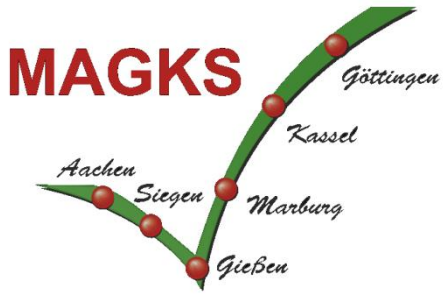

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Willingness to pay for biodiversity conservation and climate protection: A comparative empirical analysis for Germany

January 2025

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Willingness to pay for biodiversity conservation and climate protection: A comparative empirical analysis for Germany

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Abstract

While climate change is widely considered as a major challenge for societies, another pressing global environmental problem, i.e. the loss of biodiversity, is often given less attention despite its strong negative consequences for ecosystems and thus for human life. In light of the strong interconnections between biodiversity loss and climate change, this paper compares the preferences and stated willingness to pay (WTP) for biodiversity conservation and climate protection. The empirical analysis is based on data from a broadly representative large-scale computer-assisted online survey of more than 9,000 citizens in Germany in 2021. Our data reveal a strong correlation between the perceived importance of the problems of biodiversity loss and climate change as well as between the WTP for biodiversity conservation and climate protection. However, the average WTP for climate protection is slightly higher than for biodiversity conservation according to our data. Our econometric analysis with bivariate linear and loglinear regression models as well as Tobit and binary probit models suggests that the main explanatory factors, namely environmental attitudes (i.e. environmental awareness and ecological policy identification) as well as economic preferences (i.e. altruism, trust, and patience) in addition to some socio-economic variables (e.g. equivalized income), are very similar for the WTP for biodiversity conservation and climate protection. However, for many individual characteristics (e.g., ecological policy identification, altruism, trust, patience) that are (statistically) significantly correlated with the WTP for both climate protection and biodiversity conservation, the correlations are significantly stronger for the WTP for climate protection. These estimation results, in combination with a higher average perception in our sample that climate change is an important global environmental problem, could be due to the stronger recognition of climate change and protection in the public debate (e.g., in media coverage) compared to biodiversity loss and conservation.

Keywords: Biodiversity conservation, climate protection, willingness to pay, bivariate econometric models

JEL classification: Q57, Q54

1. Introduction

According to Nordhaus (2019), the only feasible strategy to limit climate change, which has widespread negative effects on the natural environment and human life (e.g., IPCC, 2023), is to reduce greenhouse gas emissions. Another pressing global environmental problem is the loss of biodiversity, which receives less public recognition than climate change (e.g., Althaus et al., 2021), especially in media coverage (e.g., Legagneux et al., 2018; Althaus et al., 2021). According to Dasgupta (2021), biodiversity is the variety of life in all its forms. It includes three areas of life, i.e. the diversity of animal and plant species, the genetic diversity within animal and plant species, and the diversity of ecosystems (e.g., UNEP, 2010). The importance of biodiversity stems particularly from its role in ecosystems that provide essential goods (e.g., food, timber for construction, medical products) and services (e.g., parks or coastlines for recreation) that form the basis of societies and economies (e.g., Dasgupta, 2021). However, about 25% of animal and plant species worldwide are threatened with extinction (e.g., IPBES, 2019), which can have a strong impact on human life. Therefore, effective international (e.g., within the United Nations Convention on Biological Diversity) or national policies (e.g., based on the National Strategy on Biological Diversity in Germany) are certainly important.

However, similar to the case of insufficient climate policy measures (e.g., Lee et al., 2015; Victor et al., 2017; Sognnaes et al., 2021), it is evident that a key factor for successful international and national biodiversity policies is their support among the population. Furthermore, it is certainly useful that regulations are complemented by voluntary biodiversity protection activities by firms and citizens, for example, through voluntary (possibly more expensive) pro-environmental agriculture and food choices. Therefore, knowledge about the individual preferences for the conservation of biodiversity and particularly about factors that determine these preferences is crucial for the stimulation of voluntary biodiversity protection activities and for the design of appropriate biodiversity policy measures by decision makers. In this context, this paper empirically examines the general preferences and the willingness to pay (WTP) of citizens in Germany for biodiversity conservation and additionally individual characteristics that drive these preferences. Since individual financial resources for voluntary environmental protection measures and public resources for environmental policy measures (e.g., subsidies) are scarce and compete across different environmental problems, efficient allocation is crucial. Therefore, we use a direct simultaneous approach to compare the WTP and a large number of different explanatory factors (i.e. individual characteristics) for biodiversity conservation with the corresponding WTP and determinants for climate protection, which strongly dominates the public debate on environmental problems.

The number of empirical studies on the preferences for biodiversity conservation is large (see e.g. the meta-analyses in Martín-López et al., 2008, Jacobsen and Hanley, 2009, and Subroy et al., 2019, or the review in Bartkowski et al., 2015). Some of these studies use revealed preferences techniques such as the hedonic property-value method (e.g., Ratzke, 2023) or the travel-cost method (e.g., Kolstoe and Cameron, 2017). One reason for not examining revealed preferences is that they are unable to capture non-use or intrinsic values that are important for eliciting the WTP for biodiversity conservation (e.g., Ando, 2022). Another general problem of revealed preferences approaches (not only for biodiversity conservation) is that they are only able to analyze the WTP for selected samples, but not for the whole population (e.g., Bernard et al., 2023). Most previous biodiversity studies are therefore based on stated preference data. Stated preference studies in the biodiversity domain are commonly based on discrete choice experiments and contingent valuation (CV) approaches. Mostly, they do not address general preferences for biodiversity conservation (an exception can e.g. be found in Turpie, 2003), but consider specific areas such as watersheds and rivers (e.g., Spash et al., 2009; Shoyama et al., 2013), forests and trees (e.g., Czajkowski et al., 2009; Yao et al., 2014; Bakaki and Bernauer, 2016; Sardana, 2019; Tavárez et al., 2024), entire national parks (e.g., Martín-López et al., 2007), or urban nature (e.g., Collins et al., 2017; Salm et al., 2023).

Similarly, the empirical literature on the determinants of preferences and the WTP for climate protection is also abundant. In addition to a few field experiments in specific areas such as bus travel (e.g., Kesternich et al., 2016, 2019), some previous studies consider incentivized WTP for general climate protection in terms of lower greenhouse gas emissions (e.g., Diederich and Goeschl, 2014, 2017, 2018; Kawamura et al., 2018; Bartels et al., 2021; Ziegler, 2021; Panzone et al., 2021; Fornwagner and Hauser, 2022; Gleue et al., 2025). However, most previous studies are also based on data from stated preferences (including data from stated choice experiments) for general climate protection or climate protection in specific areas such as transportation or energy efficiency in the home (e.g., Qiu et al., 2014; Newell and Siikamäki, 2014, 2015; Schwirplies and Ziegler, 2016; Arimura et al., 2016; Lange et al., 2017; Ziegler, 2017, 2020; Fischbacher et al., 2021; Bernard et al., 2023; Kanberger and Ziegler, 2024; Schleich et al., 2024). Previous stated preference studies are also often based on CV approaches (e.g., Tao et al., 2021; Bernard et al., 2023; Lawton and Fujiwara, 2023; Schleich and Alsheimer, 2024). An important result in many of these empirical studies is that environmental awareness and policy identification are important drivers of these preferences. In addition, some studies show that economic preferences, i.e. social, risk, and time preferences play an important role (e.g., Andre et al., 2024; Engler et al., 2025).

However, few previous empirical studies examine the preferences for climate protection and biodiversity conservation simultaneously, although climate change and biodiversity loss are strongly interconnected. Climate change is considered as one of the drivers of biodiversity loss (e.g., IPBES, 2019; IPCC, 2023) and will continue to contribute to the loss of biodiversity in several dimensions (e.g., Bellard et al., 2012; IPBES, 2019). According to Urban (2015), for example, (anthropogenic) climate change harms biodiversity, resulting in substantial extinction rates. In addition, protection activities influence each other. While some climate protection activities can be harmful for biodiversity (e.g., Arneth et al., 2020), other activities can have co-benefits for biodiversity (e.g., IPCC, 2023), such as in the case of reforestation due to carbon offsetting (e.g., Schwirplies et al., 2019). Conversely, the conservation of biodiversity makes substantial contributions to climate protection since marine and terrestrial ecosystems are sinks for about 60% of global carbon emissions (e.g., IPBES, 2019). An early joint empirical analysis of the WTP for climate protection and biodiversity conservation can be found in Turpie (2003), although her questions for these two preferences were not coordinated with each other. In contrast, Shoyama et al. (2013) include both climate protection and biodiversity conservation together in their specific stated choice experiment on land use. They reveal higher preferences for biodiversity conservation (i.e. avoiding the extinction of endangered species) than for carbon sequestration and thus climate protection.

Due to the strong interconnections between climate change and biodiversity loss and thus between climate protection and biodiversity conservation (also with respect to competing financial resources as discussed above), we follow this strand of literature and simultaneously examine the WTP for both climate protection and biodiversity conservation in our empirical analysis. The contribution of our paper is two-fold: First, we contribute to the empirical literature on the preferences and WTP for biodiversity conservation by examining biodiversity in a broader sense and not only very specific areas of biodiversity, such as forests and trees or urban nature, as discussed above. In particular, we include different groups of individual characteristics as explanatory factors in our econometric analysis, such as environmental awareness, policy identification, and economic preferences in addition to common socio-economic variables. Second, we contribute to the empirical literature on the preferences for environmental and nature conservation by considering and comparing the two most important global environmental problems. A direct and valid comparison of the WTP for climate protection and biodiversity conservation is possible since we measure them simultaneously in a standard stated preference approach. In particular, we try to identify similarities and differences in the explanatory factors for the WTP for climate protection and biodiversity conservation.

