Willingness to Pay for Climate Friendly Energy in Romania. A Sociological Approach[1]

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Willingness to Pay for Climate Friendly Energy in Romania. A Sociological Approach. In this paper I intend to focus on the individuals' choices with the aim of establishing those micro-level factors which significantly increase the likelihood of financial support for climate change mitigation in the case of Romania. The analysis builds on the databases of the 2008 and 2009 Special Eurobarometers on Europeans' attitudes towards climate change. The dependent variable is the willingness to pay for climate friendly energy (i.e. for energy produced from sources which generate less greenhouse emissions), used firstly in the form of a binary variable (yes vs. no) and subsequently in such a way as to indicate the degree of financial support (if yes, how much respondents are willing to pay). Results suggest that in both 2008 and 2009, appreciatively one third of the Romanian respondents declared willingness to pay for climate friendly energy which is significantly below the European average. Moreover, Romania provides one of the highest percentages of indecisive respondents. Statistical models underscore the fact that in-principle willingness to pay is determined by climate-change attitudes, education and age, while income plays only a marginal role. On the other hand, the proclivity to invest higher amounts of money in clean energy is dramatically dependent on the respondents' income and illustrates the relevance of the economic model in explaining the willingness to pay.
Sociológia 2013, Vol. 45 (No. 6: 566-588)

Key words: *climate change; energy; contingent valuation; Romania*

Introduction

The dangerously growing average temperature of the atmosphere, that is the phenomenon of climate change, constitutes a much debated issue within the scientific community. Szerszynski and Urry (2010) classify into three major paradigms the most important viewpoints on the origins of climate change and the role of human activities in generating it. 1) scepticism covers the abrupt climate change thesis and claims that climate change is a natural process, linked to fluctuations in the solar activity rather than to anthropogenic causes; 2) gradualism is a more careful approach which contends that climate is changing and humans are significantly, if not entirely, responsible for these changes which, being slow, allow for the economies to adjust to them either by reducing or by adopting them; 3) catastrophism is a radical standpoint which claims that climate change is abrupt and sudden and, therefore, little can be done to stop its negative impacts.

[1] This work was supported by a grant of the Romanian Ministry of Education, CNCS – UEFISCDI, project number PN-II-RU-PD-2012-3-0157.
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The most important scientific community in connection with the climate change phenomenon, i.e. the IPCC as well as the much referred Stern Report (Stern 2007) enter the gradualist paradigm and sustain that climate change is dependent – both in its causes and solutions – on human society. Following this line of thought, there are approaches which ”put human agency at the centre stage” and speak about a new geological epoch called “the Anthropocene“ (Creutzen 2002: 39). Given this climate change – society turnaround, it is understandable that following a period of lagging and “strange silence of the mainstream sociology” (Lever-Tracy 2008: 450), social sciences and particularly sociology started to progressively “warming [itself] to climate change” (Wainwright 2011: 173) by producing a significant range of theoretical and empirical approaches. The role of sociology is very important, since the mitigation of climate change needs joint collaboration between political, social-institutional and individual actors; thereby, it is crucial to reveal and study the attitudes and behaviours of individual and institutional social agents towards climate change and the capacities and willingness of human agency to adapt to these changes (cf. Urry 2011). Thus, according to Bord et al. (1998: 75) sociology can contribute to the “improved understanding of public perceptions about global warming” and in this way it is possible to envisage “how the public is likely to respond to climate impacts and initiatives” and it becomes possible “to design policies that will be supported or at least tolerated”.

The purpose of the study

Framed by the paradigm of gradualist climate change, the present approach is concerned with the climate-society tandem on the micro-level and investigates those individual level variables which increase the individuals’ willingness to take specific action for climate change mitigation by declaring a willingness to pay for climate friendly energy, that is for energy sources that produce less greenhouse gas emissions.

The study is built on the data set[3] of two Special Eurobarometer surveys on climate change, Eurobarometer 69.2. (European Commission 2008) and Eurobarometer 72.1 (European Commission 2009) and is specifically concerned with the case of Romania, a country which – based on its citizens’ behaviours – constitutes an environmental laggard of the European Union. According to the data of several surveys (e.g. Eurobarometer, European Quality of Life Survey, etc.), Romanians are significantly more worried about

[3] Dataset: Eurobarometer 69.2: National and European Identity, European Elections, European Values, and Climate Change, March-May 2008. Dataset: Eurobarometer 72.1: August-September 2009). Data sets were downloades free of charge from the website of the GESIS – Leibniz Institute for Social Sciences ZACAT (http://zacat.gesis.org/webview/index.jsp – 07 March, 2010).

environmental pollution than other European citizens and they seem to experience much more strongly the effects of environmental problems in their daily life than other Europeans (Mărginean 2006; European Commission, 2007). At the same time, compared to the European average, Romanians are less likely engaged in environmentally friendly behaviours and they generally attach a low (monetary) value to the environment (cf. Nistor 2010). This discrepancy between attitudes and actions can illustrate the so-called how serious vs. how important paradox of environmental concern, described by Dieckmann and Franzen (1999; see also Franzen and Vogl 2013), according to which citizens of less wealthy countries can be regarded as leaders of environmental concern in connection with those survey items which refer to the seriousness of environmental problems, but it is again them who are the laggards as indicated by those items which presuppose the monetary valuation of nature.

