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What about the others? Conditional cooperation, climate change perception and ecological actions

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Abstract

Climate challenge can be modelled as a multiplayer prisoner's dilemma where any ecological action – i.e., purchasing an electric car or adopting sustainable life styles – is a costly action in terms of economic resources, time, and effort for individuals. According to the well-known embedded social dilemma, even though the social benefit is maximised when everyone takes ecological actions, the Nash equilibrium of the game if all players have standard self-interested preferences is not acting. In this paper we analyse how this ecological prisoner's dilemma is affected by people's perception. Using the European Social Survey, we look at how urgent the climate threat is perceived by respondents and what they think about other countries' willingness to take ecological actions. Theoretical predictions suggest that the former increases, while the latter does not affect willingness to take ecological actions. Our empirical findings on a large sample of European citizens however show that both factors positively affect willingness to take actions. We interpret the positive effect of other country action on the individual responsibility to take actions in terms of conditional cooperation and show that the effect is weaker in countries and regions with higher social capital.

Keywords: climate change, perception, ecological actions, social dilemma, conditional cooperation.
JEL code: H41 (public goods) · Q54 (global warming) · Q58 (government policy).

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1 Introduction and literature review

[I] feel it coming, a series of disasters
created through our diligent yet unconscious efforts.
If they're big enough to wake up the world,
but not enough to smash everything,
I 'd call them learning experiences,
the only ones able to overcome our inertia.
(de Rougemont cited in Partant 1979)

The climate threat is by far one of the most daunting global challenges of the years to come. Its tentative solution (the achievement of the goal of net zero emissions) requires a combination of coordinated public and private actions involving a radical change in habits in domains such as the production of energy, industry, agriculture, mobility and housing. The direction to be taken, as described by the International Energy Agency involves the replacement of high emission with low emission choices such as the substitution of fossil fuels with renewable or nuclear energy sources, sustainable mobility, the ecological transition of productive processes in industry and agriculture, and net zero housing involving building heating and cooling choices (Bouckaert et al., 2021).

The characteristics of the problem are such that the required radical change implies relevant costs (money, time, effort and/or psychological cost of switching) but the costs of doing nothing start being clearly visible in more recent times with the progressive increase in the average global temperature and its consequences. Among the most important consequences we have shocks in agriculture production due to almost more frequent drought spells and extreme climatic events, property destruction and increase in hydrogeological risk due to such events, the sharp reduction of economic opportunities for people living in semi arid areas that are likely to trigger giant migration flows and, more in general, the widespread effect of the climate change due to our limits of adaptation to it.

Individuals are a fundamental part of the change with their waste, mobility and housing decisions since government policies cannot be so radical to restrict individual choices only to the most environmentally sustainable option if they want to ensure a socially sustainable (just) transition. A longstanding literature has investigated determinants of the willingness to pay for environmental sustainability showing how education and social capital are among the main drivers. Kalkbrenner and Roosen (2016) show that trust, social norms and environmental concerns are three drivers affecting positively and significantly the willingness to participate to energy communities. The literature finds in general resistance to habit changes also with regard to environmental habits that can however be stimulated by shocks. O'Garra and Fouquet (2022) find that the COVID-19 lockdowns have generated a positive increase in people declaring to be willing to reduce voluntarily travel consumption in support to a low-carbon transition.

What is typically discussed in the literature is the nexus between declared willingness to act for the environment or to pay for environmentally friendly products and the actual environmentally responsible behaviour. While some authors (Brown et al., 1996; Seip and Strand, 1996) provided evidence in the past that the declared willingness to pay evaluated with contingent valuation methods overstates actual willingness to pay, Carlsson and Martinsson (2001) show with experimental data that declared and actual willingness to pay do not differ substantially. Zabkar and Hosta (2013)

find that 'prosocial status' perceptions increase the positive association between 'willingness' and 'behaviour'

Policies to fight climate change require strong coordination and, as such, they have been recently investigated using game theory. An interesting characterisation of games that model climate negotiations has been provided by DeCanio and Fremstad (2013). The authors discuss the conditions that make the climate problem similar to a Prisoner's Dilemma and suggest that diplomacy should focus on the urgency of climate risks to make the game like a coordination game. More recently, the intrinsic Prisoner's dilemma nature of ecological interactions has been remarked by Magli and Manfredi (2022). The authors highlight how modelling the dynamic of the interactions may be more complex if policy-makers focus on short-term preferences and current choices alter future payoffs. More specific climate threats have also been modelled to prevent and manage climate risks. For example, Alvarez et al. (2019) have analysed how river flooding risk can be managed and prevented using cooperative games.

We aim to contribute to this literature by arguing that the climate threat problem can be modelled as a multiplayer prisoner's dilemma. Individuals can decide whether to take action or not (i.e., by purchasing a hybrid or electric car, sorting waste, investing in renewable energy as domestic energy source or switching to other sustainable life styles) in order to tackle the environmental threat but taking ecological action is more costly than doing nothing. If all individuals take action, the social outcome is the highest and the payoff is the success in addressing in full or in part the problem with the implied economic and social benefits. This equilibrium would Pareto dominate the equilibrium where everyone decides to do nothing. Unfortunately, the latter is the Nash equilibrium of the game that is, the crossing of the players' dominant strategies, if players are assumed as having a utility function depending only on their own monetary payoffs (which we define as myopically self-interested players in our paper). The climate challenge can therefore be modelled from this perspective as having the typical characteristics of a multiplayer prisoner's dilemma. The originality of our contribution is in framing the empirical research on drivers of environmental responsibility to act in a game theoretic framework focusing specifically on the interaction between one's own felt responsibility to act and the perceived action of one's own country fellows and other world countries. On the one side our object of interest is more general and above the willingness to pay for, while, on the other side, it is original in addressing the interaction issue that is crucial given that environmental responsibility is a typical social dilemma where one's own responsibility to act is affected by what other players at stake (country fellows, other world countries) are expected to take action since moves of the other players definitely affect the final outcome. To provide an intuition on our point we have often heard people saying that it is useless to act pro-environment unless China and India choose to follow with decision ecological transition patterns. In our paper we wonder how much this strategic interaction factor matters.

We investigate the impact of two factors (perception of the seriousness of the climate threat and expectations whether other countries will act ecologically) in the model and on the willingness to take environmentally sustainable action. Predictions from the multiplayer model show that the first factor has a positive effect, while the second an insignificant effect on the individual willingness to take action.

We test these theoretical predictions on data from the 10th European social survey (ESS10). Our findings show that both factors (the respondent's perception of the gravity of the problem and of how much other parts will act) are strongly positive and significant. Our findings can be reconciled

with the benchmark model under the assumption that players are conditional co-operators that is, their willingness to cooperate is positively affected by the perceived number of co-operators in the model. We as well show that the positive effect of ecological action in other countries is significantly lower in countries and regions with higher social capital. Our interpretation is that the latter moves individuals from conditional toward unconditional cooperation.

2 The benchmark model and our research hypothesis

In this section we focus on the strategic implications of ecological transition by modelling the climate problem as a multiplayer prisoner's dilemma. In order to illustrate our point, we start from a simple two-player problem to move to its multiplayer version. Ecological transition requires a set of public and private actions to tackle the climate threat. Whenever government rules do not exclude the opportunity to consume less environmentally friendly products (i.e., ban on diesel cars) individuals and households can choose between a more and less environmentally friendly action where we assume that taking the environmental friendly action is more costly than the alternative. Examples are buying a full electric (or plug-in) car against the less environmentally friendly alternative, reducing the production of undifferentiated garbage, reusing and reciclying, making sustainable housing choices in terms of emissions, investing in renewable energy as domestic energy source, etc.

Following Becchetti and Salustri (2019), we model the citizen's choice of taking an ecological action as a multiplayer prisoner's dilemma. There are n citizens that can choose between taking an ecological action (E) and remain in the status quo (R). The ecological action has a positive externality (b) on the environment that is benefited from all citizens, but requires a costly effort (c) for those who take the action (the ecological citizens) that can be monetary or non-monetary. As mentioned above the cost can have various dimensions (money, time, effort psychological cost of habit change). We also assume that taking the ecological action rewards ecological citizens by a value a that represents other-regarding preferences. These preferences can be explained by several rationales according to the behavioural economic literature such as pure altruism, guilt aversion (Charness and Dufwenberg, 2006) or warm-glow (Andreoni, 1989, 1990) that can all be viewed as non-pecuniary motivations stimulating individuals to take ecological actions.

Thus, the utility of player i given that there are j ecological citizens can be written as

$$u_i = \begin{cases} (j+1)b - c & \text{if } s_i(j) = E \\ jb & \text{if } s_i(j) = R \end{cases}$$

where $s_i(j)$ denotes the strategy of player i against j ecological citizens.

We conveniently assume that the myopically self-interested player who does not take ecological actions has no other-regarding preferences and therefore $a = 0$.

Under this framework, if the cost of ecological actions is negligible (i.e., $c < \frac{1}{n}b + a$) every citizen has no incentive to deviate from *mutual ecologism* (i.e., the strategy profile where every citizen takes ecological actions) and the set of this strategies is a Nash equilibrium. Alternatively, if the cost is too high ($c > \frac{1}{n}b + a$), individual and social costs of ecological action exceed individual and social benefits and *mutual non-ecologism* (i.e., the strategy profile where every player leaves the status quo) is a Nash equilibrium. More interestingly, if the cost falls between the two thresholds set above, then we have a Prisoner's dilemma: mutual non-ecologism is a Nash equilibrium in dominant strategies, but

this equilibrium is Pareto dominated by mutual ecologism. Figure 1 represents the three scenarios.

Note that other-regarding preferences shift the region of the Prisoners's dilemma along the segment of costs, making mutual ecological actions more likely to be socially desirable. More specifically, the left boundary occurs at higher costs of adoption (i.e., the threshold of costs that makes mutual ecological action a Nash equilibrium is higher); similarly, the right boundary occurs at higher costs of adoption (i.e., the threshold of costs that makes mutual ecological action socially desirable is also higher). At the same time, a higher number of players makes the Prisoner's dilemma region larger at the expense of mutual ecological action as a Nash equilibrium (Figure 2).

In predicting theoretically the effects of our two main variables of interest (worry about climate change and perception on how other countries are willing to act ecologically) we formulate the following two propositions.

H_{01}: the player's perception of a higher number of co-operators in the multiplayer dilemma increases the prisoner's dilemma interval and therefore does not increase cooperation for given parametric values of the model.

The intuition is as follows. No matter how many more players an individual believes will play cooperatively, the dominant strategy of a myopically self-interested player remains doing nothing. To understand the point in the two-player game doing nothing is the dominant strategy for the myopically self-interested player and therefore it is the optimal strategy even when the other player cooperates. This is the same if we consider a larger number of players. To provide an intuition we can imagine a urban district where everyone has purchased an electric car. The air is cleaner, the emissions are lower and this public good is enjoyed also by the myopically self-interested player. At the margin its choice to cooperate will not change much and the cost of doing it will be higher than the benefit.