Our empirical analysis is based on data from a broadly representative large-scale computer-assisted online survey of more than 9,000 citizens in Germany in 2021. To elicit the WTP for climate protection and biodiversity conservation, we applied a simple CV procedure in the survey. Our data reveal a strong correlation between the perceived importance of the problems of biodiversity loss and climate change, and between the stated WTP for climate protection and biodiversity conservation, but a slightly higher average WTP for climate protection and a clearly higher average perceived importance of climate change as a global environmental problem. Our econometric analysis shows that the main explanatory variables are very similar for the WTP for climate protection and biodiversity conservation. In addition to some socio-economic variables (such as equivalized income), especially economic preferences (i.e. altruism, trust, and patience) as well as environmental awareness and ecological policy identification have a high explanatory power. However, our analysis of differences in the WTP also shows that for many individual characteristics (e.g., ecological policy identification, altruism, trust, patience) that are (statistically) significantly correlated with the WTP for both climate protection and biodiversity conservation, the estimated correlation is significantly stronger for the WTP for climate protection.

The remainder of this paper is as follows: Section 2 describes the survey, the data, and the variables in the empirical analysis. Section 3 discusses the empirical results and Section 4 concludes.

2. Data and variables

2.1. Survey and data

Our empirical analysis is based on data from a large-scale computer-assisted online survey of 9,021 citizens in Germany. In line with the focus of the underlying project, the target population consisted exclusively of adults who are responsible for major household decisions (e.g., with respect to vehicles, furniture, electricity contracts). After a pre-test, the main survey was carried out in April and May 2021 in cooperation with the German market research company Psyma+Consultic GmbH (Psyma). The participants of the survey were recruited from an online panel of more than 80,000 people in Germany aged 15 years or older. The sample was stratified by age groups, gender, education, and place of main residence (across the 16 German federal states) to enable broad representativeness. To ensure the reliability of the answers, Psyma implemented various quality checks during the survey. Respondents with low-quality answers, indicating inadequate comprehension, incorrect answers to control questions, systematic response patterns, or short completion times were excluded, and new respondents

were drawn from the panel accordingly. After some screening questions and socio-economic variables, the questionnaire addressed personal values and economic preferences in the first part. The second part contained specific climate and other environmental questions related to environmental attitudes and the questions for the dependent variables in our econometric analysis. The third part included various experiments that will not be analyzed further in this paper. The subsequent sections of the questionnaire comprised COVID-19 and health-related questions. The last part included additional information on socio-economic characteristics.[1] The average time in terms of the median required to complete the survey was about 30 minutes for all respondents (with the experiments not considered in this study taking up a large proportion of the time on average).

2.2. Dependent variables

To elicit the WTP for climate protection and biodiversity conservation, we used a simple CV method by directly asking the respondents to jointly indicate the maximum amount of Euro per year they are willing to pay voluntarily for climate protection and for combatting the loss of biodiversity, respectively. In contrast to many previous studies as discussed above, we consider general preferences for climate protection and biodiversity conservation instead of looking at specific areas such as transportation and energy efficiency in the case of climate protection or forests and trees in the case of biodiversity conservation. Since it is important to understand both concepts to adequately indicate the WTP (e.g., Christie, 2006), the participants of the survey were given a brief definition of climate change and biodiversity before seeing the WTP question. Specifically, we defined climate change as follows: "By climate change, we mean that the average temperature on Earth has risen in the last 150 years or will rise in the future and that the weather and climate will change as a result". For biodiversity the respondents were given the following definition: "By biodiversity we mean three areas, namely the diversity of animal and plant species, the genetic diversity within animal and plant species and the diversity of ecosystems".

Using a simple open-ended question to elicit the WTP for climate protection and biodiversity conservation has the advantage that it is very easy for survey participants to understand and does not provide respondents with cues (e.g., OECD, 2018; Schleich and Alsheimer, 2024). However, such open-ended formats are known to be not incentive compatible and to elicit a high number of respondents who provide either unrealistically high or zero WTP responses (e.g., Johnston et al., 2017). Alternative closed-ended formats such as single and double

[1] All survey questions that are used for our empirical analysis can be found in the online appendix.

bounded binary choices would have been possible. However, they also involve several problems (e.g., Braun et al., 2016). For example, even if they are incentive compatible, single binary-choice questions can introduce the problem of bid anchoring and insufficient responsiveness to bid amounts (e.g., Johnston et al., 2017). Furthermore, all CV and other stated preference studies are subject to the problem of hypothetical bias, i.e. incorrectly stated and in particular overstated WTP values due to the hypothetical nature of these approaches (e.g., Hanley and Czajkowski, 2019). Another important alternative (at least when field experiments are not practical or possible) is the analysis of incentivized WTP, such as in Andre et al. (2024), Engler et al. (2025), or Gleue et al. (2025), considering donations for climate protection. However, even this approach is not without concerns since windfall profits due to the underlying endowment (or "house money") can lead to more generous behavior in experiments (e.g., Dannenberg et al., 2012; Carlsson et al., 2013) or in our case to higher WTP responses for climate protection and biodiversity conservation than in the real world or when using own money or earned money.

To limit hypothetical bias, we included an extensive cheap talk script in the questionnaire prior to the WTP elicitation, as it is common practice in stated preference studies (e.g., Carlsson et al., 2005; Howard et al., 2017). Specifically, we informed the respondents that many of them state comparatively high amounts of money for environmental protection activities since they do not take into account that they would have to give up other things if they actually had to pay this amount of money. We therefore asked them to only indicate amounts of money they would actually be willing to pay in reality and to take into account their spending on other environmental protection activities and charitable purposes. In spite of the inclusion of this cheap talk script, we are aware that hypothetical bias remains an issue. In particular, some respondents in our survey provided unrealistically high WTP responses which can also be interpreted as protest answers (e.g., OECD, 2018) and thus need to be treated accordingly in the empirical analysis by dropping the corresponding observations or conducting analyses with and without these observations (e.g., Bateman et al., 1995; Johnston et al., 2017). Nevertheless, we do not consider this hypothetical bias to be a strong problem for our study since we are not interested in precise estimates of the true WTP for climate protection and biodiversity conservation, but in comparing them. For this comparison and also for the analysis of the determinants of the two WTP, hypothetical bias and protest answers can be expected to affect the WTP for climate protection and the WTP for biodiversity conservation to a similar extent so that they should not have strong impacts on the validity of our empirical results.

The variable ‘WTP climate’ in our econometric analysis is the stated maximum annual amount a respondent is willing to pay for climate protection, whereas the variable ‘WTP biodiversity’ is the stated maximum annual amount a respondent is willing to pay for combating the loss of biodiversity. Also to address outlier values, we additionally consider the variables ‘log WTP climate’ and ‘log WTP biodiversity’, i.e. the logarithmized values of the amounts (plus one due to the zero values). Furthermore, to analyze the WTP at the extensive margin, we consider the variables ‘positive WTP climate’ and ‘positive WTP biodiversity’ that take the value of one if a respondent indicated a positive WTP for climate protection and biodiversity conservation, respectively. Since we are particularly interested in comparing the WTP for biodiversity conservation with the corresponding WTP for climate protection, we additionally consider the corresponding variable ‘difference WTP’. Based on this, we also examine the variable ‘log difference WTP’ (i.e. the logarithmized values of ‘difference WTP’ plus one) to address outlier values and the variable ‘positive difference WTP’ that takes the value of one if a respondent indicated a higher WTP for climate protection than for biodiversity conservation. Since some respondents provided very unrealistically high WTP responses as aforementioned, we also consider these dependent variables in two additional subsamples for which the corresponding observations were dropped. In a first step, we excluded 1% of the highest values (e.g., Batemen et al., 1995) for the WTP for climate protection and the WTP for biodiversity conservation, respectively. In a second step, we excluded all respondents from the sample that have a WTP above 300 Euro for climate protection and biodiversity conservation, respectively. These excluded values are outliers in that they lie outside the 1.5-fold quartile range according to common statistical analyses with box plots.

To compare the WTP for climate protection and biodiversity conservation with the individual perception of the underlying global environmental problems, we also asked the survey participants (prior to the WTP questions) to indicate the importance of several global environmental problems, including climate change and the loss of biodiversity, on a symmetric scale using the five ordered response categories “completely irrelevant”, “rather unimportant”, “undecided”, “rather important”, and “very important”. In the econometric analysis, we consider the corresponding ordinal variables ‘perceived climate importance’ and ‘perceived biodiversity importance’ for the five categories, respectively.

2.3. Explanatory variables

Environmental attitudes

Since environmental attitudes are important drivers for climate protection activities (e.g., Arimura et al., 2016; Schwirplies and Ziegler, 2016; Lange et al., 2017; Ziegler, 2017; Bernard et al., 2023; Andre et al., 2024; Engler et al., 2025; Gleue et al., 2025) and for the conservation of biodiversity (e.g., Martín-López et al., 2007), we include environmental awareness and ecological policy identification in our econometric analysis. To measure environmental awareness, we consider the New Ecological Paradigm (NEP) scale according to Dunlap et al. (2000). In line with, for example, Whitmarsh (2008, 2011) or Schleich et al. (2024), our NEP scale is based on six statements, three of which are environmentally positively worded (i.e. "humans are severely abusing the environment", "plants and animals have the same right to exist as humans", "the balance of nature is very delicate and easily upset") and three are negatively worded (i.e. "humans have the right to modify the natural environment to suit their needs", "the balance of nature is strong enough to cope with the impacts of modern industrial nations", "humans were meant to rule over the rest of nature"). The respondents were asked to what extent they agree with these statements on a symmetric scale with five ordered response categories, ranging from "completely disagree" to "completely agree". In line with, for example, Ziegler (2020) or Engler et al. (2025), we assigned increasing integers from zero to four for the three environmentally positively worded statements and decreasing integers from four to zero for the three environmentally negatively worded statements. The variable 'environmental awareness' is the sum of these integers and can thus range from zero to 24, with higher values indicating a higher level of environmental awareness.