Romania is one of the least developed countries of the European Union in terms of its economy[4]; because of low real income, about 10% of the Romanian households' monthly income is spent on energy and housing related expenses (compared to 3% in Western Europe) in spite of the fact that Romania has the lowest energy prices in Europe. Nearly 30% of the total population have problems with keeping their home adequately warm and nearly 40% of the population from the lowest income quartiles have constant arrears on energy bills (Grevisse and Brynant 2011). Additionally, Romania has a very inefficient energy system, energy losses are estimated to be as large as 30% of the energy consumption (Leca 2012). Up to now, Romania had over-met the Kyoto Protocol targets concerning greenhouse gas reduction due to the restructuring and decline of the socialist type industry, but it is self-evident that in order to meet the other obligations[5] stipulated in connection with climate change mitigation, the country needs serious improvements in its energy-efficiency; this will probably engender higher energy prices, respectively a higher growth of energy prices compared to income growth (Leca 2012).

Given this distinctiveness influenced, on the one hand, by income constraints, and on the other hand, by the necessity to introduce energy efficient measures, Romania seems to offer the adequate context for analyzing the monetary value of a specific environmental protection, i.e. climate change

[4] In Purchasing Power Standards (PPS) and compared to the reference value =100 PPS of the EU 27, the Romanian GDP for 2011 is 49 PPS (the second lowest value, after Bulgaria).
(http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00114 – last visit 24 January, 2013).

[5] Romania took the obligation to reduce until 2020 the emission of greenhouse gases by 20% compared to the level of 1990, to increase by 20% within that timeframe the share of renewable energy in the overall consumption, to enhance energy efficiency by 20% and to have a minimum 10% share of biofuel in the total fuel consumption (Government of Romania and UNDP, 2008).

mitigation, measured through the specific variable of willingness to pay for climate friendly energy.

Contingent valuation in environmental studies

The dependent variable of the present study is represented by the respondents' willingness to pay for climate friendly energy. This variable corresponds to the so-called contingent valuation (CV) method (Mitchell and Carson 1989; Munro and Hanley 1999) which, by directly questioning people about the "economic value they place on a change in the quantity and/or quality of a specified resource" (Kotchen and Reiling 2000: 94), aims to appreciate the hypothetical valuation of those kinds of goods which are not really bought and sold on the market (Hanemann 1994).

Contingent valuation is a popular survey technique, albeit there are important debates regarding the reliability of the method. The questioning of the CV method's reliability gave rise to a number of scientific recommendations (see Arrow et al. 1993; Hanemann 1994) which specify that contingent valuation should avoid very general formulations in which the object of the valuation and the payment scenario are formulated in an abstract manner, otherwise there is the risk that respondents will treat the valuation scenario as symbolic (Carson et al. 2001). Another recommendation states that contingent valuation questions have to be formulated as closed questions, because otherwise respondents might find them difficult to answer, in the sense of expressing the exact or the most amount they are willing to pay (Hanemann 1994). According to Kotchen and Reiling (2000), we need to use the respondents' attitudes to help interpret CV survey responses. The underlining assumption is that a person who has a strong pro-environmental attitude is more willing to pay for the environment, respectively that a person who is more willing to pay will do so in an effective situation of payment.

Another problematic issue associated with contingent valuation and which is a source of potential response bias is the so called 'warm glow' effect (Kahneman and Knetsch 1992), which refers to the respondents' satisfaction ensuing from expressing willingness to pay. Warm glow may be interpreted as an impure altruism in the sense that respondents usually gain utility from their declared willingness to pay for good reasons, such as environmental protection; warm glow is very similar to environmentally desirable responding (cf. Ewert and Galloway 2009), since "respondents in a CV survey attempt to please an interviewer by agreeing (or not agreeing) to pay some amount when they would not do so otherwise, except for the utility gain associated with telling the interviewer" (Carson et al. 2001: 177). This way of responding is easily observable also in comparisons between contingent valuation surveys and

effective payments, the latter being usually lower than it would be expectable based on the results of contingent valuation (Diamond and Hausman 1994).

The reason for the warm glow might be the fact that in contingent valuation respondents usually "have no real value for the item, but just make one up during the course of the interview: the process creates the values that it seeks to measure" (Hanemann 1994: 27). That is, individuals usually have no *a priori* preferences for the public good in question and they also fail to consider, under the hypothetical survey circumstance, the constraints of their income (Diamond and Hausman 1994) and, ultimately, they tend to agree with the willingness to pay. This situation might be one of the reasons for the so called 'embedding effect' (Kahneman and Knetsch 1992) according to which there is a tendency of willingness to pay responses to be very similar across different surveys.

In such a context, the validation of the contingent valuation appears as a crucial imperative. According to Hanemann (1994) there are three major ways to validate contingent valuation results: through replication, through comparison with both estimates from other sources and through comparison with actual behaviour.

