Intrinsic vs extrinsic motivation to protect the environment: correlational and causal evidence

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Intrinsic vs extrinsic motivation to protect the environment: correlational and causal evidence*

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Abstract

Understanding why many people spontaneously perform pro-environmental behaviours, rather than requiring some incentive, is an active area of research. To solve the puzzle, many studies address people's intrinsic motivation for this kind of behaviour. However, the term 'intrinsic' remains unclear, and thus also the solution of the puzzle. We contribute to this research by attaching intrinsic and extrinsic motivation to the pursuit of central goals in people's lives. We take the prominent example of the motivations in looking for a job, and relate these motivations to pro-environmental attitudes and engagements. Using an international sample, we find that intrinsic motivation relates positively and extrinsic motivation relates negatively to a variety of subjective pro-environmental outcomes. This result holds for different sub-samples and for various econometric specifications and methodologies. In particular, two-stage least squares

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estimation with proper instruments provides evidence of a causal relationship between motivations and pro-environmental outcomes.

JEL codes: Q5; D91; Q53

Keywords: intrinsic motivation; extrinsic motivation; pro-environmental behaviours; multilevel model; instrumental variables; World Values Survey; European Values Study

1 Introduction

The reason why many people spontaneously perform pro-environmental behaviours, rather than requiring some material incentive, is still not well understood. Arguing that people's intrinsic motivation is the underlying reason only moves the mystery one step further, because the term 'intrinsic' remains unclear (Lindenberg, 2001; Van der Werff et al., 2013). It originally referred to "the inherent satisfactions of the behaviors per se" (Deci and Ryan, 2002), but this is counter-intuitive in the case of pro-environmental behaviours, because such behaviours are usually costly (Blankenberg and Alhusen, 2018). Other interpretations thus attach 'intrinsic motivation' to gaining reputation for pro-environmental competence and moral obligation. But in this way, extrinsic motivation could come into play, because social recognition could become an external incentive for pro-environmental behaviors. This paper contributes to solving the puzzle by attaching 'intrinsic motivation' to the pursuit of personal life goals. To be concrete, we will refer intrinsic motivation to a specific life domain, i.e. work. Leveraging on integrated World Values Survey - European Values Study (WVS/EVS) data, we exploit the answers to what people look for in a job to distinguish 'intrinsic' goals, like community feeling and personal accomplishment, from 'extrinsic' goals, like a good income and a safe job. Our approach is justified by the literature showing that motivation on the job is positively correlated with overall subjective well-being, while extrinsic motivation on the job is negatively correlated (Salinas-Jiménez et al., 2010; Meier and Stutzer, 2008).

We expect personal life goals, such as work-related goals, to inform how people approach the environmental problem. More precisely, we expect people with intrinsic goals, and thus with the underlying intrinsic motivation, to exhibit more pro-environmental behaviours than people with ex-

trinsic motivation and goals. We expect this prediction to be valid in a variety of contexts and pro-environmental outcomes.

The WVS/EVS provides us data on a number of subjective pro-environmental outcomes, which can be distinguished between attitudes and engagements in behaviours of the respondents. The international samples used will differ according to the availability of the data on the pro-environmental outcomes, and according to greater homogeneity of work status, i.e. employed only, or countries, i.e. OECD countries. The methodologies used are first the probit and order probit estimations with the usual socio-demographic controls. Then we proceed with multilevel regression analysis in order to control for country specific features, like GDP per capita and two indices for human and social capitals. We finally test for causality by using the two-stage least squares estimation and proper instruments for the motivations. This is perhaps the largest econometric analysis in the literature on the relationship between life goals and pro-environmental behaviours.

The rest of the paper is organised as follows. By reviewing the relevant literature, Section 2 distinguishes the different interpretations of intrinsic (and extrinsic) motivation related to pro-environmental behaviours. Sections 3 and 4 present the data and, respectively, the methodologies used in the estimations. Section 5 and 6 show the results with a special focus on the endogeneity issue. Section 7 concludes the paper.

2 Review of the literature

Financial incentives to steer Pro-Environmental Behaviours (PEB) can be effective, but have a number of drawbacks: they are costly; they may increase illegal waste disposal; they may instill the idea of having the right to pollute; they may discourage non-incentivized PEB (Kirakozian, 2016; Bolderdijk and Steg, 2015). However, observations from the field and experiments from the lab show that many individuals perform PEB spontaneously. This counters the prediction of rational choice, because the marginal cost of individuals' PEB is higher than the marginal benefit, as long as the natural environment or its quality is a public good, so that no PEB should arise without incentives (Sturm and Weimann, 2006).

A lot of literature has investigated why individuals spontaneously perform PEB, having recognised that some spontaneously perform more PEB than others. A popular answer is that some individuals have 'intrinsic mo-

tivations' to perform PEB, whereas others need incentives, thus revealing 'extrinsic motivations'. But different studies put forward different concepts of 'in/extrinsic motivation'.

According to a stream of research in psychology, "intrinsically motivated behaviours are those whose motivation is based in the inherent satisfactions of the behaviors *per se*, [...] whereas extrinsic motivation is focused toward and dependent on contingent outcomes that are separable from the action *per se*" (Deci and Ryan, 2002, p. 10). This interpretation of intrinsic motivation has been sometimes called 'hedonic' (Lindenberg, 2001), and when the emotional aspect of satisfaction is underlined it is called 'warm glow giving' by the economists (Andreoni, 1990). Intrinsically motivated individuals choose to perform PEB because they expect to enjoy it, whereas extrinsically motivated individuals choose to perform PEB if they enjoy a sufficient incentive for it. Indeed, a positive correlation between individuals' PEB and well-being emerges in many studies of psychologists and economists (Kasser, 2017; Welsch and Kühling, 2011).

However, the 'hedonic' interpretation of intrinsic motivation generally refers to activities that involve interest, curiosity and play (Deci and Ryan, 2002), while PEB *per se* hardly arouse such feelings, maybe because PEB aim at preserving well-known environmental conditions rather than discovering something new. One would expect that managing waste at home, minimising the use of home heating, water and electricity are not pleasurable *per se* (Binder and Blankenberg, 2017).

A second interpretation of intrinsic motivation focuses on some individuals' Pro-Environmental (PE) characteristics: people perform PEB in order to exercise or show those characteristics. Individuals with PE characteristics enjoy exercising or showing them, thus appearing as intrinsically motivated, while individuals without those characteristics have no reason to exercise or show them, and need incentives for PEB, thus appearing as extrinsically motivated. A variety of characteristics are investigated: PE competence, i.e. the extent to which one maintains self-efficacy in performing PEB; PE self-image, i.e. the extent to which one sees oneself as a type of person whose actions are PE; PE obligation, i.e. the extent to which one follows PE norms as socially learned; PE personal values, i.e. the extent to which one believes in PE values (e.g., preventing pollution and protecting the environment). These individuals' characteristics attract, singly or in combination, significant positive correlation coefficients with PEB, as shown, e.g., in Tabernero and Hernandez (2011) for PE competence, in Van der Werff et al. (2013) for

PE self-image and PE obligation, and in Gatersleben et al. (2014) for PE values.

However, exercising or showing these individual PE characteristics may be induced by some need of social approval, i.e. need of appearing PE competent, with a desirable PE self-image, with a civic morale and respectable PE values. To such an extent, the implied motivation follows a contingent outcome, i.e. it is extrinsic. As a consequence, if an external shock dampened the social perception of the environmental problem, individual's PEB would be discouraged, and a source of well-being would dry up.

Furthermore, although the social norms that prescribe PEB can be effective in contributing to preserve the environment as a public good (Farrow et al., 2017), they are vulnerable to 'free-riding'. As studies on public good games show, cooperative behaviour tends to decrease if the game is repeated. To support cooperation, an additional motivation to utility derived from the public good is needed (Fischbacher et al., 2001; Ostrom, 2000) .

A third interpretation of intrinsic motivation focuses on individuals' life goals, like personal growth, affiliation and community contribution, which are proved by research in both psychology and economics as being associated with individual's well-being (Ryan et al., 2008; Ryff and Singer, 2008; Konow and Earley, 2008; Bartolini et al., 2013; Bartolini and Sarracino, 2014). These goals can be said 'intrinsic' because they are pursued for their own sake, so that also the motivations for such pursuit can be said 'intrinsic'. By contrast, 'extrinsic goals', like wealth, social recognition, and image, are pursued instrumentally for some other goals, and they are negatively associated with well-being (Ryan et al., 2008). The motivations for such pursuit can thus be said 'extrinsic'. Since PEB is consistent with the personal goal of community contribution, its underlying motivation is intrinsic. By contrast, if individuals hold extrinsic goals, then they need a sufficient incentive, financial or in the form of social approval, to perform PEB (Brown and Kasser, 2005).[1]

Such 'life goals approach' to intrinsic motivations for PEB is underresearched (see the reviews by Blankenberg and Alhusen (2018); Tripathi and Singh (2016)). Nevertheless, it avoids the problem of the 'hedonic' approach, because performing PEB can be unpleasant per se, but it can become pleasant if it is involved in the pursuit of intrinsic life goals. This approach

[1]Many psychology studies focus on 'materialism' as an extrinsic value or goal (meaning the tendency to judge one's own success and that of others in terms of material possessions), and find significant correlations with PEB (Hurst et al., 2013).

also avoids the possible problem of the one based on individuals' PE characteristics, by keeping distinct final goals (being intrinsic) from instrumental goals (being extrinsic). If an external shock, like an environmental policy, mitigated the need for PEB, individuals' intrinsic life goals hardly change, thus remaining as the ultimate source of well-being.

3 Data

The integrated World Values Survey - European Values Study dataset contains five questions that allow us to measure people's pro-environmental attitudes and engagements (see Table 1 for the list of variables used in this study and some descriptive statistics). People's *attitudes* are observed via respondent's degree of agreement with the following statements:

- Would buy things at a 20% higher price if it would help protect the environment;
- Increase in taxes if used to prevent environmental damage;
- Would give part of my income for the environment.

The answers to each of these items range on a scale from 1 (strongly agree) to 4 (strongly disagree). For the purpose of present study, we revert the order of these answers so that higher scores indicate stronger agreement.

The wording of the questions we use to observe people's engagement in pro-environmental *behaviours*[2] is as follows: "Which, if any, of these things have you done in the last 12 months, out of concern for the environment?

- Recycle;
- Reduce water consumption.

The possible answers are dichotomous: one if the respondent declared to have done the specific action, zero otherwise.

Together, the five items about people's pro-environmental attitudes and behaviours allow us to test the role of motivations in a variety of settings, using various wordings, and different contexts. Indeed, as reported in the last column of Table 1, the five items have been administered in various waves

[2]From now on we will refer to "engagement in behaviours" simply as "behaviours".

and, therefore, in different times and countries. Four out of five items have the third wave in common, whereas willingness to give part of the income and to pay higher taxes has been asked in three and four waves, respectively. The complete list of countries included in our study is available in Table 6 in Appendix A.

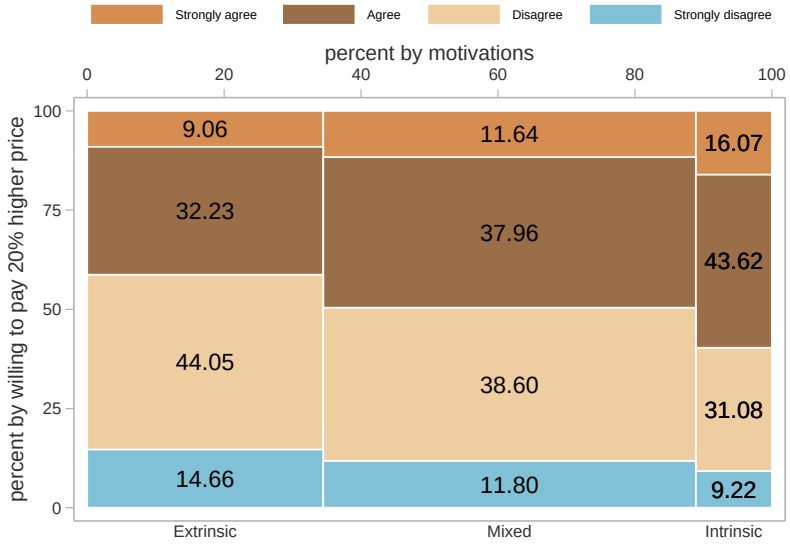
Table 1: List of variables and descriptive statistics.

variable	mean	sd	min	max	obs	waves
Willing to pay 20% higher price	2.474	0.850	1	4	52241	3
Willing to give part of the income	2.791	0.849	1	4	86795	2, 4, 5
Willing to pay higher taxes	2.661	0.869	1	4	142388	2, 3, 4, 5
Environmental action: recycle	0.476	0.499	0	1	46712	3
Environmental action: reduce water consumption	0.501	0.500	0	1	51252	3
Intrinsically motivated	0.0998	0.300	0	1	156611	3, 4, 5
Extrinsically motivated	0.377	0.485	0	1	156611	3, 4, 5
Age	40.99	15.86	16	99	156198	all
Female	0.514	0.500	0	1	156611	all
Scale of incomes	4.581	2.410	1	10	156611	all
Full-time	0.355	0.479	0	1	156611	all
Part-time	0.0726	0.259	0	1	156611	all
Self-employed	0.108	0.311	0	1	156611	all
Retired	0.123	0.329	0	1	156611	all
Housewife	0.127	0.334	0	1	156611	all
Student	0.0660	0.248	0	1	156611	all
Unemployed	0.0927	0.290	0	1	156611	all
Other	0.0229	0.150	0	1	156611	all
Married	0.588	0.492	0	1	156611	all
Living together as married	0.0626	0.242	0	1	156611	all
Divorced	0.0358	0.186	0	1	156611	all
Separated	0.0183	0.134	0	1	156611	all
Widowed	0.0593	0.236	0	1	156611	all
Single	0.234	0.423	0	1	156611	all
Number of children	1.902	1.760	0	8	153437	all
Primary education	0.305	0.461	0	1	147542	all
Secondary education	0.456	0.498	0	1	147542	all
Tertiary or higher education	0.239	0.426	0	1	147542	all
Real GDP at constant 2011 US$ per capita (log)	9.266	1.010	6.764	11.34	152802	all
Human capital index	2.626	0.638	1.136	3.642	142148	all
Share of people trusting others	0.256	0.143	0.0282	0.746	156611	all

The main independent variables are people's motivations. We distinguish between intrinsically and extrinsically motivated people on the basis of respondent's answers to what they look for in a job. Respondents can provide a first and second choice among the following list of options: 1. a good income; 2. a safe job with no risk; 3. working with people you like; 4. doing an important job that gives you a feeling of accomplishment; 5 do something for community. We build two dichotomous and mutually exclusive variables

to distinguish respondents with primarily intrinsic motivations from those with primarily extrinsic motivations. We define as intrinsically motivated the respondents who chose options 3, 4, or 5 as first and second choice when looking for a job, zero otherwise. Extrinsically motivated people are those who pick option 1 or 2 as their first and second choices when looking for a job[3]. The two dummies are available for waves 3, 4, and 5. This procedure is the same as in Salinas-Jiménez et al. (2010).

