferenceTimePatient	7.05	2.03	6.00	8.00	352
GreenProfitability	-0.29	0.57	-1.00	0.00	352
BeliefFixClimateChange	5.46	1.15	5.00	6.00	352
DAgeUpTo25	0.06	0.23	0.00	0.00	352
DAgeUpTo35	0.24	0.43	0.00	0.00	352
DAgeUpTo45	0.23	0.42	0.00	0.00	352
DAgeUpTo55	0.22	0.41	0.00	0.00	352
DAgeUpTo65	0.17	0.38	0.00	0.00	352
DAgeAbove65	0.08	0.27	0.00	0.00	352
DMale	0.76	0.43	1.00	1.00	352
DFemale	0.21	0.41	0.00	0.00	352
DIncomeNoAnswer	0.14	0.35	0.00	0.00	352
DIncomeUpTo10k	0.03	0.18	0.00	0.00	352
DIncomeUpTo20k	0.06	0.24	0.00	0.00	352
DIncomeUpTo30k	0.08	0.28	0.00	0.00	352
DIncomeUpTo40k	0.11	0.31	0.00	0.00	352
DIncomeUpTo50k	0.11	0.31	0.00	0.00	352
DIncomeUpTo60k	0.11	0.31	0.00	0.00	352
DIncomeUpTo80k	0.15	0.36	0.00	0.00	352
DIncomeUpTo100k	0.09	0.28	0.00	0.00	352
DIncomeAbove100k	0.13	0.34	0.00	0.00	352

measure of how important environmental impact is to the investor, we use

$$\text{WTA-Green} = \min\{\text{WTA-CarbonOffset}, \text{WTA-Greenpeace}\}.$$

Because some investors might be skeptical about the effectiveness of carbon offsetting, or may view Greenpeace as too radical, this combined measure is broader and more meaningful than the individual WTAs. A lower WTA indicates a larger importance of impact, because the investor is willing to give up a higher investment return via the voucher for a smaller donation. WTA-RedCross is the willingness to accept a donation to the Red Cross, our main incentivized measure for the importance investors attach to social impact.

ImportanceGreen and ImportanceSocial are the survey responses to how important environmental or social impact is to the investor, on three levels (not important, fairly important, very important),

Table 1: Summary statistics (continued)

	Mean	SD	1st Quartile	3rd Quartile	N
DJobStudent	0.06	0.23	0.00	0.00	352
DJobPublicSector	0.20	0.40	0.00	0.00	352
DJobPrivateSector	0.48	0.50	0.00	1.00	352
DJobSelfEmployed	0.18	0.39	0.00	0.00	352
DNoJob	0.01	0.08	0.00	0.00	352
DJobRetired	0.10	0.30	0.00	0.00	352
DJobNoAnswer	0.03	0.17	0.00	0.00	352
DJobHousewife	0.01	0.08	0.00	0.00	352
DInvestBonds	0.27	0.44	0.00	1.00	352
DInvestStocks	0.77	0.42	1.00	1.00	352
DInvestDeposit	0.47	0.50	0.00	1.00	352
DInvestActiveFund	0.51	0.50	0.00	1.00	352
DInvestPassiveFund	0.54	0.50	0.00	1.00	352
DInvestCrypto	0.23	0.42	0.00	0.00	352
DInvestCommodities	0.31	0.46	0.00	1.00	352
DInvestRealEstate	0.38	0.48	0.00	1.00	352
DInvestDerivatives	0.11	0.31	0.00	0.00	352
DInvestNothing	0.05	0.21	0.00	0.00	352

coded as $\{-1, 0, 1\}$.¹⁴ IndiffInterestGreen is the survey answer to how many percentage points of additional interest the investor would need to receive in order to invest in a company without positive social or environmental impact, compared to a company that has such impact. A larger number indicates a higher importance of environmental impact.

PreferenceRiskSeeking and PreferenceTimePatient are two survey measures eliciting risk and time preferences. Both measures are experimentally validated, i.e., correlate strongly with incentivized experimental outcomes (such as lottery choices). The risk measure is from [Dohmen et al. \(2011\)](#), the time measure is from [Falk et al. \(2016\)](#).

GreenProfitability is a survey response to a question whether investors believe that projects on the green platform are less profitable, similarly profitable, or more profitable than projects on the other platforms, coded as $\{-1, 0, 1\}$. A negative mean in Table 1 indicates that, if anything, a slight majority of investors believes green projects to be less profitable. BeliefFixClimateChange is a survey response to a question whether climate change is a serious problem that needs to be solved, with values ranging from 0 (disagree) to 6 (agree). This measure is taken from [Heeb et al. \(2021\)](#).

The remaining variables are dummies. DMale, DFemale represent self-identified gender. DAgeUpToX indicates the age group, with the age between the previous group’s upper bound and X. DIncomeUpToX indicates the income group, with an annual income (excluding capital income) between the previous

¹⁴The exact question was: “Which of the following characteristics of a project/firm are important to you when investing via crowdfunding? That is, which characteristics make a project more attractive?” Then several characteristics are listed. For ImportanceGreen: “Positive ecological or environmental impact (e.g., firm improves recycling, product reduces greenhouse gas emissions)”. For ImportanceSocial: “Positive social impact (e.g., firm develops affordable prosthetics, product helps students find a flat)”. See the online appendix for the entire survey/experiment wording.

group’s upper bound and X . $DJobX$ indicates whether the investor has employment status X . $DInvestX$ indicates whether the investor is invested in alternative investment class X . Multiple answers were possible except for gender and income, where the option “no answer” was available (not displayed in the table), so the dummies need not sum to one on every question. Section B in the appendix discusses which of these demographics explain the importance that an investor attached to environmental impact.

Overall, our investors tend to be young to middle aged (25-55), male (76%), with a relatively even income distribution, mostly employed in the private sector (48%). Most investors hold stocks (77%) besides crowdfund investments, and about half hold active or passive funds. Relatively new investment classes such as crypto currencies are surprisingly common with 23%.¹⁵ Consequently, investors in our sample appear to be more progressive retail investors.

4 Results

4.1 Are investors willing to give up money for impact?

In the field, one might be tempted to infer from an investment in a green project that the investor has preferences to achieve environmental impact. Yet this inference is not completely compelling, since there are alternative explanations. For example, even if investors have no preference for environmental impact whatsoever, they might still invest in a green project due to a belief that the investment is more profitable, less risky, or more liquid, than other non-green projects.

Our experiment avoids these issues by giving investors a simple choice: Take a voucher that effectively increases the investment return, or instead donate the money for environmental or social impact but does not increase the investment return. A lower WTA, which indicates that the investor is willing to give up the voucher for a lower donation, is evidence that investors value impact more (see section 2).

The distributions of all WTAs are plotted in Figure 1. A significant share of investors (between 21% and 29%) chooses the voucher, and not to donate, independent of the donation amount or independent of impact, which is achieved by setting $WTA = 51$. This share does not differ much by environmental vs social impact. These investors do not value impact, or at least value it so little that it is not measured in our experiment. Their choices suggest that these investors are unlikely to invest in green projects, unless they are superior on other dimensions such as return or risk.

At the other extreme, a share of 12% to 14% of investors forgoes the voucher for any donation amount by setting $WTA = 1$. The revealed preference of these investors shows they value impact very much, because they were willing to give up a voucher for even very small donation amounts. Their choices suggest these investors might be willing to invest in green projects even if these are viewed as less profitable or more risky, as long as there is a positive environmental impact.

The remaining group of about 60% of investors is willing to give up the higher investment return

¹⁵For comparison, among customers of a retail bank in the neighboring country, [Lammer et al. \(2019\)](#) found only 1% to trade with cryptocurrencies. However, this number is two years older than ours, and might have changed since.

