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We implement a survey experiment to study whether awareness of the consequences of hydrogeological risk affects people's willingness to fight it. We use a representative panel of 5,000 Italian individuals interviewed at quarterly frequency, starting in October 2023.
We elicit survey participants' willingness to contribute to a public fund to finance investment to secure areas exposed to hydrogeological risk under different information treatments. We find that disclosing information about the consequences of hydrogeological risk causes individuals to increase both support for public funding and individual willingness to pay for the policy. Compared to the control group, individuals exposed to the treatment were 9 percentage points more likely to contribute to the fund and more willing to contribute an additional €29. Applying the information treatment to the whole working age population could raise as much as €0.26 billion per year. The willingness to pay depends on individual knowledge that the success of the policy depends critically on the willingness to pay of other citizens.
Our results suggest also that one-off campaigns increase the willingness to pay only in the short run, and to be effective campaigns should not be time limited. In fact, refreshing the treatment in a follow-up survey reinstates its effect.
Keywords: Natural Disasters; Willingness to Pay; Insurance.
JEL Classification: H31, H2, H23.
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Discussion Paper Series

Are People Willing to Pay to Prevent Natural Disasters?

Discussion Paper n. 05/2025

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Perceptions of Gender Norms: Framing Effects and Double Standard

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Gender norms play a crucial role in shaping the division of household labor. Yet, little attention has been given to how framing effects and gendered double standards influence perceptions of fairness in chore allocations. In this study, we embed an incentivized measure of normative expectations (Krupka and Weber, 2013) within a representative survey of the Italian population (N=1,501) to bridge two strands of literature: survey-based elicitation of attitudes and incentivized experimental measures of social appropriateness. Participants evaluate the social appropriateness of chore allocations in vignettes where partners' labor supply, household division, and the gender of the proposer vary. We show that, when partners have the same working status, equal sharing of household chores is widely recognized as socially appropriate across generations. However, judgments of unequal allocations reveal the presence of a framing effect and a gender double standard among middle and older generations. In contrast, younger generations exhibit greater internalization of egalitarian norms, suggesting a genuine shift in attitudes. Finally, we find that perceived norms on the division of household labor, measured through normative expectations, are strongly associated with women's labor market outcomes at the regional level. These findings highlight the cognitive biases sustaining gender inequality inside and outside the household.

Keywords: Gender norms, Krupka&Weber elicitation method, Representative surveys, Domestic Chores, Framing effects, Double Standard.

JEL Classification: A13; C90; D01; J16.

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1. Introduction

Tackling the consequences of environmental change and associated extreme events requires massive mobilization of public resources (Trancoso et al., 2024). For instance, the European Union (EU) (2023) estimates that financing the green transition could reach €578bn per year up to 2030. This will require an extraordinary public financing effort. Lack of awareness among voters about the scale of the risks involved is likely to result in limited public support for the financing of the policies that will be required. Without public support, it will be difficult for governments to implement the necessary funding measures. Disseminating information to raise awareness of environmental risks could be a powerful strategy for garnering this support. We need to know whether this strategy would succeed in practice: since protecting the environment is a public good, dissemination of information may not be enough to counteract incentives to free ride even when people are aware of the environmental risks.

In this paper we provide evidence about people's willingness to support and *voluntarily* to pay for the establishment of a dedicated public fund to finance investment in prevention and mitigation of environmental disruptions and secure areas exposed to hydrogeological risk. Most important, we provide evidence showing whether information dissemination about the damage caused by environmental disruption *causally* increases the willingness to contribute to the fund and increases the amount contributed. We refine the analysis by studying how individual willingness to pay (WTP) in response to information treatments depends on the level of the respondent's knowledge about the criticality for policy success of the WTP among the overall population.

The design of our experiment runs for four consecutive quarters. In wave 1 (October 2023) we elicit the respondent's prior beliefs, i.e., the subjective probability of a hydrogeological disaster. Wave 2 (January 2024) is the core of our experiment, and elicits WTP under different information treatments, as described below. In wave 3 (April 2024) we suspend the information treatment but elicit willingness to pay to check if the effect of the information treatment on wave 2 extends beyond the time of the survey. In wave 4 we repeat one of the information treatments to test whether refreshing the treatment boosts the effect on WTP., and

We conduct a survey experiment based on a representative panel of around 5,000 Italian individuals aged between 18 and 75 years who were interviewed at quarterly frequency, starting in October 2023. We elicit the survey participants' willingness to contribute to the public fund under different information treatments in line with a growing stream of work on similar

treatments in relation to large scale surveys, see Bachmann et al. (2022), Stantcheva (2023), Coibion et al (2022, 2024). Since it is conceivable that opposition to government funded green programs would be less were people willing to contribute voluntarily to the program, our experiment provides a better understanding about whether dissemination of information is an effective way to increase consensus related to compulsory fiscal contributions.

We designed the experiment with two layers of randomization. In the first layer three groups of survey participants are randomly selected. The control group is not given any information and reports only WTP for the fund, in terms of participation in the fund, and amount the individual would be willing to contribute. A first treatment group receives information on the number of deaths and displaced people following a hydrogeological catastrophe that occurred on May 16-17, 2023 in Romagna, a northern Italian region. A second treatment group receives the same information in addition to information on the amount (in euros) of the economic damage caused by the disaster. If information diffusion is an effective way to raise awareness about the value of public investment for tackling environmental risk, we would expect the treated individuals to be more willing to participate in the fund and more willing to contribute more to it.

In the second randomly selected layer all the individuals in the sample are allocated randomly to two groups. The questionnaire administered to the second layer control group asks the respondents to read a statement explaining that the investment needed to contain environmental disruption risks requires a substantial amount of public resources. The second layer treated group receives the same information complemented by a statement that tells them that should there not be a sufficient number of individuals willing to contribute, or should the amount contributed be too small, the policy will fail. Therefore, the experiment treats the second group with information on the cost of hydrogeological risks (the first layer) and the relevance of wide participation for policy success (the second layer).

The second layer is noteworthy because awareness that policy success depends on the choice of the other citizens also could have an ambiguous effect on the WTP. On the one hand, it could enhance individual perception of the importance and value of his/her contribution for the success of the policy, and thus could increase the cost of non-participating and strengthen the motivation to contribute more. On the other hand, the treatment might focus the individual's attention on the decisions made by the other citizens. Skepticism about the pro-social attitude of fellow citizens can induce pessimism about policy success and reduce the individual's

willingness to contribute to the fund. Understanding which effect dominates would be informative for policy design.

The design of the treatments was inspired by the large literature on public good games. A robust finding in this literature is that even in one shot games an even in the absence of an external monitor people tend to contribute to the public good rejecting the no contribution predicted by selfish individuals in the Nash equilibrium.[1] In general, in lab experiments involving public good games, peoples' cooperative behavior responds positively to the payoffs, measured by the marginal net benefit from the public good (e.g. Capraro, 2013). The first treatment is aimed at testing this sensitivity. Also, people respond to the behavior of others, and particularly the presence of free riders (e.g. Dong et al., 2016). The second treatment explores this sensitivity in our large sample of the adult population in a real hydrogeological risk context.

The survey indicates substantial support for the public fund, even among individuals not exposed to the treatment: 52.1% expressed willingness to contribute, with a median amount of €25. However, a notable portion (18.4%) is unwilling to pay, and an even larger percentage (29.5%) is undecided, indicating potential for policies aimed at raising awareness. Disclosing information about the consequences of hydrogeological risk causes individuals to increase their support for the public fund and their WTP for the policy. Compared to the control group, individuals exposed *only* to the first-stage treatment are around 9 percentage points more likely to support the establishment of a fund and would be willing to contribute an additional €29 to it. Notably, about half of the observed effect on the willingness to participate stems from the group of previously undecided individuals.

Treating individuals with information that the policy might fail if not enough people endorse it, reduces the willingness to contribute to the fund by 6 percentage points. About half of this reduction comes from an increase in the number of undecided and half comes from the group opposed to a fund. The effect of the second treatment on the amount contributed is not statistically different from zero. We observe that the information treatments are economically important. A simple back-of-the-envelope calculation implies that applying the first stage treatment to the whole working age population could raise as much as €0.26 billion per year, 33% more than in the case of no awareness campaign prior to the establishment of the fund.

[1] The literature is too large to cite all the contributions but see among others Isaac and Walker (1988), Cooper et al. (1996), Fehr and Gachter (2000), Fischbacher et al. (2001), Horton et al. (2011), Dreber et al. (2013). Chaudhuri (2011) offers a broad review of the literature.

We find that the effect of the treatment is transitory. When we elicit the WTP in the subsequent survey (Wave 3) we detect no effect of the treatments in the previous survey. However, repeating the treatment in Wave 4 reinstates the contemporaneous effects on WTP, though for those treated twice (in Waves 2 and 4) the effect is not magnified. This suggests that information campaigns are effective but cannot be one shot.

Our paper contributes to work on the WTP for environmental risk and in particular to contingent valuation methods that involve individuals reporting their WTP for a hypothetical environmental improvement or a reduction in environmental risk (see Mitchell and Carson 1989, the classic manual by Bateman et al. 2002, and OECD 2018).[2] There is a large stream of work on the demand for insurance against high impact low probability events such as natural disasters (see McClelland et al. 1993 and Kriesel and Landry 2004). Also, Botzen and van den Bergh (2012) elicit individual risk beliefs and demand for flood insurance using the contingent valuation survey method on a sample of homeowners in a Dutch river delta.

In the last decade, many papers have focused on the characteristics of the population that supports climate policies, especially in the context of carbon taxes. Within this literature, our paper is closely connected to two recent studies that elicit willingness to pay to fight climate change. Andre et al. (2021) show that providing U.S. respondents with correct information about the prevalence of climate norms increases their willingness to donate to fight climate change and their support for climate policies. Dechezleprêtre et al. (2024) measure the causal effect of specific information provision on climate policy views in a large international cross-section. They show that respondents who watched videos documenting the impacts of climate change became more willing to take action to limit climate change and support additional climate policies.

Our paper differs from these contributions in two key ways. First, we document that the effects of information dissemination can be threatened by perceptions of free riding. Second, we show that these effects are short-lived unless the treatment is refreshed.

Stated preferences techniques allow estimation of the monetary value placed by the individual on environmental outcomes; however, this technique has been criticized on the grounds that due to respondents' reluctance to reveal their true preferences or due to a lack of understanding of the hypothetical scenario, stated preferences might differ from actual

[2] The contingent valuation method is a stated preferences approach in which respondents are asked directly for their WTP for a hypothetical change in the level of provision of a non-market good.

behavior. In this respect, our randomization is important: to the extent that preferences and other unobserved characteristics are randomly distributed across treatments and control groups, it is still possible to estimate the causal impact of information on the WTP.[3]

As already mentioned, this paper is part of a broader research program that uses survey experiments in largescale surveys of households or firms to study economic issues. For example, Roth and Wohlfart (2020) use information treatments related to the economic outlook to study how households' expectations about future growth affect their consumption plans. Also, Armantier et al. (2016b) and Cavallo et al. (2017) study how distinct types of information on inflation or monetary policy affect households' inflation expectations. Coibion et al. (2024) adopt a similar strategy to show that exogenous variation in household inflation expectations affects subsequent household spending decisions. Coibion et al. (2018) study how firms' expectations affect their subsequent pricing, investment, and employment decisions, and how monetary policy affects inflation expectations. The mentioned paper by Dechezleprêtre et al. (2024) is another good example on how information treatments can affect policy views in the context of climate change policies.