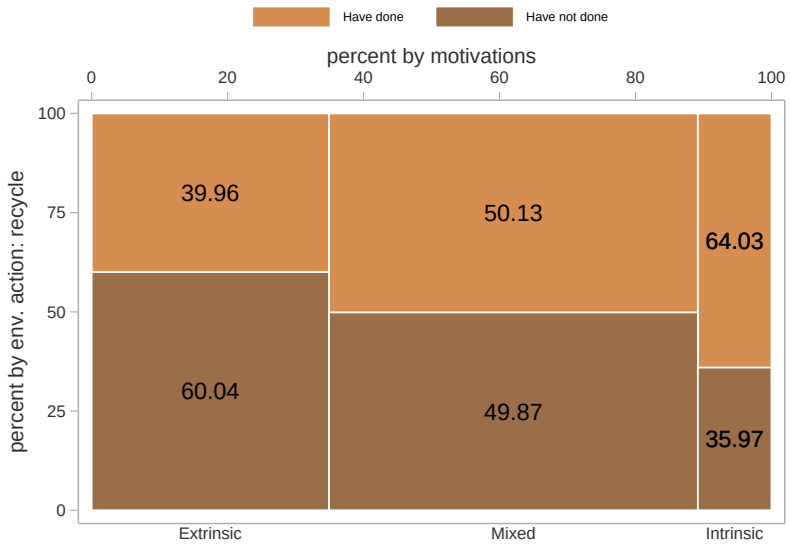
Figure 1: Correlation between willingness to pay 20% higher price and motivations.



Descriptive statistics indicate that on average 10% of respondents in the pooled sample are intrinsically motivated, and 37.6% are extrinsically motivated. The correlation coefficient between the shares of people with purely intrinsic and extrinsic motivations is -0.76 significant at 1%, while the majority of the respondents hold mixed motivations for all the five items. We alternatively use a single categorical variable set equal to one if the respondent is

[3]The coefficient of the Cronbach alpha between "a safe job" and "a good income" is 0.83, which suggests a high degree of internal validity. The coefficient is also high compared to all the other combinations of variables for which we got coefficients below 0.60. These findings indicate that "a good income" and "a safe job" contribute to a common, latent concept. Additional tests using factor analysis confirm that the two variables contribute to the same factor with similar factor loadings.

Figure 2: Correlation between recycling and motivations.



extrinsically motivated, three if the respondent is intrinsically motivated, and two for respondents exhibiting a mix of intrinsic and extrinsic motivations. For ease of use, we refer to it as *Motivations*. This variable is positively associated to pro-environmental attitudes and behaviours. For instance, Figure 1 shows that the share of people willing to pay 20% higher price to protect the environment is higher among people with intrinsic (59.7%) rather than extrinsic (41.3%) motivations. Similarly, we observe that 64% of people with intrinsic motivations does recycling, and this share reduces to 40% among people with extrinsic motivations (see Figure 2). In sum, descriptive statistics indicate that intrinsic (extrinsic) motivations increase (decrease) the chances that people engage in pro-environmental attitudes and behaviours (Figures 3 - 5 in Appendix B show the results for the other three measures). Many factors can, however, make this observation spurious: education, age, income, are all examples of possible factors that can stand behind the association we uncovered.

To account for this possibility, we adopt a regression design in which we control for various, possible confounding factors. The list of control variables includes respondent's age, gender, household income, working conditions (full-time, part-time, self-employed, retired, housewife, student, un-

employment, other), marital status (married, living together as married, divorced, separated, widowed, single), education (primary, secondary, and tertiary education or higher), and number of children. With the exception of age, household income, and number of children – which are discrete variables – all the others are encoded as dichotomous variables in which we assigned value 1 if respondent has the mentioned characteristic (e.g. is married) and zero otherwise. Finally, we include three macro variables to account for the possible confounding effect of the context where respondents live: Gross Domestic Product per capita (deflated to 2011 dollars at purchasing power parity), the Human Capital Index (measured as average years of schooling), and the share of people trusting others. The first two variables are sourced from the Penn World Tables (Feenstra et al., 2015) and we use them to account for the different levels of wealth and development of the countries included in the data. The third variable is derived from respondents' answers to the question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?". This is a dichotomous variable set equal to one if respondent declares to trust others, and zero otherwise. The share of people trusting others is therefore computed as the weighted average of the individual level variable by country and wave. This variable allows us to control for the average ability of a population to cooperate to achieve common goals. Indeed, people may be reluctant to adopt PEB because they fear to be the only ones or to be exploited by free-riders. However, Tam and Chan (2018) show that generalized trust reduces this fear and facilitates PEB because it reassures people about others' commitment. In other words, the higher is trust among people in a country, the easier they can adopt shared rules and behaviours, such as recycling, to achieve common goals, i.e. protecting the environment.

4 Methods

4.1 Probit and ordered probit regressions

We start our analysis with a simple regression model. In case of Pro-Environmental Attitudes (PEA) – in which the variables are categorical – we

use the following ordered probit model:

$$PEA_i = \begin{cases} 1 & \text{if } y_i \leq c_1, \\ 2 & \text{if } c_1 < y_i \leq c_2, \\ 3 & \text{if } c_2 < y_i \leq c_3, \\ 4 & \text{if } c_3 < y_i. \end{cases} \tag{1}$$

where i stands for respondents, y_i represents an ordered dependent variable for individual i, c_1, c_2 and c_3 are unknown parameters to be estimated where $0 < c_1 < c_2 < c_3$; and PEA_i is modelled as follows:

$$PEA_i = \alpha + \beta_1 \cdot Intrinsic_i + \beta_2 \cdot Extrinsic_i + \boldsymbol{\theta} \cdot \mathbf{X_i} + \varepsilon_i, \varepsilon_i \sim N(0,1) \tag{2}$$

where X_i is the vector of individual level control variables, namely: gender, age (both in linear and squared form), employment status, marital status, household income, number of children, education, along with country and wave dummy variables (see Table 1 in section 3 for more details). The two variables, $Intrinsic_i$ and $Extrinsic_i$, are the identifiers of people with, respectively, intrinsic and extrinsic motivations. Estimates use sampling weights and robust standard errors clustered by country and year.

The variables about people's pro-environmental behaviour (PEB), i.e. recycling and reducing water consumption, are dichotomous. In this case, we apply a probit model to an equation like 2. Also in this case we use sampling weights and robust standard errors clustered by country and year.

4.2 Multilevel regressions

Country specific features, such as the level of development of a country, can still affect our estimates. To correctly account for GDP per capita, Human Capital Index and the share of trust in others (Trust), we resort to multilevel (hierarchical) model. Formally, we estimate the following three-level linear probability model with random intercept, in which individuals are nested within countries, within country-years:

$$\begin{aligned} \text{PEA/B}_{icj} = \alpha_{0cj} + \beta_1 \text{Intrinsic}_{icj} + \beta_2 \text{Extrinsic}_{icj} + \mathbf{B_K X}_{icj} + \\ + \beta_3 \text{GDP}_{cj} + \beta_4 \text{HCI}_{cj} + \beta_5 \text{Trust}_{cj} + \epsilon_{icj} \end{aligned} \tag{3}$$

$$\alpha_{0cj} = \gamma_{00c} + \tau_{cj} \tag{4}$$

$$\gamma_{00c} = \gamma_{000} + \nu_c \tag{5}$$

where i stands for respondents, the subscript c is the country where the survey was administered, and j the year of the survey. For variables that were observed only in one year, the model above is estimated only for two levels: individuals within countries. $\mathbf{X}_{icj}$ is the same vector of control variables listed for equation 2, and $\mathbf{B_K}$ is a vector of respective coefficients. In the model, we allow for random intercepts τ_{jc} and ν_c, i.e. the average of our dependent variables varies randomly across countries and country-waves (see equations 4 and 5).

To account for possible non-linearities between motivations and the share of people trusting others, we run also a variant of the model above in which we include an interaction between motivations and the share of trust in others. The coefficients of the interaction indicates the partial correlation between intrinsic (extrinsic) motivations and pro-environmental attitudes and behaviours for marginal changes in the share of people trusting others.

4.3 Two-Stage Least Squares

The coefficients estimated with equation 2 indicate the sign and magnitude of partial correlations among our variables of interest and pro-environmental attitudes and behaviours. However, the coefficients may be affected by endogeneity due to measurement error, omitted variable or reverse causality. We test the robustness of our results to endogeneity issues using instrumental variables and Two-Stage Least Squares (2SLS), thus estimating a linear probability model. For this approach to work, we need one or more sources of external variation that correlate meaningfully ('relevance' condition) with the (potentially) endogenous variable (in this case, motivations), but not with the dependent variables ('orthogonality' condition).

The WVS/EVS survey provides a non-self-reported variable that can be used as an instrument: the inteviewer's rating of whether the respondent was interested during the interview (*Interview*). Possible ratings are: 1 "not very interested"; 2 "somewhat interested"; 3 "very interested". We consider the interviewer's rating as an external source of information about respondent's motivation to cooperate and do their part for a greater good, i.e. answering lengthy questionnaires for the sake of scientific research. We expect interviewer's ratings to correlate positively with intrinsic motivations, and negatively with extrinsic ones. Respondent's education is another eli-

gible instrument for motivations. Indeed, education provides the skill to process information, including information on the environmental problem, and hence to form personal motivations and goals, including pro-environmental motivations. One may object that education may correlate with the dependent variable independently from motivations. This could be the case if, for instance, teaching how to protect the environment were part of the educational curricula of schools worldwide. We can't exclude this possibility, but we observe that this is a minor practice. We thus use interviewer's rating and two levels of education as instruments, and, for parsimony reason, the variable *Motivations* in the 2SLS rather than the two dummies $Intrinsic$ and $Extrinsic$.

Formally, the 2SLS model is as follows:
First stage:

$$Motivations_i = \alpha_1 + \boldsymbol{\beta} \cdot \mathbf{IV_i} + \boldsymbol{\theta} \cdot \mathbf{X_i} + \mu_i \tag{6}$$

Second stage:

$$PEA/B_i = \alpha_2 + \pi \cdot \widehat{Motivations}_i + \boldsymbol{\theta} \cdot \mathbf{X_i} + \eta_i \tag{7}$$

where $Motivations_i$ is the single categorical variable mentioned in section 3; $\mathbf{IV_i}$ is the vector of excluded instruments; $\mathbf{X_i}$ is the vector of control variables described for equation 2; $\boldsymbol{\beta}$ and $\boldsymbol{\theta}$ are two vectors of coefficients to be estimated; μ and η are the error terms. We use sampling weights and robust standard errors.

5 Results

Tables 2 and 3 summarize our main results. We find that intrinsic motivations correlate with higher respondents' willingess to protect the environment. On the contrary, respondents with extrinsic motivations have a higher probability to report less pro-environmental attitudes (see Table 2). The same result holds if we consider people's reported behaviours (see Table 3). All the coefficients are statistically significant at least at 1%. The large variation in sample size across estimates is due to the fact that the variables have been collected in different waves.

The association between motivations and pro-environmental attitudes and behaviours does not depend on individual control variables, such as

occupation, income, age, gender, education, marital status and number of children. Among these variables, the best predictors are the educational levels, which is consistent with previous findings (Blankeberg and Alhusen, 2018). The magnitudes of McFadden's pseudo R^2 are all rather low except in model 4, which predicts recycling. In this case, the pseudo R^2 is 0.22. These coefficients indicate that the models fit the data rather well, although our models seem to predict better attitudes than behaviours.