The item which asks the respondents about their willingness to pay for climate friendly energy in the two Special Eurobarometer surveys that form the object of our study, is expressed in the following way:
Personally, how much would you be prepared to pay more for energy produced from sources that emit less greenhouse gases in order to fight the climate change? In average, how much, in percent, would you be ready to pay more?

Then, the respondents were invited, through an open-ended question, to indicate the percentage increase that they would be ready to pay (or not) for cleaner energy.

It is observable that the contingent valuation situation is not sufficiently clear: we do not know to which kind of sources the question makes reference when it assumes that these sources emit less greenhouse gases[6]; respondents do not get a reference to what to compare this "more" they are willing to pay, if any; furthermore, the concept of "greenhouse gases" might be unclear for a part of the respondents.

As far as both Eurobarometer surveys contained a number of items which investigated the respondents' attitudes towards climate change and climate-change mitigation behaviours, the opportunity presented itself to investigate precisely the relationship between the willingness to pay and the attitudinal items; in this way, it was possible to proceed in mildly correcting the shortcomings associated with the formulations of the contingent valuation

[6] We can justly presuppose that there occurs the implicit consideration of the bio-fuels, as far as in a previous question, the Eurobarometer surveys asked respondents if they agree with the usage of alternative fuels – such as bio-fuels – in order to reduce greenhouse gas emissions.

questions of the two Eurobarometers. I tried to ensure to some degree the validity of the data by comparing the results of the two Eurobarometer surveys in order to assess the longitudinal stability of the willingness to pay. At the same time and in the same vein, I assessed comparatively the Romanian situation to that of the pooled samples' and made some comparisons with the results of previous surveys on the theme of environmental contingent valuation.

Willingness to pay and its individual level determinants. Hypotheses

Besides determining the monetary sacrifice citizens are willing to undergo for environmental 'products', I am going to focus on the individual level determinants of the WTP for climate friendly energy, by assuming that once we have knowledge about the profiles of those respondents who are willing to sacrifice monetarily, we are able to circumscribe a possible public for actual payments for climate friendly energy.

Willingness to pay studies are following the inherent truism that individuals differ both in their socio-demographic characteristics and in their environmental concern and, consequently, it would be legitimate to expect that along these variables it is possible to model different levels of willingness to pay (cf. Ojea and Loureiro 2007). More specifically, regarding the determinants of the willingness to pay there are two important competing theories. The economic model assesses the role of income and other types of resources (e.g. education, knowledge and information), while the social-psychological model accentuates the attitudinal roots of the willingness to pay, by considering willingness to pay a behavioural intention preceded by pro-environmental attitudes (Liebe et al. 2010). There are also authors who opt for an integrative view and consider that both socio-demographics, i.e. resources, and attitudes play a role in structuring the individuals' willingness to pay. According to Hansla et al. (2008) willingness to pay for the environment can be regarded as a pro-environmental behavioural intention and can be modelled after the theory of planned behaviour (Fishbein and Ajzen 1975), in the sense that willingness to pay should be regarded as dependent on both environmental attitudes and on perceived behavioural control which includes factors like available income, information about the causes and effects of climate change, etc. While accepting the relevance of the integrative model of the WTP several authors contend that it depends on the nature of the WTP questions whether socio-demographics or attitudes have a stronger influence on the WTP (e.g., Hansla et al. 2008).

According to Meyer and Liebe (2010) many economic studies put the emphasis fundamentally on income as the main explanatory variable of the willingness to pay for the environment and they assume that environmental quality is a good for those who are better off and can afford it. Multivariate

analyses on willingness to pay for the environment usually reported positive, significant, albeit weak, income effect (e.g., Kemmelmeier et al. 2002; Ivanova and Tranter 2004; Gelissen 2007) and several studies found that education is a much more crucial resource in determining the willingness to pay. For instance, Lee and Norris (2000), on the basis of the World Values Survey data, demonstrated that in the East-Central European region, education is the strongest predictor of environmental concern understood in terms of financial sacrifice for pollution prevention. Similar evidence is presented by other scholars based on cross-national (e.g. Hersch and Viscusi 2006; Torgler et al. 2008; Franzen and Meyer 2010) or national (e.g., Göksen et al. 2002; Meyer and Liebe 2010; Adaman et al. 2011) studies. The positive linkage between education and financial sacrifice for environmental reasons becomes understandable through the so called enlightenment hypothesis (Gelissen 2007) according to which more educated people had more frequent and better opportunities for socializing with environmental values and environmental knowledge, and this knowledge accumulation might have then determined a greater commitment to the protection of the environmental quality, while their better economic status (which is an implicit factor of better education) allowed them to express willingness to pay for environmental goods.

The relationship between age and the dispositions towards financial contribution for the environment usually reveals a negative association (e.g. Gelissen 2007; Hersch and Viscusi 2006; Torgler et al. 2008; Adaman et al. 2011; Hanemann et al. 2011). As a consequence, younger age can be considered a further resource in determining the willingness to pay for the environment. Regarding the influence of gender on the willingness to pay for the environment, previous studies amounted to contradictory findings. In the light of those empirical evidence which assess that women – based on their gender-socialization towards the ethic of care – hold stronger pro-environmental values than men (e.g. the review of Zelezny et al. 2000), it is possible to state that women attach greater value to clean environment and, thus, be more willing to pay for the quality and cleanliness of it. However, men who earn more than women can have more disposable resources and this financial comfort, coupled with the income effect, might ultimately predispose them to greater financial sacrifice.