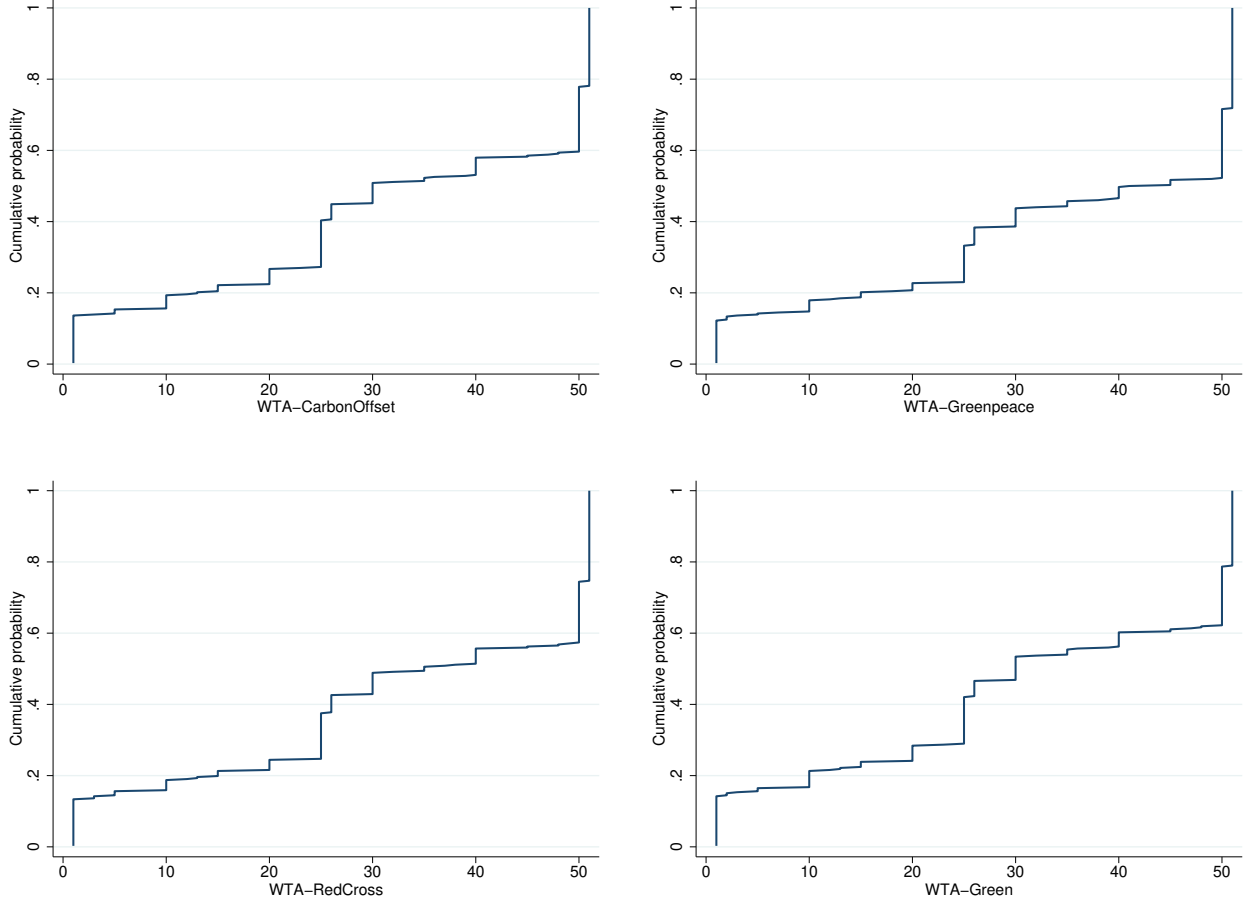


Figure 1: Cumulative distribution functions of WTAs

only for a sufficiently large donation amount or impact, i.e., $1 < \text{WTA} < 51$. The mean investor is willing to give up the 25 Euro voucher for a donation of at least 32 Euro (for carbon offset) or at least 35 Euro (for Greenpeace). Interestingly, Figure 1 shows there is a bunching of WTAs around 25 Euro, the amount of the voucher. These investors have a 1:1 exchange rate between money for their own investment or money for the good cause.

Among the three organizations to donate to, Greenpeace is the least favorite with the largest average WTA. A paired t-test between WTA-CarbonOffset and WTA-Greenpeace shows carbon offset is valued significantly more by investors ($t = -4.1761$, $df = 351$, $p < 0.0001$). Comparing WTA-Green and WTA-RedCross as the two measures of environmental and social impact, environmental impact is valued significantly more ($t = -2.7251$, $df = 351$, $p = 0.0068$). The exchange rate for the average investor between money for their own investment vs for environmental impact is 25:31, and between money for their own investment vs for social impact it is 25:33.

Result 1. *About 25% of investors never give up higher returns for impact, 13% give up a higher return for any kind of impact, and 60% of investors give up a higher return for a sufficiently large impact. On average, investors value environmental impact more than social impact.*

Hence, we have convincing evidence that a significant portion of retail investors is willing to accept a lower return as long as there is a sufficiently large environmental impact, and to a lesser degree, a positive social impact.

We can further classify investors according to whether they are willing to give up the higher investment return for some donation amount or not, by green and social cause, leading to four possible types. The “Green and Social” type is willing to donate to either cause for a sufficiently large donation, and accounts for 68% in our sample. The “Neither Green Nor Social” type does not donate for any amount, and accounts for 22% of investors. Finally, 6% belong to the “Not Green But Social” type, and 3% belong to the “Green But Not Social” type. Thus, the share of investors that deem one cause but not the other important is very small, whereas the shares that either deem both important or both unimportant are very large.

4.2 Why do investors invest in green projects?

In the survey, we asked investors whether, in their view, projects on the green crowdfunding platform had been more profitable, similarly profitable, or less profitable than projects on other platforms (variable *GreenProfitability*). We combine these return expectations with our incentivized measure of the importance of green impact, *WTA-Green*, where a lower value indicates a larger importance of green impact. We now investigate whether one, both, or none of these motivations explain the historical investments of investors in green projects, relative to all other investments in non-green projects. All regressions were pre-registered in our pre-analysis plan, unless indicated by [†] in the table.

Table 2 reports the OLS regression estimates explaining the motivations of investors to invest in green projects. The main result is that both the importance of environmental impact (*WTA-Green*) and the belief about the relative profitability of green projects (*GreenProfitability*) are strong explanatory variables for the investment share in green projects.

In all regressions, the coefficients for both variables are significantly different from zero at conventional confidence levels, and the point estimates go in the expected direction: A higher importance of green impact (lower *WTA-Green*) and a belief that green projects are more profitable are associated with a higher share of investments in green projects. The point estimates are remarkably stable in the full sample, and barely change when including additional investor controls (column 3) or controlling for the importance of social impact (column 5). On average, if an investor is willing to give up the investment voucher for a 1 Euro lower donation to Greenpeace or the carbon offset company, then the share of green projects in the portfolio increases by almost one percentage point. Moreover, an investor who believes that green projects are more profitable than other projects, compared to one who believes there is no difference, has a 20 percentage point larger share in green projects.

Column 2 is the same regression as in column 1, except that we restrict the sample to investors whose first registration was not on GREEN ROCKET, i.e., not on the platform with green projects.¹⁶ Even among these more conventional investors, who did not first join for green projects, both the

¹⁶They may have signed up later on this platform as well, but their initial interest was conventional investments.

importance of environmental impact and the beliefs about the profitability are significant predictors of how often such investors invest in green projects. This is a comfortingly robust result, which implies that our findings are not only driven by “green investors.”

Result 2. *Investors with a belief that green projects are more profitable, and those attaching a larger importance to positive environmental impact, make a significantly larger share of investments in green projects.*

Table 2: Impact vs return expectations in green projects

Dependent variable	(1) OLS InvestShareGreen	(2) OLS [†] InvestShareGreen	(3) OLS InvestShareGreen	(4) OLS InvestShareGreen	(5) OLS [†] InvestShareGreen
WTA-Green	-0.008*** (0.001)	-0.002** (0.001)	-0.008*** (0.001)		-0.008*** (0.002)
GreenProfitability	0.206*** (0.031)	0.066** (0.033)	0.208*** (0.034)	0.207*** (0.031)	0.205*** (0.031)
$\mathbf{1}\{\text{WTA-Green} \leq 50\} \times \text{WTA-Green}$				-0.007*** (0.001)	
$\mathbf{1}\{\text{WTA-Green} > 50\}$				-0.435*** (0.052)	
WTA-RedCross					-0.000 (0.002)
BeliefFixClimateChange			0.038** (0.017)		
Constant	0.741*** (0.037)	0.217*** (0.047)	0.487* (0.256)	0.726*** (0.039)	0.745*** (0.039)
Crowdfunder Controls	No	No	Yes	No	No
Only Non-Green Investors	No	Yes	No	No	No
R ²	0.25	0.08	0.36	0.26	0.25
Observations	352	157	352	352	352

Note: InvestShareGreen is the share of investments on the subplatform with green projects relative to all investments. WTA-Green is the incentivized measure of how important environmental impact is to the crowdfunder, with smaller values indicating more importance. GreenProfitability $\in \{-1, 0, 1\}$ is the belief that green projects have historically been less, similarly, or more profitable than other projects. Standard errors are shown in brackets below the point estimates, and are heteroskedasticity robust. [†] indicates that this regression was not pre-registered in our pre-analysis plan (absence indicates that it was). ***Significant at the 1% level; **Significant at the 5% level; *Significant at the 10% level.

To assess the relative importance of both variables, we can compare the R^2 of two regressions similar to column 1, but where either WTA-Green or GreenProfitability is excluded (not reported in Table 2). The regression with WTA-Green explains 16.5% of variation in InvestShareGreen, whereas the regression with GreenProfitability explains 12% of the variation. Hence, the variable WTA-Green is the more important predictor in this case.¹⁷ This highlights further that the degree to which investors value environmental impact is important in explaining green investments.