In line with, for example, Ziegler (2017, 2020) or Engler et al. (2025), we consider an additional dimension of environmental attitudes, i.e. ecological policy identification. The respondents were asked to what extent they agree with the statement "I identify myself with ecologically oriented policy" again on a symmetric scale with the five ordered response categories "completely disagree", "rather disagree", "undecided", "rather agree", and "completely agree". The corresponding dummy variable 'ecological policy identification' takes the value of one if a respondent indicated to rather or completely agree with this statement. Due to potential interrelations of policy orientations, we additionally include social, liberal, and conservative policy identifications, which is in contrast to many previous studies that measure policy identification with a one-dimensional index, for example, for left/right-wing (e.g., McCright et al., 2016), conservative/liberal (e.g., McCright and Dunlap, 2011), or Republican/Democrat (e.g., Andre et al., 2024) orientation. In line with, for example, Groh and Ziegler

(2022) or Kanberger and Ziegler (2024), the respondents were asked to what extent they agree with the three statements "I identify myself with socially oriented policy", "I identify myself with liberally oriented policy", and "I identify myself with conservatively oriented policy" on a symmetric scale with five ordered response categories again ranging from "completely disagree" to "completely agree". The corresponding dummy variables 'social policy identification', 'liberal policy identification', and 'conservative policy identification' take the value of one if a respondent indicated to rather or completely agree with the corresponding statements.

Economic preferences

Economic preferences (e.g., Falk et al., 2018, 2023) are shown to play an important role for environmental and especially climate protection activities (e.g., Newell and Siikamäki, 2015; Ziegler, 2020, 2021; Fischbacher et al., 2021). Therefore, we include risk, time, and social preferences (i.e. altruism, trust, as well as positive and negative reciprocity) as explanatory variables in our econometric analysis. In line with Falk et al. (2023) or Andre et al. (2024), we measured altruism by asking the respondents how willing they are to give for charity without expecting anything in return on a symmetric scale with the five ordered response categories "not at all willing", "rather not willing", "undecided", "rather willing", and "very willing". The dummy variable 'altruism' takes the value of one if a respondent indicated to be rather or very willing. In line with Dohmen et al. (2012), we measured trust based on the three experimentally validated survey items from the German Socio-Economic Panel (SOEP) "in general, one can trust people", "these days one cannot rely on anybody else", and "when dealing with strangers, it is better to be careful before one trusts them". The respondents were asked to what extent they agree with these statements again on a symmetric scale with five ordered response categories ranging from "completely disagree" to "completely agree". In line with, for example, Ziegler (2020, 2021) or Groh and Ziegler (2022), we consider the variable 'trust' by assigning increasing integers from zero to four to the first (positively-worded) statement and decreasing integers from four to zero to the other two (negatively-worded) statements and summing up these three integers. The variable 'trust' can thus range between zero and 12, with higher values indicating a higher level of trust.

Based on corresponding survey questions from the SOEP, our variables for positive and negative reciprocity are in line with previous studies (e.g., Dohmen et al., 2008, 2009; Caliendo et al., 2012; Kanberger and Ziegler, 2023). With respect to positive reciprocity, the respondents were asked to what extent they agree with the three statements "if someone does me a favor, I am ready to return it", "I particularly try to help someone who has helped me before", and "I am willing to incur costs to help someone who has helped me before" on a symmetric

scale with five ordered response categories ranging from "completely disagree" to "completely agree". For negative reciprocity, the respondents were similarly asked to what extent they agree with the three statements "if I am treated with great injustice, I will take revenge at the first occasion, no matter what the cost", "if someone puts me in a difficult position, I will do the same to him", and "if someone offends me, I will also offend him". Assigning increasing integers from zero to four for all statements (e.g., Groh and Ziegler, 2022), the variables 'positive reciprocity' and 'negative reciprocity' are the sums of the integers for the three statements, respectively. Both variables 'positive reciprocity' and 'negative reciprocity' can thus range between zero and 12, with higher values indicating higher levels of positive and negative reciprocity.

Our variable for risk preferences is based on a validated survey question (e.g., Dohmen et al., 2011; Vieider et al., 2015; Falk et al., 2018, 2023) from the SOEP. Therefore, the respondents were asked how willing they are personally to take risks on a symmetric scale with the five ordered response categories "not at all willing to take risks", "rather not willing to take risks", "undecided", "rather willing to take risks", and "very willing to take risks". The dummy variable 'risk-taking preferences' takes the value of one if a respondent indicated to be rather or very willing to take risks. With respect to time preferences, the respondents were asked how willing they are to give up something that is beneficial for them today to benefit more in the future (e.g., Falk et al., 2018, 2023) on a symmetric scale with the five ordered response categories "not at all willing", "rather not willing", "undecided", "rather willing", and "very willing". The corresponding dummy variable 'patience' takes the value of one if a respondent indicated to be rather or very willing to give up something today.

Further individual characteristics

With respect to socio-economic variables, we analyze income, employment, education, age, gender, marriage, and place of residence. Based on 21 income classes (from "less than 500 Euro" to "10,000 Euro or more"), the respondents were first asked how high the monthly net household income in Euro of all currently permanently living persons in their household is. Starting from the midpoint of the classes (taking into account one and a half times the lower bound for the last income class according to e.g. Feldman, 2010), we consider equivalized income (e.g., Groh and Ziegler, 2022; Kanberger and Ziegler, 2024) using a modified OECD equivalence scale (e.g., Horsfield, 2015). This scale assigns a weight of one to the first adult in the household, a weight of 0.3 to children up to the age of 13 years, and a weight of 0.5 to other older household members. Based on the variable 'equivalized income', we include the variable 'log equivalized income' (i.e. the logarithmized equivalized household net income)

in our econometric analysis. Furthermore, the dummy variable 'employed' takes the value of one if a respondent is currently employed. The dummy variable 'high education' takes the value of one if the highest level of education of a respondent is at least a university degree. The variable 'age' is the age of a respondent in years, 'female' is a dummy variable that takes the value of one if a respondent is a woman, 'married' is a dummy variable that takes the value of one if a respondent is married or has a registered civil partnership, 'children' is a dummy variable that takes the value of one if a respondent has at least one own child, and 'Eastern Germany' is a dummy variable that takes the value of one if a respondent lives in one of the East German federal states, excluding Berlin.

3. Empirical analysis

3.1 Descriptive statistics

Table 1 reports selected descriptive statistics for the dependent and explanatory variables in the econometric analysis.[2] With respect to the explanatory variables in the lower part of the table, it should be noted that the mean values are qualitatively very consistent with previous studies for Germany (e.g., Ziegler, 2020, 2021; Engler et al., 2021, 2025; Kanberger and Ziegler, 2024, or Habla et al., 2024).[3] In line with these studies, the lower part of the table shows relatively high mean values for environmental awareness, ecological policy identification, and altruism. However, the high share of respondents who identify with ecologically oriented policy should not be compared with the share of voters of the German Green Party since many voters of other parties and non-voters have an ecological policy identification (a similar conclusion applies to liberal policy identification and voting for the German Liberal Party as well as for social policy identification and voting for left-wing parties). Furthermore, the mean values for the socio-demographic variables suggest that the stratification according to age groups, gender, education, and place of main residence was successful (e.g., the shares of females and non-females in the sample are almost equal and the average age of 50.35 years is very similar to the value of 51.31 years in the adult population according to German Federal Statistical Office, 2024).

The main results in Table 1 refer to the descriptive statistics for the dependent variables. The upper part of the table reveals that for all samples considered in the econometric analysis (i.e. the full sample, the subsample excluding the highest 1% of WTP values, and the subsample

[2] The values for the corresponding logarithmized variables are not reported since they are not very informative.
[3] For comparison with these studies, it should be noted that in the case of ordered variables with five response categories, integers from zero to four are often not considered, but rather from one to five.

excluding the WTP values above 300 Euro), the mean and median WTP for climate protection is higher than the mean and median WTP for biodiversity conservation. In the two subsamples (the results in the full sample should not be interpreted due to extreme outlier values up to 30 million Euro, which are certainly due to protest answers as discussed above)[4], the mean WTP for biodiversity conservation is about 80% of the mean WTP for climate protection. While the difference between the two means of the WTP is highly statistically significant (based on appropriate z-tests), the difference is economically not as large as one might expect given the lower recognition of biodiversity loss in the public debate.[5] In addition, about 66% of the respondents indicated equal values for the WTP for climate protection and the WTP for biodiversity conservation, which leads to very high correlations between the WTP values. It is naturally possible that our survey approach could have nudged some respondents to the problem of biodiversity loss (especially respondents who are not often concerned with biodiversity loss in real life) so that the WTP is often overstated (beyond possible hypothetical bias). However, from a policy perspective, it can be concluded that these possible nudges may lead to a mean WTP for biodiversity conservation that does not differ much from the mean WTP for climate protection.