The rest of the paper is organized as follows. Section 2 describes the survey and provides details of the design of the survey experiment and the structure of the information treatments. Section 3 presents the main results of the experiments and provides some initial evidence of the casual effects of the treatments on the probability that people support the policy and the amounts they are willing to pay. Section 4 tests whether the treatment effects are heterogenous in the population, and discusses the sensitivity of the results to controlling for prior beliefs, socioeconomic variables, political orientation, and "objective" environmental risk. In this section we also test if the treatments have "memory", that is, if WTP is affected by treatments received in previous months. Section 5 concludes. Detailed information on the survey are provided in Appendix B.

2. Data and experimental design

[3] Other methods to infer individual WTP rely on revealed preferences methods and actual behavior in markets related to environmental goods or services. Revealed preferences methods may not capture non-market values or preferences for goods not traded in markets, such as environmental risk.

We ran our experiment using Italian Survey of Consumers Expectations (ISCE), a new consumption and expectations survey which starting in October 2023 aims to interviewed a representative panel of Italian individuals. ISCE is a quarterly rotating panel with two completed waves, the first in October 2023 (wave 1) and the second in January 2024 (wave 2). ISCE collects data on demographic variables, household resources (income and wealth components), consumption, and expectations about individual variables such as consumption and income, and aggregate macroeconomic variables such as inflation, unemployment rate, nominal interest rate, and economic growth.

2.1. The survey

The survey builds on two international experiences of online, high-frequency surveys. The New York Fed Survey of Consumer Expectations collects monthly information on consumers' views and expectations regarding inflation, employment, income, and household finances (Armantier et al., 2016a). The European Central Bank Consumer Expectations Survey (ECB, 2021) collects similar data from about 20,000 households in 11 euro area economies.[4] Both of these surveys include some questions that are always included and some special modules that vary across waves.

The ISCE targets the Italian resident population aged between 18-75 years. A pilot of 100 interviews was administered in September 2023. Variables such as income, consumption, and expectations refer to October 2023, January 2024, April 2024 and July 2024 (waves 1 to 4), with approximately 5,000 observations per wave. Our experimental design starts in October 2023 (wave 1) with questions of the perceptions of a risk of a natural disaster and other risks. Next, we field a special module in January 2024 (wave 2) with the information treatments and questions on willingness to contribute to a public fund dedicated to protecting against hydrogeological risks. As explained in Sections 4.4. and 4.5, in April 2024 (wave 3) we repeat the WTP questions, with no treatments. In July 2024 (wave 4) we repeat one of the information treatments.

The sampling scheme is similar to that applied in many similar surveys. The Italian resident population is stratified based on three criteria: area of residence (North-East, North-West, Central and South Italy), age group (18-34, 35-44, 45-54, 55-64, over 65), gender,

[4] Several other international experiences are also useful references, such as the Social Economic Lab at Harvard whose surveys are used to explore what determines social preferences, attitudes, and perceptions.

education (college degree, high school degree, less than high school), and occupation (working, not working). All interviews were enabled by a Computer Assisted Web Interviewing (CAWI) method. The overall response rate was around 40% in both waves, with quite low unit non-response for all questions. We use sample weights to make statistics population-representative. Appendix B presents information about the survey. It also compares the sample means of the ISCE selected variables and the most recent available Bank of Italy Survey of Household Income and Wealth (2022 SHIW). Samples are well aligned in terms of gender, family size and region. ISCE features a lower proportion of respondents with primary education (12% against 14%), and correspondingly a higher proportion of high school graduates (50% against 46%). Also, the ISCE sample includes a higher proportion of young respondents. These characteristics are likely to reflect that ISCE samples a segment of the population which is more likely to have internet access and is more able to respond to online questionnaires.

In addition to eliciting expectations, ISCE is open to proposals from academic scholars to gather data on specific topics, new questions and survey experiments. For instance, in wave 2 we proposed the survey experiment discussed in this paper, and in wave 1 we introduced a special module measuring the probability assessments of Italian residents scored on a scale of 1% to 100% regarding the occurrence of a set of 10 major risks. These risks ranged from risks arising from disruptive innovative technology to the collapse of the financial system or another pandemic. One of the risks included was natural disasters (including floods) linked to climate change. Respondents were also asked to report whether the event could have major economic consequences for Italy and for their personal income.[5]

2.2. The experimental design

Opinions about perception of the risk of a natural disaster provides useful information on people's prior beliefs before the information treatments introduced in wave 2, three months after wave 1. Specifically, in wave 2 we applied a two-stage information treatment. In the first stage, we randomly allocated survey participants to a control group labeled T1, and two information-treated groups, T2 and T3. In the second stage, all survey participants (T1, T2, and

[5] The question was: *Now you will read about a series of serious events. Think about each of these events and indicate on a scale from 1 to 100 how likely you think each event is to occur in the next 5 years in our country, where 1 indicates that you think it is "virtually impossible " and 100 that you think it is "virtually certain"*. The event was described as follows: natural disasters linked to climate change (floods, droughts, landslides, fires, etc.).

T3) were randomly allocated to a control group G1 which received no treatment and a group G2 which received a second-round information treatment.

Table 1 summarizes the structure of the information treatments applied before people reported their WTP. Groups T2 and T3 received a first stage treatment ("describe the flood consequences") which provides information on the consequences of hydrogeological risk. People in group T2 were given the following statement:

In Romagna, on the night of May 16 and 17, an unprecedented amount of rain caused the rivers to rise rapidly and flood in the space of only a few hours. Practically all the waterways between Rimini and Bologna, a total of 21, burst their banks, flooding vast areas of Romagna. Fifteen people died and some 40,000 were displaced.

The heavy rain was a dramatic and rare event that established a historical record. In the first 20 days of May 2023 rainfall amounting to 4 billion cubic meters of water fell on a territory of 1,600 square km, slightly more than 7% of the size of the whole region. The amount of rain that fell was equivalent to three times the annual consumption of water in the whole of the Romagna region.[6] The treatment was designed to recall the serious consequences of the event in a neutral way. In addition, at the time the event was quite recent occurring only 8 months before the survey was administered.

Group T3 received the same statement with the addition of a closing sentence to the text providing information *also* on the level of the economic damage in the affected area. This treatment was designed to evaluate whether the following extra piece of information increased the WTP:

The regional government calculated that the damage to roads, schools, embankments, canals and private homes and commercial buildings would reach nearly €9 billion.

In the second stage randomization described in Table 1 ("evoke free riding"), all participants were randomly assigned to two different groups to elicit WTP. Group G1 was asked to respond to the following question on the WTP for a public fund dedicated to protecting against hydrogeological risks:

[6] See the Hearing of the President of the Regional Government to the Parliament (Bonaccini, 2023).

Containing environmental instability and securing areas exposed to hydrogeological risk (floods, landslides, etc.) requires large amounts of public resources. To finance these investments, would you support the creation of a dedicated public fund?

Possible responses to of this "extensive margin" WTP question were: "*Yes*", "*No*", and "*I don't know*". The last option is quite important in our context. It might reflect insufficient knowledge or enough information; also, T2 and T3 could increase the support for the policy at the extensive margin, by inducing some of those who answered "No", and some uncertain about supporting the public fund to change their minds. This last group is described as "*the undecided*". Then, those who responded "*Yes*" were asked an "intensive margin" WTP question about how much they would be willing to contribute:[7]

How much would you be willing to contribute to this fund each year in euro? 5-10; 10-20; 20-50; 50-100; 100-200; 200-300; 300-400; 400-500; 500 -1000; more than 1000.

Group G2 was given the following statement:

Containing environmental instability and securing areas exposed to hydrogeological risk (floods, landslides, etc.) requires a large investment of public resources. ***Success depends on the size of the fund. If only a few contribute, the risk containment policy will fail.*** *To finance these investments, would you be in favor of creating a dedicated public fund?*

The sentence in bold is the second stage information treatment. G2 reminds respondents that the success of the public fund will be threatened if not sufficient numbers of people contribute – either because some free ride or because they are ignoring the benefits of mitigating environmental risk and thus do not express support for the policy. This treatment is aimed at investigating to what extent the design of policies and information campaigns related to the risks arising from climate change should consider that WTP depends on fear of others free riding rather than lack of awareness of the environmental risks. Similar to group G1, this group then is asked the intensive WTP question: "*How much would you be willing to contribute to this fund each year?*"

Table 1 summarizes the structure of the information treatment. There is a total of six groups: the no-information treatments (T1G1) is the control group, T1G2 receives only the second stage free riding treatment, T2G1 and T3G1 receive only the first stage treatment, and

[7] In our payment card approach respondents were asked to choose a contribution based on an interval amount. We assume that the mid-point of the interval (if this value is positive) represents the respondent's true WTP .

T2G2 and T3G2 receive both treatments. In what follows, we label T2 and T3 as respectively, "*weak cost*" and "*strong cost*" information treatments. We label the G2 treatment as "*many for success*."

2.3. Descriptive statistics and balance tests

Table 2 presents summary statistics for the selected characteristics for the whole sample and the five randomized groups. Each of the three *T* groups includes around a third of the total sample, and each of the two G groups includes about half of the sample. A quick glance at the summary statistics reveals small differences in the characteristics of the three first-stage groups and the two second-stage groups. Age, gender, marital status, and all the demographic variables and disposable income and homeownership have very similar means across the six groups.

Table 3 presents the results for the formal balance tests for each random group using probit regressions for the probability of being included in the subsample. Out of the 70 estimated parameters only 8 are statistically different from zero at the 10% confidence level, 5 at the 5% level, and none at the 1% level. For all other parameters the null hypothesis that they are zero cannot be rejected. In all cases the differences are economically negligible, implying that the randomization was successfully implemented.

Since by design the treatments are orthogonal to individual characteristics, we can estimate the causal effects of exogenous information meant to enhance awareness of the cost of hydrogeological risk on WTP and capture two dimensions of the decision to adhere to the fund. The first is an *extensive margin* about the decision to contribute to the public fund, and the second is the *intensive margin*, measuring how much money respondents are willing to contribute to the fund.