Column 4 of Table 2 is a robustness specification in which WTA-Green is split in the part which is uncensored by the BDM procedure (for WTA-Green no more than 50 Euro) and bundling all investors whose WTA is censored (WTA above 50 Euro). The significantly negative point estimates imply that the above result applies to both the censored and uncensored range and our results are not driven by only one of these cases. Investors who chose not to donate money to a green cause under any circumstance—those with WTA-Green above 50—have on average a 43 percentage point lower share invested in green projects, compared to those who always donated (WTA-Green equal to 1).

Column 5 adds the importance of social impact as explanatory variable. Consequently, we can separate whether investors put money into green projects for the environment per se (WTA-Green), or to achieve a positive social impact by helping the environment (WTA-RedCross). Interestingly, the coefficient of the importance of social impact is not significantly different from zero. Hence, we conclude that investors invest in green projects for the environmental impact, but not for the social impact. In other words, investors behave as if green projects have an environmental impact similar to the activities of carbon offset companies or Greenpeace, but do not have social impact in the same way the Red Cross achieves. This is because investors who value the activities of the Red Cross do not invest more in green projects than those that do not value those activities.

Result 3. *Investors who attach a larger importance to social impact, holding the importance of environmental impact and return expectations constant, do not invest a larger share of money in green projects. That is, investors invest in green projects for the environmental, but not the social impact.*

Among the investor controls in column 3—see Table 1 for a list, not included here because of their large number—there are no significant differences among most of them to explain investments into green projects. Hence, demographics such as age, income group, job type (e.g., student, self-employed) or gender do not significantly change the investment share in green projects. Neither do risk and time preferences, so more patient or risk-averse investors do not lean significantly one way or the other. A notable exception is BeliefFixClimateChange—the belief to what degree climate change should be addressed—which has a significant positive effect. Consequently, those who believe something should be done regarding climate change are channeling more of their funds into green projects. There are also a few significant differences for alternative investments, but no obvious and clear patterns arise.¹⁸

¹⁷However, WTA-Green can take 51 different values while GreenProfitability takes only 3 different values. So it does not follow that the importance an investor attaches to green impact is in general more important to explain investment choices than beliefs about returns and profitability. Instead, this is a statement about the two variables we have.

¹⁸For example, investors who also have stocks invest a significantly smaller share in green projects on the crowdfunding platform, compared to investors who have derivatives or fixed term deposits.

Result 4. *Demographic variables such as age, gender, income, job type, and risk or time preferences, all else equal, do not explain whether an investor invests more in green projects. But the belief that more needs to be done about climate change is associated with more investments in green projects.*

Overall, we have strong and robust evidence that both the return expectation and the importance of environmental impact matter for investors, and both variables are strong predictors of investment decisions or capital allocations. Social impact, on the other hand, is not a central motivation for investors when deciding whether to invest in green projects.

4.3 Are survey measures valid proxies for the importance of environmental and social impact?

Because environmental impact matters for capital allocation and investment decisions, it is important to ask whether self-reported survey measures are as useful as our incentivized or choice-based measure. Clearly, survey measures are easier and cheaper to obtain. Yet, because an answer to a survey question does not have any material consequences, economists tend to view surveys with caution and prefer actual choices with material consequences. This is in particular true if social desirability bias plays a role, which could be the case with questions about the environment. We can test whether and to what degree the incentivized measure can be captured by the two survey measures.

When validating survey measures, we can test whether the survey measures are significant predictors of the experimental measure. We can also test whether the survey measures are significant predictors of field behavior, which in this case is the share of investments in green projects. Or we can test whether the survey measure adds something on top of the experimental measure in predicting field behavior. The regressions in Table 3 do all of these three.

Because the measure WTA-Green is censored at 51, we use a Tobit rather than an OLS regression to estimate the effect of the regressors on the importance of environmental impact. The Tobit regression takes the censoring at 51 into account and estimates the effect of the regressors on the latent variable, the uncensored WTA, which we are interested in.¹⁹

The regressions in columns 1 and 2 predict the incentivized experimental measure with the two survey measures of environmental importance. ImportanceGreen, a three point Likert scale, is significantly related to WTA-Green and in the direction that is expected. An investor who answers that environmental impact is “very important” is also willing to forgo the investment voucher and donate to Greenpeace/Carbon-Offsetting for a 12 Euro lower donation, compared to an investor who answers that environmental impact is “somewhat important.”

¹⁹OLS regressions have identical results in terms of sign and significance levels as the reported Tobit regressions, though point estimates can differ. Moreover, we ran Censored Least Absolute Deviations (CLAD) regressions (Powell, 1984), which are more robust to functional form misspecification than Tobit regressions (e.g., Chay and Powell, 2001). CLAD gives identical results as the Tobit regressions in terms of sign and significance level, with very similar point estimates. Thus, our findings are very robust to the choice of the estimator.

Table 3: Validation and predictive power of survey measures

Dependent variable	(1) Tobit WTA-Green	(2) Tobit WTA-Green	(3) Tobit WTA-RedCross	(4) OLS [†] InvestShareGreen	(5) OLS [†] InvestShareGreen	(6) OLS [†] InvestShareGreen	(7) OLS [†] InvestShareGreen
ImportanceGreen	-12.048*** (1.776)			0.320*** (0.023)			0.236*** (0.025)
IndiffInterestGreen		-2.120*** (0.301)			0.051*** (0.005)		0.027*** (0.005)
ImportanceSocial			-9.871*** (1.767)			0.271*** (0.026)	
WTA-Green							-0.005*** (0.001)
Constant	39.212*** (1.779)	39.651*** (1.822)	38.615*** (1.650)	0.290*** (0.017)	0.299*** (0.025)	0.377*** (0.019)	0.403*** (0.043)
Control Order Effects	Yes	Yes	Yes	No	No	No	No
R ²				0.28	0.16	0.23	0.38
Pseudo-R ²	0.02	0.01	0.01				
Observations	352	352	352	352	352	352	352

Note: InvestShareGreen is the share of investments on the subplatform with green projects relative to all investments. WTA-Green is the incentivized measure of how important environmental impact is to the crowdfunder, with smaller values indicating more importance. WTA-RedCross is the minimum donation amount in the experiment where crowdfunders were willing to forgo the 25 Euro voucher for themselves in favor of a donation to the Red Cross. A lower amount indicates a higher importance of social impact to the crowdfunder. Standard errors are shown in brackets below the point estimates, and are heteroskedasticity robust. [†] indicates that this regression was not pre-registered in our pre-analysis plan (absence indicates that it was). ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level.

IndiffInterestGreen is the additional return as measured by the percentage points in interest that a firm without positive social or environmental impact has to pay to investors to be as attractive as an identical firm with positive social or environmental impact. This measure is significantly related to WTA-Green as well and the relationship has the expected direction. Consequently, both survey measures of environmental impact are experimentally valid. Our measures thus contribute to an important literature that experimentally validates survey measures for future use (e.g., [Dohmen et al., 2011](#)).

Column 4 and 5 use these survey measures to predict the share of funds invested in green projects. Like the experimental measure WTA-Green, both survey measures of the importance of environmental impact are highly significant predictors of field behavior in the expected direction. Hence, these survey measures are not only experimentally valid, but also have external validity.

To compare the relative predictive power of the experimental measure and the two survey measures of the importance of environmental impact, we use the R^2 of simple OLS regressions with one measure at a time. WTA-Green has an R^2 of 16.5% (not in the table) in predicting the share of funds invested in green projects alone. ImportanceGreen explains 28.5% of the variation in InvestShareGreen (column 4), and IndiffInterestGreen explains 16% (column 5). Consequently, WTA-Green and IndiffInterestGreen have a similar predictive power in explaining investments in green projects, whereas the survey measure ImportanceGreen has almost twice the predictive power. This is remarkable, because not only is this survey measure not incentivized, it is also the most coarse scale—having only three levels—whereas the other measures are finer. Thus, less is more in this case, and ImportanceGreen is actually superior to a rigorous lab measure in predicting field behavior.

Finally, column 7 of Table 3 asks whether the two survey measures improve the prediction of the share of investments in green projects, compared to using a predictive model only with the experimental measure WTA-Green. Clearly, both survey measures are significant predictors in the expected direction, holding WTA-Green constant. Thus, the survey measures do improve the prediction and hence contain information that the experimental measure does not contain.

Result 5. *Both survey measures ImportanceGreen and IndiffInterestGreen are experimentally valid and are highly significant predictors of field behavior. Moreover, both survey measures contain information that the experimental measure WTA-Green does not contain. ImportanceGreen has the most predictive power among the three measures in explaining the investment share in green projects.*

Column 3 of Table 3 validates the survey measure of the importance of social impact to the investor. Like ImportanceGreen, ImportanceSocial is a three point Likert scale, and is a significant predictor of the experimental measure of the importance of social impact (WTA-RedCross), in the expected direction. Moreover, column 6 shows that ImportanceSocial is a significant predictor of field behavior as well.²⁰ Therefore, future research can use our simple survey questions as measure of social or environmental impact, which are all experimentally valid, can predict field behavior, and are potentially even more predictive of field behavior than the incentivized lab measures.