This argument is further strengthened when looking at the extensive margins. The corresponding differences are even much smaller since the WTP for climate protection is positive for about 76% of the respondents, while the WTP for biodiversity conservation is positive for about 74%. Interestingly, these values are extremely similar to the about 75% of respondents with a positive WTP for climate protection (i.e. donations for climate protection that are non-zero) in Engler et al. (2025).[6] These surprisingly similar values support the validity of our approach to elicit the WTP despite some unrealistically high (protest) WTP responses. In contrast, the perceived importance of climate change as a global environmental problem is clearly higher than that of biodiversity loss. Table 2 shows the corresponding absolute and relative frequencies for the five categories of perceived importance. Indeed, only a very small proportion of the respondents consider both global environmental problems as completely irrelevant. In addition, the vast majority of respondents consider the problems of climate change and the

[4] In particular, we have one extreme outlier with WTP values of 30 and 15 million Euro for climate protection and biodiversity conservation respectively. The second and third highest WTP values are one million and 50,000 Euro in the case of climate protection and one million and 30,000 Euro in the case of biodiversity conservation.
[5] The differences between the two medians of the WTP is higher. However, this is in particular due to large clusters for some round numbers (e.g., 20 Euro for the WTP for biodiversity conservation), which affect the medians. In the subsamples excluding the WTP values above 300 Euro, the median of the WTP for biodiversity conservation (20 Euro) is exactly 80% of the median of the WTP for climate protection (25 Euro).
[6] The means cannot be compared with each other due to the different approaches for eliciting the WTP, i.e. in Engler et al. (2025) an endowment of 100 Euro could be donated for climate protection.

loss of biodiversity as very or rather important, with the proportion for climate change (about 82%) being higher than for biodiversity loss (about 72%). In particular, however, much more respondents perceive climate change (about 55%) as a very important global environmental problem than biodiversity loss (about 38%). These results are thus in line with the above discussed mean WTP for climate protection and biodiversity loss at the intensive margin.

3.2 Econometric results

Analysis of the WTP for climate protection and biodiversity conservation

Table 3 and Table 4 report the estimation results for the explanation of the WTP for climate protection and the WTP for biodiversity conservation. Due to the structure of the underlying dependent variables 'WTP climate', 'log WTP climate', 'WTP biodiversity', and 'log WTP biodiversity', we used common linear and loglinear regression models. However, to take correlations between the (logarithmized) WTP for climate protection and the (logarithmized) WTP for biodiversity conservation (in the corresponding error terms) into account, we specifically consider seemingly unrelated (linear and loglinear) regression (SUR) models, which were estimated with the feasible general least squares (FGLS) method. Since our dependent variables are left-censored (or bounded) at zero and due to a significant proportion of WTP values of zero, we additionally examine bivariate Tobit models. It should be noted that these Tobit models, which were estimated with the simulated maximum likelihood (SML) method, also take into account the additional right-censoring in the subsamples excluding the highest 1% of WTP values and excluding the WTP values above 300 Euro. While the estimated parameters are reported for the linear and loglinear regression models (in addition to heteroskedasticity robust z-statistics), the tables report the estimated average marginal and discrete effects[7] (in addition to robust z-statistics) for the Tobit models.[8]

Both Table 3 and Table 4 show qualitatively extremely similar estimation results across the seven different model specifications and (sub)samples, respectively. In particular, the estimation results are also extremely similar across the two tables, i.e. for both the WTP for climate

[7] We use the term "effect" as it is common in econometric analyses. However, many relationships between the dependent and explanatory variables (especially attitudinal variables and economic preferences) should rather be interpreted as correlations.

[8] All estimations (and also the generation of all descriptive statistics) were conducted with the statistical software package Stata. While the estimation of the SUR models is based on the "sureg" command, the SML estimation of the bivariate Tobit models (just as the bivariate binary and ordinal probit models as discussed below) is based on the "cmp" command, which was developed by Roodman (2011). We always used 200 random draws in the underlying Geweke-Hajivassiliou-Keane (GHK) simulator that is included in the maximum likelihood estimation approach.

protection and the WTP for biodiversity conservation. For example, all 14 model specifications reveal a significantly higher WTP for highly educated, younger, and married citizens. In particular, environmental awareness, ecological policy identification, altruism, trust, and patience are significantly positively correlated with the corresponding WTP in all 14 model specifications. These results suggest that the main determinants of the preferences and WTP for climate protection and biodiversity conservation are widely equal. Quantitatively, however, the estimated correlations are different, with larger differences between the two subsamples (in the linear regression and Tobit models)[9] than between the WTP for climate protection and biodiversity conservation. As expected, the estimated correlations are mostly smaller when more observations are excluded, i.e. in our case when all respondents with a WTP above 300 Euro are excluded. However, even in this case, the size of the estimated correlations is considerable. For example, based on this smallest subsample, the estimated WTP for climate protection is between about 20 Euro (in the Tobit model) and 22 Euro (in the linear regression model) higher for citizens with a high ecological policy identification. The corresponding estimates lie between about 19 and 17 Euro for altruistic citizens. In the case of WTP for biodiversity conservation, the size of the estimates is still considerable, but smaller with values between about 15 and 16 Euro for citizens with a high ecological policy identification and between about 16 and 14 Euro for altruistic citizens.

Overall, the estimation results for environmental attitudes are in line with previous climate protection studies such as Schwirplies and Ziegler (2016), Lange et al. (2017), Ziegler (2017, 2020), Bernard et al. (2023), or Engler et al. (2025). The estimation results for altruism and patience are in line with, for example, Andre et al. (2024) and Engler et al. (2025), which consider incentivized WTP for climate protection (i.e. donations) as dependent variables. The similarity of our estimation results with estimation results based on incentivized WTP for climate protection supports the validity of our approach to elicit the WTP. An additional support of the validity of our estimation results is (similar to previous studies) the strong significantly positive correlation between (logarithmized) equivalized income and the WTP for climate protection and biodiversity conservation, i.e. higher-income citizens indicated strongly higher WTP.[10]

[9] Since the loglinear regression models capture the outlier values, the differences in the estimated correlations across the full sample and the two subsamples are clearly smaller than in the linear regression and Tobit models.
[10] Insignificant or even negatively estimated correlations for (logarithmized) equivalized income would have led to strong concerns about the validity of our simple CV approach to elicit the WTP due to the well-known problem of hypothetical bias as discussed above.

Analysis of a positive WTP for climate protection and biodiversity conservation (extensive margin)

The first six columns of Table 5 report the estimated average marginal and discrete probability effects and the corresponding robust z-statistics to explain a positive (i.e. non-zero) WTP for climate protection and biodiversity conservation. Due to the binary nature of the dependent variables 'positive WTP climate' and 'positive WTP biodiversity' and possible correlations between them as discussed above, we consider bivariate binary probit models based on all three (sub)samples, which were estimated with the SML method. The table reveals almost identical estimation results across the full sample and the two subsamples, i.e. retaining the outlier values has no relevant effects on the estimation results at the extensive margin. Furthermore, in contrast to the previous quantitative differences in the estimation results, the size of the estimated correlations with the probabilities of a positive WTP for climate protection and biodiversity conservation is overall very similar.[11] However, the main result is that the determinants for the probability of a positive WTP and for all WTP values according to the previous paragraph are extremely similar, i.e. that the main explanatory variables according to Table 3 and Table 4 (i.e. environmental awareness, ecological policy identification, altruism, trust, patience, and also equivalized income) are also significantly positively correlated with the probability of a positive WTP for climate protection and biodiversity conservation. Furthermore, the size of the estimated correlations is again considerable. For example, the estimated probability for a positive WTP for climate protection and for a positive WTP for biodiversity conservation is about 14 percentage points higher for altruistic citizens.

Analysis of perceived importance of the problems climate change and loss of biodiversity

Before analyzing the estimation results for the explanation of the perceived importance of the problems of climate change and biodiversity loss, it is important to note that these perceptions are significantly positively correlated with the WTP for climate protection and biodiversity conservation. The values of Spearman correlation coefficients are 0.340, 0.337, and 0.307 for the relationship between 'perceived climate importance' and 'WTP climate' in the two subsamples and 'positive WTP climate', respectively, as well as 0.318, 0.320, and 0.256 for the relationship between 'perceived biodiversity importance' and 'WTP biodiversity' in the two subsamples and 'positive WTP biodiversity', respectively. These correlations suggest a high (theoretical) validity of our approach to elicit the WTP, i.e. a high degree to which our WTP

[11] An interesting exception is conservative policy identification, which is significantly negatively correlated with the probability of a positive WTP for climate protection, but not significantly correlated with the probability of a positive WTP for biodiversity conservation.

values are consistent with theoretical expectations (e.g., Braun et al., 2016).[12] The last two columns of Table 5 report the results from the SML estimation (i.e. the estimated parameters and the corresponding robust z-statistics) of bivariate ordered probit models for 'perceived climate importance' and 'perceived biodiversity importance' based on the full sample. They reveal that most of the main variables that are significantly positively correlated with the WTP or positive WTP for climate protection and biodiversity conservation according to Table 3, Table 4, and the first six columns of Table 5 (i.e. environmental attitudes, altruism, trust, patience) are also significantly positively correlated with the perceived importance of climate change and biodiversity loss as global environmental problems.

One exception is (logarithmized) equivalized income, which is not significantly correlated with these perceptions. In addition, several explanatory variables such as risk-taking preferences, age, or having at least one own child differ in their estimated correlations with the perceived importance of the problems of climate change and biodiversity loss, without a clear pattern. Most interestingly is the difference between the estimated correlations with liberal and conservative policy identification. The corresponding citizens have a significantly lower perception that climate change is an important global environmental problem, whereas conservative policy identification is not significantly correlated, and liberal policy identification is even significantly positively correlated with the perception that biodiversity loss is an important problem. In combination with the strong significantly positive correlation between ecological policy identification and the perceived importance of the problem of climate change, these results reflect the ongoing controversial public debate about climate change, climate protection, and especially climate policy measures between conservative-liberally (and thus rather right-wing[13]) oriented citizens and more progressive social-ecologically (and thus rather left-wing) oriented citizens.