Table 2: Association between intrinsic or extrinsic motivations and pro-environmental attitudes. The table reports marginal effects after ordered probit model with country and year fixed effects and clustered standard errors for three variables. The results of ordered probit estimates are available in Appendix C.

Would buy things at a 20% higher price if it would help protect the environment								
	Strongly disagree		Disagree		Agree		Strongly agree	
Intrinsically motivated	-0.0406***	(-7.41)	-0.0395***	(-6.93)	0.0411***	(7.06)	0.0390***	(7.37)
Extrinsically motivated	0.0305***	(7.64)	0.0297***	(7.01)	-0.0308***	(-7.00)	-0.0293***	(-7.81)
Observations	49568		49568		49568		49568	
Would give part of my income for the environment								
Intrinsically motivated	-0.0276***	(-9.04)	-0.0379***	(-9.61)	0.0146***	(8.73)	0.0508***	(9.56)
Extrinsically motivated	0.0281***	(9.52)	0.0386***	(11.94)	-0.0149***	(-11.12)	-0.0518***	(-10.60)
Observations	79439		79439		79439		79439	
Increase in taxes if used to prevent environmental damage								
Intrinsically motivated	-0.0332***	(-9.11)	-0.0380***	(-10.25)	0.0263***	(9.70)	0.0448***	(9.69)
Extrinsically motivated	0.0277***	(10.37)	0.0317***	(10.94)	-0.0220***	(-10.08)	-0.0374***	(-11.11)
Observations	132354		132354		132354		132354	

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Association between intrinsic or extrinsic motivations and pro-environmental behaviours. The table reports marginal effects after probit model with country and year fixed effects and clustered standard errors for two variables. The results of probit estimates are available in Appendix C.

	Recycle		Reduce water consumption	
Intrinsically motivated	0.0391***	(5.07)	0.0506***	(5.05)
Extrinsically motivated	-0.0382***	(-4.18)	-0.0493***	(-5.44)
Observations	44221		48712	

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The three behavioural variables reflect people's propensity to incur in

higher costs to protect the environment. However, the WVS/EVS are general population surveys, thus it is possible that our results are driven by subgroups of the population, like employed and non-employed respondents. Since we observe motivations via the desired aspects in a job, it is possible that motivations differ for employed and non-employed people. To account for this possibility, we first included a control for employment status in our main regressions, and, secondly, we repeated our analysis only on the sub-set of respondents in occupation. The second set of estimates confirms our main results (for more details, see Table 8 in Appendix C).

Similarly, our coefficients may be driven by the inclusion in the sample of very heterogeneous countries. To address this possibility, we adopted two strategies: first, we repeated our baseline regression analysis on the sub-set of respondents from OECD member states. Results are very similar, both in magnitude and significance, to our main results (for more details, see Table 9 in Appendix C; second, we account for the resources available to a country by controlling for GDP per capita, human capital, the share of people trusting others and its interaction with motivations in a multilevel regression analysis. Table 4 summarizes the key figures from the complete set of results available in Appendix D.

Table 4: Summary of results from multilevel regression model. The table reports the coefficients of a random intercept, linear probability model in which individuals are nested within countries with years. For dependent variables observed only in one wave, we omit the third level (year). The detailed tables with results are available in Appendix D.

	Pay 20% more	Give part of income	Pay higher taxes	Recycling	Reduce water consumption
Intrinsically motivated	0.088**	0.073***	0.057***	0.069***	0.056**
Extrinsically motivated	-0.082***	-0.136***	-0.093***	-0.050***	-0.064***
GDP per capita (log)	0.0547	-0.029	-0.022	0.167***	0.03
Human capital index	-0.191*	-0.242**	-0.22***	-0.06	-.006
Share of trust in others	-0.164	0.184	0.423**	0.636***	-0.198
Int. motivated * Trust (share)	0.211*	0.211***	0.256***	-0.084	-0.028
Ext. motivated * Trust (share)	-0.157*	-0.06	-0.122**	0.039	0.037

The results from the multilevel model are comparable to those from the baseline model: intrinsically (extrinsically) motivated people are more likely to be willing to adopt pro-environmental attitudes and behaviours. The coefficients are larger in magnitude than in the baseline model, but of similar

statistical significance. The fact that we are modelling categorical variables as continuous can explain the larger size of the coefficients from multilevel regressions. In other words, accounting for macro level variables does not significantly alter our results. This indicates that country and year effects play a minor role in the relationship between motivations and pro-environmental attitudes and behaviours. The analysis of macro variables does not reveal any clear pattern: people in richer countries are more likely to do recycling, but this relationship is not confirmed for all the remaining variables; human capital is negatively and significantly correlated to pro-environmental attitudes, but not to behaviours (although the sign remains negative). The interaction of motivations with the share of people trusting others reveals that people with intrinsic motivations and living in countries with high shares of trust in others have higher probability to be willing to adopt pro-environmental attitudes. The main effect of the share of trust in others does not show any consistent association with our dependent variables, whereas the main effects of motivations decreases. This suggests that part of the relationship between motivations and pro-environmental behaviours is mediated by the share of people trusting others. This confirms our findings that motivations matter, and it adds that it is important to trust others, probably because trust facilitates the efficacy of collective action. However, this result holds only for attitudes: the interaction effect for the two proxies of pro-environmental behaviours is not statistically different from zero. In these cases, the share of people trusting others does not add to individual motivations.

In sum, the results from multilevel model confirm our main results, but add little to our understanding of the role of contextual variables. However, it seems safe to say that trusting others boosts the role of motivations for pro-environmental attitudes, but not behaviours: the fact that people trust others increases the probability that they would be willing to pay for the environment, but it does not change their behaviours.

6 Addressing endogeneity issues

As it is often the case with the analysis of survey data with self-reported variables, we cannot exclude the possibility that endogeneity affects our coefficients. We adopt 2SLS with instrumental variables to address this issue.

As discussed in section 4, we identified three suitable instruments: respondent's interest as reported by the interviewer, secondary and tertiary

education. Table 5 summarizes the results for our five dependent variables (see Table 15 in Appendix E for the complete set of results). Our three instruments are significantly and positively associated with *Motivations* in the first stage. We recall that we use a single variable to measure Motivations in 2SLS for parsimony. A high (low) score for the variable *Motivations* indicates intrinsic (extrinsic) motivations. The positive coefficients of our instruments indicate that the higher the respondent's interest and education, the higher his/her intrinsic motivations. The coefficients of *Motivations* are consistently positive and significant, thus confirming our finding that intrinsically motivated people are more willing to adopt pro-environmental attitudes and behaviours. The diagnostics related to our identification strategy are encouraging: the tests of weak instruments, and of underidentification suggest that the instruments are valid: the Kleibergen-Paap test of weak instruments provide coefficients that are all above the Stock-Yogo critical values, whereas the highly significant coefficients of the underidentification tests allow us to reject the null that the equation is underidentified. In other words, this evidence suggests that the excluded instruments are relevant, i.e. they correlate with the endogenous regressors. Finally, the p-values of the Hansen J statistic test of overidentifying restrictions are always not significant. We can thus not reject the null that the instruments are valid, i.e. they are uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation.

Table 5: Motivations and pro-environmental behaviours and attitudes using 2SLS and instrumental variables. The table reports the coefficients of linear probability models with sample weights and robust standard errors.

	Pay 20% more		Give part of income		Pay higher taxes		Recycling		Reduce water consumption	
	first stage	second stage	first stage	second stage	first stage	second stage	first stage	second stage	first stage	second stage
Resp.' interest	0.105*** (7.68)		0.0814*** (5.86)		0.0930*** (9.14)		0.0714*** (8.88)		0.101*** (8.37)	
Secondary education	0.0571** (2.92)		0.0988*** (6.85)		0.0810*** (6.66)		0.0834*** (6.56)		0.0720*** (4.66)	
Tertiary education or higher	0.186*** (7.55)		0.228*** (8.92)		0.214*** (11.62)		0.209*** (10.10)		0.198*** (8.38)	
Motivations		0.867*** (7.35)		1.063*** (6.82)		0.930*** (9.02)		0.524*** (7.88)		0.372*** (4.87)
N	48371	48371	75336	75336	126953	126953	42997	42997	47491	47491
RMSE	0.618	0.955	0.604	0.990	0.611	0.977	0.597	0.516	0.615	0.527
Hansen J statistics		3.748		1.567		3.017		3.905		2.520
p-value		0.153		0.457		0.221		0.142		0.284
Underidentification test		31.50		38.09		66.36		27.63		29.92
p-value		0.000		0.000		0.000		0.000		0.000
Weak identification test		40.47		36.83		72.15		52.20		43.10

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7 Conclusions

The relationship between intrinsic motivation and pro-environmental behaviours is rather explored in the literature. However, it is yet not clear how to interpret 'intrinsic motivation', and how to contrast it with 'extrinsic motivation'. We contribute to the literature by exploring an interpretation of motivations that refers to how people approach goals in life, rather than to environmental issues. The example of the goal of a good job seems well representative, because it is usually a central goal in life, and the motivations in looking for a job can be clearly distinguished.

We use data from the integrated World Values Survey / European Values Study dataset, which provide a large set of repeated, cross-country data on a number of relevant variables. We analyse the association between motivations (both intrinsic and extrinsic) with three measures of pro-environmental attitudes (willingness to pay 20% higher prices, to give part of their income, and to pay higher taxes for the environment) and two measures of behaviours (respondent's declaration that he/she does recycling and reduces water consumption). We measure people's motivations based on their answers to what they look for in a job: we define as intrinsically motivated people those who prioritize the community feeling and personal accomplishment, whereas we consider extrinsically motivated people those who prioritize aspects such as income and security of the job. Our baseline results hinge on probit and ordered probit estimates in which we account for a number of individual level control variables, country and year fixed effects and robust standard errors clustered by country and year.

Figures indicate clear associations between motivations and concerns for the environment. Intrinsically motivated people have a higher probability to be willing to pay 20% higher prices, higher taxes and to be willing to give part of their income to protect the environment. Similarly, intrinsically motivated people are more likely to do recycling and to reduce water consumption. The contrary holds for extrinsically motivated people. The size of the coefficients changes depending on the attitude or behaviour we consider, but differences are small. For example, to be intrinsically motivated increases the probability to strongly agree to pay things at 20% higher price by nearly 4 percentage points, whereas to be extrinsically motivated reduces the same probability by about 3 percentage points. The difference in the probability between the two groups of people is some points larger for the other pro-environmental variables we considered. These results do

not depend on respondent's age, gender, marital status, number of children, education, employment or income.

Our result is remarkably robust to various specifications of the model (if we restrict the analysis only to the sample of people in occupation or of people living in OECD countries), and to different regression models. To account for country or country-year sources of variability - i.e. GDP per capita, human capital or trust in others – we run multilevel regression analysis with random intercept. The results confirm our findings and add the role of the share of people trusting others.

The interaction of motivations with the share of people trusting others reveals that people with both intrinsic motivations and living in countries with high shares of trust in others have higher probability to be willing to adopt pro-environmental attitudes. This confirms our findings that motivations matter, and it adds that it is important to trust others. That is probably because ultimately the protection of the environment is the result of a joint effort, and trust facilitates cooperation. However, this is true only for attitudes: we did not find a significant interaction effect for the two proxies of pro-environmental behaviours.

Finally, our results appear robust to possible endogeneity bias. We used 2SLS with instrumental variables to predict motivations and test the association of the predicted variable with pro-environmental attitudes and behaviours. Estimates confirm that intrinsically (extrinsically) motivated people are more (less) willing to care for the environment. Diagnostics lend support to our identification strategy.

These results shed some light on the limits of the incentives for pro-environmental behaviours, and suggest that decision makers who want to protect the environment should invest in both general and environmental-specific educational policy.

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A List of countries

Table 6: List of countries by variable.