H_{02}: enhanced perception of the seriousness of the climate issue does increase the probability of a cooperative choice.

The intuition is that an enhanced perception of the seriousness of the climate issue implies that the player sees the payoff (X) from cooperation higher (or the loss from non cooperation higher as well). A higher X shifts to the right the segment of the prisoner's dilemma so that the maximum cost of adoption of the environmental friendly behaviour is still a Nash equilibrium (area below the prisoners dilemma segment) is higher.

3 Empirical findings

We test our research hypothesis using ESS10. Variable legend and descriptive statistics are provided in Tables 1 and 2, respectively. Our dependent variable is the answer to the question *"to what extent you feel it is your personal responsibility to reduce climate change?"*, with available options being distributed on a 0-10 scale where 0 is "not at all" and 10 is "a great deal". The distribution of the variable shows that around 55.4 percent of respondents provide scores above 5 (Figure 3A). The two extreme options are chosen by 7.8 ("not at all") and 9.6 ("a great deal") percent of the sample respectively.

Our two main variables of interest are respondent's worry about climate change and perception about government actions against climate change. More specifically the first question is "How worried about climate change" (not at all worried, very worried, somewhat worried, very worried, extremely worried) and the second "How likely, governments in enough countries take action to reduce climate change" (0 = not at all likely,. . . , 10 = extremely likely).

Descriptive inspection of the first variable shows that only 4.7 percent of respondents are not worried at all, while 36 percent of respondents are very or extremely worried (Figure 3B). On the second variable almost 10 percent chooses value zero thereby believing that it is not likely at all that governments in enough countries will take action to reduce climate change. It is also remarkable that most respondents (86.4 percent) do not choose a score higher than 5 to this question (Figure 3C).

The benchmark specification used to test our research hypothesis is

$$\mathsf{Responsible}_i = \beta_0 + \beta_1 \mathsf{Worried}_i + \beta_2 \mathsf{Governments}_i + \boldsymbol{\beta}_h \mathbf{X}_i + \boldsymbol{\beta}_k \mathbf{Z}_i + \boldsymbol{\beta}_c \mathbf{Country}_i + \varepsilon_i \quad (1)$$

where the dependent variable Responsible measures how much the respondent believes they are responsible to act against climate change; the two main explanatory variables are Worried and Governments, that capture the respondent's degree of concern for climate change and how much the respondent believes other governments will take action against climate change, respectively. We as well control for a vector of sociodemographic characteristics, $\mathbf{X}_i$, which includes sex, age grouped in five-year brackets, years of education, income decile, household size, employment status, and marital status of each respondent; also, we add a vector of political preferences and satisfaction variables, $\mathbf{Z}_i$, which includes self-assessed health, income satisfaction, political preferences, and social capital proxied by whether the respondent had voted in the last election; the model is augmented with a vector of country dummies, $\mathbf{Country}_i$, and estimated using standard errors clustered at country level.

Ordered logit estimate findings are presented in Table 3. Both respondent's perception of the severity of the climate problem and the effort of enough governments to tackle climate change affect positively and significantly the dependent variable. The result is robust to different specifications. Our findings lead to reject our first null hypothesis formulated under the assumption that individuals are unaffected by their expectation of other players (government) cooperative behaviour. The significance of the government effort variable can be interpreted as evidence of conditional cooperation, a well-known finding in the experimental behavioural economic literature (Fischbacher et al., 2001).

An implication of our findings is that we may expect that when increasingly frequent extreme climatic events make people always more worried, and therefore more aware of the severity of the situation, they increase the expected payoff of ecological action and stimulating their responsibility to act. In this sense, our findings come in support of the so called hypothesis of the pedagogy of catastrophes.

In testing our research hypothesis on our second variable of interest (belief that other governments will/will not act) we use as approximation an estimate where the dependent variable is assumed to be continuous and calculate that moving from the lowest to the highest value of the perception of other governments effort produces an effect of 1.2 (less than 50 percent its standard deviation) on the dependent variable. The effect of respondent worries is much stronger in magnitude with an impact when moving from the lowest to the highest value, net of the effect of the other controls introduced in the specification, of 4.8 points that is more than 1.5 the standard deviation of the dependent variable.

Among other controls the positive and significant effect of income supports the hypothesis about the risk that environmental action for ecological transition is perceived as a "luxury good" and the importance of just transition policies to avoid hostility of low-income classes to it. The positive effect of education is also expected given the nexus between education and social capital and the characteristics of education programs always more oriented to discuss climate challenges.

4 Robustness checks and discussion

4.1 Subsample analyses

We re-estimate our model in sample splits where education, age, income and social capital are used as delimiters. Our two main variables of interest remain positive and significant in all subsamples (Table A3). Sample splits as well show that age makes a difference since worry for climate change has a stronger effect and other government action a weaker effect on the responsibility to take action of the younger. The second effect suggest that their cooperative attitude in the ecological stance is more unconditional and less conditional to expectation of other players' action.

In a further robustness check we introduce as additional controls the average level of Responsible at country and regional level. This allows us to net out the effect of Responsbile from the average in that region and to see if the average responsibility feeling in the region positively affects individual responsibility in its own. At descriptive level, the lowest country average of responsibility to take action is declared in the Montenegro, while the highest in France (4.1 vs 7.5, see Table A1). Regression findings from the specification where average country responsibility to take action show that the two main regressors of interest remain positive and significant with the added control also having a positive and significant effect (Table A4, column 1). The robustness of our findings is also confirmed when we add to average country the average regional (NUTS2 level) responsibility to take action finding that both controls are positive and significant (Table A4, columns 2–3).

In our benchmark specification we consider the respondent's worry and its expectation about other government action as continuous variables in our estimate. Robustness checks using them as categorical variables do not change our main results and show that both variables of other nationals and other government action are strongly positive and significant.

We acknowledge that the ESS10 measures intention and not action, and this may represent a limit of our analysis. in fact, we implicitly assume that the declaration of personal responsibility in taking action finds a correspondence in straightforward action but we cannot provide evidence of that. In order to address this problem we identify a subsample of more active citizens by creating a variable summing positive answers to the following five questions of actions taken in the last 12 months: i) donated to or participated in political party or pressure group; ii) worn of displayed campaign badge/sticker; iii) taken part in public demonstration; iv) boycotted certain products; v) signed petition. We find that a subsample of respondents (24 percent of the sample) has taken at least three of these five actions in the last year. We regard this group of more active citizens as more reliable in moving from declarations to facts when saying it is their responsibility to act for the environment. We estimate our model for this subsample and for the complementary group. We find that our results are confirmed for both groups. It is also interesting to see that our main findings are confirmed (in terms of declarations of responsibility as measured by our dependent variable) also in the complementary sample.

4.2 Explaining country and regional distribution of estimated coefficients

We try to shed more light on country and regional differences of our two main coefficient of interest (reaction to one's own worry and reaction to the belief about the future other government action). The inspection of the distribution of the "worry" and "other government action" coefficients show a negative correlation between the two with, in general, countries with higher level of human and social capital having higher and lower values for the first and second coefficient respectively (Figure 4. To test whether our conjectures are statistically significant we estimate three specifications where the two coefficients separately taken (or the worry/other government ratio) are, in turn, dependent variables and average country human and social capital (years of education and percent of voters in the last national election) plus placement on the left-right scale of respondents our regressors. Our third dependent variable of interest here (the worry/other government ratio) can be interpreted as the unconditional willingness to take responsibility to act on worries about climate change.

Our findings clearly show the strong and significant effect of social capital on the other government action that drives also the result when the dependent variable is the ratio of the two main coefficients of interest. The "worry" variable seems unaffected by our regressors (Table 8.1). Our interpretation is that domestic social capital significantly and positively affects unconditional cooperation that is, the propensity to act even when it is believed that other countries will not act of will act less. We replicate our analysis at regional levels using the NUTS 1 classifications recorded in the dataset. Our main findings remain unchanged with social capital significantly and negatively affecting the impact of other governments action on the respondent responsibility to act (Table 8.2).

5 Conclusion

We model the climate challenge as a multiplayer prisoners' dilemma played by individuals where doing nothing is the dominant strategy for a myopically self-interested player and ends up being the Nash equilibrium creating a social dilemma of ecological transition. We wonder how the perception of the severity of the problem and the belief that other government will also act ecologically affects the respondent responsibility to take action.

The prediction of the model is that the first factor affects payoffs and therefore has a positive impact on the responsibility to take action, while the second factor does not change the behaviour of a player conventionally modelled with self-regarding preferences. Our findings show however that both factors affect positively and significantly the dependent variable finding evidence of conditional cooperation in players' preferences. In the second case we find that the expectation that enough other governments will act and the average level of responsibility to take action of individuals of the same country and region both affect significantly and independently.

The policy implications of the paper are straightforward. A first indication is that policies that increase involvement of other states in ecological transition can generate a positive externality by enhancing individually felt responsibilities to act. This is something that should be taken into account when considering for instance pros and cons of initiatives such as the introduction of carbon border adjustment mechanisms (CBAMs) where the decision of a given economic area (i.e., the European Union or the US) can increase involvement in ecological transition of third countries. The Carbon Border Adjustment Mechanism establishes that import of goods and services that use environmental standards (i.e., limits to greenhouse emission in the product life cycle perspective) below those followed by producers of the importing area should pay a tax when entering that area. The effect of

the mechanism is that of reducing the risk of environmental dumping increasing competitiveness of domestic products following high environmental standards and stimulating third countries to raise the standards not to pay the border tax. Our findings indicate that a positive externality of the CBAM when it improves environmental engagement of other governments is the increase in the responsibility to take action of the individuals.

Another relevant implication is that communication, information and education campaigns on the severity of the climate threat can affect significantly the propensity of individuals to feel responsibility to take action and that concurring changes of perceived responsibility to act at domestic and regional level can reinforce individual action in this direction.

The limit of our empirical analysis is the lack of measures of effective action so that our conclusions hold if feeling of responsibility to take action actually translates into action itself. We partially addressed this problem by identifying a subgroups of activist respondents where willingness and action are more likely to coincide. Future research can test whether our findings are confirmed when having data measuring actual behaviour.