Analysis of differences between the WTP for climate protection and biodiversity conservation

As discussed above, Table 3 and Table 4 show that the significantly positive correlations between main explanatory variables (i.e. ecological policy identification, altruism, trust, patience, equivalized income) and the WTP for biodiversity conservation are smaller than the corresponding significantly positive correlations with the WTP for climate protection (one exception is environmental awareness). However, it is not clear from the previous analyses whether these differences in the estimates are significant. Therefore, in the first five columns

[12] According to Braun et al. (2016), insignificant or even negative correlations would suggest that the theoretical validity criterion is not satisfied.

[13] It should be noted that, in contrast to the situation in the USA, a liberal policy orientation is rather a right-wing orientation in Germany.

of Table 6, the OLS estimated parameters (in addition to the heteroskedasticity robust z-statistics) in linear and loglinear regression models to explain the differences between the WTP for climate protection and biodiversity conservation are reported based on different (sub)samples. Furthermore, in the last three columns of the table, the SML estimates and corresponding robust z-statistics of the average marginal and discrete probability effects in binary probit models to explain the positive difference between the WTP for climate protection and biodiversity conservation are reported based on all three (sub)samples.

As expected, Table 6 reveals that environmental awareness is not significantly correlated with the differences between the WTP for climate protection and biodiversity conservation in any model specification and (sub)sample. However, the most important result in the table is that in all linear regression and binary probit models (and for the most part also in the loglinear regression model based on the subsample excluding the WTP values above 300 Euro) the other main explanatory variables (i.e. ecological policy identification, altruism, trust, patience, and also equivalized income) are significantly positively correlated with the difference between the WTP for climate protection and biodiversity conservation, whereby the correlation with trust is most robust in all eight model specifications and (sub)samples, at least at the 10% significance level. In addition, the size of the significantly lower WTP for both climate protection and biodiversity conservation among younger citizens and females is significantly larger for the WTP for climate protection according to Table 3 and Table 4. This means that the estimated positive or negative correlations with the WTP for climate protection and biodiversity conservation (which are significant) are significantly larger overall for the WTP for climate protection.

4. Discussion and conclusions

This paper simultaneously examines the preferences and WTP for climate protection and biodiversity conservation. Our empirical analysis is based on data from a broadly representative large-scale computer-assisted online survey of more than 9,000 citizens in Germany in 2021. To elicit the WTP, we used a simple CV method in which the respondents were asked to jointly indicate the maximum annual amount of Euro they are willing to pay voluntarily for climate protection and for combatting the loss of biodiversity, respectively. Our data reveal a strong correlation between the perceived importance of the problems of biodiversity loss and climate change, and between the WTP for biodiversity conservation and climate protection, but a slightly higher average WTP for climate protection. Our econometric analysis shows that the main explanatory variables (i.e. environmental attitudes and economic preferences

such as altruism, trust, and patience) and some socio-economic variables (especially equivalized income) are very similar for the WTP for climate protection and biodiversity conservation. With respect to (logarithmized) equivalized income, it is interesting to note that it is not significantly correlated with the perceived importance of biodiversity loss and climate change as global environmental problems. This result suggests that also many lower-income citizens consider climate change and biodiversity loss as a threat, but (perceive to) have not sufficient resources to individually support the fight against these environmental problems financially.

Our analysis of differences in the WTP reveals that for many individual characteristics (i.e. main explanatory variables such as ecological policy identification, altruism, trust, patience, and some socio-economic variables) that are (statistically) significantly correlated with the WTP for both climate protection and biodiversity conservation, the estimated positive or negative correlations are significantly larger overall for the WTP for climate protection. These estimation results, in combination with a higher average perceived importance of climate change as a global environmental problem in our sample, could be due to the stronger recognition of climate change and protection in the public debate (e.g., in media coverage) compared to biodiversity loss and conservation. Based on this, it might be speculated that the much higher public awareness and discussion of the problem of climate change and the presumably higher lack of knowledge and uncertainty about biodiversity loss can lead to a higher activism in terms of WTP for climate protection among citizen groups with a higher WTP for both climate protection and biodiversity conservation. In contrast, citizens with high general environmental awareness (but not ecological policy identification) do not seem to respond to this public debate about climate change, climate protection, and climate policy measures in particular, which may also be due to a higher knowledge and certainty about biodiversity loss and conservation.

However, our estimation results do not only reflect that climate issues are more salient than biodiversity issues, but also the ongoing controversial public debate between conservative-liberally or right-wing oriented citizens and more progressive social-ecologically or left-wing oriented citizens. In line with previous studies as discussed above, our econometric analysis reveals that ecological and in most parts also social policy identification are significantly positively correlated with the WTP for climate protection, whereas right-wing orientation is mostly not significantly and sometimes even significantly negatively correlated with the WTP for climate protection. Furthermore, while liberal and especially conservative policy identification is significantly negatively correlated with the perceived importance of climate change as a global environmental problem, conservative policy identification is not significantly and

liberal policy identification (in line with ecological policy identification) is even strongly significantly positively correlated with the perceived importance of biodiversity loss as a global environmental problem. Therefore, these results suggest that the publicly much less recognized and controversially discussed problem of biodiversity loss and conservation is not significantly less considered by citizens with a right-wing orientation.

Despite the general differences in the WTP between climate protection and biodiversity conservation, an important result is that the average WTP for biodiversity conservation is also considerable. It is naturally possible that the stated WTP can be influenced by the measurement with the CV approach in our survey. In particular, hypothetical bias is possible, i.e. overstating WTP, although the average stated WTP for climate protection (at least in terms of positive WTP) in our analysis does not differ much from the average WTP values in previous studies that are based on incentivized schemes. Furthermore, the stated WTP could also be influenced by the description of biodiversity (loss) and the direct comparison with climate change (protection) in the survey, which could inform the respondents about this environmental problem, although they were generally not aware of it. However, despite these methodological limitations of our empirical analysis, the only slightly lower average WTP for biodiversity conservation and the still considerable average perception of biodiversity loss as an important global environmental problem suggest a considerable average preference for combating this problem, at least when citizens are made aware of it. We therefore conclude that there is not only considerable support for climate protection measures in environmental policy, but also (e.g., after information campaigns to increase the awareness of the consequences of biodiversity loss) considerable support for specific biodiversity conservation measures. To further increase this support and also voluntary individual biodiversity conservation activities, citizens with a higher stated WTP (e.g., people with stronger environmental attitudes or higher trust and patience) could be provided with targeted information.

The methodological limitations in our empirical analysis provide a good basis for future studies. For example, the WTP for biodiversity conservation could be measured using more sophisticated CV approaches or especially incentivized schemes that are often used to measure the WTP for climate protection (a rare application of incentivized WTP for biodiversity conservation can be found in the empirical analysis of Shreedhar and Mourato, 2019, although they only consider a very limited sample of students in the lab). In such incentivized (survey) experiments (with samples from a broad population), it would also be interesting to examine differences in the WTP between certain areas of biodiversity conservations (e.g., in terms of animal and plant species diversity) and certain areas of climate protection (e.g., support of

renewable energies or carbon offsetting). Furthermore, our speculation that information about biodiversity (loss) leads to a higher WTP could be examined in an appropriate randomized experiment. In addition, it would be interesting to analyze the WTP for biodiversity conservation compared to climate protection in other countries and also on other continents.

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Tables

Table 1: Descriptive statistics for dependent and explanatory variables

	Mean	Standard deviation	Minimum	Median	Maximum	Number of respondents
Dependent variables						
WTP climate	3,547.85	316,033.30	0	50	30,000,000	9,021
WTP climate (drop >1% sample)	81.05	145.88	0	40	1,000	8,930
WTP climate (drop >300 Euro sample)	52.77	63.91	0	25	300	8,465
Positive WTP climate	0.76	0.43	0	1	1	9,021
WTP biodiversity	1,861.93	158,279.10	0	20	15,000,000	9,021
WTP biodiversity (drop >1% sample)	64.62	123.55	0	20	1,000	8,930
WTP biodiversity (drop >300 Euro sample)	42.70	55.62	0	20	300	8,465
Positive WTP biodiversity	0.74	0.44	0	1	1	9,021
Difference WTP	1,685.92	157,929.80	-5,000	0	15,000,000	9,021
Difference WTP (drop >1% sample)	16.43	75.97	-1,000	0	1,000	8,930
Difference WTP (drop >300 Euro sample)	10.07	34.86	-290	0	280	8,465
Positive difference WTP	0.27	0.44	0	0	1	9,021
Explanatory variables						
Environmental awareness	18.59	4.05	0	19	24	9,021
Ecological policy identification	0.39	0.49	0	0	1	9,021
Social policy identification	0.60	0.49	0	1	1	9,021
Liberal policy identification	0.31	0.46	0	0	1	9,021
Conservative policy identification	0.24	0.42	0	0	1	9,021
Altruism	0.65	0.48	0	1	1	9,021
Trust	5.29	2.38	0	5	12	9,021
Positive reciprocity	9.44	1.86	0	9	12	9,021
Negative reciprocity	4.47	2.82	0	4	12	9,021
Risk-taking preferences	0.28	0.45	0	0	1	9,021
Patience	0.54	0.50	0	1	1	9,021
Equivalized income	1,811.02	1,154.60	45.45	1750	15,000	9,021
Employed	0.62	0.49	0	1	1	9,021
High education	0.12	0.32	0	0	1	9,021
Age	50.35	16.26	18	52	93	9,021
Female	0.49	0.50	0	0	1	9,021
Married	0.50	0.50	0	0	1	9,021
Children	0.60	0.49	0	1	1	9,021
Eastern Germany	0.17	0.38	0	0	1	9,021

Table 2: Absolute and relative frequencies (in %) of perceived importance of climate change and loss of biodiversity as global environmental problems, 9,021 respondents