3. The effect of information on WTP

We first examine the WTP for the control sample, the group of non-treated individuals in the first and the second rounds (840 observations) and compare this to the total sample. Table 4 presents three important aspects of the willingness to support the fund and the amount respondents would be willing to contribute. First, even with no information treatments, 52% of respondents would be willing to support the fund and to contribute to it. It seems that a large share of the population is already aware of the significance of hydrogeological risk. Consistent with this interpretation, in the control group, those people in wave 1 who reported a higher

probability of hydrogeological disasters within the next five years are more likely to support the fund. A one standard deviation higher subjective probability of a hydrogeological disaster predicts a 3 percentage point higher probability of supporting the fund.

Second, many individuals responded that they did not know whether they would be willing to contribute to the fund. This suggests there is scope for the information treatment policy. Bringing the undecided into the group of supporters of the fund will be particularly important, and especially because the WTP of citizens who are aware of the costs of hydrogeological risk might dissipate if they fear that others will not support it. This might be due to some people may free ride or because they lack the information about the risks that they could help to mitigate by supporting the policy. While it is difficult to address free riding the policy would reduce ignorance, and raise awareness and (possibly) support for funding the environmental preservation policy.

Finally, in table 4 we observe that the amount that the people in the control group would be willing to contribute is very dispersed. Conditional on willingness to contribute, the median contribution in the control group (438 observations) is €25 per year. The mean of the distribution is much higher (€63) because the distribution of the contributions is right skewed. It is interesting that 5% of the control group would be willing to contribute more than €150 per year. Next, we present the main results of the experiment.

3.1. Model specification

We ran probit regressions for the probability of supporting the program, and estimated ordered probit models for the probability of supporting the program, being undecided (the "I don't know" response), and opposing the program. We use all the observations; setting to missing the "I don't know" observations would result in a sample that depends on subsamples that are not randomized and are affected by endogenous selection by respondents in the yes/no/don't know options - in their turn depend on the information treatments, which would undermine identification of the causal effect of the treatments on the outcomes.

We estimated Tobit models for the amount people would be willing to contribute, setting to zero the amounts of those unwilling to contribute or undecided. We specify our model as:

$$y_i = \beta_1 T_2 + \beta_2 T_3 + \beta_3 G_2 + \beta_4 T_2 G_2 + \beta_5 T_3 G_2 + \varepsilon_i \quad (1)$$

The left-hand side variable is the outcome of interest. Depending on the model, we estimate: the indicator for support for the fund, the indicator for undecided, and the amount willing to contribute. The right-hand side includes the treatment dummies. The excluded group is the sample of the untreated (or control group) in both stages (T1G1). The β_j parameters [j=1,...5] measure the effects of the treatments. All these effects are relative to the control group whose summary statistics are presented in table 4.

The parameters β_1 and β_2 measure the causal effects of the first stage information treatments (T2 and T3) in the absence of the second stage treatment. Comparison of the two coefficients allows us to test whether making the costs of hydrogeological risks more salient by adding the economic costs to the human lives losses affects the WTP. The coefficient β_3 measures the effect of letting participants know that success of the fund depends on the others' decisions to contribute, regardless of the information received in the first stage.

The coefficients β_4 and β_5 measure the additional effects of informing people exposed to the "weak" or "strong" "*cost*" treatments that the success of the fund depends on how many people contribute. Thus, $\beta_1 + \beta_4$ measures the total effect on the outcome of treatments T1 and G2, and $\beta_2 + \beta_5$ measures the total effect of treatments T2 and G2. Finally, a test of $\beta_4 = \beta_5 = 0$ reveals whether adding the second treatment affects the WTP of the groups treated in the first stage.

For robustness, in section 4 we report regressions controlling for observable variables to ensure that the treatments are not capturing correlation patterns in the data that might not be fully controlled by our randomization. These regressions are also of interest in terms of examining how WTP covaries with demographic variables. The random design of the survey means that these controls should be orthogonal to the treatments and therefore we expect no systematic effects on the estimated treatment parameters.

3.2. Probability of contributing and being undecided

Table 5 column 1 presents the model (1) estimates in which the outcome variable is a dummy for willingness to support the creation of the fund by contributing to it. We set responses to the WTP question of "*No*" or "*I do not know*" to zero. The values reported in the table are marginal values and thus measure the causal effect of the treatments in percentage points. The first stage information treatment on its own significantly, statistically, and economically

increases the probability that people are willing to support the fund financially. This is true regardless of whether the "weaker" T2 treatment or the "stronger" T3 was received.

The marginal effect is 9.3% for T2 and 7.2% for T3 but a chi-square test cannot reject the null hypothesis $\beta_1 = \beta_2$ (*p*-value 0.388). Thus, once new supporters of the fund are informed about the loss of human life caused by the hydrogeological risk they support the fund even if no economic losses are involved. If people treated in the first round are also treated in the second round which provides them with the information that fund success depends on many contributing to it, the effect are small and not statistically different from zero. They are also not statistically different from each other (*p*-value from testing the hypothesis that $\beta_4 = \beta_5 = 0$ is 0.629). In other words, the effect on support for the fund from the first stage information treatment does not change with the extra information that free riding/ignorance could threaten the success of the fund.

The coefficient of G2 is –0.06 and precisely estimated. This is an interesting effect. Recall that G2 has an ambiguous effects on the outcome of the experiment: on the one hand, it could increase the WTP by making the individual feel that his or her contribution might be more valuable. On the other, it might lead the respondents to conclude that since many will not contribute, then whatever they might do as individuals the fund will fail, which will reduce the WTP. This finding suggests that the second effect prevails, regardless of whether the group received the first treatment or not (since we estimates $\beta_4 = \beta_5 = 0$) . Hence, while alerting people to the serious consequences of climate risk enhances their WTP telling them that to be successful their effort requires the contributions of many fellow citizens reduces the incentive to contribute.

Overall, our baseline specification provides four major key findings: (i) the first-stage information treatment increases the WTP; (ii) the second-stage treatment has the opposite effect; (iii) it is not possible statistically to distinguish between T2 and T3 ($\beta_1 = \beta_2$) since the information about the loss of human lives in the disaster make the economic costs redundant; (iv) there are no interaction effects between the first and second treatments ($\beta_4 = \beta_5 = 0$) implying that the "*cost treatments*" are so powerful that they completely counteract the "*many-to-success*" treatment which latter has a negative effect only on the WTP of those untreated in the first stage.

In terms of the magnitude of the effects, informing people of the cost implications of hydrogeological risks increases the proportion of those willing to contribute by 8-9 percentage

points but informing them also that many others must contribute for the fund to be successful reduces the proportion by 6 points. However, receiving only the "*many for success*" treatment is sufficiently strong to reduce support for the policy among the untreated from 52.1% (see Table 4) to 46%, moving the majority from individuals who would support the fund even in the absence of an information campaign to individuals who either are opposed to the fund or do not know whether or not they would support it.

Table 5 column 2 presents the estimates of the causal effect of the treatments on the WTP imposing the restrictions ($\beta_4 = \beta_5 = 0$). The marginal effects are essentially the same as in the baseline specification but are estimated with smaller standard errors: the T2 and T3 treatments increase the probability of contributing by 8 percentage points, while the G2 treatment reduces the probability by 6 points.

Because the effects of the treatments on the three alternatives must sum to zero, an increase in support for a fund caused by the treatment must derive from fewer undecided about or fewer opposed to the fund, or both. We estimated an ordered probit model to obtain a fuller picture of how the different treatments redistribute respondents across the three groups. The ordered variable takes the values 0 if the individual is opposed to the fund (responding "No" to the first WTP question), 0.5 if the respondent is undecided ("I don't know"), and 1 if the respondent supports it ("Yes").

Table 6 presents the marginal effects of the ordered probit model (a multinomial logit model delivers the same results). Column 1 includes the treatments and all the interactions. The null hypothesis that the first stage and second stage treatments (T2G2 and T3G2) are jointly equal to zero is not rejected, both economically (marginal effects close to zero) and statistically (*p*-value for the joint test that they are zero is 0.381). Column 2 reports the marginal effects imposing these restrictions.

The weak-cost treatment (T2) raises support for the fund by 8.9 percentage points of which 5.5 percentage points (61%) are due to a reduction in those opposed to the fund and 3.5 percentage points (39%) are due to a reduction in the size of the undecided group. The "*strong cost"* treatment (T3) has a comparable effect on support for the fund, and the contribution from a contraction in those opposed to the fund and those undecided about support is quite similar to the effect of T2. Only the second stage treatment lowers support for the fund - by 4.3 percentage points which comes from increases of 2.6 percentage points (60%) in those opposed to the fund and 1.7 percentage points (40%) in the share of undecided.

3.3. Contribution amounts

The first regression in table 7 reports the marginal effects of the Tobit model estimates for the outcome variable of the euro amount that respondents would be willing to contribute to the fund. The variable is zero for those opposed to the policy and those undecided about contributing. The reported effects measure the additional euros contributed to the fund caused by the treatment. The effects of the two cost treatments are both positive and precisely estimated, and the null hypothesis that they are equal is not rejected (the *p*-value is 0.497).

Economically, the T2 and T3 treatments add about €25 to the individual WTP. This is a sizeable effect: it represents 34% of the sample mean of the distribution of contributions conditional on supporting the fund in the whole sample (€73), 40% of the mean of the conditional contribution of the control group (€63), and 72% of the unconditional distribution in the sample of non-treated (€35), which are remarkable shifts. The *many-for-success* treatment is negative and reduces the size of the contribution by slightly less than €8 but this is not precisely estimated, suggesting that reminding people about the risk of free riding operates mostly at the extensive margin and works to increase the number of those opposed to or undecided about the fund. The interaction terms capturing joint exposure to the *cost* and *many-for-success* treatments are small and not statistically different from zero. Hence, the hypothesis that they are both equal to zero is not rejected (*p*-value =0.891). Accordingly, the estimates in column 2 restrict these effects to zero, improving the precision of the estimates, while leaving the economic effects basically unchanged.

To gauge how much a campaign to raise awareness on hydrogeological risks would boost people's WTP we used the estimates to produce a back-of-the-envelope calculation. Without any treatment, 52.1% of the population would be willing to support the fund and would contribute an average of €63.4 (Table 4). Since the number of Italian households is approximately 25 million, at the baseline the fund would be around €826 million ($63.4 \times 0.521 \times 25$). Suppose now that the whole adult Italian population were exposed to the first-stage treatment. Computing the effects at the extensive and intensive margins implied by the Tobit estimates in column 2, the T2 treatment would have two effects: to increase the fraction of supporters by 6 percentage points to 58.1% and would increase the average amount contributed conditional on supporting the fund, by €11.9, to €75.3. The extra amount added to the fund through the extensive margin is €113 million ($75.3 \times 0.06 \times 25$). The extra amount

added through the intensive margin is €155 million ($11.9 \times 0.521 \times 25$). The overall increase in the contributions to the fund induced by the treatment would be €268 million per year, an increase of 32% on its initial value.