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7 Figures and tables

Figure 1: Effects of intrinsic motivation on the boundaries of the area of the prisoners' dilemma along the segment of the costs of adopting ecologically sustainable behaviour

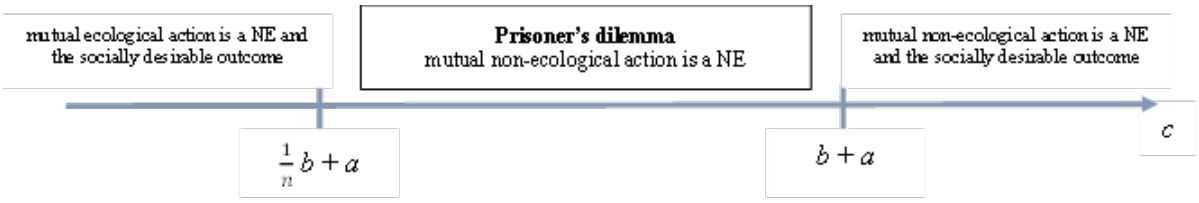


Figure 2: The effect of the number of players on mutual ecological action as a Nash equilibrium ($n_1 < n_2$).

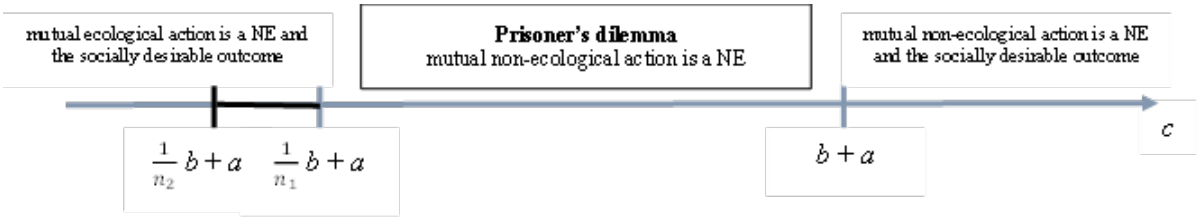
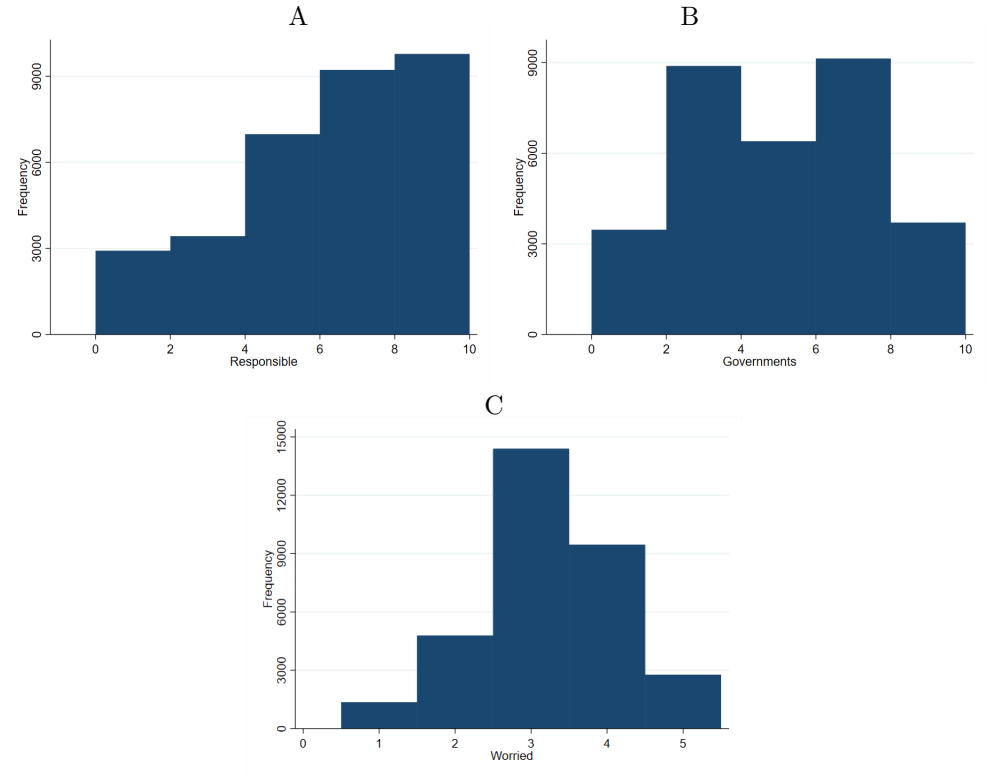
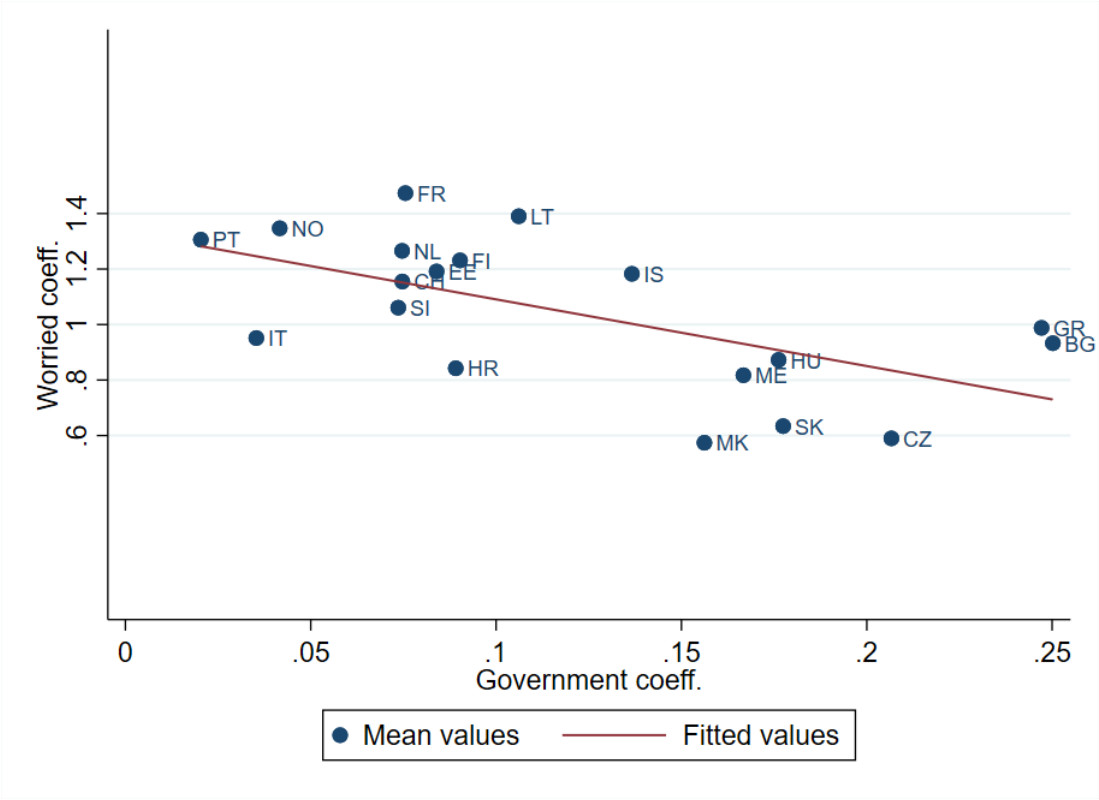


Figure 3: Frequency distribution of the main variable of interest.



Legend: Figure A shows the frequency distribution of the answer to the question *"to what extent you feel it is your personal responsibility to reduce climate change?"* on a 0-10 scale (0 = not at all, . . . , 10 = a great deal), grouped in five bins; Figure B shows the frequency distribution of the answer to the question how likely, governments in enough countries take action to reduce climate change" on a 0-10 scale (0 = not at all likely, . . . , 10 = extremely likely), grouped in five bins; Figure C shows the frequency distribution to the question "how worried about climate change" (Not at all worried, not very worried, somewhat worried, very worried, extremely worried).

Figure 4: The effect of perceived severity of climate change and expected action of other governments on responsibility to take action for climate change – distribution of the two coefficients in individual country estimates.



Legend: The horizontal and the vertical axes displays the coefficients β_1 and β_2, respectively, of Equation 1 arising from the estimates for each single country.

Table 1: Variable legend

Variable	**Description**
Dependent variable	
Responsible	The answer to the question *"to what extent you feel it is your personal responsibility to reduce climate change?"* on a 0-10 scale (0 = not at all, ..., 10 = a great deal).
Main explanatory variables	
Worried	The answer to the question *"how worried about climate change"* (Not at all worried, not very worried, somewhat worried, very worried, extremely worried).
Governments	The answer to the question "how likely, governments in enough countries take action to reduce climate change" on a 0-10 scale (0 = not at all likely, ..., 10 = extremely likely).
Other controls	
Female	A (0/1) dummy equal to 1 if the respondent is female.
Age	The age of the respondent, in years.
Education	Respondent years of education.
Income	The decile of the respondent's household total net income within the respondent's country of residence (1 = lowest, 10 = highest).
HHsize	The number of the members in the household.
Marital status	A categorical variable for the respondents' marital status: married, civil union, separated, divorced, widowed, or never married.
Employment	A categorical variable for the respondents' employment status: paid worker, retired, student, houseworker, disabled, unemployed in search, or unemployed not in search.
Life Sat	The answer to the question "how satisfied with life as a whole" on a 0-10 scale.
Social capital	A (0/1) dummy equal to 1 if the respondent has voted in the last elections.
Politics	The respondent's self- assessed political preference in the left-right scale (0 = extreme left, 10 = extreme right).
Health	A categorical variable with the respondent's self-assessed health status (very good, good, fair, bad, very bad).
Income satisfaction	A categorical variable for the respondent's feeling about their household's income nowadays (living comfortably, coping on, difficult, very difficult).
Country	For each country, a dummy equal to 1 if the respondent is resident in that country. List of countries: Bulgaria, Switzerland, Czech Republic, Estonia, Finland, France, Greece, Croatia, Hungary, Iceland, Italy, Lituania, Montenegro, North Macedonia, The Netherlands, Norway, Portugal, Slovenia, Slovakia.
Active citizen	Respondents who have declared in the last 12 months they have: i) donated to or participated in political party or pressure group; ii) worn of displayed campaign badge/sticker; iii) taken part in public demonstration; iv) boycotted certain products; v) signed petition.