²⁰Compare this to column 5 in Table 2, where the experimental measure of the importance of social impact was not a significant predictor. This is because that model also controlled for return expectations and the importance of environmental impact, whereas this one in Table 3 does not.

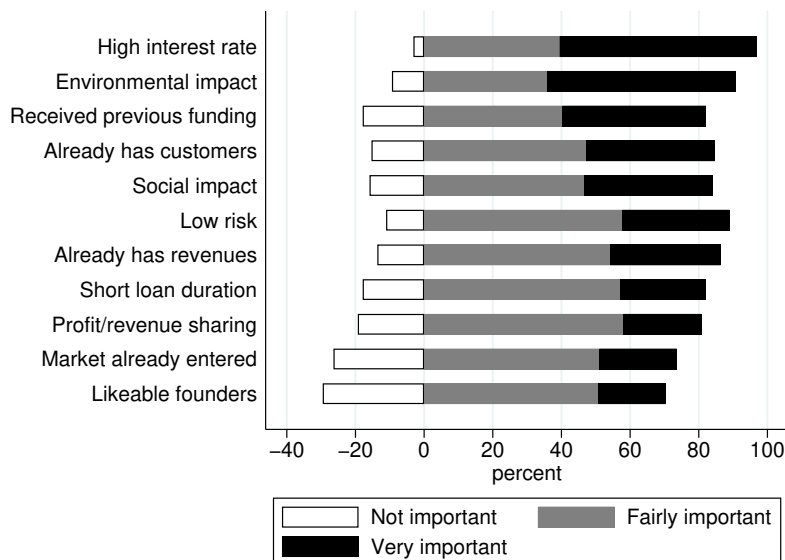


Figure 2: Responses to: Which of the following characteristics of a project are important to you when making investment decisions? Ranked by mean response.

4.4 Additional survey evidence on returns vs impact

In this section, we present survey answers as complementary evidence, in addition to the above results from field and experimental data. These responses give a more comprehensive picture of why retail investors invest in certain projects, whereas the experiment tested for three specific explanations: environmental impact, social impact, and return expectations.

First, we asked what aspects about a project are important to investors. We gave a list of 11 options, and asked for each whether it is “not important,” “fairly important,” or “very important.” The variables ImportanceGreen and ImportanceSocial derive from this question, and we see how these two aspects rank relative to other aspects. Figure 2 plots the answers, where the options are ordered by the mean response of the three level scale.

Recall that the projects on the crowdfunding platform are debt instruments. Unsurprisingly, the most important aspect of a project is the promised interest rate as a main determinant of the expected return. Perhaps surprisingly, rank 2 is claimed by whether a project has a positive environmental impact, such as reducing emissions or improving recycling. The share of investors who consider this aspect at least moderately important is only about 5 percentage points below the interest rate. Social impact ranks 5 on the importance scale. The top two responses therefore confirm the earlier results that expected returns, and environmental impact, are important factors in investment decisions, and in fact the most important ones, out of 11 options.

Third, fourth and seventh most important are signals of success or profitability, namely whether the firm/project has received funding elsewhere before, whether it already has customers, and whether it is already receiving revenues. Low risk is ranked sixth, and a short maturity, which is typically associated with lower risk, is ranked eighth, so the investors are not overly concerned with risk.

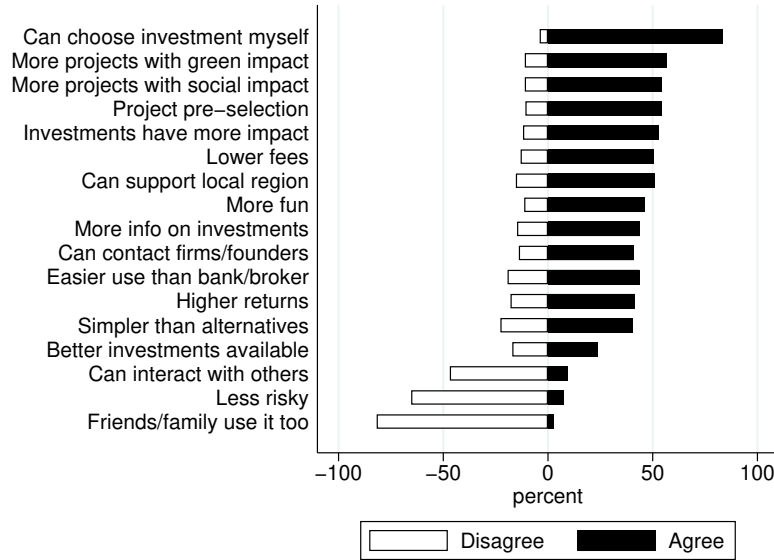


Figure 3: Responses to: Which of the following options do you see as an advantage of crowdfunding, compared to alternatives such as stocks, funds, or bonds? Neutral answer not plotted. Ranked by mean response.

The bottom of the importance ranking is an additional “revenue kicker” (additional payments if goals on revenue are reached), whether the firm had already entered the market, and finally whether founders are likeable. Self-selection likely plays a role here, because investors who value more equity like investments could go to equity crowdfunding or to the equity market, instead of a debt crowdfunding platform.

Second, we asked more directly what advantages investors see in crowdfunding, compared to alternative investment classes such as stocks, bonds or funds. We offered a list of 17 potential factors. Possible responses are “do not agree,” “neutral,” or “agree.” We asked investors to disagree both if the option is factually incorrect in their view (e.g., “No crowdfunding does not provide a higher return”), or if the statement is correct but they do not see it as an advantage (“Yes, crowdfunding does allow me to contact the founders, but I do not see this as an advantage”). Figure 3 plots the responses but omits the neutral category. Responses are again ordered by the mean response.

The top rank gives an interesting insight into why crowdfunding might be attractive: Investors can determine themselves where their money goes unlike, for example, with funds. And, unlike stocks or bonds of large firms, crowdfunding platforms allow the channeling of funds to very specific projects, which investors regard as important.

Ranks 2, 3, 5 and 7 again reflect that investors value environmental and social impact, which alternatives investments apparently cannot provide in a similar fashion: At least 50% of investors agree impact is an advantage. A special case of impact is that the investments benefit the region (rank 7).

Aspects of usability, such as whether the crowdfunding platform is easier to use than the stock broker or bank website (rank 11), whether the financial instruments themselves are simpler (rank

14), or whether crowdfunding is more fun (rank 8), place only in the middle. This might not be surprising, because fintechs have simplified conventional banking services and stock brokering lately, so the relative advantage appears not to be large.

The investors overwhelmingly disagree that crowdfunding is less risky.²¹ Moreover, social interaction—such as investing with friends and family or being able to interact with other crowdfunders—are not viewed as advantages.

Result 6. *Survey answers confirm that returns and environmental impact are the two most important project characteristics when choosing investments. Crowdfunding is attractive to investors because it allows investors to determine themselves how the investment is used.*

5 Conclusion

We investigated whether retail investors on a crowdfunding platform have a preference for environmental or social impact when choosing investment projects. Since it is easy to state that one values positive environmental impact, but harder to actually give something up to affect such impact, we conducted a lab-in-the-field experiment to answer the question. The experiment allowed us to use incentivized preference elicitation methods to see if and to what degree investors are willing to give up a higher return for impact.

We find that the majority of investors is willing to give up a higher return as long as the environmental or social impact is large enough. However, there is large variation among investors in just how much positive impact is needed to give up the higher return. Still, this is convincing evidence that investors have a preference for environmental impact and for social impact.

We further find that those with a stronger preference for environmental impact also invest a larger share of their funds in green projects, so the experimental measure explains field behavior. This suggests that investors view green projects as one way to satisfy their preference for environmental impact. Besides environmental impact, return expectations for green projects also play a significant role in explaining green investments. Perhaps surprisingly, even though many investors also value social impact, those who do did not invest more in green projects, which suggests that it is environmental and not social impact that drives green investments. Overall, these findings can be taken as good news for environmental projects and technologies, as these investor preferences tend to increase demand for such investments. Whether this ultimately results in lower funding costs for green projects in large capital markets will depend on the actions of all investors, including institutional investors.

Our comparison of survey and experimental measures of the importance of environmental impact shows that typical concerns about social desirability bias and other self-reporting biases do not appear to be a major problem in this context. Consequently, future research is justified in using the simpler survey measures of how important environmental or social impact is to an investor. Indeed, these

²¹While we do not have default rates for the platforms we study, historical default rates in debt crowdfunding vary substantially by platform. For example, Kirby and Worner (2014) document a range between 0.2% and 7% defaults by platform, with a median of 1.5%-2%. This exceeds the default rates of high-grade bonds, and our investor responses are consistent with this.

measures are not only experimentally valid, they are strong predictors of field behavior. Our experimental method could still be valuable in future research on even more controversial topics, such as investments in weapons or tobacco firms, or if social desirability biases play a bigger role, for example if a survey cannot guarantee anonymity.