This is a remarkable increase considering that currently the losses due to droughts caused by extreme weather are estimated to be €9 billion annually for the *whole* of the EU plus the U.K. (Naumann et al. 2021) and those due to rivers flooding are estimated to be at €7.6 billion (Dottori et al. 2023). Italy is one of the countries at the greatest risk of suffering a natural disaster such as an earthquake, floods, and landslides and the average losses due to these events represent 0.2% of GDP (Gizzi et al. 2016), or more than €3 billion each year.

4. Robustness checks and extensions

In this section we check the sensitivity of the results by extending the baseline specification in four directions. We test whether the treatment effects are heterogeneous among the population, are affected by prior beliefs, and do not change if we introduce in the regressions demographic variables, environmental risk indicators, and political orientation. We also check if the treatments have an effect that extends beyond the period in which the individual is treated.

4.1. Heterogeneity of responses for the information treatments

Our first extension consists of estimating the model based on different levels of awareness about the costs of environmental risks prior to our treatments. If all else being equal some groups were already aware of the costs of hydrogeological risks they should show a lower response to information campaigns. We proxy prior cost-awareness with education level. In our survey, education is the most reliable indicator of differences in prior information on the size and costs of environmental risks available, for instance because more highly educated people follow the news more intensively. Table 8 presents the marginal effects of the probit and Tobit regressions splitting the sample by college education.

In the group with college education the treatment effects are smaller than in the lower education group and are not statistically different from zero. This holds both the probit and Tobit regressions. For instance, among individuals with lower levels of education, treatment T2 increases the probability of contributing significantly by 10.2 percentage points. Among those with a college degree, the treatment effect is about half that (5.7 points) and is not statistically

different from zero. The most plausible explanation for this result is that individuals with college education are already aware of environmental risks and have already discounted their support for a fund, so adding T2 or T3 treatments does not have much effect on their willingness to contribute. Consistent with this interpretation, in the control group compared to respondents with lower education**,** college graduates are 15 percentage points more likely to already support the fund (T1G1) and be willing to contribute €22 more.[8]

Response heterogeneity among education groups provides valuable insights that help to counter potential criticism of our measures of WTP that they may merely reflect "cheap talk" and respondents overstate their WTP due to a lack of incentives to reveal their true values. The observation that college graduates do not respond to the treatment whereas those with lower education do, suggests that this assumption of cheap talk being independent of education is not warranted.

For instance, cheap talk could also induce upward bias responses to the information treatments. In this scenario, we would expect college-educated individuals who report higher WTP when not treated, to be more sensitive to the treatment. However, we observe the opposite pattern, that is, findings do not support this expectation.

4.2. Prior beliefs

Our main treatments are meant to shift knowledge about the *consequences* of hydrogeological disasters, not their *frequency*. The outcome we study is WTP, not posterior beliefs. The treatment most likely affects consumer utility, conditional on occurrence of a disaster, and the effect on the outcome should reflect the change in utility caused by the treatment. However, the treatment may also affect the outcome because it shifts respondents' belief away from the prior.

[8] We also checked for a source of heterogeneity in the pre-treatment information by examining whether the treatment effect was weaker for individuals living close to an area that had suffered a catastrophic event, i.e. the presumption that proximity to an event raises awareness. In September 2022 just under a year before the four provinces of Emilia Romagna experienced the May 2023 flood, the neighboring Marche region experienced floods that resulted in victims and damage. In the control group, residents of Emilia and Marche reported higher pre-treatment WTP: the proportion of those in favor of contributing is 61% (against 51% in the other regions), and the amount of the contribution conditional on participation is €68. The pattern shown in the results in Appendix Table A1 is similar to the education split. Compared to residents in other regions of Italy, residents in Emilia and Marche who had experienced serious flooding and thus, were more likely to be better informed about the consequences of flood risk did not respond to the treatments. However, the large standard errors due to small sample size in these regions do not allow reliable inferences.

Suppose the WTP of individual i, $y_i = f(\pi_i, u_i, k_i, s_i)$ is a function of the individual's beliefs about the occurrence of a disaster, π_i, the associated utility, u_i , the cost of contributing k_i, and a signal from the information treatment, s_i. For instance, the decision to contribute may be based on the solution to an optimization problem where the individual chooses y_i in order to maximize the expected utility from contributing to the fund net of the cost of the contribution:

$$max_{y_i}: \pi_i(s_i)u_i\big(y_i, s_i, d = 1\big) + \big(1 - \pi_i(s_i)\big)u_i\big(y_i, s_i, d = 0\big) - k_i y_i \quad (2)$$

where $d = 1$ if a hydrogeological disaster occurs. We let the information signal s_i affect both the belief π_i and the utility from contributing to the fund which depends on whether or not a disaster occurs. If individual beliefs follow a Bayes rule, then

$$\pi_i = \alpha_0 p_i + (1 - \alpha_0)s_i$$

where p_i is the prior probability of a hydrogeological disaster before the individual receives the information treatment. The parameter α_0 measures the informativeness of the signal and thus its ability to shift beliefs away from the prior. If the information treatments have no effect on the posterior belief then $\alpha_0 = 1$ but if the treatments effect on beliefs is large α_0 will be close to zero. The effect of the prior on WTP is:

$$\frac{dy_i}{dp_i} = \frac{dy_i}{d\pi_i}\frac{d\pi_i}{dp_i} = \frac{dy_i}{d\pi_i}\alpha_0$$

Since $\frac{dy_i}{d\pi_i} > 0$, regression of the WTP on the prior provides information about whether the treatments affect the WTP by also shifting beliefs. Following Coibion et al. (2018), to the baseline specification we add: (a) a control for prior belief p_i – the respondent's subjective probability of a hydrogeological disaster elicited in the first wave of the survey[9]; (b) the interactions between p_i and all the treatments. Specifically, we estimate:

[9] The question posed in the first wave was: "*Now you will read about a series of serious events. Think about each of these events and indicate on a scale of 1 to 100 how likely you think each event is to occur in the next 5 years in our country, where 1 indicates that you think it is very unlikely" and 100 that you think it is "very likely"*. One of the events is "*natural disasters linked to climate change (floods, droughts, landslides, fires, etc.)*".

$$y_i = \beta_1 T_2 + \beta_2 T_3 + \beta_3 G_2 + \gamma_0 p_i + \gamma_1 p_i T_2 + \gamma_2 p_i T_3 + \gamma_3 p_i G_2 + \varepsilon_i \quad (3)$$

Since the coefficients of T2G2 and T3G2 in all previous specifications are not statistically different from zero, here we set their effects to zero. The parameter γ_0 captures the joint effect of the prior probability of a disaster on the posterior and of the latter on the WTP in the control sample. The coefficients of the interaction terms in equation (3) – the parameters $\gamma_1, \gamma_2, \gamma_3$ – reveal whether the treatments affect the distance between the prior and posterior beliefs, and thus if the treatments affect the WTP because they causally affect the beliefs.

Table 9 reports the estimates of equation (3). Prior belief about the probability of a disaster has a positive and significant effect on the WTP in both the probit and Tobit estimates, suggesting that the posterior is affected by the prior and that more pessimistic beliefs increase the WTP. The interactions between the prior and first stage treatments are negative, implying that these treatments attenuate the dependence of the posterior belief on the prior. This suggests that the treatment although not explicitly targeting the frequency of hydrogeological risk, does affect the respondents' WTP by shifting beliefs and increasing the posterior probability.

The point estimates imply large economic effects. For example, for individuals with a prior that is one standard deviation below the mean of the cross-sectional distribution (and there is room for the information treatment to have an influence) treatment T2 increases the probability of supporting the fund by 10 percentage points, and for those with a prior one standard deviation above average it increases it by 5.9 points. However, the standard errors are too large to draw firm conclusions. We take this evidence suggesting weakly that T2 and T3 affect the WTP by also increasing beliefs about the occurrence of hydrogeological disasters but that most of the effects of the information treatments reflect a shift in the perceived costs of disaster occurrences.

To verify our approach, we conducted placebo tests replacing prior belief about a hydrogeological disaster with beliefs about the subjective probability of other disasters unrelated to hydrogeological risk. Appendix Table A2 reports the probit and Tobit estimates replacing the prior on hydrogeological risk with the probability that individuals assign to the occurrence within five years of three events: another pandemic of similar intensity to COVID-19, a large-scale conflict leading to nuclear war, and collapse of the financial markets comparable to that in 2008. None of these prior beliefs should affect the baseline which is the

WTP in the control group ($\gamma_0 = 0$), or the interaction of these beliefs with the treatments. The results indicate that none of these placebos affect the WTP which confirms the validity of our strategy to control for the influence of prior beliefs about hydrogeological risks.

4.3. Controlling for observables

Table 10 presents the probit and Tobit estimates controlling now for two groups of variables. The first group includes a set of demographic variables: gender, age, family size, education, region of residence, employment status, income, and home ownership. The second set includes three variables: the subjective probability of the occurrence of a natural disaster within the next five years, an indicator measuring "objective" environmental risk (described in section 4.1), and a dummy for political orientation.

The probability of contributing to the fund is positively related to education and economic resources (income and home ownership). It is also positively related to perceived risk of natural disasters and a leftist political orientation but is not sensitive to "objective" indicators of environmental risk. Education, income, and home ownership are also associated with a lower level of uncertainty about the decision to contribute. Most importantly in the context of our study is that the effects of the first and second treatments in these extended specifications are similar to those in Tables 5 and 7 which given our randomized experiment is as expected.

4.4. Long memory of treatments

An important question is whether information treatments have an effect that extends beyond the period in which the individual is treated. To check this, we use data from ISCE wave 3 (April 2024), merged with a panel from wave 1 (October 2023), the treatments in wave 2 (January 2024), and the WTP elicited in the same format in wave 3 (April 2024).

Table 11 reproduces the regressions in Table 9 using the prior beliefs from wave 1.[10] We observe no evidence that the wave 2 random treatments (T or G) affect the WTP three months later. Instead, we observe that prior beliefs (elicited in October 2023, wave 1) have an impact on the WTP in wave 3 (April 2023). The marginal effect in the probit regressions is of the same order of magnitude as in Table 9 (0.14 against 0.12) and is precisely estimated and somewhat smaller in the Tobit.

[10] The sample size reduces to 3,743 observations because some individuals dropped out of the panel in April. Sample means of the WTP in April are similar to those elicited in January: the proportion willing to contribute to the fund is 49%, undecided are 32%, and opposers are 19%.

These results suggest that providing information on the consequences of hydrogeological disasters increases the WTP only in the short term, with the effect vanishing after a few months. This could be interpreted in terms of a one-off campaign having only a temporary effect because it is competing with efforts from other agents to downplay the importance of environmental risks and run conflicting campaigns. Our regressions show that prior beliefs have persistent effects on the WTP, indicating that information campaigns matter but need to be repeated frequently to gradually change people's beliefs and attitudes about investing in environmental improvements and disaster protection.[11]

4.5. Refreshment of treatments

Another important question is whether the information treatment is effective only in the short-run, and whether refreshing it reinstates and possibly reinforces the initial treatments. To test whether this is the case we rely on ISCE wave 4. This wave was fielded in July 2024 and repeats the treatment in Wave 2. To simplify matters, we only implement the T2 and T3 information treatments and avoid the G one.