Pay 20% more	Give part of income		Pay higher taxes		Recycling	Reduce water consumption
Albania	Albania	Thailand	Albania	Puerto Rico	Albania	Albania
Azerbaijan	Andorra	Trinidad and Tobago	Andorra	Romania	Azerbaijan	Azerbaijan
Argentina	Argentina	Turkey	Azerbaijan	Russia	Argentina	Argentina
Australia	Australia	Uganda	Argentina	Rwanda	Australia	Australia
Bangladesh	Bangladesh	Ukraine	Australia	Serbia	Bangladesh	Bangladesh
Armenia	Bosnia Herzegovina	Macedonia	Bangladesh	Singapore	Armenia	Armenia
Brazil	Brazil	Egypt	Armenia	Slovakia	Brazil	Brazil
Bulgaria	Bulgaria	Tanzania	Bosnia Herzegovina	Vietnam	Bulgaria	Bulgaria
SrpSka Republic	Canada	United States	Brazil	Slovenia	SrpSka Republic	SrpSka Republic
Belarus	Chile	Burkina Faso	Bulgaria	South Africa	Belarus	Belarus
Chile	China	Uruguay	SrpSka Republic	Zimbabwe	Chile	Chile
China	Taiwan	Zambia	Belarus	Spain	China	China
Taiwan	Cyprus		Canada	Sweden	Taiwan	Taiwan
Croatia	Ethiopia		Chile	Switzerland	Croatia	Croatia
Czech Rep.	Finland		China	Thailand	Czech Rep.	Czech Rep.
Dominican Rep.	Georgia		Taiwan	Trinidad and Tobago	Dominican Rep.	Dominican Rep.
Estonia	Germany		Colombia	Turkey	Estonia	Estonia
Finland	Ghana		Croatia	Uganda	Finland	Finland
Georgia	Guatemala		Cyprus	Ukraine	Georgia	Georgia
Germany	Hungary		Czech Rep.	Macedonia	Germany	Germany
Hungary	India		Dominican Rep.	Egypt	Hungary	Hungary
India	Indonesia		Ethiopia	Tanzania	India	India
Japan	Iran		Estonia	United States	Japan	Japan
South Korea	Italy		Finland	Burkina Faso	South Korea	South Korea
Latvia	Japan		Georgia	Uruguay	Lithuania	Latvia
Lithuania	Jordan		Germany	Venezuela	Mexico	Lithuania
Mexico	South Korea		Ghana	Zambia	Montenegro	Mexico
Moldova	Kyrgyzstan		Guatemala	Bosnia	New Zealand	Moldova
Montenegro	Malaysia		Hungary		Nigeria	Montenegro
New Zealand	Mali		India		Norway	New Zealand
Nigeria	Mexico		Indonesia		Peru	Nigeria
Norway	Moldova		Iran		Philippines	Norway
Peru	Montenegro		Italy		Puerto Rico	Peru
Philippines	Morocco		Japan		Romania	Philippines
Puerto Rico	New Zealand		Jordan		Russia	Puerto Rico
Romania	Norway		South Korea		Serbia	Romania
Russia	Peru		Kyrgyzstan		Slovakia	Russia
Serbia	Philippines		Latvia		Slovenia	Serbia
Slovakia	Poland		Lithuania		South Africa	Slovakia
Slovenia	Puerto Rico		Malaysia		Spain	Slovenia
South Africa	Romania		Mali		Sweden	South Africa
Spain	Rwanda		Mexico		Macedonia	Spain
Sweden	Serbia		Moldova		United States	Sweden
Switzerland	Singapore		Montenegro		Uruguay	Ukraine
Turkey	Vietnam		Morocco		Venezuela	Macedonia
Ukraine	Slovenia		New Zealand		Bosnia	United States
Macedonia	South Africa		Nigeria			Uruguay
United States	Zimbabwe		Norway			Venezuela
Uruguay	Spain		Peru			Bosnia
Venezuela	Sweden		Philippines			
Bosnia	Switzerland		Poland			

B Correlation graphs

Figure 3: Correlation between willingness to give part of the income for the environment and motivations.

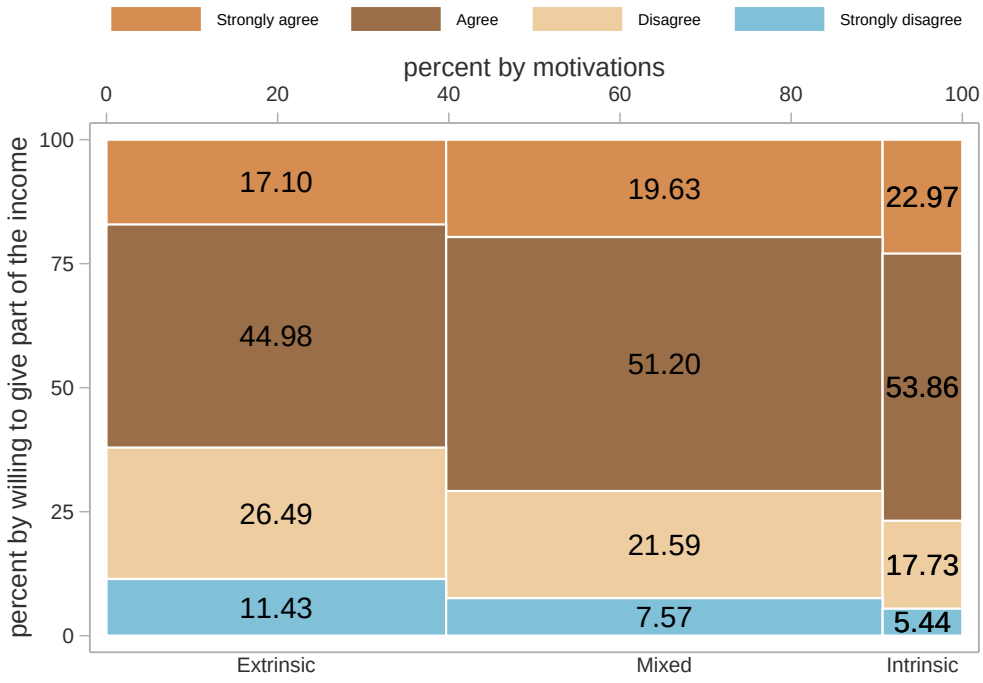


Figure 4: Correlation between willingness to accept higher taxes if used to prevent environmental pollution and motivations.

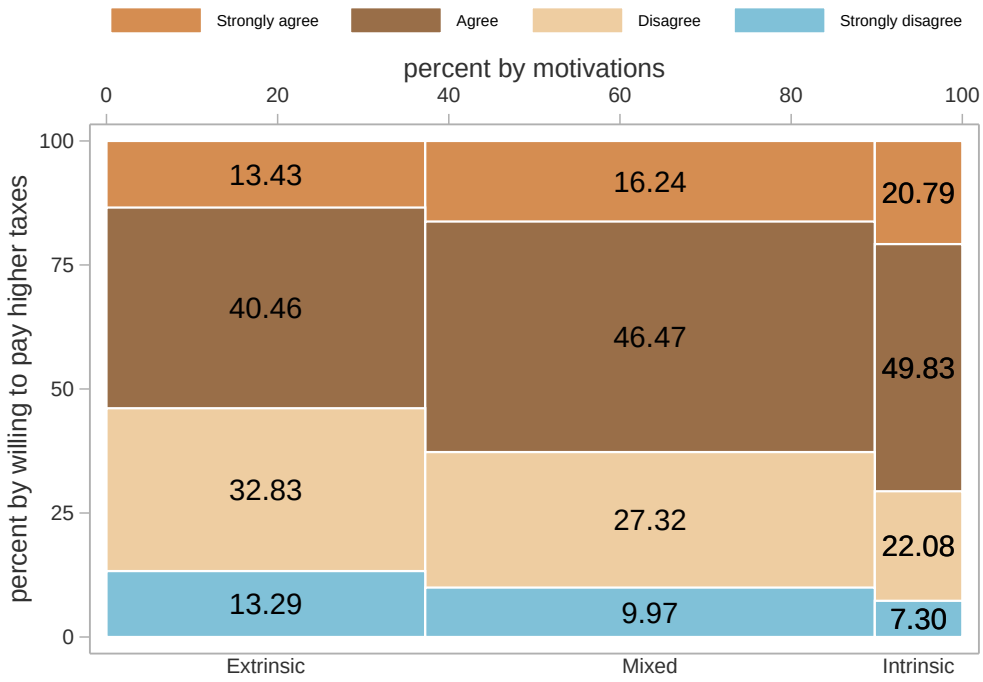
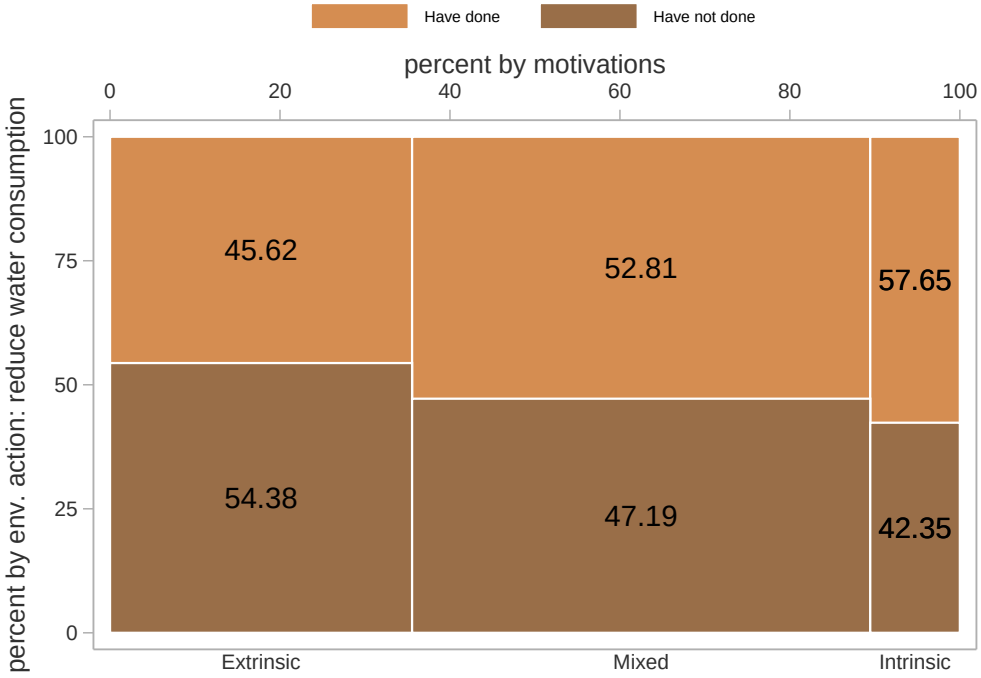


Figure 5: Correlation between reducing water consumption and motivations.



C Probit and ordered probit regressions

Table 7: Baseline estimates on the complete sample of respondents.

	(1) Buy things at a higher price	(2) Give part of the income	(3) Increase in taxes	(4) Recycle	(5) Reduce water consumption
Part-time	-0.0124	0.0431*	0.0308	0.00272	0.00708
	(-0.58)	(2.19)	(1.93)	(0.08)	(0.15)
Self-employed	-0.0329	0.0379	-0.0118	0.0337	0.00381
	(-1.02)	(1.61)	(-0.67)	(1.21)	(0.09)
Retired	-0.0856***	-0.0416*	-0.0537**	-0.0149	0.0360
	(-3.86)	(-1.99)	(-3.12)	(-0.49)	(1.24)
Housewife	-0.0449**	-0.000385	-0.0340*	-0.0749	0.00754
	(-2.58)	(-0.02)	(-2.33)	(-1.50)	(0.23)
Student	0.0348	0.0731**	0.0378	-0.00635	-0.0611
	(1.15)	(2.86)	(1.83)	(-0.14)	(-1.10)
Unemployed	0.00778	0.0170	0.00133	-0.0883*	-0.0296
	(0.34)	(0.53)	(0.07)	(-2.38)	(-0.73)
Other	-0.0539	-0.0365	-0.0567*	-0.114	-0.106
	(-1.13)	(-0.97)	(-2.20)	(-1.70)	(-1.81)
Middle income	0.0364	0.0638***	0.0385**	0.0784	0.0457
	(1.61)	(3.93)	(2.59)	(1.33)	(1.06)
High income	0.0967***	0.121***	0.104***	0.106	0.0102
	(3.75)	(5.31)	(5.08)	(1.76)	(0.22)
Age	-0.00371	-0.00301	-0.00349*	0.0125***	0.0219***
	(-1.76)	(-1.52)	(-1.99)	(3.49)	(6.38)
Age squared/100	0.00270	0.00498*	0.00474**	-0.0126**	-0.0172***
	(1.15)	(2.37)	(2.61)	(-3.16)	(-4.80)
Female	0.0498***	-0.000616	0.0179*	0.110***	0.104***
	(3.33)	(-0.05)	(1.96)	(5.16)	(5.02)
Married	0.0171	-0.00645	0.00572	0.0904**	0.108**
	(1.01)	(-0.38)	(0.48)	(2.85)	(2.99)
Living together as married	0.00865	0.00232	-0.00173	-0.00379	0.0321
	(0.23)	(0.10)	(-0.09)	(-0.11)	(0.71)
Divorced	-0.0758*	-0.0147	-0.0290	0.00562	0.111*
	(-2.35)	(-0.55)	(-1.28)	(0.10)	(1.97)
Separated	-0.0459	-0.0183	-0.0199	0.0195	0.130*
	(-0.99)	(-0.57)	(-0.84)	(0.31)	(2.44)
Widowed	-0.0766**	-0.116***	-0.103***	0.0626	0.0809
	(-2.97)	(-4.49)	(-5.38)	(1.51)	(1.83)
1 child	0.0244	0.0123	0.00363	-0.0199	0.0162
	(1.44)	(0.69)	(0.29)	(-0.65)	(0.62)
2 children	-0.00416	0.0184	0.00999	-0.0266	-0.0223
	(-0.21)	(1.16)	(0.79)	(-0.90)	(-0.69)
3 children	-0.0378	-0.0216	-0.0174	-0.0375	-0.0388
	(-1.64)	(-1.20)	(-1.19)	(-1.00)	(-1.03)
4 children	-0.0444	-0.0281	-0.0445*	-0.0413	-0.0704
	(-1.51)	(-1.22)	(-2.40)	(-0.82)	(-1.40)
5 children	-0.00636	-0.0512	-0.0431*	-0.120*	-0.0920
	(-0.20)	(-1.76)	(-2.03)	(-2.05)	(-1.60)
6 children	0.0745	0.0258	-0.0500	-0.119	-0.173*
	(1.40)	(0.67)	(-1.53)	(-1.71)	(-2.30)
7 children	-0.0352	-0.0389	-0.0415	-0.0457	-0.113
	(-0.46)	(-0.57)	(-0.92)	(-0.62)	(-1.37)
8 children or more	0.0226	-0.0800	-0.0645	-0.137	-0.110
	(0.44)	(-1.78)	(-1.74)	(-1.49)	(-1.33)
Secondary education	0.0725***	0.105***	0.104***	0.177***	0.174***
	(3.42)	(6.36)	(7.21)	(4.72)	(3.54)
Tertiary education or higher	0.152***	0.239***	0.204***	0.339***	0.229***
	(5.81)	(9.66)	(10.23)	(7.64)	(3.80)
Intrinsically motivated	0.211***	0.200***	0.195***	0.128***	0.140***
	(7.44)	(9.89)	(9.93)	(5.07)	(5.04)
Extrinsically motivated	-0.158***	-0.204***	-0.163***	-0.125***	-0.137***
	(-7.62)	(-11.59)	(-11.05)	(-4.17)	(-5.44)
Constant				-0.912***	-1.043***
				(-10.50)	(-11.59)
cut1	-1.080***	-1.123***	-1.005***		
	(-16.43)	(-18.50)	(-12.67)		
cut2	0.190***	-0.150**	0.0366		
	(3.35)	(-3.13)	(0.50)		
cut3	1.400***	1.332***	1.385***		
	(18.75)	(25.47)	(17.69)		
Observations	49568	79439	132354	44221	48712
Pseudo R^2	0.032	0.052	0.037	0.220	0.090

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Estimates limited to the sample of employed people only.