Table 2: Descriptive statistics

Variable	**Obs.**	**Mean**	**Std. dev.**	**Min**	**Max**
Responsibility to act	32,313	5.845	2.705	0	10
Worried about Climate	32,759	3.229	0.941	1	5
Female	33,351	0.536	0.499	0	1
Other governments action	31,589	4.885	2.461	0	10
Income					
1	26,003	0.058	0.233	0	0
2	26,003	0.105	0.307	0	1
3	26,003	0.112	0.316	0	1
4	26,003	0.119	0.324	0	1
5	26,003	0.120	0.325	0	1
6	26,003	0.109	0.311	0	1
7	26,003	0.107	0.309	0	1
8	26,003	0.098	0.298	0	1
9	26,003	0.079	0.270	0	1
10	26,003	0.076	0.266	0	1
HHsize	33,212	2.550	1.332	1	13
Marital status					
Married	33,043	0.480	0.500	0	1
Civil Union	33,043	0.011	0.105	0	1
Separated	33,043	0.022	0.145	0	1
Divorced	33,043	0.088	0.283	0	1
Widowed	33,043	0.094	0.292	0	1
Never Married	33,043	0.301	0.459	0	1
Employment status					
Retired	33,351	0.266	0.442	0	1
Student	33,351	0.079	0.270	0	1
Unemployed in search	33,351	0.043	0.202	0	1
Unemployed not in search	33,351	0.025	0.156	0	1
Employed	33,351	0.537	0.499	0	1
Houseworker	33,351	0.110	0.314	0	1
Disabled	33,351	0.025	0.155	0	1
Education	33,351	13.058	4.208	0	25
Self-Assessed-Health					
Very good	33,309	0.257	0.437	0	1
Good	33,309	0.415	0.493	0	1
Fair	33,309	0.253	0.435	0	1
Bad	33,309	0.064	0.245	0	1
Very bad	33,309	0.011	0.103	0	1
Politics	28,445	5.227	2.376	0	10
Social capital	33,351	0.705	0.456	0	1
Income satisfaction	32,901	2.026	0.850	1	4

Table 3: The effect of perceived severity of climate change and expected action of other governments on responsibility to act for climate change

	(1)	(2)	(3)	(4)	(5)
Variables	Responsible	Responsible	Responsible	Responsible	Responsible
Worried	0.977***	0.980***	0.994***	0.994***	0.996***
	(0.0705)	(0.0711)	(0.0702)	(0.0704)	(0.0704)
Governments	0.128***	0.127***	0.124***	0.123***	0.123***
	(0.0175)	(0.0176)	(0.0178)	(0.0179)	(0.0179)
Female	0.240***	0.242***	0.252***	0.253***	0.253***
	(0.0386)	(0.0389)	(0.0413)	(0.0411)	(0.0411)
Education	0.0382***	0.0366***	0.0348***	0.0319***	0.0308***
	(0.00490)	(0.00485)	(0.00535)	(0.00530)	(0.00526)
Sociodemographics	Yes	Yes	Yes	Yes	Yes
Pseudo Log L	-49539	-49494	-44333	-44279	-44216
Observations	24,419	24,407	21,938	21,929	21,902

The estimated specification is described in Eq. 1. Column (1) does not include vector $\mathbf{Z}_i$; Columns (2)-(5) add sequentially health, politics, social capital, and income satisfaction.
Robust standard errors clustered at country level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: The effect of perceived severity of climate change and expected action of other governments on responsibility to act for climate change – sample subgroups

Variables	(1) Females	(2) Males	(3) $\geq$ 55 yo	(4) $<$ 55 yo	(5) Voted	(6) Abstained	(7) High educated	(8) Low educated
Worried	0.994***	1.000***	0.877***	1.105***	0.989***	1.021***	1.033***	0.918***
	(0.0865)	(0.0641)	(0.0712)	(0.0741)	(0.0666)	(0.0927)	(0.0875)	(0.0524)
Governments	0.123***	0.122***	0.135***	0.113***	0.126***	0.116***	0.125***	0.119***
	(0.0177)	(0.0191)	(0.0151)	(0.0215)	(0.0193)	(0.0195)	(0.0205)	(0.0154)
Female			0.241***	0.251***	0.274***	0.190***	0.270***	0.191***
			(0.0399)	(0.0506)	(0.0500)	(0.0474)	(0.0479)	(0.0512)
Education	0.0373***	0.0224***	0.0243***	0.0381***	0.0314***	0.0276***	0.0335***	0.0158
	(0.00559)	(0.00777)	(0.00696)	(0.00775)	(0.00542)	(0.00881)	(0.00733)	(0.0126)
Sociodemographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo Log L	-22930	-21222	-20305	-23774	-33142	-11000	-31450	-12659
Observations	11,468	10,434	9,862	12,040	16,482	5,420	15,750	6,152

Note: The estimated specification is described in Eq. 1, section 4. The samples of column (1)-(8) are, respectively, females, males, people aged above 55 years old, people aged 55 or below, people who had voted at the last election, people who had not voted at the last election, people with more than 15 years of education, and people with less than 12 years of education.
Robust standard errors clustered at country level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: The effect of perceived severity of climate change and expected action of other governments on responsibility to take action for climate change – controlling for domestic respondents' responsibility and active citizenship

Variables	All			Active citizens only		
	(1)	(2)	(3)	(4)	(5)	(6)
Worried	0.996***	0.992***	0.992***	1.033***	1.020***	1.020***
	(0.0704)	(0.0698)	(0.0698)	(0.107)	(0.104)	(0.104)
Governments	0.123***	0.120***	0.120***	0.127***	0.127***	0.127***
	(0.0179)	(0.0165)	(0.0165)	(0.0334)	(0.0315)	(0.0315)
Responsible country	2.734***		2.309***	2.566***		2.370***
	(0.149)		(0.154)	(0.270)		(0.279)
Responsible regional		0.528***	0.528***		0.759***	0.759***
		(0.0621)	(0.0621)		(0.147)	(0.147)
Female	0.253***	0.254***	0.254***	0.260**	0.271**	0.271**
	(0.0411)	(0.0419)	(0.0419)	(0.111)	(0.108)	(0.108)
Education	0.0308***	0.0307***	0.0307***	0.0459***	0.0454***	0.0454***
	(0.00526)	(0.00526)	(0.00526)	(0.0125)	(0.0119)	(0.0119)
Pseudo Log L	-44216	-44104	-44104	-3916	-3900	-3900
Observations	21,902	21,902	21,902	2,027	2,027	2,027

Note: Responsible country and Responsible regional are, respectively, the country average and the NUTS-1 average of Responsible.
Robust standard errors clustered at country level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Effects of country social and human capital on the estimated effects of perceived severity of climate change and expected action of other governments on responsibility to take action for climate change at country level

	(1)	(2)	(3)
Variables	Ratio	Worried coeff.	Governments coeff.
Social capital	23.66**	0.386	-0.275***
	(11.08)	(0.316)	(0.0917)
Education	-0.923	0.0297	-0.0110
	(3.037)	(0.0443)	(0.0149)
Politics	-5.546	-0.0482	0.0655
	(5.569)	(0.0779)	(0.0428)
Constant	21.09	0.407	0.315
	(57.06)	(0.924)	(0.368)
Observations	19	19	19
R-squared	0.162	0.077	0.252

Note: Ordinary least squares (OLS) estimates of the model $y = a + b_1\mathsf{Social\ capital} + b_2\mathsf{Education} + b_3\mathsf{Politics} + c$; y is the ratio between the coefficients β_1 and β_2 estimated for each country using OLS models as in Equation 1 (column 1), or β_1 (column 2), or β_3 (column 3); Social capital, education, and politics represent their respective country average.
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Effects of regional social and human capital on the estimated effects of perceived severity of climate change and expected action of other governments on responsibility to take action for climate change at NUTS1 level

	(1)	(2)	(3)
	A1	A2	A3
Variables	Ratio	Worried coeff.	Governments coeff.
Social capital	111.4	0.278	-0.188**
	(90.22)	(0.202)	(0.0760)
Education	6.165	0.0471	-0.0150
	(5.902)	(0.0409)	(0.0115)
Politics	-51.29	0.00939	0.0404
	(49.89)	(0.110)	(0.0393)
Constant	56.15	-0.0166	0.362
	(162.8)	(0.883)	(0.261)
Observations	43	43	43
R-squared	0.082	0.058	0.156

Note: Ordinary least squares (OLS) estimates of the model $y = a + b_1\mathsf{Social\ capital} + b_2\mathsf{Education} + b_3\mathsf{Politics} + c$; y is the ratio between the coefficients β_1 and β_2 estimated for each NUTS1 using OLS models as in Equation 1 (column 1), or β_1 (column 2), or β_3 (column 3); Social capital, education, and politics represent their respective NUTS1 average.
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix A

Table A1: Average feeling of responsibility to take action against climate change

Country	**Average Responsible**	**Obs.**
Montenegro	4.07	1,278
North Macedonia	4.28	1,429
Czech Republic	4.35	2,476
Slovakia	5.02	1,418
Croatia	5.53	1,592
Estonia	5.53	1,542
Greece	5.54	2,799
Hungary	5.80	1,849
Italy	5.91	2,640
Lithuania	6.09	1,659
Slovenia	6.42	1,252
The Netherlands	6.66	1,470
Iceland	6.74	903
Portugal	6.77	1,838
Finland	6.84	1,577
Norway	6.86	1,411
Switzerland	7.28	1,523
France	7.49	1,977

Table A2: The effect of perceived severity of climate change and expected action of other governments on responsibility to act for climate change

Variables	(1) Responsible	(2) Responsible	(3) Responsible	(4) Responsible	(5) Responsible
Worried	0.977***	0.980***	0.994***	0.994***	0.996***
	(0.0705)	(0.0711)	(0.0702)	(0.0704)	(0.0704)
Governments	0.128***	0.127***	0.124***	0.123***	0.123***
	(0.0175)	(0.0176)	(0.0178)	(0.0179)	(0.0179)
Female	0.240***	0.242***	0.252***	0.253***	0.253***
	(0.0386)	(0.0389)	(0.0413)	(0.0411)	(0.0411)
Education	0.0382***	0.0366***	0.0348***	0.0319***	0.0308***
	(0.00490)	(0.00485)	(0.00535)	(0.00530)	(0.00526)
Age class (Ref. = 15–19)					
20–24	0.0244	0.0255	0.0436	-0.0404	-0.0277
	(0.0541)	(0.0526)	(0.0577)	(0.0762)	(0.0782)
25–29	0.00383	0.0135	0.0189	-0.0761	-0.0477
	(0.0943)	(0.0934)	(0.102)	(0.116)	(0.117)
30–34	0.0805	0.0934	0.129	0.0320	0.0589
	(0.0880)	(0.0877)	(0.0871)	(0.0942)	(0.0972)