The influence of the size of locality on the willingness to pay for the environment was scarcely investigated in the literature, and when viewed in the context of other types of environmental attitudes, the findings were contradictory. Arcury and Christianson (1990) stated that the size of the locality is not necessarily decisive in shaping people's environmental attitudes, whereas the implicit environmental problems and their perception are. According to the enlightenment hypothesis, it can be assumed that the urban

environment offers more opportunities for information and thus it might be expected that people from urban settings are more environmentally concerned and more willing to pay. This idea is supported by the Romanian context in which rural people have less economic resources, are lower educated and therefore might be less willing to monetary sacrifice than urban residents (cf. Göksen et al. 2002).

In accordance with the attitudinal model, many studies have investigated so far the relationship between environmental attitudes and willingness to pay for different environmental goods (e.g., Stern et al. 1995; Widegren 1998; Kotchen and Reiling 2000; Göksen et al. 2002; Hersch and Viscusi 2006 etc.). Kotchen and Reiling (2000) draw attention to the fact that it is quite difficult to delineate a clear attitude – willingness to pay relationship because of the differences in the measurement of the attitudes (i.e. different instruments); the different construction of the willingness to pay questions, both in terms of their specificity (e.g. differences in the detailed description of the resource to be valued; differences in the form and frequency of payment, etc.) and ways of formulations (e.g. open vs. closed questions), etc. Nevertheless, there is obvious the following tendency: citizens with more pro-environmental attitudes are more prepared to pay for the environment, both in expressing agreement and in willing to contribute with higher payments. Recent specific studies in connection with willingness to pay for CO_2 reductions and climate change mitigation (Lee and Cameron 2008; Zografakis et al. 2010; Adaman et al. 2011; Lange and Ziegler 2012) showed that pro-environmental attitudes, feelings of responsibility towards the environment and the belief in the possibility of harms caused by climate change to have substantial impacts on the environment – all these come to significantly influence the respondents' willingness to pay for climate change mitigation.

In line with this briefly espoused integrative view it becomes possible to construct a theoretical model centred on the individual-level sources of the willingness to pay and to hypothesize that in Romania, in terms of socio-demographic backgrounds: respondents with higher incomes are more willing to pay for climate friendly energy compared to respondents who are less economically better off (H1); better educated respondents are more willing to pay for climate friendly energy than respondents who spent lesser time in formal education (H2); compared to older respondents, younger individuals are more willing to pay for climate friendly energy (H3). In terms of attitudes, I expect that respondents, who are more confident in the negative impacts of climate change, i.e. are more risk-aversive, are more willing to pay for climate friendly energy (H4).

Methodology

As already mentioned, the dependent variables of the two analyzed surveys are the same and they are directed towards investigating respondents' willingness to pay for climate friendly energy. The formulations of the questions in the two surveys allowed me to construct – through a methodological artefact – two specific variables in the case of both surveys. Firstly, I created two dichotomous variables which account for the refusal of the willingness to pay (i.e. those respondents who answered they are not willing to pay more, or would pay 0% more), respectively for the acceptance of the willingness to pay, irrespective of the percentage respondents would be willing to pay more. This variable (having the code values of 1=yes vs. 0=no and 'don't know' option being considered missing values) was considered the dependent variable of a binary logistic regression analysis in each of the two surveys and thus enabled us to investigate which are those independent variables that raise the odds of accepting financial sacrifice, irrespective of its amount.

Secondly, I created another variable which accounts for degrees of financial sacrifice. For this purpose, I took into account only those respondents who accepted to pay more for climate friendly energy. From the wording of its questions, it is obvious that the Eurobarometer survey asked for the degree of financial sacrifice in the form of an open question and the respondents practically indicated extremely various amounts of paying in the form of a continuous variable. In order to simplify the insight into the disposition for financial sacrifice, I collapsed some of the categories and arranged the amounts the respondents are willing to pay in the form of an ordinal variable, accounting for less than 5%, 6 – 20% and 21% and more willingness to pay ('don't know' and 'no' or 0% answers were considered missing values) and considered this as the dependent variable of ordinal logistic regression. Constructed in this way and compared to the previous variable which assesses the disposition of sacrifice against its refusal, this variable aims to reveal the degree of financial sacrifice as a function of several independent variables like socio-demographics (i.e. age, gender, education, income, place of residence, household composition)[7] and attitudes towards climate change. Attitudes towards climate change are operationalized in the form of two factorial scores based on six Likert-type items which investigated the respondents' general

[7] Independent variables were the following: age (categorical), gender (dummy: 1=male, 2=female), education (categorical, in years of education: low level=studied less than 15 years; medium level education:16-20 years and upper level education: more than 20 years); income was measured through the subjective rating of the household income, accounting for the perceived difficulties of the respondents' household in making ends meet (totally agree; tend to agree, tend to disagree and totally disagree). Household members (dummy: 1=maximum two members; 3=three or more members). Type of locality constitutes in the case of both surveys a categorical variable (1=village; 2=small and medium sized town; 3=city).

attitudes towards climate change, respectively their attitudes towards fighting climate change[8].