	Completely irrelevant	Rather unimportant	Undecided	Rather important	Very important
Climate change	216 (2.39%)	371 (4.11%)	1,021 (11.32%)	2,464 (27.31%)	4,949 (54.86%)
Loss of biodiversity	130 (1.44%)	268 (2.97%)	2.099 (23.27%)	3,073 (34.06%)	3,451 (38.26%)

Table 3: FGLS estimates (heteroskedasticity robust z-statistics) in linear and loglinear SUR models and SML estimates (robust z-statistics) of average marginal and discrete effects in bivariate Tobit models for the WTP for climate protection

	Dependent variable: 'WTP climate'				Dependent variable: 'Log WTP climate'		
Explanatory variable	(1) Linear SUR model, drop >1% sample	(2) Linear SUR model, drop >300 Euro sample	(3) Bivariate Tobit model, drop >1% sample	(4) Bivariate Tobit model, drop >300 Euro Sample	(5) Loglinear SUR model, full sample	(6) Loglinear SUR model, drop >1% sample	(7) Loglinear SUR model, drop >300 Euro sample
Environmental awareness	2.935*** (8.05)	1.886*** (12.01)	3.179*** (10.35)	1.980*** (12.88)	0.075*** (14.26)	0.075*** (14.42)	0.072*** (14.23)
Ecological policy identification	40.146*** (11.10)	21.972*** (13.74)	33.848*** (12.23)	19.561*** (13.78)	0.731*** (15.98)	0.700*** (15.67)	0.627*** (14.27)
Social policy identification	4.466 (1.43)	4.155*** (2.92)	7.771*** (3.16)	5.401*** (4.17)	0.190*** (4.23)	0.201*** (4.56)	0.207*** (4.78)
Liberal policy identification	1.654 (0.47)	-2.675* (-1.77)	1.695 (0.65)	-1.672 (-1.30)	0.011 (0.26)	0.010 (0.23)	-0.007 (-0.16)
Conservative policy identification	-2.189 (-0.62)	1.965 (1.23)	-3.005 (-1.12)	0.657 (0.46)	-0.074 (-1.54)	-0.056 (-1.18)	-0.047 (-1.01)
Altruism	27.400*** (9.38)	16.814*** (12.33)	32.533*** (13.79)	19.071*** (15.28)	0.787*** (16.90)	0.779*** (16.95)	0.732*** (16.25)
Trust	5.199*** (7.42)	2.880*** (10.02)	5.282*** (9.77)	2.982*** (11.50)	0.110*** (12.40)	0.110*** (12.73)	0.102*** (12.06)
Positive reciprocity	0.897 (1.15)	0.720** (2.13)	1.131* (1.77)	0.785** (2.40)	0.018 (1.55)	0.021* (1.88)	0.025** (2.28)
Negative reciprocity	-1.528*** (-2.99)	-0.646*** (-2.76)	-0.772* (-1.89)	-0.349 (-1.62)	-0.019** (-2.46)	-0.017** (-2.29)	-0.012* (-1.68)
Risk-taking preferences	12.242*** (3.10)	0.713 (0.45)	6.778** (2.34)	-0.217 (-0.16)	0.069 (1.51)	0.027 (0.61)	-0.041 (-0.92)
Patience	19.841*** (6.71)	11.627*** (8.80)	19.319*** (8.45)	11.388*** (9.57)	0.437*** (10.46)	0.431*** (10.55)	0.397*** (9.90)
Log equivalized income	24.514*** (7.80)	11.489*** (9.94)	18.857*** (7.79)	9.719*** (9.07)	0.348*** (9.48)	0.342*** (9.55)	0.282*** (8.20)
Employed	0.599 (0.17)	2.913* (1.91)	1.140 (0.41)	2.577* (1.86)	0.067 (1.42)	0.053 (1.15)	0.078* (1.71)
High education	30.560*** (5.03)	10.076*** (4.08)	20.911*** (4.59)	7.532*** (3.55)	0.269*** (4.26)	0.236*** (3.83)	0.148** (2.41)
Age	-0.585*** (-4.75)	-0.333*** (-6.50)	-0.735*** (-7.90)	-0.412*** (-9.05)	-0.015*** (-9.80)	-0.015*** (-9.87)	-0.014*** (-9.21)
Female	-22.019*** (-7.43)	-5.477*** (-4.18)	-14.317*** (-6.33)	-3.848*** (-3.29)	-0.130*** (-3.27)	-0.127*** (-3.25)	-0.048 (-1.23)
Married	12.717*** (4.30)	6.364*** (4.69)	10.409*** (4.47)	5.653*** (4.59)	0.224*** (5.27)	0.212*** (5.10)	0.181*** (4.42)
Children	8.130** (2.42)	0.888 (0.60)	6.678** (2.59)	1.230 (0.92)	0.034 (0.75)	0.045 (1.00)	-0.000 (-0.01)
Eastern Germany	-4.998 (-1.36)	-7.469*** (-4.79)	-6.232** (-2.19)	-6.882*** (-4.89)	-0.198*** (-3.86)	-0.187*** (-3.71)	-0.222*** (-4.51)
Number of respondents	8,930	8,465	8,930	8,465	9,012	8,930	8,465

Notes * (**, ***) means that the appropriate correlation or effect is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 4: FGLS estimates (heteroskedasticity robust z-statistics) in linear and loglinear SUR models and SML estimates (robust z-statistics) of average marginal and discrete effects in bivariate Tobit models for the WTP for biodiversity conservation

	Dependent variable: 'WTP biodiversity'				Dependent variable: 'Log WTP biodiversity'		
Explanatory variable	(1) Linear SUR model, drop >1% sample	(2) Linear SUR model, drop >300 Euro sample	(3) Bivariate Tobit model, drop >1% sample	(4) Bivariate Tobit model, drop >300 Euro sample	(5) Loglinear SUR model, full sample	(6) Loglinear SUR model, drop >1% sample	(7) Loglinear SUR model, drop >300 Euro sample
Environmental awareness	2.928*** (9.15)	1.853*** (13.21)	3.011*** (11.30)	1.883*** (13.87)	0.077*** (14.87)	0.076*** (15.05)	0.072*** (14.67)
Ecological policy identification	29.936*** (9.89)	16.399*** (11.52)	25.679*** (11.27)	14.687*** (11.96)	0.685*** (15.27)	0.653*** (14.92)	0.587*** (13.59)
Social policy identification	1.564 (0.60)	2.802** (2.20)	5.032** (2.47)	4.075*** (3.60)	0.164*** (3.73)	0.171*** (3.98)	0.182*** (4.30)
Liberal policy identification	4.986 (1.64)	-0.258 (-0.19)	3.918* (1.79)	0.224 (0.20)	0.050 (1.19)	0.046 (1.11)	0.028 (0.68)
Conservative policy identification	0.836 (0.27)	2.565* (1.80)	0.188 (0.08)	1.566 (1.25)	0.017 (0.36)	0.033 (0.73)	0.040 (0.89)
Altruism	24.480*** (10.11)	13.898*** (11.61)	28.530*** (14.53)	16.047*** (14.94)	0.756*** (16.78)	0.754*** (16.98)	0.697*** (16.03)
Trust	3.430*** (5.95)	2.153*** (8.50)	3.727*** (8.55)	2.283*** (10.17)	0.101*** (11.78)	0.100*** (11.94)	0.094*** (11.41)
Positive reciprocity	-0.099 (-0.14)	0.533* (1.76)	0.402 (0.72)	0.663** (2.31)	0.024** (2.07)	0.025** (2.33)	0.031*** (2.94)
Negative reciprocity	-0.905** (-2.07)	-0.385* (-1.87)	-0.349 (-1.02)	-0.144 (-0.78)	-0.012* (-1.69)	-0.012* (-1.71)	-0.009 (-1.25)
Risk-taking preferences	13.122*** (3.82)	-0.086 (-0.06)	7.616*** (3.07)	-0.759 (-0.65)	0.065 (1.44)	0.030 (0.68)	-0.051 (-1.18)
Patience	15.039*** (5.95)	9.922*** (8.59)	14.630*** (7.65)	9.476*** (9.27)	0.375*** (9.22)	0.372*** (9.37)	0.344*** (8.80)
Log equivalized income	21.319*** (8.18)	8.922*** (8.83)	16.066*** (8.13)	7.281*** (7.90)	0.324*** (9.22)	0.322*** (9.35)	0.252*** (7.58)
Employed	1.144 (0.39)	2.918** (2.12)	1.680 (0.75)	2.611** (2.16)	0.093** (2.05)	0.081* (1.81)	0.103** (2.33)
High education	25.520*** (4.76)	8.555*** (3.88)	17.385*** (4.43)	6.418*** (3.46)	0.286*** (4.70)	0.259*** (4.36)	0.167*** (2.83)
Age	-0.414*** (-4.06)	-0.176*** (-3.86)	-0.558*** (-7.31)	-0.266*** (-6.72)	-0.012*** (-8.39)	-0.012*** (-8.19)	-0.011*** (-7.43)
Female	-14.360*** (-5.63)	-2.864** (-2.46)	-8.613*** (-4.51)	-1.635 (-1.61)	-0.088** (-2.26)	-0.093** (-2.43)	-0.014 (-0.38)
Married	12.750*** (4.97)	5.364*** (4.44)	10.339*** (5.22)	4.786*** (4.46)	0.221*** (5.35)	0.208*** (5.15)	0.178*** (4.47)
Children	5.721* (1.93)	0.183 (0.14)	4.526** (2.04)	0.514 (0.44)	0.026 (0.58)	0.031 (0.71)	-0.012 (-0.28)
Eastern Germany	-1.346 (-0.43)	-4.675*** (-3.27)	-3.507 (-1.46)	-4.648*** (-3.69)	-0.180*** (-3.58)	-0.172*** (-3.47)	-0.212*** (-4.40)
Number of respondents	8,930	8,465	8,930	8,465	9,021	8,930	8,465