35–39	0.156*	0.172*	0.200**	0.106	0.134
	(0.0937)	(0.0956)	(0.0906)	(0.0988)	(0.0993)
40–44	0.0900	0.111	0.123	0.0232	0.0561
	(0.118)	(0.118)	(0.119)	(0.132)	(0.134)
45–49	0.150	0.179	0.200*	0.105	0.135
	(0.119)	(0.123)	(0.118)	(0.131)	(0.132)
50–54	0.280**	0.313**	0.335**	0.238	0.267*
	(0.130)	(0.134)	(0.138)	(0.151)	(0.150)
55–59	0.151	0.189	0.205*	0.111	0.140
	(0.120)	(0.125)	(0.121)	(0.139)	(0.138)
60–64	0.137	0.180	0.177	0.0812	0.105
	(0.130)	(0.139)	(0.133)	(0.148)	(0.147)
65–69	-0.0108	0.0266	0.0343	-0.0713	-0.0477
	(0.145)	(0.156)	(0.149)	(0.163)	(0.162)
70–74	-0.0362	0.0167	0.0178	-0.0739	-0.0510
	(0.145)	(0.152)	(0.155)	(0.179)	(0.177)
75–79	-0.0364	0.0308	0.00445	-0.0757	-0.0575
	(0.151)	(0.162)	(0.166)	(0.185)	(0.185)
80–84	0.0521	0.132	0.0568	-0.00853	0.00492
	(0.157)	(0.165)	(0.162)	(0.185)	(0.185)
85+	-0.312*	-0.229	-0.334*	-0.388*	-0.380*
Income (Ref. = 1)					
	(0.164)	(0.170)	(0.183)	(0.199)	(0.199)
2	0.0406	0.0237	0.0176	-0.00245	-0.0277
	(0.0649)	(0.0629)	(0.0910)	(0.0885)	(0.0872)
3	0.194***	0.173**	0.147	0.121	0.0823
	(0.0716)	(0.0702)	(0.0900)	(0.0899)	(0.0937)
4	0.294***	0.265***	0.269***	0.229***	0.178**
	(0.0607)	(0.0581)	(0.0730)	(0.0740)	(0.0837)
5	0.243***	0.209**	0.220**	0.175*	0.120
	(0.0838)	(0.0822)	(0.0940)	(0.0958)	(0.100)
6	0.271***	0.238***	0.247***	0.200**	0.133
	(0.0691)	(0.0658)	(0.0822)	(0.0820)	(0.0926)
7	0.332***	0.295***	0.306***	0.252***	0.181*
	(0.0740)	(0.0746)	(0.0916)	(0.0972)	(0.102)
8	0.336***	0.297***	0.310***	0.257***	0.182*
	(0.0713)	(0.0717)	(0.0883)	(0.0919)	(0.0953)
9	0.373***	0.333***	0.349***	0.292***	0.204*
	(0.0693)	(0.0741)	(0.0803)	(0.0896)	(0.106)
10	0.420***	0.374***	0.391***	0.325***	0.232**
	(0.0859)	(0.0877)	(0.0972)	(0.104)	(0.117)
HHsize	-0.0140	-0.0130	-0.00792	-0.00678	-0.00183
	(0.0135)	(0.0135)	(0.0148)	(0.0148)	(0.0144)
Marital status (Ref. = Married)					
Civil union	-0.111	-0.0999	-0.101	-0.0792	-0.0808
	(0.0823)	(0.0804)	(0.0972)	(0.0920)	(0.0926)
Separated	-0.0820	-0.0809	-0.101	-0.0889	-0.0681
	(0.145)	(0.142)	(0.110)	(0.107)	(0.106)

Divorced	-0.0133	-0.0114	0.0316	0.0449	0.0512
	(0.0475)	(0.0466)	(0.0520)	(0.0507)	(0.0502)
Widowed	-0.177*	-0.163*	-0.144	-0.125	-0.120
	(0.0910)	(0.0904)	(0.0980)	(0.0946)	(0.0941)
Employment (Ref. = Paid work)					
Never married	0.00814	0.0104	0.0304	0.0372	0.0385
	(0.0625)	(0.0629)	(0.0663)	(0.0668)	(0.0672)
In education	0.163***	0.164***	0.165***	0.168***	0.173***
	(0.0500)	(0.0489)	(0.0486)	(0.0480)	(0.0502)
Unemployed	-0.0248	-0.0250	0.00244	0.00937	0.0256
	(0.0871)	(0.0863)	(0.0854)	(0.0842)	(0.0776)
Not working	-0.0760	-0.0723	-0.0311	-0.0233	0.00110
	(0.120)	(0.119)	(0.151)	(0.146)	(0.150)
Housework	0.0238	0.0305	0.0499	0.0569	0.0603
	(0.0585)	(0.0593)	(0.0568)	(0.0581)	(0.0571)
Retired	0.00775	0.0287	0.0267	0.0459	0.0480
	(0.0566)	(0.0575)	(0.0605)	(0.0625)	(0.0623)
Disabled	-0.0764	0.0604	-0.0365	0.100	0.113
	(0.0590)	(0.0737)	(0.0696)	(0.0878)	(0.0881)
Other	5.86e-05	0.0117	-0.0257	0.00226	0.00889
	(0.0976)	(0.0947)	(0.106)	(0.106)	(0.105)
Country (Ref. = Bulgaria)					
Switzerland	1.994***	1.965***	1.982***	1.978***	1.914***
	(0.0693)	(0.0721)	(0.0705)	(0.0736)	(0.0817)
Czech Republic	-0.164***	-0.164***	-0.144***	-0.136***	-0.161***
	(0.0312)	(0.0300)	(0.0241)	(0.0204)	(0.0286)
Estonia	0.595***	0.615***	0.617***	0.643***	0.609***
	(0.0384)	(0.0442)	(0.0414)	(0.0497)	(0.0528)
Finland	1.518***	1.515***	1.522***	1.508***	1.468***
	(0.0752)	(0.0759)	(0.0785)	(0.0790)	(0.0843)
France	2.083***	2.090***	2.092***	2.129***	2.080***
	(0.0764)	(0.0768)	(0.0789)	(0.0832)	(0.0874)
Greece	0.182***	0.158***	0.214***	0.167***	0.174***
	(0.0243)	(0.0197)	(0.0264)	(0.0213)	(0.0211)
Croatia	0.551***	0.558***	0.624***	0.634***	0.583***
	(0.0380)	(0.0413)	(0.0406)	(0.0430)	(0.0493)
Hungary	0.445***	0.443***	0.426***	0.421***	0.397***
	(0.0242)	(0.0244)	(0.0295)	(0.0293)	(0.0371)
Iceland	1.500***	1.486***	1.519***	1.487***	1.414***
	(0.0729)	(0.0725)	(0.0721)	(0.0713)	(0.0833)
Italy	0.755***	0.741***	0.776***	0.751***	0.702***
	(0.0293)	(0.0301)	(0.0312)	(0.0320)	(0.0450)
Lithuania	0.907***	0.925***	0.948***	0.968***	0.941***
	(0.0386)	(0.0408)	(0.0448)	(0.0490)	(0.0538)
North Macedonia	-0.449***	-0.459***	-0.499***	-0.542***	-0.586***
	(0.0306)	(0.0317)	(0.0520)	(0.0587)	(0.0552)
Montenegro	-0.474***	-0.479***	-0.335***	-0.359***	-0.390***
	(0.0435)	(0.0447)	(0.0375)	(0.0430)	(0.0456)

The Netherlands	1.125***	1.116***	1.132***	1.100***	1.035***
	(0.0672)	(0.0662)	(0.0682)	(0.0674)	(0.0812)
Norway	1.384***	1.374***	1.388***	1.363***	1.296***
	(0.0657)	(0.0652)	(0.0658)	(0.0652)	(0.0773)
Portugal	1.397***	1.412***	1.431***	1.437***	1.408***
	(0.0510)	(0.0516)	(0.0542)	(0.0549)	(0.0591)
Slovenia	1.025***	1.017***	0.990***	0.982***	0.915***
	(0.0542)	(0.0538)	(0.0526)	(0.0525)	(0.0675)
Slovakia	0.459***	0.467***	0.447***	0.447***	0.423***
	(0.0203)	(0.0233)	(0.0207)	(0.0229)	(0.0230)
Health (Ref. = Very good)					
Good		-0.0290		-0.00764	-0.00416
		(0.0637)		(0.0660)	(0.0664)
Fair		-0.124		-0.108	-0.0958
		(0.0999)		(0.104)	(0.104)
Bad		-0.275***		-0.261**	-0.236**
		(0.104)		(0.112)	(0.115)
Very bad		-0.525**		-0.447*	-0.414*
		(0.229)		(0.237)	(0.230)
Politics			0.00323	0.00126	0.000725
			(0.0111)	(0.0110)	(0.0111)
Social capital				0.175***	0.170***
				(0.0645)	(0.0642)
Income satisfaction					-0.0688*
					(0.0363)
/cut1	1.989***	1.918***	1.971***	1.872***	1.672***
	(0.236)	(0.223)	(0.264)	(0.252)	(0.223)
/cut2	2.404***	2.332***	2.413***	2.313***	2.114***
	(0.210)	(0.198)	(0.230)	(0.220)	(0.192)
/cut3	2.977***	2.905***	3.008***	2.909***	2.711***
	(0.187)	(0.175)	(0.203)	(0.192)	(0.162)
/cut4	3.546***	3.475***	3.587***	3.489***	3.291***
	(0.183)	(0.172)	(0.199)	(0.190)	(0.156)
/cut5	3.986***	3.916***	4.039***	3.942***	3.744***
	(0.178)	(0.167)	(0.195)	(0.185)	(0.156)
/cut6	4.933***	4.863***	4.978***	4.883***	4.685***
	(0.186)	(0.173)	(0.204)	(0.191)	(0.161)
/cut7	5.601***	5.533***	5.654***	5.561***	5.363***
	(0.182)	(0.171)	(0.194)	(0.182)	(0.160)
/cut8	6.518***	6.451***	6.583***	6.492***	6.294***
	(0.210)	(0.199)	(0.215)	(0.200)	(0.183)
/cut9	7.702***	7.634***	7.787***	7.697***	7.499***
	(0.263)	(0.250)	(0.258)	(0.239)	(0.225)
/cut10	8.408***	8.340***	8.517***	8.426***	8.229***
	(0.299)	(0.284)	(0.290)	(0.267)	(0.251)
Pseudo Log L	-49539	-49494	-44333	-44279	-44216
Observations	24,419	24,407	21,938	21,929	21,902

The estimated specification is described in Eq. 1. Column (1) does not include vector $\mathbf{Z}_i$; Columns (2)-(5) add sequentially health, politics, social capital, and income satisfaction.
Robust standard errors clustered at country level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3: The effect of perceived severity of climate change and expected action of other governments on responsibility to act for climate change – sample subgroups