In the analysis section I firstly present certain descriptive data in connection with Romanians' willingness to pay for climate friendly energy and, as far as the analysis is built on the data of two Special Eurobarometers, certain comparative findings are also discussed between Romania, the pooled EU 27 samples, respectively the subsamples corresponding to the Old (EU 15) and New (EU 12) states of the EU, so that to better appreciate the Romanian willingness to sacrifice. Then, I will focus solely on Romania and will assess the willingness to pay and the influence of individual-level variables on this particular disposition.

Analyses and discussions

Descriptive statistics: Romania and the pooled samples

According to the descriptive statistics in Table 1, in 2008 one third of the Romanian respondents expressed willingness to pay for climate friendly energy, which is much less than the European average, whether we refer to the EU 27, 15 or 12 country groups, where nearly half of the respondents declared in-principle willingness to pay. The fraction of those Romanian respondents who manifested willingness to pay in 2009 is somewhat higher than in 2008. This growth occurs, however, in a context wherein the European average willingness to pay increased as well and thus practically Romanian respondents are still with 20 per cent below the European average. Another important issue which needs to be underlined is the extremely high percent of indecisive Romanian respondents who expressed 'don't know' or 'no answer' in 2009. Seemingly, while in 2008 the fraction of indecisive Romanians was virtually the same as those occurring in the pooled samples, in 2009 half of the Romanian respondents could be considered indecisive. Unfortunately, our samples are not panel data and we cannot adequately model such movements;

[8] The six items are the following: *1) Climate change is an unstoppable process, we cannot do anything about it. 2) The seriousness of climate change has been exaggerated. 3) Emission of CO2 has only a marginal impact on climate change; 4) Fighting climate change can have a positive impact on the European economy. 5) Alternative fuels, such as 'bio fuels' should be used to reduce greenhouse gas emissions. 6) You personally have taken actions aimed at helping to fight climate change.* It is evident that these variables are quite broad and cover a lot of issues in connection with climate change, including more general attitudes (questions 1, 2), knowledge (questions 3, 4, 5) and personal behavioral commitment (question 6). After recoding the response variants, in order that higher codes to measure greater attachment to the problem of climate change, respectively its fight (e.g., in the case of items no. 1, 2, 3 codes ranged from 1=totally agree to 4=totally disagree; while in the case of items 4, 5, 6, codes ranged from 1=totally disagree to 4= totally agree) exploratory factor analysis was run which resulted in the case of both surveys in two factors, which explain 56% (2008 survey), respectively (64% (2009 survey) out of the total variance. In the case of both surveys, the first component comprises the first 3 items, while the second component encompasses the last three items. Given this solution, it seems that respondents' climate oriented attitudes split into a component corresponding to 'general attitudes towards climate change' (component 1) and another component corresponding to 'attitudes towards fighting climate change' (component 2).

however it might seem that a part of those respondents, who in 2008 were definitely unwilling to pay, turned to be indecisive in 2009.

With these limited dispositions towards financial sacrifice, Romania is among the least devoted countries to the financial sacrifice for clean energy, together with countries like Portugal (26% in 2008, 24% in 2009), Malta (28% in 2008, 35% in 2009), and Bulgaria (28% in 2008 and 39% in 2009). In all the other countries of the EU there are much higher tendencies for financial sacrifice. A correlation between the Member States' GDP[9] and their residents' financial sacrifice results in a positive and significant correlations in both years (Pearson's $r=0.340$; $p<0.05$ in 2008, respectively 0.312; $p<0.05$ in 2009); in this way, those considerations according to which macro-level wealth correlates with willingness to pay for environmental goods seem to be valid (e.g., Franzen and Meyer 2010).

Table 1: **Willingness to pay more for climate friendly energy (yes vs. no and don't know/no answer). Pooled sample vs. Romania in the two survey years. Percents of respondents**

	2008 (EB 69.2)			2009 (EB 72.1)		
	Yes	No	DK	Yes	No	DK
Romania	29	49	22	37	13	50
Pooled sample (EU 27)	48	27	25	58	19	23
EU15	49	28	23	63	15	22
EU 12	47	27	25	61	15	24

If we refer specifically to the case of Romania, it must be noted that Romanians' willingness to pay for climate friendly energy falls well beyond their willingness to pay for pollution prevention. As signalled previously by the European Values Survey (EVS) data, in 2008 more than half of the Romanian respondents expressed willingness to give part of their income for pollution prevention[10] (Nistor 2010). These discrepancies between the two types of hypothetical sacrifices can be explained through the different wording of the questions: while the meaning of pollution prevention is broader, the meaning of climate friendly energy is stricter and, thus, the financial sacrifice becomes much less symbolic in the second situation, making respondents to emit more careful judgements about their willingness to sacrifice (cf. Hanemann 1994). Another difference is the response-format: while the EVS item requires answers in the form of a Likert scale, the Eurobarometer question demands respondents to indicate a clear amount they are willing to sacrifice. Thus, in the

[9] Values delivered from Eurostat

[10] As a response to the question: *I would give part of my income if I were certain that the money would be used to prevent environmental pollution.*

second situation respondents are constrained to calculate, not just indicate, their willingness to sacrifice and the situation becomes less symbolic, wherein income constraints are being, probably, better taken into account, and respondents grow more immune against the influence of the warm glow effect (cf. Diamond and Hausman 1994; Haneman 1994).