Notes * (**, ***) means that the appropriate correlation or effect is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 5: SML estimates (robust z-statistics) of average marginal and discrete probability effects in bivariate binary probit models for a positive WTP for climate protection and biodiversity conservation and SML estimates (robust z-statistics) in bivariate ordered probit models for the perceived importance of the problems of climate protection and biodiversity conservation

	Dependent variable: 'Positive WTP climate'			Dependent variable: 'Positive WTP biodiversity'			Dependent variable: 'Perceived climate importance'	Dependent variable: 'Perceived biodiversity importance'
Explanatory variable	(1) Bivariate binary probit model, full sample	(2) Bivariate binary probit model, drop >1% sample	(3) Bivariate binary probit model, drop >300 Euro sample	(4) Bivariate binary probit model, full sample	(5) Bivariate binary probit model, drop >1% sample	(6) Bivariate binary probit model, drop >300 Euro sample	(7) Bivariate ordered probit model, full sample	(8) Bivariate ordered probit model, full sample
Environmental awareness	0.012*** (10.68)	0.012*** (10.57)	0.012*** (10.44)	0.012*** (10.40)	0.012*** (10.27)	0.012*** (9.97)	0.131*** (33.93)	0.108*** (29.38)
Ecological policy identification	0.114*** (11.99)	0.114*** (11.90)	0.113*** (11.25)	0.117*** (11.82)	0.117*** (11.74)	0.117*** (11.18)	0.719*** (22.92)	0.532*** (18.80)
Social policy identification	0.044*** (4.73)	0.044*** (4.73)	0.046*** (4.72)	0.045*** (4.63)	0.044*** (4.55)	0.046*** (4.56)	0.027 (0.96)	0.051* (1.90)
Liberal policy identification	0.002 (0.24)	0.003 (0.27)	0.001 (0.12)	0.002 (0.24)	0.002 (0.22)	0.001 (0.11)	-0.073** (-2.45)	0.096*** (3.56)
Conservative policy identification	-0.034*** (-3.36)	-0.034*** (-3.32)	-0.036*** (-3.31)	-0.013 (-1.29)	-0.013 (-1.23)	-0.013 (-1.22)	-0.226*** (-7.27)	0.027 (0.93)
Altruism	0.135*** (13.29)	0.136*** (13.27)	0.138*** (12.97)	0.141*** (13.47)	0.142*** (13.52)	0.143*** (13.13)	0.201*** (7.11)	0.106*** (3.87)
Trust	0.020*** (10.65)	0.020*** (10.61)	0.021*** (10.27)	0.020*** (10.31)	0.020*** (10.21)	0.020*** (9.85)	0.033*** (5.24)	0.011* (1.82)
Positive reciprocity	0.004 (1.57)	0.004 (1.63)	0.005* (1.89)	0.007*** (2.81)	0.007*** (2.83)	0.008*** (3.04)	0.032*** (4.13)	0.071*** (9.47)
Negative reciprocity	0.000 (0.10)	0.000 (0.11)	0.001 (0.31)	0.001 (0.34)	0.000 (0.28)	0.001 (0.43)	0.000 (0.02)	-0.000 (-0.07)
Risk-taking preferences	-0.010 (-0.98)	-0.012 (-1.17)	-0.018* (-1.69)	-0.009 (-0.89)	-0.011 (-1.06)	-0.017 (-1.58)	-0.084*** (-2.74)	-0.047 (-1.62)
Patience	0.068*** (7.69)	0.068*** (7.65)	0.069*** (7.42)	0.060*** (6.51)	0.060*** (6.55)	0.061*** (6.35)	0.169*** (6.17)	0.100*** (3.89)
Log equivalized income	0.026*** (3.59)	0.026*** (3.59)	0.025*** (3.18)	0.028*** (3.73)	0.028*** (3.72)	0.025*** (3.10)	-0.012 (-0.52)	-0.004 (-0.16)
Employed	0.006 (0.60)	0.006 (0.60)	0.008 (0.77)	0.012 (1.17)	0.012 (1.17)	0.015 (1.34)	-0.118*** (-3.67)	0.055* (1.83)
High education	0.018 (1.28)	0.018 (1.25)	0.014 (0.88)	0.028** (2.05)	0.029** (2.08)	0.025 (1.61)	0.174*** (4.15)	0.307*** (8.01)
Age	-0.004*** (-10.90)	-0.004*** (-10.91)	-0.004*** (-10.56)	-0.003*** (-10.10)	-0.003*** (-10.08)	-0.004*** (-9.74)	0.001 (0.57)	0.004*** (4.05)
Female	0.005 (0.59)	0.005 (0.61)	0.009 (0.98)	0.007 (0.83)	0.007 (0.82)	0.012 (1.32)	-0.051* (-1.87)	0.010 (0.39)
Married	0.026*** (2.87)	0.026*** (2.88)	0.025*** (2.61)	0.030*** (3.19)	0.029*** (3.13)	0.028*** (2.92)	0.022 (0.77)	-0.001 (-0.05)
Children	0.005 (0.55)	0.005 (0.55)	0.002 (0.16)	0.002 (0.16)	0.002 (0.16)	-0.001 (-0.12)	0.011 (0.34)	-0.078*** (-2.70)
Eastern Germany	-0.034*** (-3.10)	-0.034*** (-3.03)	-0.037*** (-3.16)	-0.041*** (-3.57)	-0.040*** (-3.54)	-0.044*** (-3.68)	-0.236*** (-7.20)	-0.023 (-0.74)
Number of respondents	9,021	8,930	8,465	9,021	8,930	8,465	9,021	9,021

Notes * (**, ***) means that the appropriate parameter, correlation, or effect is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 6: OLS estimates (heteroskedasticity robust z-statistics) in linear and loglinear regression models for the difference between the WTP for climate protection and biodiversity conservation and SML estimates (robust z-statistics) of average marginal and discrete effects in binary probit models for a positive difference in the WTP for climate protection and biodiversity conservation

	Dependent variable: 'Difference WTP'		Dependent variable: 'Log difference WTP'			Dependent variable: 'Positive difference WTP'		
Explanatory variable	(1) Linear regression model, drop >1% sample	(2) Linear regression model, drop >300 Euro sample	(3) Loglinear regression model, full sample	(4) Loglinear regression model, drop >1% sample	(5) Loglinear regression model, drop >300 Euro sample	(6) Binary probit model, full sample	(7) Binary probit model, drop >1% sample	(8) Binary probit model, drop >300 Euro sample
Environmental awareness	0.007 (0.03)	0.033 (0.33)	0.000 (0.13)	0.000 (0.06)	-0.000 (-0.48)	-0.001 (-0.81)	-0.001 (-0.96)	-0.001 (-0.60)
Ecological policy identification	10.209*** (5.10)	5.573*** (5.64)	0.003 (0.68)	0.008*** (2.94)	0.018*** (4.64)	0.052*** (4.63)	0.053*** (4.74)	0.047*** (4.14)
Social policy identification	2.902 (1.62)	1.353 (1.56)	-0.002 (-0.57)	0.005 (1.63)	0.003 (0.81)	0.040*** (3.70)	0.040*** (3.71)	0.042*** (3.87)
Liberal policy identification	-3.332* (-1.68)	-2.417** (-2.59)	0.004 (1.00)	-0.006* (-1.93)	-0.008** (-2.38)	-0.014 (-1.38)	-0.014 (-1.35)	-0.011 (-1.06)
Conservative policy identification	-3.025 (-1.54)	-0.599 (-0.60)	-0.001 (-0.60)	-0.001 (-0.43)	-0.006 (-1.56)	-0.010 (-0.86)	-0.008 (-0.72)	-0.006 (-0.56)
Altruism	2.920* (1.82)	2.916*** (3.74)	0.000 (0.12)	-0.001 (-0.24)	0.006** (2.30)	0.075*** (7.09)	0.075*** (7.14)	0.076*** (7.16)
Trust	1.769*** (4.51)	0.727*** (4.09)	0.001* (1.85)	0.002*** (2.76)	0.002*** (3.77)	0.008*** (3.70)	0.007*** (3.40)	0.007*** (3.04)
Positive reciprocity	0.996*** (2.69)	0.187 (0.93)	-0.000 (-0.14)	0.001 (0.96)	0.001 (0.88)	-0.000 (-0.09)	-0.000 (-0.17)	-0.001 (-0.40)
Negative reciprocity	-0.623** (-2.18)	-0.261* (-1.83)	-0.001* (-1.78)	-0.000 (-0.12)	-0.001** (-1.99)	0.000 (0.10)	0.000 (0.19)	0.001 (0.64)
Risk-taking preferences	-0.880 (-0.39)	0.799 (0.82)	0.002 (0.31)	-0.004 (-0.90)	0.003 (0.95)	0.009 (0.80)	0.006 (0.52)	0.004 (0.34)
Patience	4.802*** (2.97)	1.705** (2.20)	-0.004 (-1.06)	0.006 (1.53)	0.002 (0.60)	0.056*** (5.62)	0.056*** (5.66)	0.056*** (5.61)
Log equivalized income	3.195* (1.80)	2.567*** (3.70)	0.000 (0.18)	-0.004 (-0.82)	0.006** (2.25)	0.031*** (3.66)	0.030*** (3.58)	0.031*** (3.60)
Employed	-0.545 (-0.28)	-0.005 (-0.01)	-0.001 (-0.53)	0.000 (0.16)	0.004 (0.71)	-0.015 (-1.35)	-0.016 (-1.42)	-0.014 (-1.19)
High education	5.040 (1.41)	1.521 (0.98)	0.000 (0.06)	-0.003 (-0.37)	0.003 (0.68)	0.019 (1.28)	0.017 (1.12)	0.011 (0.69)
Age	-0.171** (-2.35)	-0.157*** (-4.84)	-0.000 (-0.72)	-0.000 (-1.29)	-0.000 (-1.40)	-0.003*** (-6.86)	-0.003*** (-6.99)	-0.003*** (-7.20)
Female	-7.659*** (-4.75)	-2.613*** (-3.36)	0.002 (0.55)	-0.005 (-1.64)	-0.008*** (-3.11)	-0.028*** (-2.86)	-0.025*** (-2.63)	-0.022** (-2.26)
Married	-0.033 (-0.02)	1.000 (1.26)	0.009* (1.81)	-0.002 (-0.55)	0.002 (0.69)	0.014 (1.34)	0.012 (1.14)	0.014 (1.34)
Children	2.408 (1.24)	0.705 (0.81)	-0.008* (-1.80)	0.006 (1.38)	0.001 (0.20)	-0.014 (-1.28)	-0.013 (-1.13)	-0.013 (-1.17)
Eastern Germany	-3.652* (-1.79)	-2.794*** (-2.91)	0.001 (0.61)	-0.004 (-1.55)	-0.012** (-2.49)	-0.017 (-1.44)	-0.018 (-1.49)	-0.018 (-1.48)
Number of respondents	8,930	8,465	9,021	8,930	8,465	9,021	8,930	8,465