	(1) Buy things at a higher price	(2) Give part of the income	(3) Increase in taxes	(4) Recycle	(5) Reduce water consumption
Part-time	-0.00686	0.0406	0.0343	0.00342	0.0103
	(-0.28)	(1.90)	(1.96)	(0.09)	(0.22)
Self-employed	-0.0326	0.0345	-0.0189	0.0113	-0.00938
	(-0.95)	(1.40)	(-1.04)	(0.42)	(-0.23)
Middle income	0.0290	0.0571**	0.0324	0.0712	0.0444
	(0.98)	(2.75)	(1.66)	(1.01)	(0.78)
High income	0.103***	0.0979***	0.102***	0.162*	0.00870
	(3.32)	(4.59)	(4.31)	(2.44)	(0.16)
Age	-0.000600	-0.00661	-0.00512	0.00392	0.0198***
	(-0.15)	(-1.66)	(-1.90)	(0.67)	(3.35)
Age squared/100	-0.000213	0.00990*	0.00789**	-0.00297	-0.0148*
	(-0.05)	(2.18)	(2.60)	(-0.43)	(-2.14)
Female	0.0601***	-0.00149	0.0246*	0.109***	0.101***
	(3.36)	(-0.09)	(2.13)	(4.99)	(3.89)
Married	0.0307	-0.000564	0.0186	0.105**	0.104*
	(1.31)	(-0.03)	(1.16)	(3.08)	(2.49)
Living together as married	-0.00899	0.00322	0.00414	-0.0445	-0.000932
	(-0.23)	(0.12)	(0.17)	(-1.01)	(-0.02)
Divorced	-0.0563	-0.00145	-0.0262	0.0184	0.118
	(-1.49)	(-0.04)	(-0.88)	(0.34)	(1.91)
Separated	-0.0147	-0.0652	-0.0366	-0.0118	0.152*
	(-0.26)	(-1.59)	(-0.99)	(-0.16)	(2.31)
Widowed	-0.0818*	-0.0647	-0.111***	0.121	0.0556
	(-2.25)	(-1.57)	(-3.67)	(1.66)	(0.95)
1 child	0.0136	-0.00676	-0.00538	0.00331	0.0409
	(0.55)	(-0.31)	(-0.31)	(0.08)	(1.25)
2 children	-0.000209	0.0106	0.0124	-0.0175	-0.00974
	(-0.01)	(0.54)	(0.72)	(-0.46)	(-0.27)
3 children	-0.0330	-0.0388	-0.0149	-0.0348	-0.00514
	(-1.06)	(-1.73)	(-0.77)	(-0.77)	(-0.12)
4 children	-0.0610	-0.000479	-0.0261	-0.0390	-0.0424
	(-1.41)	(-0.01)	(-0.94)	(-0.70)	(-0.71)
5 children	0.0509	-0.0620	-0.0357	-0.0791	-0.0842
	(1.11)	(-1.77)	(-1.19)	(-1.04)	(-1.12)
6 children	-0.00689	-0.0433	-0.0680	-0.0866	-0.149
	(-0.07)	(-0.83)	(-1.46)	(-1.06)	(-1.44)
7 children	-0.0269	0.110	-0.00686	-0.0836	-0.225
	(-0.25)	(1.56)	(-0.08)	(-0.62)	(-1.58)
8 children or more	0.108	-0.0486	-0.0783	-0.0547	-0.0266
	(0.97)	(-0.96)	(-1.48)	(-0.36)	(-0.20)
Secondary education	0.0754*	0.0812***	0.0914***	0.148**	0.150*
	(2.57)	(3.71)	(5.18)	(3.29)	(2.46)
Tertiary education or higher	0.168***	0.251***	0.220***	0.292***	0.199**
	(4.96)	(8.23)	(9.40)	(6.17)	(2.93)
Intrinsically motivated	0.199***	0.227***	0.203***	0.110***	0.122***
	(6.57)	(10.53)	(9.78)	(3.57)	(3.83)
Extrinsically motivated	-0.159***	-0.224***	-0.166***	-0.136***	-0.151***
	(-7.73)	(-12.35)	(-10.97)	(-3.83)	(-5.19)
Constant				-0.800***	-1.044***
				(-6.43)	(-10.06)
cut1	-0.961***	-1.304***	-1.024***		
	(-10.80)	(-14.53)	(-11.35)		
cut2	0.307***	-0.293***	0.0293		
	(3.44)	(-3.64)	(0.34)		
cut3	1.537***	1.219***	1.401***		
	(14.31)	(14.79)	(15.80)		
Observations	27125	42721	71876	23954	26436
Pseudo R^2	0.030	0.050	0.036	0.201	0.079

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Estimates limited to the sample of respondents from OECD countries only.

	(1) Buy things at a higher price	(2) Give part of the income	(3) Increase in taxes	(4) Recycle	(5) Reduce water consumption
Part-time	0.00890	0.0732*	0.0414	0.0215	0.0229
	(0.39)	(2.49)	(1.93)	(0.33)	(0.39)
Self-employed	-0.00720	0.111**	0.0411	-0.0211	-0.00220
	(-0.13)	(2.87)	(1.21)	(-0.52)	(-0.05)
Retired	-0.0943*	0.00927	-0.0132	0.0366	0.0828
	(-2.18)	(0.31)	(-0.47)	(0.67)	(1.88)
Housewife	-0.0619*	0.0278	-0.0227	-0.0892*	-0.0218
	(-2.20)	(1.34)	(-1.08)	(-2.07)	(-0.48)
Student	0.0640	0.132***	0.122***	0.0708	0.00316
	(1.64)	(4.46)	(4.82)	(1.35)	(0.12)
Unemployed	0.0219	-0.0174	0.0139	-0.0798	0.00759
	(0.37)	(-0.38)	(0.42)	(-1.07)	(0.13)
Other	-0.140	0.0982	-0.0598	0.249**	-0.0839
	(-1.89)	(1.75)	(-1.36)	(2.76)	(-1.13)
Middle income	0.0104	0.0915***	0.0562**	0.0927*	-0.0232
	(0.36)	(3.71)	(3.21)	(2.30)	(-0.71)
High income	0.0706**	0.154***	0.112***	0.0824	-0.0935*
	(2.71)	(5.01)	(4.05)	(1.54)	(-2.26)
Age	-0.000891	0.00101	0.00193	0.0164**	0.0315***
	(-0.23)	(0.45)	(0.76)	(2.77)	(11.86)
Age squared/100	0.000184	0.00113	0.000110	-0.0181**	-0.0274***
	(0.05)	(0.49)	(0.04)	(-2.82)	(-8.51)
Female	0.109***	0.0140	0.0570***	0.178***	0.196***
	(4.84)	(0.74)	(3.98)	(3.55)	(6.50)
Married	0.0502*	-0.0264	-0.0138	0.176**	0.150**
	(1.98)	(-0.84)	(-0.59)	(3.25)	(2.82)
Living together as married	0.00286	0.0271	-0.00574	0.0734	0.0318
	(0.07)	(0.75)	(-0.21)	(1.72)	(0.49)
Divorced	-0.0492	-0.0167	-0.0459	0.0248	0.0737
	(-1.17)	(-0.42)	(-1.70)	(0.35)	(1.02)
Separated	-0.0545	-0.0448	-0.0478	0.0764	0.0584
	(-0.88)	(-1.03)	(-1.52)	(0.73)	(0.84)
Widowed	0.00239	-0.113**	-0.0764*	0.144*	0.0835
	(0.07)	(-2.75)	(-2.36)	(2.38)	(1.47)
1 child	-0.0195	-0.0496	-0.0110	-0.0390	0.0156
	(-0.83)	(-1.70)	(-0.50)	(-0.76)	(0.45)
2 children	-0.0375	-0.00842	-0.0108	0.0237	-0.0231
	(-1.34)	(-0.30)	(-0.50)	(0.39)	(-0.53)
3 children	-0.0749	-0.0254	-0.00313	0.0480	0.00824
	(-1.77)	(-1.01)	(-0.14)	(0.75)	(0.14)
4 children	-0.0890	-0.0582	-0.0410	0.00602	-0.00690
	(-1.81)	(-1.34)	(-1.68)	(0.07)	(-0.10)
5 children	-0.0903	-0.0812	-0.0989**	-0.136	-0.105
	(-1.41)	(-1.46)	(-3.00)	(-1.05)	(-1.06)
6 children	0.0402	0.0249	-0.0697	-0.0830	-0.0336
	(0.38)	(0.28)	(-0.90)	(-0.91)	(-0.26)
7 children	-0.148	-0.187	-0.225*	0.00601	-0.256
	(-1.10)	(-1.46)	(-2.19)	(0.04)	(-1.29)
8 children or more	-0.0881	-0.112*	-0.120	-0.0649	-0.0103
	(-1.06)	(-2.06)	(-1.89)	(-0.44)	(-0.09)
Secondary education	0.0436	0.114***	0.0770***	0.163***	0.0718
	(1.43)	(4.42)	(3.36)	(5.16)	(1.78)
Tertiary education or higher	0.112**	0.282***	0.222***	0.326***	0.110*
	(2.86)	(7.82)	(6.64)	(7.44)	(2.09)
Intrinsically motivated	0.233***	0.217***	0.226***	0.154***	0.106**
	(5.15)	(7.53)	(7.13)	(5.25)	(2.79)
Extrinsically motivated	-0.200***	-0.227***	-0.223***	-0.117***	-0.0984***
	(-6.63)	(-6.59)	(-8.85)	(-3.92)	(-3.99)
Constant				0.405***	-0.837***
				(4.23)	(-10.66)
cut1	-0.880***	-1.038***	-0.787***		
	(-7.24)	(-8.95)	(-5.91)		
cut2	0.377***	-0.0739	0.201		
	(3.90)	(-0.73)	(1.53)		
cut3	1.663***	1.462***	1.609***		
	(13.40)	(16.32)	(11.47)		
Observations	18356	26014	44638	14964	16119
Pseudo R^2	0.035	0.050	0.032	0.162	0.106

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D Multilevel regressions

Table 10: Results from multilevel regression model. The dependent variable is people's willingness to pay 20% higher price to protect the environment.