The results are shown in Table 12. In the first column the right-hand-side variables are only T2 and T3. It shows that the effects of repeating the treatments on the WTP are the same as we document in Table 5. Both treatments increase WTP by about 8 percentage points, the effects are significant, and are not statistically different from each other. In the second column we exploit the panel component of wave 4 and interact the treatments T2 and T2 with an indicator for whether the respondent was also treated in Wave 2. Being treated twice has no significant effects, while the effect of T2 and T3 is unaffected. Thus, refreshing the treatment reinstates people WTP, counteracting the short memory effect documented in Table 11. But there is no additional effect if people are treated twice.

5. Conclusions

We implemented a survey experiment based on a representative panel of 5,000 Italian individuals interviewed at quarterly frequency, starting in October 2023. We elicited survey participants willingness to contribute to a public fund to finance investment to contain

[11] Results don't change if we control for prior beliefs and demographic variables.

environmental change and secure areas exposed to hydrogeological risk under different information treatments.

We found that providing information on the consequences of hydrogeological risk increases support for a public fund and the WTP for the policy. Compared to the control group, individuals exposed to the information treatment on the costs of hydrogeological events were around 9 percentage points more likely to support the fund and willing to contribute an additional €25 to the fund. About half of the effect of the treatment on the willingness to contribute comes from those who initially opposed the fund and from those who were undecided about contributing. Applying the information treatment to the entire working-age population could raise as much as €0.26 billion per year. This could cover up to 42% of the currently estimated annual cost of the investment necessary in Italy to reduce economic damage due to hydrogeological risk by a factor of 4 and to reduce the population exposed by 84% (see Dottori et al., 2023).

We provide evidence of how individual WTP depends on the individual's knowledge that success of the policy depends critically on the WTP of the other citizens. More generally, we show that dissemination of information is effective for achieving consensus over accumulation of funding for climate change mitigation policies.

Our findings have implications for the design of information campaigns. First, our results suggest that people have a stronger response to damage to human life than to economic damage, which shows where the emphasis should be on information about climate change. Second, there is considerable heterogeneity in public awareness regarding the costs of climate change, with those less informed being more responsive to the information treatments. Since disseminating information is costly, targeted strategies using artificial intelligence could enhance cost-effectiveness. Additionally, raising awareness among the less well informed and the undecided could increase the consensus on climate funding policies among those already aware of the risks, due to the expected broader participation of the population and reduced likelihood of free riding.

Our results suggest also that one-off campaigns increase the WTP only in the short run, and to be effective campaigns should not be time limited. Finally, our results imply that because people's support for climate policies is influenced by information, they could also be swayed by biased information. Not all campaigns are truthful. Climate policies impose transition costs and may affect existing financial interests. Owners of these interests have a stronger motivation

to downplay or deny the costs of climate change and launch biased campaigns. This suggests that consensus-building measures must be long-term and continuous to counter the large amounts of strategic dissemination of information by parties with conflicting interests.[12]

[12] The clearest example of these strategies are the ones put in place by oil producing companies which, according to Alan Gore, "have used fraud and falsehood on an industrial scale" in order to attenuate people concerns and fears about climate change.

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Table 1. The structure of information treatments

First stage randomization: "*Describe flood consequence*"	T1 Control group	T2 Treatment: *N of deaths*	T3 Treatment: N *of deaths plus damages*	T1 Control group	T2 Treatment: *N of deaths*	T3 Treatment: *N of deaths plus damages*
Second stage randomization: "*Evoke free riding*"		G1: No treatment			G2: Treatment: *Fund success depends on how many contribute*	
			WTP asked to all			

Table 2. Summary statistics in the randomized samples

	T1	T2	T3	G1	G2	All
Age	48.19	48.358	47.66	48.114	48.024	48.07
Male	.487	.495	.502	.492	.497	.495
Married	.531	.56	.54	.544	.544	.544
Family size	2.80	2.76	2.77	2.77	2.79	2.78
High school	.449	.423	.456	.462	.424	.443
College	.232	.24	.224	.221	.243	.232
Centre	.195	.186	.195	.191	.193	.192
South	.34	.335	.337	.337	.338	.338
Employed	.436	.411	.431	.421	.431	.426
Self-employed	.079	.095	.085	.097	.076	.086
Retired	.189	.192	.17	.182	.186	.184
Log income	7.573	7.593	7.571	7.592	7.566	7.579
Homeowner	.753	.772	.757	.77	.751	.761
Financial literacy	1.78	1.778	1.772	1.819	1.735	1.777
N. of observations	1,667	1,670	1,664	2,507	2,494	5,001

Note. The table reports variables means in each of the five randomized samples and in the total sample. Data are drawn from the January 2024 (wave 2) Italian Consumer Expectations Survey (ICES). Statistics are computed using sample weights.

Table 3. Balance tests

	T1	T2	T3	G1	G2
Age	0.001	-0.000	-0.000	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male	-0.013	-0.003	0.016	-0.015	0.015
	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)
Married	-0.028	0.022	0.006	0.002	-0.002
	(0.015)*	(0.015)	(0.015)	(0.016)	(0.016)
Family size	0.013	-0.008	-0.006	-0.009	0.009
	(0.007)**	(0.007)	(0.007)	(0.007)	(0.007)
High school	0.009	-0.025	0.015	0.023	-0.023
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)
College	0.010	-0.001	-0.009	-0.036	0.036
	(0.020)	(0.020)	(0.020)	(0.022)*	(0.022)*
Centre	0.008	-0.013	0.005	-0.004	0.004
	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)
South	0.004	-0.002	-0.002	0.011	-0.011
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)
Employed	0.025	-0.017	-0.008	-0.004	0.004
	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)
Self-employed	-0.017	0.030	-0.013	0.067	-0.067
	(0.027)	(0.026)	(0.027)	(0.028)**	(0.028)**
Retired	0.028	0.007	-0.036	-0.018	0.018
	(0.026)	(0.025)	(0.026)	(0.027)	(0.027)
Log income	-0.010	0.015	-0.005	0.025	-0.025
	(0.015)	(0.015)	(0.015)	(0.016)	(0.016)
Homeowner	-0.018	0.018	0.000	0.018	-0.018
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)
Financial literacy	0.003	-0.003	-0.000	0.018	-0.018
	(0.007)	(0.007)	(0.007)	(0.007)**	(0.007)**
N. of observations	5,001	5,001	5,001	5,001	5,001

Note. The table reports probit regressions for the probability of inclusion in the 5 randomized subsamples. We report average marginal effects, and in parentheses heteroskedasticity consistent standard errors. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%.

Table 4. Summary statistics for willingness to contribute to the fund

	Control group T1/G1	Total sample
Support to the fund		
% Yes	52.1	54.6
% No	18.4	15.9
% I don't know	29.5	29.5
N. of observations	840	5,001
Amount willing to contribute if "Yes"		
		.
5th pct	7.5	7.5
10th pct	7.5	7.5
25th pct	7.5	7.5
Median	25	35
75th pct	75	75
90th pct	150	150
95th pct	250	250
Mean	63.4	73.48
Standard deviation	119.4	158.0
Skewness	5.97	5.28
N. of observations	438	2,731

Note. The table reports sample statistics on willingness to contribute to the fund, and amount of the contribution, separately for the control group (T1G1) and the total sample. Statistics are computed using sample weights.

Table 5. The effect of treatments on the probability of WTP

Treatment	Probit	Probit
T2	0.093	0.085
	(0.024)***	(0.017)***
T3	0.072	0.080
	(0.024)***	(0.017)***
G2	-0.060	-0.060
	(0.024)**	(0.014)***
T2G2	-0.017	
	(0.034)	
T3G2	0.016	
	(0.034)	
P-value test : $\beta_1 = \beta_2$	0.388	0.799
P-value test $\beta_4 = \beta_5 = 0$	0.629	
Average of LHS variable	0.521	0.521
N	5,001	5,001

Note. The table reports marginal effects calculated from probit regressions for the probability of contributing to the fund. Heteroskedasticity consistent standard errors are reported in parentheses. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%. The table also reports the p-values of a chi-square test of the listed null. The estimated equation is $y_i = \beta_1 T_2 + \beta_2 T_3 + \beta_3 G_2 + \beta_4 T_2 G_2 + \beta_5 T_3 G_2 + \varepsilon_i$.

Table 6. Ordered probit estimates

Treatment	Marginal effects on:	Ordered probit	Ordered probit
T2	Oppose	-0.055	-0.055
		(0.014)***	(0.010)***
	Undecided	-0.035	-0.035
		(0.009)***	(0.006)***
	Support	0.089	0.089
		(0.023)***	(0.016)***
T3	Oppose	-0.041	-0.053
		(0.014)***	(0.010)***
	Undecided	-0.026	-0.034
		(0.009)***	(0.006)***
	Support	0.067	0.086
		(0.023)***	(0.016)***
G2	Oppose	0.034	0.026
		(0.014)**	(0.008)***
	Undecided	0.022	0.017
		(0.009)**	(0.005)***
	Support	-0.055	-0.043
		(0.022)**	(0.013)***
T2G2	Oppose	-0.000	
		(0.019)	
	Undecided	-0.000	
		(0.012)	
	Support	0.000	
		(0.032)	
T3G2	Oppose	-0.024	
		(0.019)	
	Undecided	-0.015	
		(0.012)	
	Support	0.039	
		(0.032)	
P-value test : $\beta_1 = \beta_2$		0.332	0.833
P-value test $\beta_4 = \beta_5 = 0$		0.381	
N		5,001	5,001

Note. The table reports marginal effects of the various treatments calculated from ordered probit regressions for the probability of contributing to the fund (Support), being undecided whether to support or not (Undecided) and not contribute (Oppose). The estimated equation is $y_i = \beta_1 T_2 + \beta_2 T_3 + \beta_3 G_2 + \beta_4 T_2 G_2 + \beta_5 T_3 G_2 + \varepsilon_i$. The last column reports marginal effects of the treatments when the estimated model restricts the effects of the joint first and second stage treatments to zero. Heteroskedasticity consistent standard errors are reported in parentheses. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%. The table also reports the p-values of a chi-square test of the listed null.

Table 7. Tobit estimates of the effect of treatments on WTP

Treatment	Tobit	Tobit
T2	28.878	27.481
	(9.724)***	(7.066)***
T3	22.351	24.1888
	(9.734)**	(7.097)**
G2	-7.859	-7.558
	(9.989)	(5.607)
T2G2	-2.832	
	(13.897)	
T3G2	3.744	
	(13.922)	
P-value test : $\beta_1 = \beta_2$	0.497	0.631
P-value test $\beta_4 = \beta_5 = 0$	0.891	
Average of LHS variable	73.48	73.48
N. of observations	5,001	5,001

Note. The first regression reports marginal effects calculated from Tobit regressions for the amount that respondent intend to contribute to the fund. The estimated equation is $y_i = \beta_1 T_2 + \beta_2 T_3 + \beta_3 G_2 + \beta_4 T_2 G_2 + \beta_5 T_3 G_2 + \varepsilon_i$.. The second column restricts to zero the effects of the joint first-stage and second stage treatments. Heteroskedasticity consistent standard errors are reported in parentheses. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%. The table also reports the *p*-values of a chi-square test of the listed null.