Notes * (**, ***) means that the appropriate correlation or effect is different from zero at the 10% (5%, 1%) significance level, respectively.

Online appendix: Survey questions for the variables in the empirical analysis (translated into English)

The following statements are the basis for the dependent variables 'perceived climate importance' and 'perceived biodiversity importance':

In the following, various global environmental problems are considered, i.e. climate change, loss of biodiversity, water pollution, air pollution and waste.

By climate change we mean that the average temperature on earth has risen in the last 150 years or will rise in the future and that the weather and climate are changing as a result.

By biodiversity we mean three areas, namely the diversity of animal and plant species, the genetic diversity within animal and plant species and the diversity of ecosystems.

How important do you think the following global environmental problems mentioned above are?

Environmental problem	Completely irrelevant	Rather unimportant	Undecided	Rather important	Very important
Climate change	□	□	□	□	□
Loss of biodiversity	□	□	□	□	□

The following questions are the basis for the dependent variables 'WTP climate' and 'WTP biodiversity':

Environmental protection activities to combat global environmental problems are associated with higher costs, at least in the short term. These costs arise if you take voluntary action yourself, for example, by donating to an environmental protection organization or buying more expensive environmentally friendly products. However, additional costs can also arise from governmental environmental protection measures, for example, as part of the energy transition, if these costs are financed through taxes or levies.

In the following, we would like to ask you about your financial readiness for climate protection (i.e. for combating climate change) and for combating the loss of biodiversity, regardless of whether this involves the financing of voluntary activities or the financing of government measures, for example.

In this context, we would like to point out that some interviewees state comparatively high amounts of money for environmental protection activities. Presumably the respondents do not take into account at this moment that they would have to forgo other things if they actually had to pay this amount of money. We would therefore like to ask you to only indicate amounts of money that you would actually be prepared to pay in reality. We would also like to ask you to take into account your expenditure for other environmental protection activities and for charitable purposes.

Please indicate the maximum amount of Euro per year that you are willing to pay voluntarily for climate protection and combating the loss of biodiversity.

Amount for climate protection in Euro: _____
Amount to combat the loss of biodiversity in Euro: _____

The following statements are the basis for the explanatory variable 'environmental awareness':

Now we consider the relationship between humans and the environment. Please indicate to what extent you agree with the following statements:

	Completely disagree	Rather disagree	Undecided	Rather agree	Completely agree
Humans have the right to modify the natural environment to suit their needs	□	□	□	□	□
Humans are severely abusing the environment	□	□	□	□	□
Plants and animals have the same right to exist as humans	□	□	□	□	□
The balance of nature is strong enough to cope with the impacts of modern industrial nations	□	□	□	□	□
Humans were meant to rule over the rest of nature	□	□	□	□	□
The balance of nature is very delicate and easily upset	□	□	□	□	□

The following statements are the basis for the explanatory variables 'ecological policy identification', 'social policy identification', 'liberal policy identification', and 'conservative policy identification':

Now we would like to know something about your personal attitudes towards politics. Again, please indicate to what extent you agree with the following statements:

	Completely disagree	Rather disagree	Undecided	Rather agree	Completely agree
I identify myself with ecologically oriented policy	□	□	□	□	□
I identify myself with socially oriented policy	□	□	□	□	□
I identify myself with liberally oriented policy	□	□	□	□	□
I identify myself with conservatively oriented policy	□	□	□	□	□

The following question is the basis for the explanatory variable 'altruism':

How willing are you to give for charity without expecting anything in return?

Not at all willing	Rather not willing	Undecided	Rather willing	Very willing
□	□	□	□	□

The following statements are the basis for the explanatory variables 'trust', 'positive reciprocity', and 'negative reciprocity':

Now we are interested in your views on other people. Please indicate to what extent you agree with the following statements:

	Completely disagree	Rather disagree	Undecided	Rather agree	Completely agree
In general, one can trust people	□	□	□	□	□
These days one cannot rely on anybody else	□	□	□	□	□
When dealing with strangers, it is better to be careful before one trusts them	□	□	□	□	□
If someone does me a favor, I am ready to return it	□	□	□	□	□
I particularly try to help someone who has helped me before	□	□	□	□	□
I am willing to incur costs to help someone who has helped me before	□	□	□	□	□
If I am treated with a great injustice, I will take revenge at the first occasion, no matter what the cost	□	□	□	□	□
If someone puts me in a difficult position, I will do the same to him	□	□	□	□	□
If someone offends me, I will also offend him	□	□	□	□	□

The following question is the basis for the explanatory variable 'risk-taking preferences':

How willing are you personally to take risks?

Not at all willing to take risks	Rather not willing to take risks	Undecided	Rather willing to take risks	Very willing to take risks
□	□	□	□	□

The following question is the basis for the explanatory variable 'patience':

How willing are you to give up something that is beneficial for you today to benefit more from that in the future?

Not at all willing	Rather not willing	Undecided	Rather willing	Very willing
□	□	□	□	□

The following question and request are the basis for the explanatory variable 'log equivalized income':

How high is the monthly household income of all currently permanently living (based on the primary residence) persons in your household?
Please refer to the current net monthly amount, i.e. after deduction of taxes and social security contributions, and please add regular payments such as pensions, housing allowance, child benefit, BAföG, or alimonies. If you are not sure, please estimate the monthly amount.

Less than 500 Euro	□
500 to less than 1,000 Euro	□
1,000 to less than 1,500 Euro	□
1,500 to less than 2,000 Euro	□
2,000 to less than 2,500 Euro	□
2,500 to less than 3,000 Euro	□
3,000 to less than 3,500 Euro	□
3,500 to less than 4,000 Euro	□
4,000 to less than 4,500 Euro	□
4,500 to less than 5,000 Euro	□
5,000 to less than 5,500 Euro	□
5,500 to less than 6,000 Euro	□
6,000 to less than 6,500 Euro	□
6,500 to less than 7,000 Euro	□
7,000 to less than 7,500 Euro	□
7,500 to less than 8,000 Euro	□
8,000 to less than 8,500 Euro	□
8,500 to less than 9,000 Euro	□
9,000 to less than 9,500 Euro	□
9,500 to less than 10,000 Euro	□
10,000 Euro or more	□

Please indicate the number of all persons currently living permanently in your household (yourself included) in the following age groups:

Number of children under 14 years: _____
Number of persons between 14 and 65 years: _____
Number of persons between 66 and 74 years: _____
Number of persons over 74 years: _____

The following question is the basis for the explanatory variable 'employed':

In which form of employment are you currently engaged? Employment is understood as any paid activity associated with an income, irrespective of the amount of time involved.

Full-time employment (at least 35 hours per week on average)	□
Part-time employment (20 to less than 35 hours per week on average)	□
Marginal or irregular employment (less than 20 hours per week on average)	□
No employment	□

The following request is the basis for the explanatory variable 'high education':

Please indicate your highest school or university degree:

I left school without a graduate	□
Elementary or secondary school degree (GDR: 8th grade)	□
Secondary school degree ("Mittlere Reife") (GDR: 10th grade)	□
Degree from a polytechnic high school (8th / 10th grade)	□
Advanced technical college certificate	□
High school degree ("Abitur") or higher education entrance qualification	□
Degree from a university of applied sciences or from a vocational academy (GDR: Engineering and technical high school degree)	□
University or college degree	□
Doctorate or habilitation	□
Other qualifications with a high school degree ("Abitur") or a higher education entrance qualification	□
Other qualifications without a high school degree ("Abitur") or a higher education entrance qualification	□

The following request is the basis for the explanatory variable 'age':

Please indicate your age:

Age in years: _____

The following request is the basis for the explanatory variable 'female':

Please indicate your gender:

Male	□
Female	□
Divers	□

The following request is the basis for the explanatory variable 'married':

Please indicate your current marital status:

Single	□
Married or registered civil partnership	□
Widowed or registered partner deceased	□
Divorced or registered civil partnership cancelled	□

The following request is the basis for the explanatory variable 'children':

Please indicate the number of your own children and grandchildren, irrespective of where they live:

Number of children: _____
Number of grandchildren: _____

The following request is the basis for the explanatory variable 'Eastern Germany':

Please indicate in which city or municipality you currently live:

Name of the city or municipality: _____
Zip code of the city or municipality: _____