Variables	(1) Females	(2) Males	(3) ≥ 55 yo	(4) < 55 yo	(5) Voted	(6) Abstained	(7) High educated	(8) Low educated
Worried	0.994***	1.000***	0.877***	1.105***	0.989***	1.021***	1.033***	0.918***
	(0.0865)	(0.0641)	(0.0712)	(0.0741)	(0.0666)	(0.0927)	(0.0875)	(0.0524)
Governments	0.123***	0.122***	0.135***	0.113***	0.126***	0.116***	0.125***	0.119***
	(0.0177)	(0.0191)	(0.0151)	(0.0215)	(0.0193)	(0.0195)	(0.0205)	(0.0154)
Female			0.241***	0.251***	0.274***	0.190***	0.270***	0.191***
			(0.0399)	(0.0506)	(0.0500)	(0.0474)	(0.0479)	(0.0512)
Education	0.0373***	0.0224***	0.0243***	0.0381***	0.0314***	0.0276***	0.0335***	0.0158
	(0.00559)	(0.00777)	(0.00696)	(0.00775)	(0.00542)	(0.00881)	(0.00733)	(0.0126)
Age class (Ref. = 15–19)								
20–24	-0.168	0.122		-0.0115	0.163	-0.0298	0.114	-0.290
	(0.134)	(0.130)		(0.0761)	(0.230)	(0.0748)	(0.0965)	(0.224)
25–29	-0.116	0.0388		-0.0328	0.263	-0.218**	0.125	-0.432*
	(0.163)	(0.134)		(0.117)	(0.270)	(0.0970)	(0.133)	(0.237)
30–34	0.0660	0.0671		0.0608	0.342	-0.0931	0.242*	-0.395*
	(0.152)	(0.117)		(0.102)	(0.269)	(0.108)	(0.126)	(0.209)
35–39	0.142	0.131		0.140	0.438	-0.0753	0.325***	-0.313
	(0.153)	(0.117)		(0.0987)	(0.275)	(0.110)	(0.126)	(0.208)
40–44	-0.0376	0.161		0.0503	0.316	-0.00419	0.256	-0.433**
	(0.161)	(0.169)		(0.137)	(0.304)	(0.121)	(0.162)	(0.201)
45–49	0.0840	0.207		0.128	0.396	0.0708	0.337**	-0.252
	(0.193)	(0.155)		(0.134)	(0.311)	(0.130)	(0.168)	(0.204)
50–54	0.202	0.344*		0.278*	0.548*	0.123	0.465**	-0.0938
	(0.196)	(0.183)		(0.157)	(0.306)	(0.193)	(0.184)	(0.192)
55–59	0.0804	0.203	0.515***		0.447	-0.120	0.321*	-0.185
	(0.197)	(0.152)	(0.122)		(0.306)	(0.158)	(0.165)	(0.198)
60–64	0.0307	0.197	0.480***		0.418	-0.206	0.336**	-0.333*
	(0.186)	(0.181)	(0.135)		(0.313)	(0.166)	(0.163)	(0.200)
65–69	-0.0837	-0.00858	0.318***		0.284	-0.487***	0.181	-0.483**
	(0.201)	(0.213)	(0.123)		(0.346)	(0.150)	(0.212)	(0.197)

70–74	-0.0696	-0.0455	0.321**		0.286	-0.464	0.136	-0.432**
	(0.235)	(0.219)	(0.126)		(0.326)	(0.310)	(0.232)	(0.188)
75–79	-0.0800	-0.0423	0.310***		0.216	-0.171	0.170	-0.485***
	(0.238)	(0.223)	(0.116)		(0.352)	(0.291)	(0.263)	(0.171)
80–84	-0.0611	0.0719	0.373***		0.339	-0.409	0.108	-0.353
	(0.260)	(0.189)	(0.114)		(0.323)	(0.358)	(0.281)	(0.218)
85+	-0.353	-0.469*			0.0148	-0.930***	-0.229	-0.792***
	(0.262)	(0.280)			(0.336)	(0.336)	(0.294)	(0.229)
Income (Ref.: = 1)								
2	0.00711	-0.0814	-0.00199	-0.0427	-0.0578	0.00419	-0.151	0.0830
	(0.105)	(0.120)	(0.116)	(0.0922)	(0.112)	(0.155)	(0.104)	(0.129)
3	0.0603	0.0939	0.141	0.0465	0.0417	0.168	0.00806	0.110
	(0.132)	(0.121)	(0.117)	(0.115)	(0.114)	(0.110)	(0.126)	(0.122)
4	0.160	0.199*	0.230*	0.149*	0.154	0.199*	0.0863	0.241*
	(0.135)	(0.111)	(0.124)	(0.0898)	(0.108)	(0.112)	(0.0964)	(0.141)
5	0.135	0.0910	0.202*	0.0688	0.120	0.0648	0.00772	0.218
	(0.136)	(0.132)	(0.117)	(0.116)	(0.123)	(0.122)	(0.118)	(0.160)
6	0.170	0.0878	0.197*	0.0991	0.112	0.127	0.0211	0.232
	(0.139)	(0.146)	(0.117)	(0.129)	(0.123)	(0.153)	(0.117)	(0.147)
7	0.197	0.181	0.246*	0.153	0.178	0.121	0.0887	0.209
	(0.149)	(0.115)	(0.135)	(0.132)	(0.129)	(0.162)	(0.132)	(0.148)
8	0.188	0.181	0.230**	0.154	0.163	0.175	0.0729	0.233
	(0.139)	(0.144)	(0.117)	(0.119)	(0.124)	(0.138)	(0.130)	(0.143)
9	0.171	0.239*	0.294**	0.149	0.193	0.155	0.104	0.219
	(0.163)	(0.131)	(0.131)	(0.131)	(0.139)	(0.141)	(0.138)	(0.168)
10	0.172	0.293*	0.325**	0.186	0.217	0.215	0.130	0.232
	(0.152)	(0.162)	(0.128)	(0.138)	(0.146)	(0.167)	(0.142)	(0.180)
HHsize	-0.0211	0.0109	-0.0134	0.00885	0.00581	-0.0180	0.00933	-0.0271
	(0.0167)	(0.0179)	(0.0217)	(0.0181)	(0.0194)	(0.0231)	(0.0155)	(0.0291)
Marital status (Ref. = Married)								
Civil union	-0.152	-0.0296	0.598***	-0.278***	-0.0567	-0.132	-0.123	0.133
	(0.152)	(0.0820)	(0.200)	(0.0848)	(0.0899)	(0.158)	(0.105)	(0.150)
Separated	-0.00234	-0.150	-0.0823	0.0311	-0.0815	-0.0760	-0.0511	-0.150
	(0.0930)	(0.163)	(0.187)	(0.213)	(0.106)	(0.291)	(0.114)	(0.253)
Divorced	0.0840	-0.00893	0.0703	0.0386	0.0497	0.0385	0.0703	0.00985
	(0.0700)	(0.0696)	(0.0653)	(0.0795)	(0.0609)	(0.0885)	(0.0566)	(0.0837)

Widowed	-0.124	-0.0151	-0.0830	0.136	-0.0549	-0.334*	-0.126	-0.143
	(0.106)	(0.111)	(0.0890)	(0.133)	(0.0880)	(0.180)	(0.116)	(0.0916)
Never married	0.0381	0.0375	0.0914	0.0149	0.0459	-0.0255	0.0621	-0.0250
	(0.0716)	(0.0775)	(0.0910)	(0.0698)	(0.0758)	(0.0776)	(0.0761)	(0.0934)
Employment (Ref. = Paid work)								
In education	0.230***	0.124	0.0850	0.164***	0.218***	0.0948	0.177***	0.0493
	(0.0821)	(0.0824)	(0.192)	(0.0517)	(0.0531)	(0.108)	(0.0564)	(0.198)
Unemployed	0.0862	-0.0171	0.272	-0.0696	0.0524	-0.0294	0.105	-0.173
	(0.118)	(0.119)	(0.179)	(0.0869)	(0.0911)	(0.103)	(0.0765)	(0.146)
Not working	0.0448	-0.0249	0.184	-0.0798	0.0492	-0.113	0.192	-0.299
	(0.212)	(0.208)	(0.285)	(0.172)	(0.219)	(0.144)	(0.193)	(0.183)
Housework	0.0931	0.0724	0.0696	0.0662	0.0443	0.104	0.0713	0.00909
	(0.0679)	(0.0916)	(0.0927)	(0.0597)	(0.0586)	(0.0805)	(0.0622)	(0.135)
Retired	-0.0194	0.126	0.0814	-0.0578	0.00201	0.296***	-0.00271	0.113
	(0.0940)	(0.0887)	(0.0622)	(0.180)	(0.0664)	(0.108)	(0.0771)	(0.0866)
Disabled	0.109	0.127	0.0727	0.182*	0.144*	-0.00948	0.190**	-0.00974
	(0.104)	(0.142)	(0.107)	(0.110)	(0.0765)	(0.201)	(0.0899)	(0.174)
Other	-0.0245	0.0594	0.0180	0.0126	0.0109	-0.0215	0.0137	-0.0287
	(0.108)	(0.137)	(0.173)	(0.133)	(0.116)	(0.174)	(0.112)	(0.223)
Country (Ref. = Bulgaria)								
Switzerland	1.929***	1.897***	2.007***	1.848***	2.000***	1.744***	1.872***	1.838***
	(0.0911)	(0.0866)	(0.107)	(0.0783)	(0.0900)	(0.0988)	(0.0794)	(0.133)
Czech Republic	-0.225***	-0.0777**	-0.267***	-0.0692**	-0.285***	0.0851	-0.160***	-0.165***
	(0.0274)	(0.0339)	(0.0526)	(0.0348)	(0.0317)	(0.0711)	(0.0333)	(0.0585)
Estonia	0.728***	0.459***	0.230***	0.941***	0.735***	0.335***	0.775***	0.173***
	(0.0525)	(0.0606)	(0.0440)	(0.0727)	(0.0570)	(0.0565)	(0.0600)	(0.0518)
Finland	1.527***	1.403***	1.265***	1.660***	1.513***	1.325***	1.596***	0.984***
	(0.0888)	(0.0871)	(0.0890)	(0.0914)	(0.0881)	(0.0888)	(0.0769)	(0.101)
France	2.128***	2.038***	1.967***	2.171***	2.039***	2.093***	2.116***	1.975***
	(0.0883)	(0.0992)	(0.0970)	(0.0918)	(0.0863)	(0.103)	(0.0811)	(0.128)
Greece	0.0447	0.295***	0.0739*	0.251***	0.197***	0.0466	0.107***	0.349***
	(0.0277)	(0.0281)	(0.0390)	(0.0305)	(0.0277)	(0.0478)	(0.0225)	(0.0454)
Croatia	0.676***	0.471***	0.658***	0.548***	0.565***	0.610***	0.666***	0.422***
	(0.0569)	(0.0437)	(0.0546)	(0.0606)	(0.0483)	(0.0856)	(0.0567)	(0.0593)
Hungary	0.388***	0.445***	0.190***	0.607***	0.395***	0.381***	0.377***	0.418***
	(0.0378)	(0.0374)	(0.0293)	(0.0578)	(0.0367)	(0.0563)	(0.0360)	(0.0527)