On the other hand, our data which suggests that about one third of Romanians would be willing to pay more for climate friendly energy is in concordance with those quantitative data which explored the Romanians' declared involvement in charity giving. According to the GFK survey (GFK Romania 2011) about one third of Romanians declared that they use to give charity money. The same survey suggests that throughout the continent donations for environmental causes are less popular, but in Romania they are even lesser supported then that (about 2% of the total of donations), and while charity giving for children in needs and for other humanitarian needs top the list in both Europe in general and Romania in particular, in the latter religious organizations are receiving high amounts of money (about one third of the donations). This puts Romania out in front among all European countries when it comes to donating to religious causes and indicates the traditionalist pattern of the Romanian charity. Similarly, the GFK data indicate that the major source for the refusal of charity giving is the income constraint, respectively the lack of interest. Comparing the data ensued with the aid of the two Eurobarometers, it seems that the lower tendency of Romanians to pay more for clean energy is explained by the meagre popularity of the involvement in ecological causes (lack of interest), by the scarcity of financial resources and by the traditionalist and philanthropic embeddedness of donations, but certainly not by the inexistence or rebuttal of the donation practice.

If we consider the amounts the respondents are willing to pay more, once declaring in-principle willingness to pay, the results show that in the 2008 EU 27 pooled sample the average amount respondents were willing to pay more was 13% (Mean=13.10; SD=15.38) with Romanians' average amount of payment being a little higher, i.e. 16% (Mean=16.25; SD=20.01). In the 2009 sample, both in the case of the pooled and the Romanian samples, we have a much more limited willingness to pay, as those respondents who agreed to pay more, declared that they would pay, in average, with only 9% more (Mean=9.69; SD=12.01 in the case of the pooled sample and Mean=9.53; SD=12.07 in the case of the Romanian sample). Unfortunately, we do not have a reference value compared to which to assess the monetary value of this sacrifice; this is in accordance with other findings of the literature which suggest that dispositions for extra payments (e.g., in the case of green and organic food which are much more tangible goods than clean energy) are

always limited and rarely exceed 30% extra payments (Davies et al. 1995; Smith and Paladino 2010).

The diminished intensity of the sacrifice between 2008 and 2009 can be, probably, explained through the context of the already installed economic crisis which made people more precautionary even in terms of their hypothetical economic sacrifice.

Table 2: **Amounts of willingness to pay after declaring in-principle willingness to pay. Pooled sample (EU 27) and Romania in the two survey years**

	2008 (EB 69.2)		2009 (EB 72.1)	
	Pooled sample (%)	Romania (%)	Pooled sample (%)	Romania (%)
1 – 5 %	38	38	61	56
6 – 20 %	50	42	34	37
21 % and more	12	20	5	6

This tendency is emphasized as well by the data of the Table 2 which presents the descriptive statistics for willingness to pay in accordance with the ordinal variable accounting for degrees of sacrifice. As it is observable, in 2008, the vast majority of the respondents would pay 6-20% more, while in 2009 the majority of those who are agreeing to pay more would pay more with only less than 5%. Thus, we can conclude that in 2009, both in Europe in general and in Romania in particular more people are willing to pay than in 2008, even though the amounts they are willing to sacrifice are lower in 2009 than in 2008.

Willingness to pay in Romania on the individual level

The following two tables present, in their turn, the results of the binary and ordinal logistic regression analyses for the two dependent variables in the two survey years. While in the case of the binary logistic regression we can investigate the influence of the selected individual level variables on the in-principle willingness to pay, in the case of the ordinal logistic regression we can get an insight into the influence of individual level variables on differentiating the respondents' degree of financial sacrifice.

As exhibited by the tables, in-principle willingness to pay has three major sources in 2008: younger (but not the youngest) age, higher education and positive attitudes towards climate change in general significantly raise the odds of accepting, in principle, paying more for climate friendly energy. In 2008, the income proxy has no significant influence on the willingness to pay, whereas in 2009, when the country was already in the claws of the economic crisis and its

negative consequences were being felt by the respondents, it becomes manifest the fact that, in comparison with those better off financially, the most disadvantaged category of people is significantly against financial sacrifice. Moreover, in 2009, the positive attitude towards the fight against climatic change influences favourably and to a great extent the disposition to financially contribute to clean energy.