References

- AGRAWAL, A., C. CATALINI, AND A. GOLDFARB (2015): “Crowdfunding: Geography, Social Networks, and the Timing of Investment Decisions,” *Journal of Economics & Management Strategy*, 24, 253–274.
- AHLERS, G. K., D. CUMMING, C. GÜNTHER, AND D. SCHWEIZER (2015): “Signaling in Equity Crowdfunding,” *Entrepreneurship Theory and Practice*, 39, 955–980.
- BARBER, B. M., A. MORSE, AND A. YASUDA (2021): “Impact investing,” *Journal of Financial Economics*, 139, 162–185.
- BAUER, R., T. RUOF, AND P. SMEETS (2021): “Get real! Individuals prefer more sustainable investments,” *Review of Financial Studies*, forthcoming.
- BECKER, G., M. DEGROOT, AND J. MARSCHAK (1964): “Measuring utility by a single-response sequential method,” *Behavioral Science*, 9, 226–232.
- BELLEFLAMME, P., T. LAMBERT, AND A. SCHWIENBACHER (2014): “Crowdfunding: Tapping the right crowd,” *Journal of Business Venturing*, 29, 585–609.
- BERTSCH, C., I. HULL, Y. QI, AND X. ZHANG (2020): “Bank misconduct and online lending,” *Journal of Banking & Finance*, 116, 105822.
- BLASEG, D., D. CUMMING, AND M. KOETTER (2021): “Equity Crowdfunding: High-Quality or Low-Quality Entrepreneurs?” *Entrepreneurship Theory and Practice*, 45, 505–530.
- BOLTON, P. AND M. KACPERCZYK (2021): “Do investors care about carbon risk?” *Journal of Financial Economics*.
- BUSER, T., M. NIEDERLE, AND H. OOSTERBEEK (2021): “Can competitiveness predict education and labor market outcomes? Evidence from incentivized choice and survey measures,” *NBER Working Paper*, 28916.
- CALIC, G. AND E. MOSAKOWSKI (2016): “Kicking Off Social Entrepreneurship: How A Sustainability Orientation Influences Crowdfunding Success,” *Journal of Management Studies*, 53, 738–767.
- CHAY, K. Y. AND J. L. POWELL (2001): “Semiparametric censored regression models,” *Journal of Economic Perspectives*, 15, 29–42.

- CHINN, S., P. S. HART, AND S. SOROKA (2020): “Politicization and polarization in climate change news content, 1985-2017,” *Science Communication*, 42, 112–129.
- CHOLAKOVA, M. AND B. CLARYSSE (2015): “Does the Possibility to Make Equity Investments in Crowdfunding Projects Crowd Out Reward-Based Investments?” *Entrepreneurship Theory and Practice*, 39, 145–172.
- CUMMING, D. AND L. HORNUF (2018): *Introduction*, Cham: Springer International Publishing, 1–8.
- DEMIR, T., A. MOHAMMADI, AND K. SHAFI (2021): “Crowdfunding as gambling: Evidence from repeated natural experiments,” *Journal of Corporate Finance*, 101905.
- DOHMEN, T., A. FALK, D. HUFFMAN, U. SUNDE, J. SCHUPP, AND G. G. WAGNER (2011): “Individual risk attitudes: Measurement, determinants, and behavioral consequences,” *Journal of the European Economic Association*, 9, 522–550.
- DØSKELAND, T. AND L. J. T. PEDERSEN (2015): “Investing with brain or heart? A field experiment on responsible investment,” *Management Science*, 62, 1632–1644.
- EDMANS, A. (2011): “Does the stock market fully value intangibles? Employee satisfaction and equity prices,” *Journal of Financial Economics*, 101, 621–640.
- FALK, A., A. BECKER, T. DOHMEN, B. ENKE, D. HUFFMAN, AND U. SUNDE (2018): “Global evidence on economic preferences,” *The Quarterly Journal of Economics*, 133, 1645–1692.
- FALK, A., A. BECKER, T. DOHMEN, D. HUFFMAN, AND U. SUNDE (2016): “The Preference Survey Module: A Validated Instrument for Measuring Risk, Time, and Social Preferences,” IZA discussion paper.
- FARRELL, J. (2016): “Corporate funding and ideological polarization about climate change,” *Proceedings of the National Academy of Sciences*, 113, 92–97.
- FRIEDE, G., T. BUSCH, AND A. BASSEN (2015): “ESG and financial performance: aggregated evidence from more than 2000 empirical studies,” *Journal of Sustainable Finance & Investment*, 5, 210–233.
- GIFFORD, R. AND R. SUSSMAN (2012): “Environmental Attitudes,” in *The Oxford Handbook of Environmental and Conservation Psychology*, ed. by S. D. Clayton, Oxford University Press.
- GOMPERS, P., J. ISHII, AND A. METRICK (2003): “Corporate Governance and Equity Prices,” *The Quarterly Journal of Economics*, 118, 107–156.
- GRÜNER, H. P. AND C. SIEMROTH (2019): “Crowdfunding, efficiency, and inequality,” *Journal of the European Economic Association*, 17, 1393–1427.
- GUARDIAN (2019): “Offsetting carbon emissions: ‘It has proved a minefield’,” <https://www.theguardian.com/travel/2019/aug/02/offsetting-carbon-emissions-how-to-travel-options>.

- HEALY, P. J. (2018): “Explaining the BDM—or any random binary choice elicitation mechanism—to subjects,” https://www.asc.ohio-state.edu/economics/healy/papers/Healy-ExplainingBDM_Note.pdf.
- HEEB, F., J. F. KÖLBEL, F. PAETZOLD, AND S. ZEISBERGER (2021): “Do investors care about impact?” SSRN working paper.
- HEINKEL, R., A. KRAUS, AND J. ZECHNER (2001): “The effect of green investment on corporate behavior,” *Journal of Financial and Quantitative Analysis*, 36, 431–449.
- HOLT, C. A. AND A. M. SMITH (2016): “Belief elicitation with a synchronized lottery choice menu that is invariant to risk attitudes,” *American Economic Journal: Microeconomics*, 8, 110–39.
- HONG, H. AND M. KACPERCZYK (2009): “The price of sin: The effects of social norms on markets,” *Journal of Financial Economics*, 93, 15–36.
- HORNUF, L., T. SCHILLING, AND A. SCHWIENBACHER (2021): “The relevance of investor rights in crowdfunding,” *Journal of Corporate Finance*, forthcoming.
- HORNUF, L. AND A. SCHWIENBACHER (2018): “Market mechanisms and funding dynamics in equity crowdfunding,” *Journal of Corporate Finance*, 50, 556–574.
- HÖRISCH, J. (2015): “Crowdfunding for environmental ventures: an empirical analysis of the influence of environmental orientation on the success of crowdfunding initiatives,” *Journal of Cleaner Production*, 107, 636–645.
- KIRBY, E. AND S. WORNER (2014): “Crowd-funding: An infant industry growing fast,” *IOSCO Research Department*.
- LAMMER, D., T. HANSPAL, AND A. HACKETHAL (2019): “Who are the Bitcoin investors? Evidence from indirect cryptocurrency investments,” .
- LIN, M. AND S. VISWANATHAN (2016): “Home Bias in Online Investments: An Empirical Study of an Online Crowdfunding Market,” *Management Science*, 62, 1393–1414.
- LUO, A. AND R. BALVERS (2017): “Social screens and systematic investor boycott risk,” *Journal of Financial and Quantitative Analysis*, 52, 365–399.
- PEDERSEN, L. H., S. FITZGIBBONS, AND L. POMORSKIA (2021): “Responsible investing: The ESG-efficient frontier,” *Journal of Financial Economics*, forthcoming.
- POWELL, J. L. (1984): “Least absolute deviations estimation for the censored regression model,” *Journal of Econometrics*, 25, 303–325.
- PUBLIC OPINION (2019): “2019 Spendenbericht,” http://public-opinion.at/wp-content/uploads/2019/11/Spendenbericht_2019_v10-WEB.pdf.