Iceland	1.708***	1.109***	1.517***	1.326***	1.498***	0.909***	1.401***	1.511***
	(0.0972)	(0.0760)	(0.106)	(0.0822)	(0.0842)	(0.128)	(0.0685)	(0.124)
Italy	0.566***	0.844***	0.599***	0.796***	0.730***	0.593***	0.679***	0.687***
	(0.0465)	(0.0510)	(0.0489)	(0.0602)	(0.0435)	(0.0715)	(0.0446)	(0.0671)
Lithuania	0.931***	0.948***	0.927***	0.955***	0.931***	0.963***	0.955***	0.912***
	(0.0519)	(0.0575)	(0.0540)	(0.0628)	(0.0549)	(0.0615)	(0.0481)	(0.0552)
North Macedonia	-0.507***	-0.658***	-0.718***	-0.493***	-0.639***	-0.360***	-0.700***	-0.307***
	(0.0593)	(0.0518)	(0.0569)	(0.0754)	(0.0635)	(0.120)	(0.0789)	(0.0448)
Montenegro	-0.522***	-0.287***	-0.526***	-0.257***	-0.434***	-0.150*	-0.398***	-0.404***
	(0.0510)	(0.0434)	(0.0365)	(0.0602)	(0.0406)	(0.0788)	(0.0585)	(0.0351)
The Netherlands	1.079***	0.993***	1.038***	1.059***	1.066***	0.848***	1.048***	1.046***
	(0.0852)	(0.0854)	(0.0941)	(0.0866)	(0.0837)	(0.0923)	(0.0694)	(0.109)
Norway	1.375***	1.225***	1.258***	1.329***	1.321***	1.160***	1.315***	1.206***
	(0.0856)	(0.0773)	(0.0896)	(0.0782)	(0.0743)	(0.123)	(0.0621)	(0.111)
Portugal	1.474***	1.323***	1.270***	1.521***	1.467***	1.227***	1.481***	1.240***
	(0.0635)	(0.0609)	(0.0574)	(0.0788)	(0.0609)	(0.0758)	(0.0743)	(0.0789)
Slovenia	1.023***	0.789***	0.691***	1.111***	0.912***	0.905***	1.030***	0.647***
	(0.0825)	(0.0627)	(0.0615)	(0.0810)	(0.0658)	(0.110)	(0.0682)	(0.0825)
Slovakia	0.329***	0.527***	0.388***	0.455***	0.463***	0.278***	0.441***	0.405***
	(0.0275)	(0.0295)	(0.0309)	(0.0295)	(0.0243)	(0.0367)	(0.0266)	(0.0290)
Health (Ref. = Very good)								
Good	-0.0164	0.0174	-0.104*	0.0219	0.0223	-0.0571	-0.0158	0.000367
	(0.0684)	(0.0755)	(0.0630)	(0.0822)	(0.0705)	(0.0850)	(0.0707)	(0.0820)
Fair	-0.0886	-0.0961	-0.183*	-0.0450	-0.0764	-0.0978	-0.102	-0.111
	(0.0933)	(0.125)	(0.0948)	(0.126)	(0.109)	(0.147)	(0.126)	(0.101)
Bad	-0.196**	-0.286	-0.327***	-0.0952	-0.158	-0.398*	-0.241*	-0.240
	(0.0951)	(0.186)	(0.107)	(0.174)	(0.115)	(0.213)	(0.136)	(0.151)
Very bad	-0.145	-0.718**	-0.564**	-0.0157	-0.281	-0.609***	-0.276	-0.473*
	(0.257)	(0.292)	(0.258)	(0.397)	(0.331)	(0.169)	(0.245)	(0.267)
Politics	0.00709	-0.00328	0.00447	-0.00253	-0.00836	0.0396*	-0.00243	0.00660
	(0.00993)	(0.0148)	(0.0133)	(0.0141)	(0.0114)	(0.0211)	(0.0138)	(0.0107)
Social capital	0.221***	0.112	0.213**	0.115**			0.143*	0.175***
	(0.0628)	(0.0826)	(0.0862)	(0.0572)			(0.0737)	(0.0603)
Income satisfaction	-0.0780*	-0.0617	-0.0412	-0.0804*	-0.0833**	-0.0417	-0.0478	-0.117**
	(0.0403)	(0.0461)	(0.0365)	(0.0485)	(0.0394)	(0.0657)	(0.0396)	(0.0463)
/cut1	1.377***	1.667***	1.818***	1.881***	1.718***	1.670***	1.866***	0.888**

	(0.308)	(0.279)	(0.264)	(0.244)	(0.429)	(0.302)	(0.310)	(0.379)
/cut2	1.844***	2.091***	2.275***	2.307***	2.182***	2.060***	2.318***	1.317***
	(0.276)	(0.260)	(0.238)	(0.217)	(0.398)	(0.292)	(0.261)	(0.372)
/cut3	2.451***	2.682***	2.823***	2.965***	2.790***	2.630***	2.972***	1.818***
	(0.245)	(0.250)	(0.231)	(0.194)	(0.370)	(0.263)	(0.228)	(0.341)
/cut4	3.066***	3.237***	3.350***	3.608***	3.384***	3.183***	3.601***	2.311***
	(0.239)	(0.247)	(0.223)	(0.192)	(0.355)	(0.259)	(0.213)	(0.348)
/cut5	3.539***	3.671***	3.776***	4.090***	3.835***	3.647***	4.066***	2.741***
	(0.238)	(0.255)	(0.216)	(0.191)	(0.354)	(0.250)	(0.205)	(0.351)
/cut6	4.485***	4.612***	4.713***	5.045***	4.759***	4.654***	4.984***	3.749***
	(0.243)	(0.263)	(0.223)	(0.201)	(0.359)	(0.236)	(0.202)	(0.364)
/cut7	5.191***	5.265***	5.346***	5.770***	5.459***	5.277***	5.665***	4.431***
	(0.242)	(0.270)	(0.237)	(0.197)	(0.356)	(0.233)	(0.182)	(0.373)
/cut8	6.111***	6.214***	6.164***	6.803***	6.400***	6.191***	6.636***	5.268***
	(0.260)	(0.291)	(0.265)	(0.196)	(0.375)	(0.264)	(0.181)	(0.399)
/cut9	7.287***	7.466***	7.360***	8.024***	7.636***	7.303***	7.873***	6.393***
	(0.303)	(0.315)	(0.310)	(0.221)	(0.411)	(0.297)	(0.204)	(0.440)
/cut10	8.039***	8.170***	8.066***	8.780***	8.387***	7.973***	8.647***	7.003***
	(0.310)	(0.341)	(0.338)	(0.244)	(0.430)	(0.324)	(0.227)	(0.460)
Pseudo Log L	-22930	-21222	-20305	-23774	-33142	-11000	-31450	-12659
Adj. R^2	0.0898	0.0898	0.0898	0.0898	0.0898	0.0898	0.0898	0.0898
Observations	11,468	10,434	9,862	12,040	16,482	5,420	15,750	6,152

Note: The estimated specification is described in Eq. 1, section 4. The samples of column (1)-(8) are, respectively, females, males, people aged above 55 years old, people aged 55 or below, people who had voted at the last election, people who had not voted at the last election, people with more than 15 years of education, and people with less than 12 years of education.
Robust standard errors clustered at country level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4: The effect of perceived severity of climate change and expected action of other governments on responsibility to take action for climate change – controlling for domestic respondents' responsibility and active citizenship

Variables	All			Active citizens only		
	(1)	(2)	(3)	(4)	(5)	(6)
Worried	0.996***	0.992***	0.992***	1.033***	1.020***	1.020***
	(0.0704)	(0.0698)	(0.0698)	(0.107)	(0.104)	(0.104)
Governments	0.123***	0.120***	0.120***	0.127***	0.127***	0.127***
	(0.0179)	(0.0165)	(0.0165)	(0.0334)	(0.0315)	(0.0315)
Responsible country	2.734***		2.309***	2.566***		2.370***
	(0.149)		(0.154)	(0.270)		(0.279)
Responsible regional		0.528***	0.528***		0.759***	0.759***
		(0.0621)	(0.0621)		(0.147)	(0.147)
Female	0.253***	0.254***	0.254***	0.260**	0.271**	0.271**
	(0.0411)	(0.0419)	(0.0419)	(0.111)	(0.108)	(0.108)
Education	0.0308***	0.0307***	0.0307***	0.0459***	0.0454***	0.0454***
	(0.00526)	(0.00526)	(0.00526)	(0.0125)	(0.0119)	(0.0119)
20–24	-0.0277	-0.0239	-0.0239	-0.0910	-0.154	-0.154
	(0.0782)	(0.0825)	(0.0825)	(0.345)	(0.355)	(0.355)
25–29	-0.0477	-0.0538	-0.0538	-0.0417	-0.0693	-0.0693
	(0.117)	(0.120)	(0.120)	(0.430)	(0.422)	(0.422)
30–34	0.0589	0.0443	0.0443	0.239	0.170	0.170
	(0.0972)	(0.0976)	(0.0976)	(0.401)	(0.403)	(0.403)
35–39	0.134	0.117	0.117	0.351	0.281	0.281
	(0.0993)	(0.0997)	(0.0997)	(0.415)	(0.416)	(0.416)
40–44	0.0561	0.0535	0.0535	0.228	0.211	0.211
	(0.134)	(0.136)	(0.136)	(0.438)	(0.432)	(0.432)
45–49	0.135	0.138	0.138	0.202	0.167	0.167
	(0.132)	(0.133)	(0.133)	(0.403)	(0.400)	(0.400)
50–54	0.267*	0.266*	0.266*	0.429	0.373	0.373
	(0.150)	(0.152)	(0.152)	(0.545)	(0.561)	(0.561)
55–59	0.140	0.144	0.144	0.247	0.185	0.185
	(0.138)	(0.139)	(0.139)	(0.509)	(0.518)	(0.518)
60–64	0.105	0.103	0.103	0.641	0.606	0.606
	(0.147)	(0.147)	(0.147)	(0.493)	(0.499)	(0.499)
65–69	-0.0477	-0.0531	-0.0531	0.220	0.156	0.156
	(0.162)	(0.163)	(0.163)	(0.559)	(0.550)	(0.550)
70–74	-0.0510	-0.0483	-0.0483	0.203	0.161	0.161
	(0.177)	(0.177)	(0.177)	(0.555)	(0.547)	(0.547)
75–79	-0.0575	-0.0720	-0.0720	0.599	0.487	0.487
	(0.185)	(0.187)	(0.187)	(0.563)	(0.562)	(0.562)
80–84	0.00492	-0.0177	-0.0177	0.443	0.328	0.328
	(0.185)	(0.185)	(0.185)	(0.558)	(0.581)	(0.581)
85+	-0.380*	-0.385*	-0.385*	0.368	0.390	0.390
	(0.199)	(0.200)	(0.200)	(0.693)	(0.685)	(0.685)
Income (Ref. = 1)						