	(1) Motivations		(2) Trust (share)		(3) Int. Motiv.*Trust (share)		(4) Ext. Motiv.*Trust (share)		(5) Full model	
Middle income	0.0251*	(2.51)	0.0252*	(2.52)	0.0260**	(2.60)	0.0260**	(2.59)	0.0265**	(2.64)
High income	0.0761***	(6.37)	0.0762***	(6.38)	0.0769***	(6.44)	0.0770***	(6.44)	0.0774***	(6.48)
Secondary education	0.0631***	(6.06)	0.0630***	(6.06)	0.0630***	(6.06)	0.0627***	(6.02)	0.0628***	(6.03)
Tertiary education or higher	0.119***	(9.28)	0.119***	(9.28)	0.118***	(9.25)	0.118***	(9.21)	0.118***	(9.20)
Married	0.0169	(1.07)	0.0170	(1.08)	0.0164	(1.04)	0.0171	(1.08)	0.0166	(1.05)
Living together as married	-0.000503	(-0.02)	-0.000435	(-0.02)	-0.000849	(-0.04)	-0.000419	(-0.02)	-0.000773	(-0.04)
Divorced	-0.0544*	(-2.23)	-0.0544*	(-2.23)	-0.0543*	(-2.22)	-0.0539*	(-2.21)	-0.0540*	(-2.21)
Separated	-0.00838	(-0.25)	-0.00841	(-0.25)	-0.00933	(-0.28)	-0.00877	(-0.26)	-0.00948	(-0.29)
Widowed	-0.0481*	(-2.02)	-0.0481*	(-2.02)	-0.0484*	(-2.03)	-0.0478*	(-2.01)	-0.0481*	(-2.02)
1 child	0.0129	(0.84)	0.0128	(0.84)	0.0132	(0.86)	0.0132	(0.86)	0.0135	(0.88)
2 children	-0.0124	(-0.84)	-0.0124	(-0.84)	-0.0123	(-0.83)	-0.0123	(-0.83)	-0.0122	(-0.82)
3 children	-0.0266	(-1.57)	-0.0266	(-1.57)	-0.0264	(-1.56)	-0.0267	(-1.58)	-0.0265	(-1.57)
4 children	-0.0432*	(-2.09)	-0.0432*	(-2.09)	-0.0430*	(-2.08)	-0.0431*	(-2.09)	-0.0430*	(-2.08)
5 children	-0.0162	(-0.61)	-0.0162	(-0.61)	-0.0165	(-0.62)	-0.0165	(-0.62)	-0.0166	(-0.62)
6 children	0.0127	(0.35)	0.0126	(0.35)	0.0129	(0.36)	0.0130	(0.36)	0.0132	(0.37)
7 children	0.0153	(0.32)	0.0152	(0.32)	0.0149	(0.32)	0.0151	(0.32)	0.0149	(0.32)
8 children or more	0.0263	(0.61)	0.0262	(0.60)	0.0246	(0.57)	0.0255	(0.59)	0.0244	(0.56)
Part-time	-0.0150	(-0.95)	-0.0150	(-0.95)	-0.0156	(-0.99)	-0.0146	(-0.93)	-0.0152	(-0.96)
Self-employed	-0.0190	(-1.26)	-0.0191	(-1.27)	-0.0189	(-1.26)	-0.0192	(-1.27)	-0.0190	(-1.26)
Retired	-0.0598***	(-3.45)	-0.0599***	(-3.45)	-0.0599***	(-3.45)	-0.0602***	(-3.47)	-0.0601***	(-3.47)
Housewife	-0.0351*	(-2.28)	-0.0352*	(-2.28)	-0.0351*	(-2.27)	-0.0354*	(-2.30)	-0.0353*	(-2.29)
Student	0.0168	(0.85)	0.0168	(0.85)	0.0168	(0.85)	0.0170	(0.86)	0.0170	(0.86)
Unemployed	0.0112	(0.69)	0.0112	(0.68)	0.0110	(0.67)	0.0113	(0.69)	0.0111	(0.68)
Other	-0.0384	(-1.28)	-0.0384	(-1.28)	-0.0389	(-1.30)	-0.0387	(-1.29)	-0.0390	(-1.30)
Female	0.0441***	(4.96)	0.0441***	(4.96)	0.0436***	(4.90)	0.0438***	(4.92)	0.0435***	(4.88)
Age	-0.00164	(-0.91)	-0.00164	(-0.92)	-0.00164	(-0.91)	-0.00166	(-0.92)	-0.00165	(-0.92)
Age squared/100	0.000905	(0.46)	0.000907	(0.46)	0.000911	(0.47)	0.000930	(0.48)	0.000928	(0.48)
Real GDP at constant 2011 US$ (log)	0.0523	(1.10)	0.0566	(1.18)	0.0556	(1.16)	0.0553	(1.15)	0.0547	(1.14)
Human capital index	-0.205**	(-2.83)	-0.193*	(-2.56)	-0.192*	(-2.54)	-0.192*	(-2.55)	-0.191*	(-2.53)
Share of people trusting others			-0.158	(-0.60)	-0.202	(-0.77)	-0.111	(-0.42)	-0.158	(-0.60)
Intrinsically motivated	0.157***	(11.94)	0.157***	(11.94)	0.0777**	(2.66)	0.155***	(11.78)	0.0884**	(2.98)
Intrinsically motivated=1 × Trust (share)					0.249**	(3.05)			0.211*	(2.52)
Extrinsically motivated	-0.122***	(-13.63)	-0.122***	(-13.63)	-0.123***	(-13.74)	-0.0703***	(-3.32)	-0.0819***	(-3.78)
Extrinsically motivated=1 × Trust (share)							-0.198**	(-2.72)	-0.157*	(-2.11)
Constant	2.521***	(7.23)	2.492***	(7.12)	2.511***	(7.15)	2.489***	(7.08)	2.505***	(7.11)
lns1_1_1	-1.649***	(-14.09)	-1.654***	(-14.13)	-1.651***	(-14.10)	-1.650***	(-14.09)	-1.648***	(-14.08)
$\ln\sigma_e$	-0.205***	(-59.00)	-0.205***	(-59.00)	-0.205***	(-59.03)	-0.205***	(-59.03)	-0.205***	(-59.05)
Observations	41646		41646		41646		41646		41646	

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Results from multilevel regression model. The dependent variable is people's willingness to give part of own income to protect the environment.

	(1) Motivations		(2) Trust (share)		(3) Int. Motiv.*Trust (share)		(4) Ext. Motiv.*Trust (share)		(5) Full model	
Middle income	0.0586***	(8.14)	0.0585***	(8.14)	0.0590***	(8.20)	0.0587***	(8.16)	0.0590***	(8.21)
High income	0.0960***	(10.81)	0.0959***	(10.80)	0.0963***	(10.85)	0.0960***	(10.81)	0.0964***	(10.85)
Secondary education	0.0725***	(9.75)	0.0725***	(9.75)	0.0723***	(9.73)	0.0724***	(9.74)	0.0723***	(9.72)
Tertiary education or higher	0.169***	(18.24)	0.169***	(18.24)	0.169***	(18.17)	0.169***	(18.19)	0.168***	(18.14)
Married	-0.00284	(-0.25)	-0.00288	(-0.25)	-0.00298	(-0.26)	-0.00302	(-0.26)	-0.00307	(-0.27)
Living together as married	0.0152	(1.05)	0.0151	(1.05)	0.0146	(1.01)	0.0151	(1.04)	0.0146	(1.01)
Divorced	-0.0136	(-0.70)	-0.0137	(-0.70)	-0.0132	(-0.68)	-0.0138	(-0.71)	-0.0133	(-0.68)
Separated	-0.0191	(-0.82)	-0.0191	(-0.82)	-0.0187	(-0.80)	-0.0192	(-0.82)	-0.0189	(-0.81)
Widowed	-0.0922***	(-5.13)	-0.0922***	(-5.13)	-0.0921***	(-5.12)	-0.0923***	(-5.13)	-0.0922***	(-5.13)
1 child	0.00547	(0.47)	0.00546	(0.47)	0.00548	(0.47)	0.00565	(0.48)	0.00560	(0.48)
2 children	0.0107	(0.92)	0.0107	(0.92)	0.0106	(0.91)	0.0108	(0.93)	0.0106	(0.91)
3 children	-0.0120	(-0.92)	-0.0120	(-0.92)	-0.0120	(-0.92)	-0.0119	(-0.91)	-0.0119	(-0.91)
4 children	-0.0132	(-0.85)	-0.0132	(-0.85)	-0.0134	(-0.86)	-0.0132	(-0.85)	-0.0134	(-0.86)
5 children	-0.0240	(-1.23)	-0.0240	(-1.23)	-0.0242	(-1.24)	-0.0241	(-1.23)	-0.0242	(-1.24)
6 children	0.00265	(0.11)	0.00271	(0.11)	0.00220	(0.09)	0.00239	(0.10)	0.00203	(0.08)
7 children	-0.00900	(-0.29)	-0.00891	(-0.28)	-0.00984	(-0.31)	-0.00929	(-0.30)	-0.0100	(-0.32)
8 children or more	-0.0203	(-0.82)	-0.0204	(-0.82)	-0.0208	(-0.83)	-0.0204	(-0.82)	-0.0207	(-0.83)
Part-time	0.0316**	(2.62)	0.0316**	(2.62)	0.0309*	(2.56)	0.0316**	(2.62)	0.0309*	(2.56)
Self-employed	0.0357***	(3.51)	0.0357***	(3.51)	0.0354***	(3.49)	0.0358***	(3.52)	0.0355***	(3.49)
Retired	-0.0351**	(-2.63)	-0.0351**	(-2.62)	-0.0350**	(-2.62)	-0.0351**	(-2.62)	-0.0351**	(-2.62)
Housewife	-0.00122	(-0.11)	-0.00112	(-0.10)	-0.00144	(-0.13)	-0.00123	(-0.11)	-0.00149	(-0.14)
Student	0.0680***	(5.01)	0.0680***	(5.01)	0.0675***	(4.97)	0.0681***	(5.02)	0.0676***	(4.98)
Unemployed	-0.00273	(-0.25)	-0.00270	(-0.24)	-0.00299	(-0.27)	-0.00279	(-0.25)	-0.00304	(-0.27)
Other	-0.0196	(-0.95)	-0.0198	(-0.96)	-0.0196	(-0.95)	-0.0200	(-0.97)	-0.0197	(-0.96)
Female	0.00204	(0.32)	0.00203	(0.32)	0.00174	(0.27)	0.00201	(0.31)	0.00174	(0.27)
Age	-0.00185	(-1.48)	-0.00186	(-1.48)	-0.00191	(-1.52)	-0.00187	(-1.49)	-0.00191	(-1.52)
Age squared/100	0.00326*	(2.41)	0.00326*	(2.41)	0.00331*	(2.45)	0.00327*	(2.42)	0.00331*	(2.45)
Real GDP at constant 2011 US$ (log)	-0.0230	(-0.51)	-0.0284	(-0.63)	-0.0290	(-0.64)	-0.0285	(-0.63)	-0.0290	(-0.64)
Human capital index	-0.227**	(-2.81)	-0.243**	(-2.98)	-0.242**	(-2.96)	-0.243**	(-2.97)	-0.242**	(-2.96)
Share of people trusting others			0.200	(1.02)	0.165	(0.84)	0.226	(1.15)	0.184	(0.93)
Intrinsically motivated	0.141***	(13.62)	0.141***	(13.61)	0.0689***	(3.42)			0.0728***	(3.58)
Intrinsically motivated=1 × Trust (share)					0.226***	(4.18)	0.140***	(13.48)	0.211***	(3.84)
Extrinsically motivated	-0.149***	(-23.30)	-0.149***	(-23.29)	-0.150***	(-23.47)	-0.127***	(-10.48)	-0.136***	(-11.02)
Extrinsically motivated=1 × Trust (share)							-0.0935*	(-2.16)	-0.0610	(-1.38)
Constant	3.524***	(12.89)	3.565***	(12.95)	3.579***	(12.97)	3.560***	(12.91)	3.575***	(12.94)
lns1_1_1	-1.654***	(-11.06)	-1.650***	(-11.19)	-1.649***	(-11.18)	-1.649***	(-11.18)	-1.648***	(-11.18)
lns2_1_1	-2.096***	(-9.94)	-2.121***	(-9.90)	-2.119***	(-9.90)	-2.119***	(-9.90)	-2.117***	(-9.90)
lnsig_e	-0.247***	(-94.76)	-0.247***	(-94.76)	-0.247***	(-94.80)	-0.247***	(-94.77)	-0.247***	(-94.81)
Observations	73847		73847		73847		73847		73847	

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: Results from multilevel regression model. The dependent variable is people's willingness to pay higher taxes to protect the environment.