Table 8. The effect of treatment on WTP, by education

	Probit		Tobit	
Treatment	No college	College	No college	College
T2	0.102	0.057	31.867	18.564
	(0.027)***	(0.051)	(11.035)***	(20.378)
T3	0.087	0.012	26.659	6.954
	(0.027)***	(0.050)	(11.070)**	(20.252)
G2	-0.064	-0.071	-12.657	-0.705
	(0.028)**	(0.048)	(11.512)	(20.113)
T2G2	-0.002	-0.053	2.223	-14.503
	(0.039)	(0.069)	(15.983)	(28.063)
T3G2	0.014	0.055	2.340	17.987
	(0.039)	(0.070)	(15.941)	(28.484)
N	3,841	1,160	3,841	1,160

Note. The table reports the marginal effects of probit and Tobit regressions for the probability of contributing to the fund and the amount that people are willing to contribute. We report average marginal effects and in parentheses heteroskedasticity consistent standard errors. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%.

Table 9. The effect of treatments on WTP through beliefs

Treatment	Probit	Tobit
T2	0.125	39.01
	(0.039)***	(15.658)**
T3	0.078	28.69
	(0.039) **	(15.746) *
G2	-0.091	-4.87
	(0.032)***	(12.791)
Prior	0.119	46.496
	(0.053)**	(21.211)**
T2*Prior	-0.081	-27.75
	(0.065)	(27.709)
T3*Prior	-0.024	-15.76
	(0.065)	(25.734)
G2*Prior	0.039	-4.96
	(0.053)	(20.971)
N	4,197	4,197

Note. The table reports the marginal effects of probit and Tobit regressions for the probability of contributing to the fund and the amount that people are willing to contribute. We report average marginal effects and in parentheses heteroskedasticity consistent standard errors. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%.

Table 10. The effect of the treatments on WTP, with demographic variables

	Probit	Probit	Tobit for extensive margin	Tobit for extensive margin
T2	0.101	0.101	31.149	23.673
	(0.023)***	(0.025)***	(9.673)***	(10.308)**
T3	0.078	0.082	25.494	24.704
	(0.023)***	(0.025)***	(9.675)***	(10.348)**
G1	-0.045	-0.042	3.116	3.790
	(0.023)*	(0.025)*	(9.956)	(10.508)
T2G2	-0.030	-0.031	-7.086	2.647
	(0.033)	(0.036)	(13.824)	(14.615)
T3G2	0.010	-0.021	0.891	-4.327
	(0.033)	(0.036)	(13.848)	(14.674)
Age	-0.000	-0.000	0.234	0.382
	(0.001)	(0.001)	(0.283)	(0.308)
Male	0.014	0.015	18.949	21.028
	(0.014)	(0.016)	(5.918)***	(6.435)***
Married	-0.026	-0.012	-9.586	-3.026
	(0.016)*	(0.017)	(6.497)	(6.908)
Family size	0.013	0.011	4.280	0.208
	(0.007)*	(0.007)	(2.814)	(3.034)
High school	0.052	0.045	18.700	15.592
	(0.016)***	(0.017)***	(6.889)***	(7.210)**
College	0.094	0.061	33.643	20.613
	(0.020)***	(0.022)***	(8.532)***	(8.949)**
Centre	0.051	0.049	6.407	13.079
	(0.019)***	(0.021)**	(7.603)	(8.529)
South	-0.006	-0.005	-3.562	0.858
	(0.016)	(0.019)	(6.781)	(7.871)
Employed	0.069	0.083	23.425	31.875
	(0.017)***	(0.020)***	(7.159)***	(8.246)***
Self-employed	0.049	0.071	25.265	25.944
	(0.026)*	(0.029)**	(11.117)**	(12.082)**
Retired	0.086	0.096	37.286	37.266
	(0.025)***	(0.027)***	(10.795)***	(11.370)***
Log income	0.054	0.046	29.787	28.176
	(0.015)***	(0.016)***	(6.170)***	(6.685)***
Homeowner	0.011	0.027	1.811	6.635
	(0.016)	(0.018)	(6.986)	(7.492)
Financial literacy	0.093	0.090	19.727	20.927
	(0.006)***	(0.007)***	(2.903)***	(3.110)***
Pr. of disaster		0.119		44.076
		(0.026)***		(10.574)***
Environmental risk		0.000		2.484
		(0.005)		(2.143)
Left-wing		0.091		17.391
		(0.016)***		(6.521)***
	5,001	4,197	5,001	4,197

Note. The table reports marginal effects calculated from probit and Tobit regressions for the probability of contributing to the fund and the amount that people are willing to contribute. Heteroskedasticity consistent standard errors are reported in parentheses. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%. The table also reports the p-values of a chi-square test of the listed null.

Table 11. The effect of treatments on WTP, wave 3 sample

Treatment	Probit	Probit	Tobit	Tobit
T2	-0.015	-0.015	-8.975	-1.727
	(0.042)	(0.020)	(10.292)	(4.868)
T3	0.016	-0.017	-9.048	-4.262
	(0.041)	(0.020)	(10.316)	(4.893)
G2	-0.004	0.011	4.471	-4.405
	(0.040)	(0.019)	(9.990)	(4.661)
Prior	0.136	0.138	28.430	23.430
	(0.069)**	(0.028)***	(16.918)*	(6.952)***
Prior*T2	0.001		13.560	
	(0.069)		(16.902)	
Prior*T3	-0.063		9.115	
	(0.069)		(16.876)	
Prior*G2	0.029		-16.321	
	(0.066)		(16.182)	
N	3,743	3,743	3,743	3,743

Note. The table uses merged data from the three waves of ISCE. The prior refers to wave 1 (October 2023), the treatments refer to wave 2 (January 2024), while WTP refers to wave 3 (April 2024). The table reports the marginal effects of probit and Tobit regressions for the probability of contributing to the fund and the amount that people are willing to contribute. We report average marginal effects and in parentheses heteroskedasticity consistent standard errors. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%.

Table 12. The effect of refreshing treatments on WTP, wave 4 sample

Treatment	Probit	Probit
T2 in wave 4	0.083	0.079
	(0.017)***	(0.034)**
T3 in wave 4	0.074	0.095
	(0.017)***	(0.034)***
Never treated		0.017
		(0.028)
T2 in waves 2 and 4		0.022
		(0.028)
T3 in wave s 2 and 4		-0.011
		(0.028)
N	5,003	5,003

Note. The table repeats the information treatments in wave 4 fielded in July 2004. We randomly split the sample according to treatments T2 and T3 (avoiding the G treatment for simplicity) used in wave 2 (January 2024) and elicit WTP. The table reports the marginal effects for the probability of contributing to the fund. In parentheses heteroskedasticity consistent standard errors. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%.

Appendix A

Table A1. The effect of treatments on WTP, by region of residence

	Probit		Tobit	
	Other regions	Romagna e Marche	Other regions	Romagna and Marche
T2	0.095	0.055	28.096	25.678
	(0.025)***	(0.080)	(9.815)***	(41.283)
T3	0.069	0.093	23.205	8.507
	(0.025)***	(0.083)	(9.794)**	(42.424)
G2	-0.064	-0.047	-10.876	13.930
	(0.025)**	(0.079)	(10.103)	(41.863)
T2G2	-0.012	-0.030	1.326	-31.725
	(0.036)	(0.110)	(14.063)	(57.550)
T3G2	0.012	0.110	-1.704	75.165
	(0.036)	(0.116)	(14.078)	(58.286)
N	4,573	428	4,573	428

Note. The table reports the marginal effects of probit and Tobit regressions for the probability of contributing to the fund and the amount that people are willing to contribute. We report average marginal effects and in parentheses heteroskedasticity consistent standard errors. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%.

Table A2. The effect of treatment on WTP through beliefs – placebo tests

	Probit			Tobit		
	Pandemic	War	Financial crisis	Pandemic	War	Financial crisis
T2	0.111	0.118	0.087	25.252	31.562	33.003
	(0.029)***	(0.030)***	(0.033)***	(11.458)**	(11.713)***	(13.046)**
T3	0.103	0.093	0.099	18.692	21.991	31.591
	(0.029)***	(0.030)***	(0.033)***	(11.459)	(11.795)*	(13.168)**
G2	-0.078	-0.064	-0.075	-9.236	-5.023	-2.569
	(0.024)***	(0.024)***	(0.027)***	(9.302)	(9.552)	(10.664)
Prior	-0.011	-0.042	-0.079	3.084	-1.747	6.261
	(0.056)	(0.052)	(0.055)	(22.102)	(21.004)	(22.008)
T2*Prior	-0.085	-0.096	-0.013	-3.643	-20.784	-22.220
	(0.067)	(0.063)	(0.067)	(26.491)	(25.218)	(26.487)
T3*Prior	-0.111	-0.071	-0.078	4.811	-4.436	-27.555
	(0.067)*	(0.063)	(0.067)	(26.620)	(25.220)	(26.580)
G2*Prior	0.025	-0.018	0.010	4.733	-7.571	-12.592
	(0.055)	(0.052)	(0.055)	(21.560)	(20.476)	(21.639)
N	4,197	4,197	4,197	4,197	4,197	4,197

Note. For the placebo tests, we consider three beliefs, elicited in the first wave of the survey (October 2023). Respondents are asked to indicate, on a scale from 1 to 100, how likely they think each event is to occur in the next 5 years in Italy. In column (1) the event is "a new pandemic, of similar intensity to Covid-19," in column (2) the event is "a large-scale conflict, leading to nuclear war," in column (3) the event is "a collapse of the financial markets comparable to that of 2008." Events are randomly rotated in the survey. Beliefs are standardized between 0 and 1 in the regressions. The table reports the marginal effects of probit and Tobit regressions for the probability of contributing to the fund and the amount that people are willing to contribute. We report average marginal effects and in parentheses heteroskedasticity consistent standard errors. One star indicates statistical significance at the 10%, two stars at the 5%, three stars at the 1%.

ADDITIONAL MATERIAL

Appendix B

The Italian Survey of Consumer Expectations:

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This version: February 10, 2025

1. Introduction

The Italian Survey of Consumer Expectations (ISCE) collects data on demographic variables, income, wealth, consumption, and expectations and beliefs from a representative sample of Italians aged 18-75. ISCE is collected at quarterly frequency, starting in October 2023. This report describes the survey design, the questionnaire, and the main variables considered in the survey. We also report specific questions used in waves 1 to 4 for the WTP experiment.