- RENNEBOOG, L., J. T. HORST, AND C. ZHANG (2008): “The price of ethics and stakeholder governance: The performance of socially responsible mutual funds,” *Journal of Corporate Finance*, 14, 302–322.
- RIEDL, A. AND P. SMEETS (2017): “Why do investors hold socially responsible mutual funds?” *Journal of Finance*, 72, 2505–2550.
- SAIEDI, E., A. MOHAMMADI, A. BROSTRÖM, AND K. SHAFI (2020): “Distrust in Banks and Fintech Participation: The Case of Peer-to-Peer Lending,” *Entrepreneurship Theory and Practice*, 0, 1042258720958020.
- STRAUSZ, R. (2017): “A theory of crowdfunding: A mechanism design approach with demand uncertainty and moral hazard,” *American Economic Review*, 107, 1430–76.
- UNGER, N., T. C. BOND, J. S. WANG, D. M. KOCH, S. MENON, D. T. SHINDELL, AND S. BAUER (2010): “Attribution of climate forcing to economic sectors,” *Proceedings of the National Academy of Sciences*, 107, 3382–3387.
- ZERBIB, O. D. (2020): “A sustainable capital asset pricing model (S-CAPM): Evidence from green investing and sin stock exclusion,” *SSRN working paper*, Available at: <https://ssrn.com/abstract=3455090>.

A Preferences for impact: An illustrative example

This section briefly illustrates how preferences for impact can be modelled, and how such preferences are reflected in our experimental measures.

Consider a traditional financial investor with a preferences over terminal wealth $w \in \mathbb{R}_0^+$, represented by a utility function $U(w)$, where we assume more wealth is better ($U_w > 0$ for all w).²² Now deviate from these standard preferences, and consider a green investor, whose preferences also include the environmental impact $e \in \mathbb{R}_0^+$ that the investment makes. These preferences are represented with a utility function $U(w, e)$, with $U_w > 0$ and $U_e > 0$. This formulation immediately implies that a slightly lower return might be accepted for a sufficiently larger impact.

But even among green investors, there may be differences in how they value impact e versus wealth w . Consider one explicit functional form of the utility function—among many that fulfill $U_w > 0$ and $U_e > 0$ —to illustrate this point. Investor i 's utility function is (note that i is the subscript not the partial derivative here)

$$U_i(w, e) = \alpha_i w + \beta_i e.$$

Clearly, the larger β_i , the more i values environmental impact, holding w constant. Our experimental procedure is able to distinguish those with small β_i and those with large β_i (relative to α_i) as follows.

The experiment offers a fixed voucher amount $v > 0$, resulting in terminal wealth $w = W_i + v$ if chosen and $w = W_i$ if forgone, where W_i is i 's wealth outside of the experiment. Let impact e be the donation amount to the environmental cause, and the experiment varies impact $e = 1, 2, 3, \dots$. For each value of e , the investor decides whether

$$U_i(W_i + v, 0) > U_i(W_i, e),$$

in which case the investor chooses the voucher. Otherwise, if

$$U_i(W_i + v, 0) < U_i(W_i, e),$$

the investor chooses the donation that leads to impact e . Our experimental BDM procedure finds the indifference impact (donation amount) \bar{e} such that

$$U_i(W_i + v, 0) = U_i(W_i, \bar{e}),$$

which after simplifying implies

$$\alpha_i v = \beta_i \bar{e} \iff \text{WTA} = \bar{e} = \frac{\alpha_i}{\beta_i} v.$$

That is, the WTA in the experiment is the relative valuation of wealth and environmental impact, and is decreasing in how strongly i values environmental impact (i.e., is decreasing in β_i). And while

²²Risk aversion could also be accommodated by assuming $U_{ww} < 0$, though this is not necessary for the argument here.

the exact expression differs depending on the functional form of the utility function, the basic insight remains that WTA reflects a relative valuation of wealth to impact.

Of course, traditional investors with $\beta_i = 0$, who do not value impact at all, prefer any $v > 0$ over any $e > 0$. So there is no indifference impact \bar{e} , and we detect this in the experiment as well, since these investors always prefer the voucher over the donation, for any $e > 0$.

B Additional results: What kind of investors value environmental impact more?

We take this opportunity to investigate which demographic variables—which often are available—predict whether someone attaches a lot of importance to environmental impact, which is not as often available.

In our pre-registration, based on previous research in psychology (see [Gifford and Sussman \(2012\)](#) for an overview), we predicted that (1) women, (2) younger people, (3) those who stated that climate change is a serious problem in the survey, and (4) university students attach a larger importance to environmental impact. Table 4 displays the results. The base category is non-female (i.e., self-identified as male or other, or did not answer), no answer on age or job, and no alternative investments besides crowdfunding.

Based on Table 4, we can reject the prediction that women attach a higher importance to environmental impact, holding the other variables constant. There is also no significant difference between any of the age groups. Moreover, the prediction that students value environmental impact more can be rejected compared to almost any other employment status, except compared to investors without a job or housewives/househusbands. The one prediction that is unambiguously consistent with the data is that those who believe climate change needs to be addressed also value environmental impact more—and have indeed donated more to these causes in our experiment.

There are some significant differences among income groups. Relative to those that did not reveal their income group or to incomes 30k-40k, incomes 10k-20k, 60k-80k, and those above 100k per year attach a significantly higher importance to environmental impact. Hence, both a low income and two high income groups are among those with the lowest WTA-Green scores, indicating a higher importance of environmental impact. Thus, there does not appear to be a monotone effect in income.

Another significant predictor is time preferences: Investors who are more patient also attach more importance to environmental impact, whereas risk preferences are not a significant predictor. This is reasonable in the sense that efforts to combat climate change typically have long term rather than short term benefits, so only sufficiently patient investors with environmental concern would value such efforts.

Overall, it is not so much demographic variables such as age, gender or employment status that determines whether an investor values environmental impact. Rather, it is their attitudes or preferences, in particular towards the environment or climate change, followed by less discounting of the future, that are the strongest predictors. These results are very much in line with the variables that predict investment shares in green projects (see Result 4).

Table 5 runs a similar regression with the survey measure ImportanceGreen as the dependent variable, with similar results, though the time preference is not a significant predictor there.

Table 4: Who values environmental impact?

Dependent variable	(1) Tobit WTA-Green	Dependent variable	(1) Tobit (cont.) WTA-Green
PreferenceRiskSeeking	1.070 (0.684)	DJobStudent	-1.371 (4.929)
PreferenceTimePatient	-1.373** (0.634)	DJobPublicSector	3.336 (4.988)
BeliefFixClimateChange	-5.097*** (1.242)	DJobPrivateSector	2.244 (4.430)
DFemale	1.829 (2.877)	DJobSelfEmployed	-4.704 (4.607)
DAgeUpTo25	-13.842 (11.182)	DNoJob	112.357*** (9.602)
DAgeUpTo35	-17.848* (10.716)	DJobRetired	7.877 (6.874)
DAgeUpTo45	-15.085 (10.847)	DJobHousewife	135.532*** (10.185)
DAgeUpTo55	-15.507 (10.983)	DInvestBonds	-0.619 (2.771)
DAgeUpTo65	-15.824 (11.300)	DInvestStocks	-3.261 (3.522)
DAgeAbove65	-23.035* (12.909)	DInvestDeposit	4.394* (2.374)
DIncomeUpTo10k	6.455 (6.820)	DInvestActiveFund	3.365 (2.706)
DIncomeUpTo20k	-16.207*** (5.685)	DInvestPassiveFund	7.077*** (2.713)
DIncomeUpTo30k	-2.268 (4.912)	DInvestCrypto	-2.321 (2.551)
DIncomeUpTo40k	3.036 (5.311)	DInvestCommodities	4.867* (2.532)
DIncomeUpTo50k	-3.638 (4.969)	DInvestRealEstate	5.055** (2.459)
DIncomeUpTo60k	-5.920 (4.744)	DInvestDerivatives	-1.387 (3.688)
DIncomeUpTo80k	-12.151*** (4.276)	Constant	76.655*** (14.380)
DIncomeUpTo100k	-6.903 (5.138)	Control Order Effects	Yes
DIncomeAbove100k	-10.425** (4.705)	Pseudo-R ²	0.04
		Observations	352

Note: WTA-Green is the minimum donation amount in the experiment where crowdfunders were willing to forego the 25 Euro voucher for themselves in favor of a donation to an environmental organisation. A lower amount indicates a higher importance of environmental impact to the crowdfunder. Standard errors are shown in brackets below the point estimates, and are heteroskedasticity robust. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level.