	(1) Motivations		(2) Trust (share)		(3) Int. Motiv.*Trust (share)		(4) Ext. Motiv.*Trust (share)		(5) Full model	
Middle income	0.0489***	(8.25)	0.0489***	(8.24)	0.0495***	(8.34)	0.0492***	(8.29)	0.0497***	(8.37)
High income	0.0910***	(12.53)	0.0909***	(12.51)	0.0915***	(12.59)	0.0912***	(12.55)	0.0916***	(12.62)
Secondary education	0.0679***	(11.02)	0.0679***	(11.02)	0.0677***	(10.99)	0.0676***	(10.98)	0.0675***	(10.97)
Tertiary education or higher	0.140***	(18.39)	0.140***	(18.39)	0.140***	(18.31)	0.140***	(18.29)	0.139***	(18.24)
Married	0.00429	(0.46)	0.00420	(0.45)	0.00391	(0.42)	0.00405	(0.43)	0.00383	(0.41)
Living together as married	0.00483	(0.40)	0.00464	(0.39)	0.00394	(0.33)	0.00452	(0.38)	0.00393	(0.33)
Divorced	-0.0232	(-1.50)	-0.0234	(-1.51)	-0.0230	(-1.49)	-0.0234	(-1.51)	-0.0231	(-1.49)
Separated	-0.0157	(-0.83)	-0.0157	(-0.82)	-0.0159	(-0.84)	-0.0160	(-0.84)	-0.0161	(-0.85)
Widowed	-0.0695***	(-4.77)	-0.0695***	(-4.77)	-0.0696***	(-4.77)	-0.0695***	(-4.77)	-0.0696***	(-4.78)
1 child	0.0107	(1.14)	0.0107	(1.14)	0.0109	(1.16)	0.0111	(1.18)	0.0111	(1.18)
2 children	0.00678	(0.73)	0.00680	(0.73)	0.00678	(0.73)	0.00691	(0.75)	0.00686	(0.74)
3 children	-0.00129	(-0.12)	-0.00128	(-0.12)	-0.00116	(-0.11)	-0.00120	(-0.11)	-0.00112	(-0.11)
4 children	-0.0226	(-1.79)	-0.0225	(-1.79)	-0.0227	(-1.80)	-0.0226	(-1.79)	-0.0227	(-1.80)
5 children	-0.0194	(-1.22)	-0.0193	(-1.21)	-0.0196	(-1.23)	-0.0196	(-1.23)	-0.0198	(-1.24)
6 children	-0.0492*	(-2.44)	-0.0491*	(-2.43)	-0.0495*	(-2.45)	-0.0494*	(-2.45)	-0.0497*	(-2.46)
7 children	-0.0286	(-1.09)	-0.0284	(-1.08)	-0.0292	(-1.12)	-0.0289	(-1.10)	-0.0295	(-1.13)
8 children or more	-0.0197	(-0.91)	-0.0196	(-0.90)	-0.0205	(-0.95)	-0.0199	(-0.92)	-0.0207	(-0.95)
Part-time	0.0243*	(2.51)	0.0242*	(2.50)	0.0232*	(2.40)	0.0243*	(2.51)	0.0234*	(2.41)
Self-employed	-0.00423	(-0.50)	-0.00412	(-0.48)	-0.00444	(-0.52)	-0.00407	(-0.48)	-0.00437	(-0.51)
Retired	-0.0324**	(-3.01)	-0.0323**	(-3.00)	-0.0324**	(-3.01)	-0.0324**	(-3.01)	-0.0325**	(-3.01)
Housewife	-0.0270**	(-3.01)	-0.0268**	(-2.99)	-0.0272**	(-3.03)	-0.0270**	(-3.01)	-0.0273**	(-3.04)
Student	0.0474***	(4.17)	0.0474***	(4.17)	0.0469***	(4.13)	0.0476***	(4.19)	0.0471***	(4.15)
Unemployed	0.00210	(0.22)	0.00219	(0.23)	0.00172	(0.18)	0.00217	(0.23)	0.00176	(0.19)
Other	-0.0343*	(-1.97)	-0.0345*	(-1.98)	-0.0345*	(-1.98)	-0.0350*	(-2.01)	-0.0348*	(-2.00)
Female	0.0147**	(2.79)	0.0147**	(2.78)	0.0143**	(2.70)	0.0146**	(2.76)	0.0142**	(2.69)
Age	-0.00197	(-1.88)	-0.00197	(-1.88)	-0.00200	(-1.92)	-0.00197	(-1.89)	-0.00201	(-1.92)
Age squared/100	0.00266*	(2.34)	0.00265*	(2.34)	0.00269*	(2.37)	0.00266*	(2.35)	0.00269*	(2.37)
Real GDP at constant 2011 US$ (log)	-0.0105	(-0.30)	-0.0215	(-0.64)	-0.0224	(-0.67)	-0.0220	(-0.65)	-0.0226	(-0.67)
Human capital index	-0.190**	(-3.21)	-0.221***	(-3.82)	-0.220***	(-3.81)	-0.221***	(-3.82)	-0.220***	(-3.81)
Share of people trusting others			0.430**	(2.63)	0.385*	(2.35)	0.476**	(2.90)	0.423**	(2.58)
Intrinsically motivated	0.138***	(16.91)	0.138***	(16.89)	0.0493**	(3.06)	0.136***	(16.66)	0.0571***	(3.50)
Intrinsically motivated=1 × Trust (share)					0.285***	(6.34)			0.256***	(5.58)
Extrinsically motivated	-0.121***	(-22.87)	-0.121***	(-22.86)	-0.123***	(-23.10)	-0.0810***	(-7.58)	-0.0928***	(-8.53)
Extrinsically motivated=1 × Trust (share)							-0.166***	(-4.37)	-0.122**	(-3.16)
Constant	3.207***	(14.08)	3.279***	(14.97)	3.298***	(15.05)	3.272***	(14.92)	3.291***	(15.01)
lns1_1_1	-2.135***	(-7.32)	-2.275***	(-6.46)	-2.282***	(-6.37)	-2.275***	(-6.44)	-2.281***	(-6.37)
lns2_1_1	-1.675***	(-15.09)	-1.677***	(-15.34)	-1.674***	(-15.32)	-1.675***	(-15.32)	-1.673***	(-15.30)
lnsig_e	-0.203***	(-98.76)	-0.203***	(-98.76)	-0.203***	(-98.85)	-0.203***	(-98.80)	-0.203***	(-98.87)
Observations	118801		118801		118801		118801		118801	

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13: Results from multilevel regression model. The dependent variable is people's declaration that they do recycling.

	(1) Motivations		(2) Trust (share)		(3) Int. Motiv.*Trust (share)		(4) Ext. Motiv.*Trust (share)		(5) Full model	
Middle income	0.0442***	(7.70)	0.0440***	(7.67)	0.0437***	(7.62)	0.0438***	(7.64)	0.0436***	(7.60)
High income	0.0411***	(6.01)	0.0409***	(5.98)	0.0406***	(5.94)	0.0407***	(5.95)	0.0405***	(5.93)
Secondary education	0.0599***	(10.28)	0.0600***	(10.30)	0.0600***	(10.30)	0.0601***	(10.32)	0.0601***	(10.32)
Tertiary education or higher	0.110***	(15.35)	0.110***	(15.37)	0.110***	(15.40)	0.110***	(15.41)	0.111***	(15.42)
Married	0.0359***	(4.09)	0.0358***	(4.07)	0.0360***	(4.10)	0.0357***	(4.07)	0.0359***	(4.09)
Living together as married	0.00229	(0.20)	0.00214	(0.18)	0.00228	(0.20)	0.00214	(0.18)	0.00227	(0.19)
Divorced	0.00720	(0.52)	0.00707	(0.51)	0.00713	(0.51)	0.00697	(0.50)	0.00705	(0.51)
Separated	0.0244	(1.32)	0.0244	(1.32)	0.0247	(1.34)	0.0245	(1.33)	0.0248	(1.34)
Widowed	0.0329*	(2.45)	0.0328*	(2.45)	0.0328*	(2.45)	0.0328*	(2.44)	0.0328*	(2.45)
1 child	-0.00533	(-0.62)	-0.00532	(-0.61)	-0.00540	(-0.62)	-0.00541	(-0.63)	-0.00546	(-0.63)
2 children	-0.00882	(-1.06)	-0.00881	(-1.06)	-0.00890	(-1.07)	-0.00888	(-1.07)	-0.00894	(-1.07)
3 children	-0.0103	(-1.09)	-0.0103	(-1.09)	-0.0104	(-1.10)	-0.0103	(-1.09)	-0.0104	(-1.10)
4 children	-0.00954	(-0.83)	-0.00947	(-0.83)	-0.00953	(-0.83)	-0.00953	(-0.83)	-0.00956	(-0.84)
5 children	-0.0380*	(-2.56)	-0.0379*	(-2.55)	-0.0379*	(-2.55)	-0.0379*	(-2.56)	-0.0379*	(-2.56)
6 children	-0.0429*	(-2.14)	-0.0427*	(-2.14)	-0.0427*	(-2.13)	-0.0429*	(-2.14)	-0.0428*	(-2.14)
7 children	0.00700	(0.26)	0.00727	(0.27)	0.00713	(0.27)	0.00727	(0.27)	0.00714	(0.27)
8 children or more	-0.0465	(-1.91)	-0.0462	(-1.90)	-0.0457	(-1.88)	-0.0460	(-1.89)	-0.0456	(-1.87)
Part-time	-0.00123	(-0.14)	-0.00129	(-0.15)	-0.00108	(-0.12)	-0.00144	(-0.16)	-0.00121	(-0.14)
Self-employed	0.0117	(1.39)	0.0118	(1.40)	0.0118	(1.39)	0.0118	(1.40)	0.0118	(1.39)
Retired	0.00195	(0.20)	0.00202	(0.20)	0.00192	(0.20)	0.00205	(0.21)	0.00196	(0.20)
Housewife	-0.0210*	(-2.41)	-0.0207*	(-2.38)	-0.0209*	(-2.40)	-0.0207*	(-2.38)	-0.0209*	(-2.39)
Student	-0.000422	(-0.04)	-0.000374	(-0.03)	-0.000409	(-0.04)	-0.000492	(-0.04)	-0.000491	(-0.04)
Unemployed	-0.0283**	(-3.09)	-0.0283**	(-3.08)	-0.0283**	(-3.08)	-0.0283**	(-3.09)	-0.0283**	(-3.08)
Other	-0.0276	(-1.56)	-0.0274	(-1.55)	-0.0273	(-1.54)	-0.0273	(-1.54)	-0.0272	(-1.53)
Female	0.0330***	(6.57)	0.0330***	(6.57)	0.0332***	(6.61)	0.0331***	(6.59)	0.0333***	(6.61)
Age	0.00400***	(3.95)	0.00401***	(3.95)	0.00400***	(3.94)	0.00401***	(3.96)	0.00400***	(3.95)
Age squared/100	-0.00402***	(-3.65)	-0.00403***	(-3.66)	-0.00402***	(-3.65)	-0.00404***	(-3.66)	-0.00403***	(-3.65)
Real GDP at constant 2011 US$ (log)	0.192***	(4.20)	0.166***	(4.10)	0.167***	(4.11)	0.167***	(4.11)	0.167***	(4.12)
Human capital index	-0.0247	(-0.36)	-0.0593	(-0.99)	-0.0599	(-1.00)	-0.0596	(-0.99)	-0.0600	(-1.00)
Share of people trusting others			0.632**	(3.23)	0.648***	(3.31)	0.618**	(3.15)	0.636**	(3.24)
Intrinsically motivated	0.0404***	(5.38)	0.0403***	(5.36)	0.0722***	(4.09)	0.0409***	(5.43)	0.0694***	(3.87)
Intrinsically motivated=1 × Trust (share)					-0.0942*	(-2.00)			-0.0844	(-1.75)
Extrinsically motivated	-0.0402***	(-7.91)	-0.0402***	(-7.90)	-0.0397***	(-7.80)	-0.0549***	(-4.58)	-0.0504***	(-4.11)
Extrinsically motivated=1 × Trust (share)							0.0550	(1.36)	0.0397	(0.96)
Constant	-1.394***	(-4.30)	-1.249***	(-4.37)	-1.256***	(-4.39)	-1.249***	(-4.36)	-1.256***	(-4.39)
lns1_1_1	-1.840***	(-14.84)	-1.978***	(-15.92)	-1.978***	(-15.93)	-1.978***	(-15.92)	-1.978***	(-15.92)
lnsig_e	-0.843***	(-226.44)	-0.843***	(-226.44)	-0.844***	(-226.46)	-0.843***	(-226.45)	-0.844***	(-226.46)
Observations	36071		36071		36071		36071		36071	

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: Results from multilevel regression model. The dependent variable is people's declaration that they do reduce water consumption.