The Italian Survey of Consumer Expectations (ISCE) aims to provide an infrastructure to:

- Elicit high-frequency individual expectations and behaviors
- Perform policy analysis
- Run survey experiments
- Explore methods to elicit expectations and beliefs

The survey builds upon international experiences of online, high-frequency surveys. In particular, the New York Fed Survey of Consumer Expectations (SCE) collects information on consumers' views and expectations regarding inflation, employment, income, and household finances. The European Central Bank Consumer Expectation Survey (CES) collects monthly data on households' expectations from about 20,000 households in 11 euro area economies. Several other international experiences such as Harvard's Social Economic Lab which through surveys explores the determinants of social preferences, attitudes, and perceptions, are also useful references.

The ISCE sample is drawn from a larger representative panel of 120,000 individuals maintained and updated regularly by Doxa, a leading statistical research company. The survey targets the population aged 18-75 residing in Italy using the CAWI method. The planned frequency is October, January, April, July, avoiding the months of December and August more likely to reflect high seasonality.

A pilot survey was fielded in September 2023. Wave 1 included 5,007 observations and refers to October 2023. Wave 2 included 5001 interviews and refers to January 2024. Wave 3 referred to April 2024 and included 5,005 interviews. Wave 4 included 5,004 observations, and referred to July 2024. Wave 5 included 5,011 observations, and referred to October 2024. Each wave features replenishments ad random sampling of observations that exit the sample in subsequent waves.

Summary static and documentation is available on the project website: https://isrlab.it

2. Survey design

Proprietary panel
The survey agency maintains a web platform designed and developed to respond to specific research needs. The platform has over 120,000 registered panelists. The average response rate is 40%, with invitations to respond to the survey sent on average 2.5 times a month. The surveys are optimized for different devices (around 33% are via mobile phone).

Recruitment of panelists
The survey agency carries out periodic subscriber recruitment (2-3 times a year) to widen the reference base and ensure rotation of subscribers. Recruitment considers a range of sources and methodologies to reduce distortion in the panel recruitment process. These strategies include:

- Annual offline recruiting based on responses to large surveys (and probabilistic random samples) carried out face-to-face or by phone.

- Online recruiting using a range of tools (DEM, impressions on sites, advertising on social networks) and sources (diversification of name suppliers, different sites, different social network activities in terms of formats and channels).

Sample

The population statistics required to construct the sample are drawn from ISTAT (https://demo.istat.it/), the Italian national statistical institute. The following variables are used for sample stratification:

- Gender: male, female
- Age: 18-34 years, 35-54 years, 55-75 years
- Geographical area: Northwest, Northeast, Center, South, Islands
- City size: less than 30,000 inhabitants, 30,000-100,000 inhabitants, more than 100,000 inhabitants
- Education: university undergraduate degree and postgraduate degrees, high school diploma, lower qualifications (junior high school diploma and elementary school)
- Employment status: employed, unemployed

Weights reflect the actual proportions in the reference population for the total sample. Weighting is based on the same stratification variables. The weighting process was carried out using the pTabs2 software for statistical data analysis.

Incentives

Panel members receive incentives for active participation in the research. The survey agency pays close attention to the type of incentives because this could affect the decision to join the panel and result in self-selection problems, attitudes when responding to questions, and thus the survey results. To filter out participants interested only in the incentive, a donation to a non-profit charity is associated with the payment of the personal incentive.

Fieldwork management
The fieldwork phase includes rigorous procedures to limit bias introduced by fast respondents or speeders. The questionnaires are administered randomly to participants; invitations are staggered across several days to try to reduce speeders; invitations remain valid for at least a week (including weekend) to allow participation of individuals who do not check their email daily and ensure participation from individuals who tend not to reply immediately.

Interviews and response rate

The average duration of the interviews is 19 minutes (ranging between 21 for wave 1 and 16.5 for wave 4). These averages are calculated excluding those who recorded a duration of more than 60 minutes (an average of 8% across waves). The response rate was 31.4% in wave 1, 34.4% in wave 2, with significant improvements in wave 3 (53.1%), wave 4 (42.8%) and wave 5 (40.6%).

Outcome of interviews	**Wave 1**	**Wave 2**	**Wave 3**	**Wave 4**	**Wave 5**
(a) Completed interviews	5,006	5,001	5,005	5,004	5,011
(b) Interruptions (abandoned the interview)	447	361	214	272	229
(c) Unable to participate because the sample quota had already been reached	694	830	706	648	591
(d) Screenouts (ineligible individuals)	71	25	21	25	386
(e) Did not respond to the invitation	10,483	9,162	4,216	6,405	7,089
(f) Total invitations sent	16,632	15,380	10,163	12,534	13,307
(g) % response rate: a / (a + b + e)	31.4	34.4	53.1	42.8	40.6

The table below shows the sample size for the surveys from October 2023 (wave 1) to October 2024 (wave 5), highlighting the number of individuals interviewed more than once over time. To exemplify, the table shows that among the 5,011 individuals interviewed in the fourth wave, 2,978 participated since the first wave, 422 since the second wave, 416 since the third wave, and 560 were interviewed for the first time in the fifth wave. The retention rate (percentage of individuals interviewed in two consecutive waves) is 84% from wave 1 to wave 2, 87% from wave 2 to wave 3, 86% from wave 3 to wave 4 and 88% from wave 4 to 5.

Quarter of entry	**Wave 1**	**Wave 2**	**Wave 3**	**Wave 4**	**Wave 5**
Wave 1 – October 2023	5006	4197	3744	3234	2,978
Wave 2 – January 2024		804	589	498	422
Wave 3 – April 2024			673	486	416
Wave4 – July 2024				785	635
Wave 5 – October 2024					560
Observations in each wave	5006	5001	5005	5003	5011

3. Questionnaire

The questionnaire has two parts: a common and stable part (about 12-14 minutes) that is repeated in each wave, and special sections of about 5-6 minutes that change in each survey. There is also the possibility of introducing one or more sections of "experiments" in which the overall sample is divided into random sub-samples to allow for treatment and control designs.

A pilot survey was conducted during the first two weeks of September 2023 to identify potential problems. The pilot targeted a small sample of 100 respondents. There was a high level of engagement and understanding among respondents. However, a few routing errors were identified and resolved.

In each wave, as described below, the questionnaire has five sections, plus one special section.

3.1. Common sections

A. Demographics and Employment. Section A collects information on respondents' demographic characteristics: gender, city of residence, education, marital status, family size, income recipients. For education, the ISCE collects data on the type and specialization of college degree. In the case of employment status it distinguishes between employees and self-employed, retired, or seeking employment. For employed individuals, the survey asks about the sector of employment to obtain a comprehensive snapshot of the labor force. To allow comparison, the coding of the variables is as close as possible to that adopted in the Bank of Italy Survey of Household Income and Wealth (SHIW).

B. Income. Income variables refer to monthly income in Wave 1 (October 2023), Wave 2 (January 2024), Wave 3 (April 2024), Wave 4 (July 2024) and Wave 5 (October 2024). Income is elicited based on through 11 income brackets and a qualitative question for whether the income is well below, below, about the same, above, or well above the Italian household mean. To create the descriptive statistics, we take the mid-point of the intervals chosen by the respondent. In the case of unbounded intervals, a reasonable upper and lower bound is used to estimate the moments in the distributions.

The survey focuses on the following income variables: household disposable income, household labor and retirement income, individual total income, and individual labor and retirement income.

Each of these variables is collected "net of tax and transfers" as in the SHIW. In the final part of the section, respondents report whether they have received bonuses or transfers in the reference month, how long they worked at home in the previous month, the probability of losing the job (if employed), and finding a job (if unemployed).

C. Wealth. Section C attempts to construct an indicator of net wealth and financial market participation. Respondents report on financial wealth, real wealth, and total debt based on 6 brackets. They also report whether they are homeowners. For financial wealth, they report

having a current (transaction) account and investments such as bonds, stocks, private pensions, and life insurance. The section asks questions also about health and accident insurance.

D. Consumption. Section D elicits monthly consumption and consumption categories in the reference month. Respondents report total consumption (11 brackets), gas and electricity bills (6 brackets), and health expenditures (6 brackets).

E. Expectations. Section E focuses on expectations and intentions. The aim is to elicit not only the means of future variables (generally 12 months ahead) but also the entire distribution based on asking respondents to allocate 100 points to given expectations intervals. For instance, respondents are asked to report the likelihood (as a percentage) that their income will decrease or increase within specified ranges (e.g., decrease by more than 8%, increase between 2% and 4%, etc.). With this information, one can directly estimate the subjective probability density function of each respondent.

Section E asks the distributions in the next 12 months of expected growth of the following variables: disposable income, labor and pension income, total consumption, health expenditures, gas and electricity bills, house prices, and nominal interest rates on respondents' financial investments. The section asks about intentions (yes/no) to purchase specific durable goods (cars, home appliances, furniture, electronics), to apply for a loan in the next 12 months, and likelihood (on a 1 to 100 scale) that the loan will be granted. The section elicits also the distribution of expected retirement age and replacement rate and the likelihood that specific events will have financial consequences for the household in the next 12 months (unemployment, health expenditure of more than €10,000, disability).

Using the same approach, in the final part of Section E respondents give their forecasts over the next 12 months of four key macroeconomic variables: GDP growth, inflation, unemployment, and nominal interest rate on mortgages. These expectations can be compared to current forecasts of aggregate variables provided by government, central banks, national and international agencies, and other surveys.

3.2. Special sections

The survey's special sections focus on topics that change overtime. In Wave 1, the focus is on eliciting expectations of catastrophic risks. Wave 2 features an experiment on willingness to pay to avoid natural disasters, and a hypothetical lottery to capture the propensity to spend in the long run. Wave 3 has a survey experiment to elicit the willingness to pay to cover health costs, an experiment linking pension information to pension expectations, and basic information on use of artificial intelligence. Wave 4 focuses on another experiment on willingness to cover environmental costs and on decisions within the family. Wave 5 has data on incentives to invest in the energy-saving home investments, and a survey experiment on willingness to pay for sustainable and social responsible fashion.

Section F. In Wave 1, the special section focuses on 10 catastrophic risks to gauge overall perception of risk, potential impact on the Italian economy, likelihood of impact on

respondents' disposable income, and impact on respondents' real estate. The format of the question is similar for all elicited risks: participants are asked to evaluate the likelihood of various serious events occurring in the next 5 years by assigning a probability to each event on a scale ranging from 1 to 100. The 10 risks are:

1. Nuclear war
2. Technological disruptions leading to job loss
3. Cyber-attack
4. Financial crisis
5. End of democracy
6. Collapse of the EU and the euro
7. Social tensions
8. New pandemic
9. Natural disasters
10. Earthquake

Section G. In Wave 2, the special section asks about financial literacy, long-term financial planning, and includes a survey experiment on the effect of information on the willingness to pay to avoid natural disasters. The special section includes the following sub-sections:

Propensity to consume. Participants report how and when they would spend hypothetical lottery prizes of €1,000, €10,000, or €50,000 over the next 20 years.
Disaster insurance. In this survey experiment, participants are randomly allocated in different information groups. The aim is to study how awareness about the consequences of natural disasters affects the willingness to contribute to a public fund dedicated to protecting against environmental risk.
Financial literacy. Participants respond to standard questions on financial literacy: knowledge of interest rates, inflation, and investment diversification.
Credit constraints. Respondents are asked whether they had applied for credit, had been refused credit, or had been discouraged from borrowing.