Table 5: Who values environmental impact? Survey measure

(1) OLS		(1) OLS (cont.)	
Dependent variable	ImportanceGreen	Dependent variable	ImportanceGreen
PreferenceRiskSeeking	-0.013 (0.020)	DJobStudent	-0.040 (0.174)
PreferenceTimePatient	0.011 (0.019)	DJobPublicSector	0.112 (0.121)
BeliefFixClimateChange	0.200*** (0.037)	DJobPrivateSector	-0.072 (0.122)
DFemale	0.112 (0.087)	DJobSelfEmployed	0.157 (0.126)
DAgeUpTo25	-0.218 (0.673)	DNoJob	0.119 (0.221)
DAgeUpTo35	-0.274 (0.652)	DJobRetired	-0.190 (0.178)
DAgeUpTo45	-0.386 (0.658)	DJobHousewife	-0.336** (0.166)
DAgeUpTo55	-0.385 (0.659)	DInvestBonds	-0.022 (0.082)
DAgeUpTo65	-0.297 (0.656)	DInvestStocks	-0.137 (0.104)
DAgeAbove65	-0.427 (0.680)	DInvestDeposit	0.002 (0.071)
DIncomeUpTo10k	0.187 (0.216)	DInvestActiveFund	0.021 (0.085)
DIncomeUpTo20k	0.271* (0.150)	DInvestPassiveFund	-0.056 (0.074)
DIncomeUpTo30k	0.238 (0.151)	DInvestCrypto	-0.096 (0.087)
DIncomeUpTo40k	-0.242 (0.152)	DInvestCommodities	-0.091 (0.080)
DIncomeUpTo50k	0.147 (0.139)	DInvestRealEstate	-0.091 (0.075)
DIncomeUpTo60k	0.012 (0.147)	DInvestDerivatives	0.039 (0.117)
DIncomeUpTo80k	0.091 (0.128)	Constant	-0.155 (0.698)
DIncomeUpTo100k	-0.136 (0.151)		
DIncomeAbove100k	0.095 (0.135)		
		Control Order Effects	Yes
		R ²	0.26
		Observations	352

Note: ImportanceGreen is the answer to a three level Likert item asking how important positive environmental impact is to the crowdfunder when choosing investments. Standard errors are shown in brackets below the point estimates, and are heteroskedasticity robust. ***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level.

Translated Instructions for the Qualtrics Experiment and Survey

Note:

- The original experiment was conducted in German.
- Some screens, like the voucher code or specific experimental outcome screens, are shown only if certain conditions are met (such as random draws or previous decisions). The instructions here do not show these conditions (as these were also not visible to participants).
- The qualtrics source file is available upon request.
- The greyed out “block starts” and “block ends” are not visible for participants. A block end also corresponds to a page break in qualtrics.
- The order of the experimental and survey block was randomized to allow us to control for order effects (none of the statistical analyses showed a significant order effect, however).
- Participants were not able to return to previous screens (e.g., could not change their experimental decisions if they did not like the outcome).
- In the survey, the display order of answer options was randomized except for questions with natural ordering (e.g., on age or income).

Rocket field experiment

Start of Block: Intro / informed consent

Thank you very much for your interest in our study.

On the following pages, you will find a survey on the subject "Crowdfunding and Crowdinvestors," which is conducted by Prof. Dr. Lars Hornuf (University of Bremen) and Dr. Christoph Siemroth (University of Essex, UK) in cooperation with the ROCKETS Group.

The first 400 participants can choose between a 25€ voucher for the HOME ROCKET platform or a donation for a good cause after completing a survey.

By participating in this study, you agree that your answers can be saved and analyzed for university research. Details on the processing of your data can be found [here](#).

It takes about 15 minutes to complete the survey. You can pause the survey and complete it within a week.

End of Block: Intro / informed consent

Start of Block: Why crowdfunding

To the survey:

Which of the following properties of a project / company are important to you when it comes to crowdfunding / crowd investing? I.e. which features make a crowdfunding project more attractive?

	Not important	Moderately important	Very important
Sufficiently high interest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive ecological or environmental impact (e.g. firm improves recycling, product reduces greenhouse emissions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive social impact (e.g. firm develops better affordable prostheses, product helps students to find an apartment)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Realized first sales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product/Service already available on the market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Previous investment rounds were successful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are already customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Short duration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Additional profit-sharing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Founding team is pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If important project features are missing from the previous list, please state them here:

Suppose you had the choice between an investment in **Firm A**, with a new product without a positive social and environmental impact but with *higher interest rates per year*, or **Firm 1**, with a new product with a *positive social or environmental impact* but lower interest rates. All further investment conditions are equivalent (risk, duration, etc.).

How much higher would the interest per year have to be for Firm A in order for you to prefer an investment in Firm A? Please give your answer in percentage points.

Example: The difference between 5% p.a. and 4% p.a. is 1 percentage point.

Hint: The answer 0 means you find an investment in both companies equally valuable at the same interest rate.

Which of the following points do you consider as an advantage of crowdfunding / crowd investing over other conventional forms of investments such as stocks, equity funds or bonds? Please do not agree if you either de facto disagree with the statement or do not see it as an advantage.

	I don't agree	neutral	I agree
I can choose exactly what I invest in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowdfunding platforms are better/easier to use compared with bank/broker websites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The projects/ companies offered are better investments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can interact with other crowdfunders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can approach/question the firms directly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowdfunding as a financial product is easier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowdfunding has a higher return	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowdfunding is less risky	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowdfunding is more fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My acquaintances/friends do the same, which is important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is more information about the investment in crowdfunding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Crowdfunding fees are lower	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My investments have more impact/influence in crowdfunding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are more projects with positive environmental impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are more projects with positive social impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Platforms make a pre-selection that avoids bad projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can support the region through crowdfunding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If important advantages of crowdfunding / crowd investing are missing from the previous list, please state them here:

What convinced you to invest through crowdfunding for the first time? Please check all factors that apply.

- ☐ Friends/acquaintances
- ☐ Coverage in business press (e.g. Handelsblatt)
- ☐ Coverage in traditional media (newspaper, TV, ...)
- ☐ Posts on social media (Facebook, Youtube, Twitter, ...)
- ☐ Advertising
- ☐ Coverage on websites (without social media)
- ☐ Statistics/data from crowdfunding platform
- ☐ Statistics/data from not-crowdfunding platform
- ☐ None of the other answers
- ☐ Financial advisor/tax advisor
- ☐ I didn't know where else to invest my money profitably

Comparing GREEN ROCKET to HOME ROCKET, do you think projects on GREEN ROCKET have been more profitable on average so far or not? (Profitability includes interest as well as potential defaults) If you do not have an opinion on this, please select "about equally profitable."

	GREEN ROCKET was less profitable	about equally profitable	GREEN ROCKET was more profitable
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Why crowdfunding

Start of Block: Individual characteristics

The following are some questions about your situation.

How old are you?

- ☐ Under 18
 - ☐ 18-25
 - ☐ 26-35
 - ☐ 36-45
 - ☐ 46-55
 - ☐ 56-65
 - ☐ Over 65
 - ☐ No reply
-

Please specify your gender.

- ☐ Male
 - ☐ Female
 - ☐ Diverse
 - ☐ No reply
-

What investments have you used or owned in the last year, besides crowdfunding (incl. p2p lending)? Please check all that apply.

- ☐ Bonds
- ☐ Stocks
- ☐ Fixed deposit account/term deposit
- ☐ Actively managed funds (equity funds, bond funds, money market funds, ...)
- ☐ Passive funds (ETF, ...)
- ☐ Cryptocurrencies (Bitcoin, Ethereum, ...)
- ☐ Commodities (Gold, ...)
- ☐ Real estate/properties
- ☐ Derivatives/certificates (Futures, Credit Default Swaps, Options, ...)
- ☐ None of the above

How do you personally assess yourself: Are you generally a risk-taker or do you try to avoid risk?

Please answer using the following scale, where the value 0 means: "not at all willing to take risks" and the value 10 means: "very willing to take risks" You can use the values in between to grade your assessment.

	0	1	2	3	4	5	6	7	8	9	10
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How do you personally assess yourself: Are you someone who is generally willing to give up something today in order to benefit from it in the future, or are you unwilling to do so?

Please answer using the following scale, where the value 0 means: "not at all willing to give up anything today" and the value 10 means: "very willing to give up something today" You can use the values in between to grade your assessment.

	0	1	2	3	4	5	6	7	8	9	10
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

To what extent do you agree with the following statement: Climate change is a serious problem that must be solved.

	I don't agree				neutral				I agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What was your household income (excluding capital income) last year, before taxes, e.g. through salary, self-employment, pension, or government transfer payments?

- ☐ Up to 10.000 Euro
 - ☐ Between 10.000 and 20.000 Euro
 - ☐ Between 20.000 and 30.000 Euro
 - ☐ Between 30.000 and 40.000 Euro
 - ☐ Between 40.000 and 50.000 Euro
 - ☐ Between 50.000 and 60.000 Euro
 - ☐ Between 60.000 and 80.000 Euro
 - ☐ Between 80.000 and 100.000 Euro
 - ☐ More than 100.000 Euro
 - ☐ No reply
-

What is your current professional situation? Please check all options that apply.

☐ School student / university student

☐ Employee, public service

☐ Employee, private sector

☐ Self-employed

☐ Unemployed / seeking work

☐ On a pension / retired

☐ No reply

☐ Housewife / househusband

End of Block: Individual characteristics

Start of Block: Choice experiment

Below we ask you to make three choices. First, you have the choice between a HOME ROCKET voucher, which you can then redeem on the platform as part of an investment, and a donation for CO2 reduction by us. We will ask you from which donation amount you prefer this donation to the voucher (**decision 1**).

Then you have the choice between a HOME ROCKET voucher and a donation to Greenpeace by us. We will ask you from which donation amount you prefer this donation to the voucher (**decision 2**).