	(1) Motivations		(2) Trust (share)		(3) Int. Motiv.*Trust (share)		(4) Ext. Motiv.*Trust (share)		(5) Full model	
Middle income	0.0325***	(5.51)	0.0325***	(5.52)	0.0324***	(5.50)	0.0324***	(5.50)	0.0324***	(5.49)
High income	0.0133	(1.88)	0.0134	(1.89)	0.0133	(1.88)	0.0133	(1.87)	0.0132	(1.87)
Secondary education	0.0580***	(9.50)	0.0579***	(9.49)	0.0580***	(9.49)	0.0580***	(9.50)	0.0580***	(9.50)
Tertiary education or higher	0.0780***	(10.40)	0.0780***	(10.40)	0.0780***	(10.40)	0.0782***	(10.42)	0.0782***	(10.42)
Married	0.0440***	(4.77)	0.0441***	(4.78)	0.0442***	(4.78)	0.0441***	(4.77)	0.0441***	(4.78)
Living together as married	0.0110	(0.89)	0.0111	(0.90)	0.0111	(0.90)	0.0111	(0.90)	0.0111	(0.90)
Divorced	0.0444**	(3.11)	0.0445**	(3.12)	0.0445**	(3.12)	0.0444**	(3.11)	0.0444**	(3.11)
Separated	0.0536**	(2.77)	0.0536**	(2.77)	0.0537**	(2.78)	0.0536**	(2.77)	0.0537**	(2.78)
Widowed	0.0434**	(3.15)	0.0434**	(3.15)	0.0434**	(3.15)	0.0434**	(3.15)	0.0434**	(3.15)
1 child	-0.00477	(-0.53)	-0.00480	(-0.53)	-0.00483	(-0.54)	-0.00486	(-0.54)	-0.00488	(-0.54)
2 children	-0.0120	(-1.39)	-0.0121	(-1.39)	-0.0121	(-1.39)	-0.0121	(-1.40)	-0.0121	(-1.40)
3 children	-0.0138	(-1.39)	-0.0138	(-1.39)	-0.0139	(-1.40)	-0.0138	(-1.39)	-0.0138	(-1.39)
4 children	-0.0235	(-1.93)	-0.0235	(-1.94)	-0.0236	(-1.94)	-0.0236	(-1.94)	-0.0236	(-1.94)
5 children	-0.0339*	(-2.16)	-0.0339*	(-2.16)	-0.0339*	(-2.16)	-0.0340*	(-2.16)	-0.0340*	(-2.16)
6 children	-0.0787***	(-3.67)	-0.0787***	(-3.67)	-0.0788***	(-3.67)	-0.0788***	(-3.68)	-0.0788***	(-3.68)
7 children	-0.0273	(-0.96)	-0.0273	(-0.96)	-0.0274	(-0.96)	-0.0273	(-0.96)	-0.0273	(-0.96)
8 children or more	-0.0742**	(-2.84)	-0.0743**	(-2.85)	-0.0741**	(-2.84)	-0.0741**	(-2.84)	-0.0740**	(-2.83)
Part-time	0.00146	(0.16)	0.00149	(0.16)	0.00156	(0.17)	0.00139	(0.15)	0.00146	(0.16)
Self-employed	-0.000511	(-0.06)	-0.000506	(-0.06)	-0.000537	(-0.06)	-0.000496	(-0.06)	-0.000521	(-0.06)
Retired	0.0178	(1.77)	0.0178	(1.77)	0.0178	(1.77)	0.0178	(1.77)	0.0178	(1.77)
Housewife	0.000778	(0.08)	0.000742	(0.08)	0.000693	(0.08)	0.000762	(0.08)	0.000723	(0.08)
Student	-0.00875	(-0.75)	-0.00875	(-0.75)	-0.00878	(-0.75)	-0.00882	(-0.76)	-0.00883	(-0.76)
Unemployed	-0.0127	(-1.34)	-0.0127	(-1.34)	-0.0127	(-1.34)	-0.0127	(-1.34)	-0.0127	(-1.34)
Other	-0.0444*	(-2.54)	-0.0444*	(-2.54)	-0.0444*	(-2.54)	-0.0443*	(-2.53)	-0.0443*	(-2.53)
Female	0.0417***	(8.04)	0.0417***	(8.04)	0.0417***	(8.05)	0.0417***	(8.05)	0.0418***	(8.06)
Age	0.00781***	(7.45)	0.00781***	(7.45)	0.00781***	(7.45)	0.00781***	(7.45)	0.00781***	(7.45)
Age squared/100	-0.00615***	(-5.40)	-0.00614***	(-5.40)	-0.00614***	(-5.39)	-0.00615***	(-5.40)	-0.00615***	(-5.40)
Real GDP at constant 2011 US$ (log)	0.0220	(0.57)	0.0298	(0.76)	0.0300	(0.77)	0.0301	(0.77)	0.0302	(0.77)
Human capital index	-0.0164	(-0.27)	-0.00571	(-0.09)	-0.00590	(-0.10)	-0.00588	(-0.10)	-0.00600	(-0.10)
Share of people trusting others			-0.194	(-0.93)	-0.187	(-0.90)	-0.204	(-0.98)	-0.198	(-0.95)
Intrinsically motivated	0.0465***	(5.88)	0.0465***	(5.89)	0.0589**	(3.14)	0.0470***	(5.94)	0.0563**	(2.96)
Intrinsically motivated=1 × Trust (share)					-0.0372	(-0.73)			-0.0282	(-0.54)
Extrinsically motivated	-0.0550***	(-10.52)	-0.0550***	(-10.52)	-0.0548***	(-10.48)	-0.0663***	(-5.13)	-0.0648***	(-4.90)
Extrinsically motivated=1 × Trust (share)							0.0420	(0.96)	0.0369	(0.82)
Constant	0.0581	(0.21)	0.0130	(0.05)	0.0101	(0.04)	0.0135	(0.05)	0.0112	(0.04)
lns1_1_1	-1.899***	(-15.95)	-1.911***	(-16.05)	-1.912***	(-16.05)	-1.913***	(-16.06)	-1.913***	(-16.06)
lnsig_e	-0.752***	(-213.71)	-0.752***	(-213.71)	-0.752***	(-213.72)	-0.752***	(-213.72)	-0.752***	(-213.72)
Observations	40464		40464		40464		40464		40464	

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

E Two Stages Least Squares estimates

Table 15: Motivations and pro-environmental behaviours and attitudes using 2SLS and instrumental variables. The table reports the coefficients of linear probability models with sample weights and robust standard errors.

	Pay 20% more				Give part of income				Pay higher taxes				Recycling				Reduce water consumption			
	first stage		second stage		first stage		second stage		first stage		second stage		first stage		second stage		first stage		second stage	
Resp.' interest	0.105***	(7.68)			0.0814***	(5.86)			0.0930***	(9.14)			0.0714***	(8.88)			0.101***	(8.37)		
Secondary education	0.0571**	(2.92)			0.0988***	(6.85)			0.0810***	(6.66)			0.0834***	(6.56)			0.0720***	(4.66)		
Tertiary education or higher	0.186***	(7.55)			0.228***	(8.92)			0.214***	(11.62)			0.209***	(10.10)			0.198***	(8.38)		
Part-time	0.0790**	(3.03)	-0.0876**	(-3.12)	0.0296	(1.52)	0.0203	(0.71)	0.0486**	(3.01)	-0.00436	(-0.18)	0.0619***	(3.78)	-0.0280*	(-2.38)	0.0646*	(2.57)	0.00601	(0.23)
Self-employed	0.0211	(0.69)	-0.0191	(-0.46)	0.0237	(0.97)	0.0919*	(2.35)	0.0255	(1.33)	0.0366	(1.24)	0.0505*	(2.26)	-0.0158	(-1.11)	0.0000203	(0.00)	0.0502	(1.19)
Retired	0.0614***	(3.72)	-0.119**	(-3.08)	0.00311	(0.12)	-0.0506	(-1.63)	0.0262	(1.65)	-0.0561*	(-2.44)	0.0779***	(4.19)	-0.0441**	(-3.05)	0.0494**	(2.93)	0.0187	(0.63)
Housewife	0.0330	(1.14)	0.00521	(0.16)	-0.0160	(-0.77)	0.0975**	(3.08)	0.00767	(0.44)	0.0339	(1.43)	0.0372*	(2.09)	-0.0422*	(-2.26)	0.00865	(0.33)	0.0741*	(2.05)
Student	-0.0233	(-0.71)	0.0182	(0.40)	0.0316	(1.69)	0.0415	(1.32)	0.0109	(0.64)	0.0271	(0.99)	0.0253	(1.20)	-0.0164	(-1.01)	-0.0212	(-0.62)	0.00667	(0.18)
Unemployed	-0.0509*	(-2.47)	0.0131	(0.35)	-0.0534*	(-2.39)	0.0751*	(2.12)	-0.0541***	(-3.42)	0.0438	(1.72)	-0.00121	(-0.06)	-0.0305	(-1.79)	-0.0491*	(-2.27)	0.0166	(0.58)
Other	0.00704	(0.22)	-0.00284	(-0.04)	0.00728	(0.28)	0.286**	(2.80)	0.00605	(0.31)	0.186*	(2.46)	0.0411	(1.45)	-0.0626**	(-3.02)	-0.00814	(-0.26)	-0.00863	(-0.23)
Middle income	0.0232	(1.40)	0.00981	(0.33)	-0.00656	(-0.48)	0.0691**	(2.87)	0.00882	(0.78)	0.0458*	(2.16)	0.0235	(1.91)	0.0121	(0.72)	0.0203	(1.20)	0.0331	(1.63)
High income	0.0770**	(2.99)	-0.0226	(-0.59)	0.0525*	(2.46)	0.0377	(1.06)	0.0653***	(3.90)	0.0276	(0.92)	0.0789***	(4.75)	-0.00809	(-0.44)	0.0736**	(2.90)	-0.00668	(-0.22)
Age	-0.00500*	(-2.54)	-0.00132	(-0.53)	0.000133	(0.07)	-0.00519	(-1.70)	-0.00141	(-1.04)	-0.00314	(-1.61)	-0.00289*	(-2.11)	0.00480***	(3.83)	-0.00478*	(-2.40)	0.00952***	(4.29)
Age squared/100	0.00768***	(4.11)	-0.00216	(-0.72)	0.00297	(1.55)	0.00208	(0.80)	0.00426**	(3.12)	0.000638	(0.34)	0.00406**	(2.79)	-0.00553***	(-4.33)	0.00765***	(3.94)	-0.00969***	(-4.15)
Female	0.0465***	(3.90)	-0.00752	(-0.46)	0.0563***	(6.06)	-0.0693***	(-3.73)	0.0521***	(7.07)	-0.0393**	(-3.18)	0.0443***	(4.37)	0.0113	(1.40)	0.0474***	(4.48)	0.0102	(0.98)
Married	-0.0583**	(-2.73)	0.0722**	(3.18)	-0.0280	(-1.63)	0.0547	(1.92)	-0.0455***	(-3.34)	0.0634**	(3.05)	-0.0440**	(-2.80)	0.0486***	(4.02)	-0.0624**	(-2.89)	0.0465**	(2.63)
Living together as married	0.0568*	(1.96)	-0.0867	(-1.88)	0.0322	(1.12)	-0.0457	(-1.09)	0.0384	(1.75)	-0.0470	(-1.87)	-0.0134	(-0.88)	-0.00106	(-0.09)	0.0754**	(2.82)	-0.0231	(-0.79)
Divorced	0.00792	(0.26)	-0.0782	(-1.83)	0.0331	(1.29)	-0.0827*	(-2.38)	0.0129	(0.63)	-0.0448	(-1.54)	-0.0245	(-1.04)	0.0102	(0.49)	0.00842	(0.26)	0.0329	(1.23)
Separated	-0.00116	(-0.03)	-0.0337	(-0.62)	0.0455	(1.89)	-0.0523	(-1.31)	0.0304	(1.49)	-0.0360	(-1.24)	-0.0131	(-0.44)	0.0143	(0.54)	0.0143	(0.38)	0.0727**	(2.99)
Widowed	-0.0929***	(-3.74)	0.0147	(0.46)	-0.0494	(-1.85)	-0.00969	(-0.29)	-0.0752***	(-3.97)	0.00228	(0.09)	-0.0585**	(-2.94)	0.0505***	(3.66)	-0.0831**	(-3.27)	0.0541*	(2.47)
1 child	-0.0633***	(-3.30)	0.0567**	(2.58)	-0.0742***	(-6.51)	0.0596**	(2.59)	-0.0702***	(-6.72)	0.0464**	(2.69)	-0.0430***	(-3.40)	0.0161	(1.63)	-0.0570**	(-3.07)	0.0138	(0.92)
2 children	-0.0578***	(-3.62)	0.0320	(1.63)	-0.0682***	(-4.72)	0.0792**	(3.19)	-0.0644***	(-6.25)	0.0572***	(3.39)	-0.0395**	(-2.87)	0.0114	(1.33)	-0.0503**	(-3.00)	0.00255	(0.17)
3 children	-0.0466*	(-2.26)	-0.00957	(-0.35)	-0.0528**	(-2.99)	0.0587	(1.87)	-0.0466***	(-3.37)	0.0305	(1.38)	-0.0352*	(-2.25)	0.00499	(0.40)	-0.0413*	(-1.99)	0.0119	(0.79)
4 children	-0.0682**	(-2.59)	0.00475	(0.11)	-0.0801***	(-3.86)	0.0909*	(2.26)	-0.0699***	(-4.12)	0.0341	(1.05)	-0.0369*	(-2.06)	0.00749	(0.44)	-0.0684**	(-2.64)	0.0206	(0.95)
5 children	-0.0593	(-1.94)	0.0472	(1.03)	-0.0945***	(-4.14)	0.101*	(2.15)	-0.0749***	(-4.03)	0.0415	(1.17)	0.00156	(0.08)	-0.0379	(-1.81)	-0.0514	(-1.62)	-0.000728	(-0.03)
6 children	-0.0981*	(-2.21)	0.137**	(2.59)	-0.0694**	(-2.59)	0.151**	(3.11)	-0.0677**	(-2.66)	0.0341	(0.79)	-0.0388	(-1.42)	-0.0143	(-0.59)	-0.107**	(-2.66)	-0.00221	(-0.05)
7 children	-0.0567	(-0.88)	0.0606	(0.76)	-0.0305	(-0.91)	0.0454	(0.52)	-0.0250	(-0.78)	-0.000718	(-0.01)	-0.0207	(-0.55)	-0.00480	(-0.15)	-0.0847	(-1.79)	0.0296	(0.84)
8 children or more	-0.0800	(-1.46)	0.134*	(2.36)	-0.0783**	(-3.25)	0.0739	(1.48)	-0.0709**	(-3.06)	0.0313	(0.71)	-0.0417	(-1.14)	-0.0300	(-0.95)	-0.109*	(-2.47)	0.0137	(0.24)
Motivations			0.867***	(7.35)			1.063***	(6.82)			0.930***	(9.02)			0.524***	(7.88)			0.372***	(4.87)
N	48371		48371		75336		75336		126953		126953		42997		42997		47491		47491	
RMSE	0.618		0.955		0.604		0.990		0.611		0.977		0.597		0.516		0.615		0.527	
Hansen J statistics			3.748				1.567				3.017				3.905				2.520	
p-value			0.153				0.457				0.221				0.142				0.284	
Underidentification test			31.50				38.09				66.36				27.63				29.92	
p-value			0.000				0.000				0.000				0.000				0.000	
Weak identification test			40.47				36.83				72.15				52.20				43.10	

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$