Section H. In Wave 3, the special section includes a survey experiment on health insurance, an experiment on pension information, information about artificial intelligence, and a question about disaster insurance.

Pension and survey experiment: Respondents are split into two randomized groups; a control group, and a treatment group that receives information about population ageing and the sustainability of the pension system. The objective is to evaluate how the information treatment affected respondents' subjective expectations about replacement rates, retirement age, and propensity to invest in a pension fund.
Willingness to pay for health insurance: Respondents are split into two randomized groups: a control group, and a treatment group that receives information on the quality of the public health system and the cost of treatment in a private hospital. They are then asked about their willingness to pay a range of amounts for a policy that covered the costs of major surgery, minor outpatient surgeries, and complex diagnostic exams.
Use and knowledge of Artificial Intelligence (AI): Respondents self-report knowledge of AI tools such as ChatGPT and Gemini and how often they had used AI tools in the previous 12 months. Respondents are also asked about the likelihood of use of AI tools in various contexts (work, financial advice, medical advice, education, and leisure activities).

Disaster insurance: As in Wave 2, the section elicits willingness to contribute to a public fund dedicated to protecting against environmental risk.

Section I. In Wave 4, some of the questions from wave 2 are repeated. In a survey experiment, participants are randomly allocated to different information groups. The aim is to study how awareness about the consequences of natural disasters affects the willingness to contribute to a public fund dedicated to protecting against environmental risk.

The Section has information also on decisions within the family, with questions on how expenses are managed, how much respondents contribute to family income, and detailed questions on respondents' involvement in some decisions: buying a house, a car, appliances, electronics, everyday purchases, holidays, savings/investment products, and about the choice of school and school path of children, and hiring a babysitter

The special section has also background information on parents' education, engagement in social activities, and trust (in government, police, judiciary, health system, civil protection).

Section L. In Wave 5 the special section is divided in two parts. The first part focuses on the role of information on sustainability and social responsibility in fashion. The sample includes a control and various treatment group. The treatment groups read information about the type of t-shirt production and certifications. All groups report their willingness to pay for a simple short-sleeved cotton t-shirt

The second part of the section focuses on energy efficiency improvements in the home (external thermal insulation, windows, boiler, heat pump for cooling, solar panels. Various questions refer to expenses for improvements, with special attention to the role of government incentives.

4. Descriptive statistics

Table 1 compares ISCE sample means and medians with the corresponding SHIW statistics, using the 2022 SHIW (the most recent available). Samples are well aligned in terms of gender, age, employment, and region. ISCE features a lower proportion of respondents with primary education, and correspondingly a higher proportion of high school graduates.

Table 2 compares income, consumption, and wealth statistics in ISCE and SHIW. Median disposable income in ISCE is lower than in the SHIW, while median consumption is similar in the two surveys. Financial wealth is lower in the SHIW, while total wealth is similar in the two surveys. Participation in financial markets (bonds, stocks, private pensions, life insurance) is higher in ISCE.

5. Environmental data

Online surveys using CAWI have pros and cons. On the negative side, responses might be less accurate than with in-person interviews, especially in the context of complex questions. On the positive side, respondents can be widely dispersed across the entire country, in our case, in 2,489 different municipalities. We merge the ISCE data with georeferenced environmental risk indicators to allow analysis, for instance, of the relation between environmental risks and perceived risks elicited in Section F of the questionnaire, and the relation between environmental risks and economic outcomes such as savings, wealth, and propensity to take financial risks.

We use the GeoSafe Data Platform, software used to analyze risks stemming from natural disasters in Italy according to different levels of granularity, up to civic or geographic coordinates. GeoSafe draws on several data sources (ISPRA, ISTAT, INGV) and a proprietary model from ANIA (Association of Italian Insurance Companies), a non-academic partner of the GRINS project. The tool has been certified by academic and institutional partners and consists of four modules: (i) hydraulic and hydrogeological risk, (ii) earthquake risk, (iii) climate risk.

Hydraulic and hydrogeological risks. GeoSafe includes indicators for hydraulic (floods and overflows) and hydrogeological (landslides) risks ranked using four variables that can be selected separately or contextually: (i) proximity to rivers; (ii) slope acclivity or presence of landslides; (iii) historical floods and claims during the last 30 years; (iv) water draught.
Earthquake risk. This is an indicator of seismic hazard and provides hazards according to building type, building height, and year of construction. The indices provided by INGV for seismic risks are the three ASI (Seismic Intensity Areas) indices. Each ranges from 1 to 3, based on the height of the buildings and the length of the oscillation period.

- ASI 1: Risk class for buildings with an oscillation period between 0.1s and 0.5s (number of floors less than or equal to 4)
- ASI 2: Risk class for buildings with an oscillation period between 0.4s and 0.8s (number of floors between 4 and 8)
- ASI 3: Risk class for buildings with an oscillation period between 0.7s and 1.1s (number of floors greater than 8)

Within each ASI there are 5 degrees of "sub-risks" which vary depending on the risk related to the site, the category of the subsoil, and the topographic conditions (flat surface or presence of reliefs).

Climate risk. For climate risk GeoSafe has a risk indicator which depends on meteorological data (precipitation, temperature, snow, hail, potential wind speed, lightning).

Table B1. ISCE-SHIW comparison: demographic variables

	ISCE	**SHIW**
Male	0.48	0.49
Female	0.52	0.51
Age 18-34	0.26	0.19
Age 35-54	0.39	0.40
Age 55-75	0.35	0.41
Family size = 1	0.12	0.14
Family size = 2	0.30	0.26
Family size = 3	0.28	0.27
Family size = 4	0.23	0.24
Family size >= 5	0.07	0.09
Primary education	0.31	0.35
Secondary education	0.50	0.46
Tertiary education	0.19	0.19
North	0.44	0.45
Centre	0.21	0.20
South and Islands	0.35	0.35
Total	**7,828**	**16,455**

Note: This table compares sample means of selected demographic variables in the ISCE and in the 2022 SHIW. In the SHIW, we consider individuals between 18 and 75 years old. In ISCE we consider all respondents interviewed for the first time since October 2023. In both surveys, means are computed using sample weights.

Table B2. ISCE-SHIW comparison: consumption, income and wealth

	ISCE	**SHIW**
Disposable income	21,000	26,003
Total consumption	15,000	15,920
Financial wealth	25,000	10,000
Real assets	148,080,1	151,200
Debt	13,471.88	0
Total wealth	123,583.4	153,500
Homeownership	0.73	0.73
Investing in		
Bonds	0.19	0.10
Stocks	0.18	0.05
Private pensions	0.20	0.12
Life insurance	0.23	0.17
Number of observations	7,828	7,605

Note: This table compares the sample medians for consumption, income, and wealth and the proportion of respondents who invest in real and financial assets in the ISCE and in the 2022 SHIW. In the SHIW, we consider all households with head between 18 and 75 years old. In ISCE we consider all respondents interviewed for the first time since October 2023. In both surveys, statistics are computed using sample weights.

The experimental design

Wave 1 (October 2023)

Now you will read about a series of serious events. Think about each of these events and please score your answers on a scale of 1 to 100 how likely you think each event is to occur in the next 5 years in our country, where 1 indicates you think it is "unlikely" and 100 that you think it is "very likely". *(rotate item)*

1. a large-scale conflict, leading to nuclear war	|__|__|__| (between 1 and 100)
2. a disruptive technological innovation that leads to the loss of many jobs	|__|__|__| (between 1 and 100)
3. an IT crisis that paralyzes the country's activities	|__|__|__| (between 1 and 100)
4. collapse of the financial markets comparable to the 2008 crisis	|__|__|__| (between 1 and 100)
5. the end of democracy and the advent of a dictatorship	|__|__|__| (between 1 and 100)
6. a political crisis and the end of the European Union and the collapse of the euro	|__|__|__| (between 1 and 100)
7. social tensions, created by growing inequalities, immigration, etc.	|__|__|__| (between 1 and 100)
8. a pandemic of similar intensity to Covid-19	|__|__|__| (between 1 and 100)
9. natural disasters linked to climate change (floods, drought, landslides, fires, etc.)	|__|__|__| (between 1 and 100)
10. an extreme event linked to a strong earthquake	|__|__|__| (between 1 and 100)

Wave 2 (January 2024)
Two layers of randomization: Information group (T1, T2, T3) ; Question group (G1, G2)
T1. Control group
No further information – directly to question G4a / G4b
T2. This group reads the following sentence: In Romagna, on the night of May 16 and 17, an unprecedented amount of rain caused the rivers to rise rapidly and flood in the space of only a few hours. Practically all the waterways between Rimini and Bologna, a total of 21, burst their banks, flooding vast areas of Romagna. Fifteen people died and some 40,000 were displaced.
T3. This group reads the following sentence: In Romagna, on the night of May 16 and 17, an unprecedented amount of rain caused rivers to rise and flood in the space of a few hours. Practically all the waterways between Rimini and Bologna, 21 in all, burst their banks, flooding vast areas of Romagna. Fifteen people died and around 40,000 were displaced. The regional government calculated that the damage to roads, schools, embankments, canals and private homes and commercial buildings would reach nearly €9 billion.

All groups (T1-T2-T3) read a statement, randomizing into two additional groups (G1 and G2)

GROUP G1
G11. Containing environmental instability and securing areas exposed to hydrogeological risk (floods, landslides, etc.) requires large amounts of public resources. To finance these investments, would you support the creation of a dedicated public fund?

- 1. Yes
- 2. No
- 3. Don't know

If YES:
G12. How much would you be willing to contribute to this fund each year in euros?
5-10
10-20
20-50
50-100
100-200
200-300
300-400
400-500
500 -1000
More than 1000

GROUP G2
G21. Containing environmental instability and securing areas exposed to hydrogeological risk (floods, landslides, etc.) requires a large investment of public resources. Success depends on the size of the fund. If only a few contribute, the risk containment policy will fail. To finance these investments, would you be in favor of creating a dedicated public fund?

- 1. Yes
- 2. No
- 3. Don't know

If YES:
G22. How much would you be willing to contribute to this fund each year in euros?
5-10
10-20
20-50
50-100
100-200
200-300
300-400
400-500
500 -1000
More than 1000

Wave 3 (April 2024)
All respondents answer questions G11 and G12.

Wave 4 (July 2024)

One layer of randomization: Information group (T1, T2, T3).
All respondents answer questions G11 and G12.