Finally, you have the choice between a HOME ROCKET voucher and a donation for a social cause by us. We will ask you from which donation amount you prefer this donation to the voucher (**decision 3**).

Your decision determines whether you get the HOME ROCKET voucher after the survey, or whether we transfer the money to the respective organization instead. You are free to choose.

The computer will randomly choose whether your decision 1, 2 or 3 will be realized. You cannot

predict which of the three choices will be chosen. Therefore, you should make the right choices for you.

The donation to reduce CO2 would be made to carbonfootprint.com, which was the most efficient organization in a [Guardian study from 2019](#). The organization uses the donation, among other things, for renewable energy projects that replace fossil energy and thus reduce CO2 emissions. A donation of 25€ can save up to 3.5t of CO2 emissions. For comparison, this is about half of the average CO2 emissions of an EU citizen. ([6.7t of CO2 in 2019](#)).

Greenpeace is the best-known environmental organization in this country that is completely financed by donations. The organization stands for environmental protection and advocates measures against climate change, deforestation, whaling, and overfishing.

The donation for the social cause would be made to the Red Cross, which is seen among the organizations with the greatest contribution to the common good according to a [2018 survey](#). The Red Cross is engaged in areas such as nursing care, food banks, and earthquake relief abroad.

You will be able to use the HOME ROCKET voucher for all active projects on HOME ROCKET. Otherwise, the donation is made by us, which we would prove after the survey by means of a donation receipt.

Please do not click "Next" until you are satisfied with your choice, as it cannot be reversed afterwards.

Decision 1

You will be given a series of 50 questions:

Row		Option 1		Option 2
1	Would you rather have	25€ HOME ROCKET voucher	or	1€ donation for CO2 reduction?
2	Would you rather have	25€ HOME ROCKET voucher	or	2€ donation for CO2 reduction?
3	Would you rather have	25€ HOME ROCKET voucher	or	3€ donation for CO2 reduction?
...
50	Would you rather have	25€ HOME ROCKET voucher	or	50€ donation for CO2 reduction?

In each row, you answer with either option 1 or option 2. After you have given all 50 answers, the computer will randomly select one of the 50 rows and you will receive the option you selected in that line. Each line can be selected by the computer.

In order to save time, we do not ask you individually for all 50 answers. Instead, we will ask you: **From which line, i.e. from which donation amount, do you prefer the donation to the voucher?** We assume that you then also prefer to donate for all higher amounts. Thus, we ask you for the amount from which you want to switch from option 1 to option 2.

We will use your answer to answer all 50 rows in the table for you. The computer will randomly draw a row and your choice in that row will then determine whether you get the voucher or the donation is made through us.

In order to receive your preferred option in any case, you should specify the donation amount from which you really prefer the donation. Because if you do not, then you could end up with the option you like less.

Hint: In case you never want to choose the donation in the table, please enter an amount above 50. If you want the donation in each row, please enter 1. Otherwise, please specify the exact amount from which you want to switch from voucher to donation.

From which donation amount in € do you prefer the donation for CO2 reduction to the voucher?

Decision 2

This decision is the same as decision 1, except that the donation goes to a different organization instead. You will again be given a series of 50 questions:

Row		Option 1		Option 2
1	Would you rather have	25€ HOME ROCKET voucher	or	1€ donation for Greenpeace?
2	Would you rather have	25€ HOME ROCKET voucher	or	2€ donation for Greenpeace?
3	Would you rather have	25€ HOME ROCKET voucher	or	3€ donation for Greenpeace?
...
50	Would you rather have	25€ HOME ROCKET voucher	or	50€ donation for Greenpeace?

As we just asked you: **From which donation amount in € do you prefer the donation for Greenpeace to the voucher?**

The computer will randomly draw a row here too, and you will be given the option you selected in that row. Thus, you should also specify the amount from which you really prefer the donation.

Hint: In case you never want to choose the donation in the table, please enter an amount above 50. If you want the donation in each row, please enter 1. Otherwise, please specify the exact amount from which you want to switch from voucher to donation.

Decision 3

This decision is the same as decision 1 and 2, except that the donation goes to a different organization instead. You will again be given a series of 50 questions:

Row		Option 1		Option 2
1	Would you rather have	25€ HOME ROCKET voucher	or	1€ donation for the Red Cross?
2	Would you rather have	25€ HOME ROCKET voucher	or	2€ donation for the Red Cross?
3	Would you rather have	25€ HOME ROCKET voucher	or	3€ donation for the Red Cross?
...
50	Would you rather have	25€ HOME ROCKET voucher	or	50€ donation for the Red Cross?

As we just asked you: **From which donation amount in € do you prefer the donation for the Red Cross to the voucher?**

The computer will randomly draw a row here as well, and you will be given the option you selected in that row. Thus, you should also specify the amount from which you really prefer the donation.

Hint: In case you never want to choose the donation in the table, please enter an amount above 50. If you want the donation in each row, please enter 1. Otherwise, please specify the exact amount from which you want to switch from voucher to donation.

Please do not click "Next" until you are satisfied with all decisions.

End of Block: Choice experiment

Start of Block: Experimental Outcome

The computer has selected **decision 1** (donation for CO2 reduction or HOME ROCKET voucher).

In another random drawing, the computer randomly determined the following donation amount (between 1€ and 50€):

$\{e://Field/rand_line\}$ € You have answered that you prefer option 2 from $\{Q18/ChoiceTextEntryValue\}$ €. In this case, you prefer the $\{e://Field/rand_line\}$ € donation for CO2 reduction to the voucher. We will therefore donate $\{e://Field/rand_line\}$ €. After completing the survey (within three weeks), ROCKET will send a donation receipt with the total amount to all participants who have selected the donation.

The computer has selected **decision 1** (donation for CO2 reduction or HOME ROCKET voucher).

In another random drawing, the computer randomly determined the following donation amount (between 1€ and 50€):

$\{e://Field/rand_line\}$ € You have answered that you prefer option 2 from $\{Q18/ChoiceTextEntryValue\}$ €. In this case, you prefer the HOME ROCKET voucher to the $\{e://Field/rand_line\}$ € donation. Therefore, you get the voucher. You will receive the voucher code when you complete the survey.

The computer has selected **decision 2** (donation to Greenpeace or HOME ROCKET voucher).

In another random drawing, the computer randomly determined the following donation amount (between 1€ and 50€):

$\{e://Field/rand_line\}$ € You have answered that you prefer option 2 from $\{Q42/ChoiceTextEntryValue\}$ €. In this case, you prefer the $\{e://Field/rand_line\}$ € donation for Greenpeace to the voucher. We will therefore donate $\{e://Field/rand_line\}$ €. After completing the survey (within three weeks), ROCKET will send a donation receipt with the total amount to all participants who have selected the donation.

The computer has selected **decision 2** (donation to Greenpeace or HOME ROCKET voucher).

In another random drawing, the computer randomly determined the following donation amount (between 1€ and 50€):

$\{e://Field/rand_line\}$ € You have answered that you prefer option 2 from $\{Q42/ChoiceTextEntryValue\}$ €. In this case, you prefer the HOME ROCKET voucher to the $\{e://Field/rand_line\}$ € donation. Therefore, you get the voucher. You will receive the voucher code when you complete the survey.

The computer has selected **decision 3** (donation to the Red Cross or HOME ROCKET voucher).

In another random drawing, the computer randomly determined the following donation amount (between 1€ and 50€):

$\{e://Field/rand_line\}$ € You have answered that you prefer option 2 from $\{Q22/ChoiceTextEntryValue\}$ €. In this case, you prefer the $\{e://Field/rand_line\}$ € donation for the Red Cross to the voucher. We will therefore donate $\{e://Field/rand_line\}$ €. After completing the survey (within three weeks), ROCKET will send a donation receipt with the total amount to all participants who have selected the donation.

The computer has selected **decision 3** (donation to the Red Cross or HOME ROCKET voucher).

In another random drawing, the computer randomly determined the following donation amount (between 1€ and 50€):

$\{e://Field/rand_line\}$ € You have answered that you prefer option 2 from $\{Q22/ChoiceTextEntryValue\}$ €. In this case, you prefer the HOME ROCKET voucher to the $\{e://Field/rand_line\}$ € donation. Therefore, you get the voucher. You will receive the voucher code when you complete the survey.

Did you understand the previous explanations about the decisions – whether voucher or donation – well or did you find them rather unclear/confusing?

	unclear/confusing	rather unclear	rather clear	well explained
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Experimental Outcome

Start of Block: Voucher

Thank you for participating.

According to your decision you will receive a 25€ HOME ROCKET voucher. Your voucher code is

You can use this code for any active project on HOME ROCKET. The voucher is valid for 4 months. Please make note of the voucher code. ROCKET will also send you this code by email in about 1-2 weeks. However, you can already use the voucher.

End of Block: Voucher