Table 3: **Determinants of the two types of willingness to pay in the 2008 Romanian sample**

	Logistic regression (willing to pay more vs. do not intend to pay more)		Ordinal logistic regression (willing to pay more, how much?)
	B	Exp(B)	Estimates
Age (reference category: 55 years old and older)			
15-24	-0.124	0.914	-0.754*
25-39	0.605*	2.127	0.292
40-54	0.319	0.901	0.816*
Female	-0.214	1.113	-0.258
Education, in years (reference category: 20 years or more)			
Less than 15 years	-0.533*	0.731	-1.537**
16-19 years	-0.421*	0.670	-0.164
Subjective income (reference category: ends are met			
Very difficult	0.334	1.535	-1.695***
Difficult	0.201	1.352	-0.884*
Coping	0.214	1.434	-1.147**
Type of locality (reference category: city)			
Village	-0.412	0.712	-0.476
Town	-0.414	0.713	-0.559
Household composition (reference: maximum two people)			
Three or more people in household	0.201	1.312	0.247
General attitude towards climate change	0.789**	2.245	0.207
Attitude towards fighting climate change	0.305	1.456	0.222
Nagelkerke R^2	0.093		0.205
Chi^2	23.897 df=14; p<0.001		37.502 df=14; p<0.001

***p<0.001; **p<0.01;*p<0.05

As a conclusion, it can be argued that at the crossroad of the two surveys, my results partially confirm H1 and H4 and entirely confirm H2 and H3 and validate those literature findings which assess that younger, better educated, economically better off respondents and those who have positive attitudes towards climate change are the most important supporters of the in-principle

willingness to pay (e.g. Göksen et al. 2002; Hersch and Viscusi 2006; Gelissen, 2007; Lee and Cameron 2008; Torgler et al. 2008; Franzen and Meyer 2010; Meyer and Liebe 2010; Hanemann et al. 2011).

Table 4: **Determinants of the two types of willingness to pay in the 2009 Romanian sample**

	Logistic regression (willing to pay more vs. do not intend to pay more)		Ordinal logistic regression (willing to pay more, how much?)
	B	Exp(B)	Estimates
Age (reference category: 55 years old and older)			
15-24	1.978**	4.373	1.000*
25-39	0.742*	4.021	0.466
40-54	0.337	0.601	-0.283
Female	-0.176	0.201	-0.585*
Education, in years (reference category: 20 years or more)			
Less than 15 years	-1.697*	0.414	-1.683*
16-19 years	-0.647	0.764	0.310
Subjective income (reference category: ends are met)			
Very difficult	-0.757*	0.772	-0.757*
Difficult	0.536	0.287	-0.973*
Coping	0.576	0.317	-0.548
Type of locality (reference category: city)			
Village	-0.667	0.945	0.244
Town	-0.672	0.984	-0.447
Household composition (reference: three or more)			
Maximum two people in household	-0.387	0.602	-0.139
General attitude towards climate change	0.332*	0.544	0.477*
Attitude towards fighting climate change	1.817***	0.541	0.127
Nagelkerke R^2	0.290		0.183
Chi^2	52.487 df=14; p<0.001		25.119 df=14p<0.01

***p<0.001; **p<0.01;*p<0.05

The last columns of the two tables present the determinants of the amounts respondents are willing to pay. In this case, besides education and age, income becomes a decisive factor in both years. Even in 2008, when income was not significantly decisive in determining in-principle willingness to pay, it turned, nevertheless, to be a significant differentiator of the amounts respondents are willing to sacrifice for climate friendly energy. In conclusion, when we refer to the willingness to pay in a rough way, not taking into account the declared degrees of sacrifice, income does not act as a constraint factor; this is very

different from the situation wherein the disposition towards monetary sacrifice is measured more finely, according to its various degrees. In this latter case, income represents a strongly differentiating resource and it confirms the financial embeddedness of the willingness to pay: in comparison with the more financially better off respondents, those more precariously financially endowed are prone to lower monetary sacrifices. Education constitutes another variable pertaining to resources (e.g. information, knowledge) and it conserves its positive influence and force of differentiation between respondents according to the accepted degree of monetary sacrifice: in comparison with those highly educated, the respondents with average, and especially low, education are significantly less prone to financial sacrifices for clean energy.

If in 2008, the higher degree of monetary sacrifice is not exclusive to young age, in 2009 there is a tightening of the significant relationship between young age and the higher degree of financial sacrifice; moreover, among the control variables, the feminine gender enters a negative relationship, statistically significant, with the accepted monetary sacrifice. If seen from a more speculative angle, it seems that, in the context of the economic crisis, the masculine gender (automatically associated with higher earnings) constitutes a protection factor which favours the acceptance of higher monetary sacrifices concerning the dependent variable. Either way, this finding along with others regarding the contextual embeddedness of the willingness to pay in the form of the economic crisis context needs further empirical arguments and for the time being they can be considered only as working hypotheses.