2	-0.0277	-0.0239	-0.0239	-0.360	-0.344	-0.344
	(0.0872)	(0.0869)	(0.0869)	(0.303)	(0.302)	(0.302)
3	0.0823	0.0838	0.0838	-0.182	-0.163	-0.163
	(0.0937)	(0.0944)	(0.0944)	(0.239)	(0.243)	(0.243)
4	0.178**	0.182**	0.182**	-0.139	-0.117	-0.117
	(0.0837)	(0.0823)	(0.0823)	(0.201)	(0.202)	(0.202)
5	0.120	0.117	0.117	-0.0853	-0.0787	-0.0787
	(0.100)	(0.0978)	(0.0978)	(0.238)	(0.237)	(0.237)
6	0.133	0.141	0.141	0.0856	0.0729	0.0729
	(0.0926)	(0.0923)	(0.0923)	(0.246)	(0.241)	(0.241)
7	0.181*	0.182*	0.182*	-0.0531	-0.0426	-0.0426
	(0.102)	(0.104)	(0.104)	(0.284)	(0.281)	(0.281)
8	0.182*	0.175*	0.175*	-0.214	-0.224	-0.224
	(0.0953)	(0.0980)	(0.0980)	(0.292)	(0.293)	(0.293)
9	0.204*	0.192*	0.192*	-0.309	-0.301	-0.301
	(0.106)	(0.113)	(0.113)	(0.257)	(0.256)	(0.256)
10	0.232**	0.214*	0.214*	-0.318	-0.304	-0.304
	(0.117)	(0.119)	(0.119)	(0.297)	(0.283)	(0.283)
HHsize	-0.00183	0.00186	0.00186	0.0447	0.0426	0.0426
	(0.0144)	(0.0146)	(0.0146)	(0.0439)	(0.0446)	(0.0446)
Marital status (Ref. = Married)						
Civil union	-0.0808	-0.0929	-0.0929	-0.246**	-0.286***	-0.286***
	(0.0926)	(0.0896)	(0.0896)	(0.118)	(0.101)	(0.101)
Separated	-0.0681	-0.100	-0.100	0.362	0.345	0.345
	(0.106)	(0.110)	(0.110)	(0.281)	(0.272)	(0.272)
Divorced	0.0512	0.0417	0.0417	0.0136	-0.0321	-0.0321
	(0.0502)	(0.0520)	(0.0520)	(0.178)	(0.160)	(0.160)
Widowed	-0.120	-0.129	-0.129	-0.291*	-0.276	-0.276
	(0.0941)	(0.0899)	(0.0899)	(0.174)	(0.176)	(0.176)
Never married	0.0385	0.0350	0.0350	0.0104	-0.0193	-0.0193
	(0.0672)	(0.0668)	(0.0668)	(0.122)	(0.115)	(0.115)
Employment (Ref. = Paid work)						
In education	0.173***	0.171***	0.171***	0.171	0.184	0.184
	(0.0502)	(0.0517)	(0.0517)	(0.152)	(0.164)	(0.164)
Unemployed	0.0256	0.0280	0.0280	0.0948	0.0964	0.0964
	(0.0776)	(0.0762)	(0.0762)	(0.253)	(0.259)	(0.259)
Not working	0.00110	0.0137	0.0137	-0.725	-0.647	-0.647
	(0.150)	(0.147)	(0.147)	(0.457)	(0.422)	(0.422)
Housework	0.0603	0.0606	0.0606	0.0306	0.0223	0.0223
	(0.0571)	(0.0562)	(0.0562)	(0.147)	(0.153)	(0.153)
Retired	0.0480	0.0557	0.0557	-0.173	-0.154	-0.154
	(0.0623)	(0.0635)	(0.0635)	(0.187)	(0.186)	(0.186)
Disabled	0.113	0.110	0.110	0.233	0.246	0.246
	(0.0881)	(0.0874)	(0.0874)	(0.343)	(0.335)	(0.335)
Other	0.00889	0.0151	0.0151	0.284	0.300	0.300
	(0.105)	(0.102)	(0.102)	(0.219)	(0.230)	(0.230)
Country (Ref. = Bulgaria)						
Switzerland	-4.700***	0.678***	-4.906***	-4.415***	0.0410	-5.692***

	(0.351)	(0.190)	(0.351)	(0.621)	(0.371)	(0.610)
Czech Republic	1.243***	0.118***	1.303***	1.041***	0.110	1.327***
	(0.0788)	(0.0321)	(0.0746)	(0.194)	(0.112)	(0.197)
Estonia	-1.214***	0.294***	-1.245***	-0.241	1.035***	-0.545***
	(0.0726)	(0.0680)	(0.0742)	(0.155)	(0.179)	(0.184)
Finland	-3.938***	0.461***	-4.104***	-3.573***	-0.0491	-4.735***
	(0.265)	(0.161)	(0.267)	(0.499)	(0.330)	(0.520)
France	-5.104***	0.738***	-5.328***	-4.573***	0.226	-6.002***
	(0.358)	(0.195)	(0.357)	(0.644)	(0.420)	(0.659)
Greece	-1.671***	-0.0832*	-1.641***	-1.726***	-0.452***	-2.051***
	(0.0954)	(0.0430)	(0.0952)	(0.161)	(0.128)	(0.170)
Croatia	-1.236***	0.247***	-1.290***	-0.254	0.957***	-0.620***
	(0.117)	(0.0728)	(0.118)	(0.195)	(0.243)	(0.233)
Hungary	-2.146***	-0.0675	-2.215***	-2.011***	-0.218*	-2.423***
	(0.132)	(0.0748)	(0.133)	(0.248)	(0.124)	(0.235)
Iceland	-3.731***	0.461***	-3.883***	-3.726***	-0.263	-4.722***
	(0.257)	(0.163)	(0.259)	(0.455)	(0.297)	(0.456)
Italy	-2.141***	0.149	-2.252***	-2.007***	-0.0918	-2.556***
	(0.150)	(0.0974)	(0.153)	(0.261)	(0.178)	(0.252)
Lithuania	-2.412***	0.330***	-2.501***	-2.386***	-0.138	-3.045***
	(0.161)	(0.0977)	(0.161)	(0.286)	(0.212)	(0.303)
North Macedonia	1.582***	-0.155**	1.675***	1.083***	-0.328**	1.551***
	(0.119)	(0.0754)	(0.119)	(0.271)	(0.155)	(0.283)
Montenegro	1.209***	-0.0624	1.287***	1.315***	0.292**	1.677***
	(0.0770)	(0.0554)	(0.0747)	(0.222)	(0.139)	(0.235)
The Netherlands	-3.878***	0.128	-4.020***	-3.604***	-0.367	-4.625***
	(0.245)	(0.154)	(0.248)	(0.459)	(0.318)	(0.479)
Norway	-4.162***	0.283*	-4.325***	-3.986***	-0.323	-5.054***
	(0.275)	(0.162)	(0.277)	(0.494)	(0.310)	(0.492)
Portugal	-3.790***	0.426***	-3.963***	-3.485***	-0.0120	-4.518***
	(0.271)	(0.147)	(0.273)	(0.452)	(0.336)	(0.480)
Slovenia	-3.341***	0.131	-3.462***	-3.148***	-0.276	-3.965***
	(0.230)	(0.135)	(0.231)	(0.400)	(0.247)	(0.376)
Slovakia		0.357***			0.366***	
		(0.0237)			(0.0431)	
Health (Ref. = Very good)						
Good	-0.00416	-0.00219	-0.00219	-0.233**	-0.248**	-0.248**
	(0.0664)	(0.0658)	(0.0658)	(0.108)	(0.101)	(0.101)
Fair	-0.0958	-0.0988	-0.0988	-0.174	-0.190	-0.190
	(0.104)	(0.102)	(0.102)	(0.140)	(0.128)	(0.128)
Bad	-0.236**	-0.233**	-0.233**	-0.331	-0.373*	-0.373*
	(0.115)	(0.110)	(0.110)	(0.238)	(0.223)	(0.223)
Very bad	-0.414*	-0.427*	-0.427*	-0.767	-0.917*	-0.917*
	(0.230)	(0.226)	(0.226)	(0.528)	(0.483)	(0.483)
Politics	0.000725	-0.000885	-0.000885	-0.0373**	-0.0414***	-0.0414***
	(0.0111)	(0.0111)	(0.0111)	(0.0178)	(0.0158)	(0.0158)
Social capital	0.170***	0.177***	0.177***	0.0584	0.107	0.107
	(0.0642)	(0.0674)	(0.0674)	(0.102)	(0.106)	(0.106)

Income satisfaction	-0.0688*	-0.0598	-0.0598	-0.162**	-0.148*	-0.148*
	(0.0363)	(0.0366)	(0.0366)	(0.0812)	(0.0873)	(0.0873)
/cut1	14.98***	4.244***	15.48***	13.75***	4.921***	16.45***
	(0.802)	(0.423)	(0.793)	(1.456)	(1.074)	(1.606)
/cut2	15.42***	4.688***	15.92***	14.17***	5.333***	16.87***
	(0.793)	(0.396)	(0.782)	(1.440)	(1.090)	(1.602)
/cut3	16.02***	5.288***	16.52***	14.67***	5.841***	17.37***
	(0.792)	(0.369)	(0.780)	(1.466)	(1.061)	(1.615)
/cut4	16.60***	5.874***	17.11***	15.31***	6.484***	18.02***
	(0.795)	(0.365)	(0.784)	(1.473)	(1.078)	(1.625)
/cut5	17.05***	6.331***	17.56***	15.86***	7.033***	18.57***
	(0.802)	(0.364)	(0.791)	(1.480)	(1.078)	(1.633)
/cut6	17.99***	7.279***	18.51***	16.75***	7.934***	19.47***
	(0.822)	(0.375)	(0.811)	(1.481)	(1.069)	(1.625)
/cut7	18.67***	7.961***	19.20***	17.40***	8.601***	20.13***
	(0.832)	(0.364)	(0.822)	(1.494)	(1.050)	(1.622)
/cut8	19.60***	8.897***	20.13***	18.29***	9.500***	21.03***
	(0.853)	(0.369)	(0.839)	(1.521)	(1.043)	(1.637)
/cut9	20.80***	10.11***	21.34***	19.62***	10.84***	22.37***
	(0.886)	(0.386)	(0.867)	(1.547)	(1.018)	(1.636)
/cut10	21.53***	10.84***	22.07***	20.51***	11.72***	23.26***
	(0.901)	(0.386)	(0.876)	(1.558)	(1.012)	(1.627)
Observations	21,902	21,902	21,902	2,027	2,027	2,027
Adj. R^2	0.128	0.128	0.128	0.128	0.128	0.128
Pseudo Log L	-44216	-44104	-44104	-3916	-3900	-3900

Note: Responsible country and Responsible regional are, respectively, the country average and the NUTS-1 average of Responsible.
Robust standard errors clustered at country level in parentheses
*** p<0.01, ** p<0.05, * p<0.1