Regarding the more specific, i.e. attitudinal determinants of the willingness to pay for climate friendly energy, the regression analysis' results brought to light discordant data: in 2008, the respondents' attitudes explained the in-principle acceptance of monetary sacrifice, but, afterward they did not hold any significant influence upon it. In 2009, however, the general attitudes towards the seriousness and negative impacts of climate change played a paramount role in the shaping of the accepted degree of financial sacrifice. Thence, in the Romanian case, the integrative model concerning the socio-economic and behavioural under-layer of the willingness to pay (eg., Hansla et al. 2008) can be only partially endorsed; this is reflected especially at the level of the in-principle willingness to pay which do not take into consideration the accepted degree of sacrifice. As we are thematically interested by the accepted degree of financial sacrifice, my results tend to espouse as more relevant the economic model (Meyer and Liebe 2010), according to which the disposition towards monetary sacrifice becomes strongly dependent on the economic factor and not at all (2008) or only partially (2009) on the attitudes expressed about climate change. Obviously, many longitudinal studies are still needed to be carried out in order to firmly back these arguments and for a more in-depth analysis of the

Romanian particular situation during these 2 years (2008 and 2009). For the time being, through the tackling of socio-demographic variables and the attitudes under research, a relatively big part (approximately one third, based on R^2 values) of the dependent variables was explained and the previously formulated hypothesis were, at least partially, assessed; that is, the influence of the selected independent variables must be measured in accordance with the way in which the dependent variable is formulated and operationalized. In this sense, the major conclusion of the study asserts that the acceptance of the in-principle monetary sacrifice is rather dependent on the attitude towards climate change, whereas the acceptance of higher payments for clean energy is more dependent on the income of the respondents.

The indecisive respondents

Given the huge amount of Romanian respondents who answered 'don't know' and 'no answer' in connection with the willingness to pay variable and, especially, on the level of the 2009 sample, I think it makes sense to analyze their socio-demographic profile and to compare them, with the help of T-tests, to the profile of those respondents who accepted (by collapsing the ordinal categories of degrees of willingness to pay), respectively refused the in-principle willingness to pay (Tables 5 and 6).

The profile of those respondents who opted for 'don't know/no answer' is not dramatically different from those respondents' who categorically refused willingness to pay. Indeed, those who categorically refuse in-principle willingness to pay are more in favour of fighting climate change (2008) and are less educated (2009) than those who cannot formulate a clear opinion about willingness to pay (2008); but in other aspects the two categories of respondents have the same sociological profile. However, compared to those who accept in-principle willingness to pay, those who cannot formulate a clear opinion seem to be more significantly different, in the sense that the latter are older, lower educated, less wealthy (in 2009) and come from smaller localities. In the light of this results, it seems that 'don't know' options have the same socio-demographic roots as categorical rejections of the willingness to pay and that they can be traced back to limited resources, both in terms of education and income.

Table 5: **Results of T-tests comparing the values of certain independent variables between respondents expressing don't know options and those who declared willingness to pay, respectively refused willingness to pay. Standard deviations in parentheses. 2008 survey**

	Expressing willingness	Refusing willingness	Don't know
Age	41.37 (15.93) **T=-3.778*** **	46.94 (17.49) T=0.148	46.73 (16.86)
Education (ordinal, 4 levels)	2.39 (0.65) **T=5.234*** **	2.09 (0.71) T=0.406	2.07 (0.75)
Income	2.33 (0.98) T=0.674	2.25 (0.98) T=-0.314	2.27 (0.89)
Locality size	2.43 (1.26) **T=4.519*** **	2.00 (1.14) T=0.418	1.96 (1.11)
Attitude towards climate change (factor score)	0.21 (0.94) **T=2.925** **	-0.14 (1.07) T=-0.002	-0.14 (0.88)
Attitude towards fighting climate change (factor score)	0.11 (1.01) **T=3.562*** **	0.021 (1.01) **T=2.811** **	-0.33 (0.89)

***p<0.001; **p<0.01; *p<0.05

Table 6: **Results of T-tests comparing the values of certain independent variables between respondents expressing don't know options and those who declared willingness to pay, respectively refused willingness to pay. Standard deviation in parentheses. 2009 survey**

	Expressing willingness	Refusing willingness	Don't know
Age	43.49 (17.3) **T=-4.705*** **	52.5 (17.9) T=-1.941	49.1 (17.64)
Education (ordinal, 4 levels)	2.33 (0.67) **T=6.482*** **	1.84 (0.71) **T=-2.773** **	2.04 (0.67)
Income	2.5 (0.62) **T=6.525** **	2.18 (0.66) T=-0.221	2.20 (0.74)
Locality size	1.86 (0.78) **T=2.938** **	1.80 (0.80) T=1.221	1.71 (0.76)
Attitude towards climate change (factor score)	-0.58 (0.97) T=-1.350	-0.10 (0.91) T=-0.318	-0.44 (1.05)
Attitude towards fighting climate change (factor score)	0.19 (0.88) **T=2.648** **	0.55 (0.87) T=**2.361***	0.09 (1.09)

***p<0.001; **p<0.01

Conclusions

The present article provided a brief analysis of the Romanian citizens' willingness to pay for climate friendly energy on the basis of two Eurobarometer surveys. The results showed that both in 2008 and 2009 Romanian citizens were less likely to accept willingness to pay than the EU27 average. In the meantime, in the case of Romania and especially on the level of the 2009 survey, the fraction of those respondents who are not able to declare either the acceptance or the refusal of the in-principle willingness to pay and thus opt for 'don't know' or 'no answer' is very high. It is also worth noting that once respondents accept the in-principle willingness to pay, they are not less committed than the average European citizens in terms of the additional amounts they are willing to pay for climate friendly energy.

More specifically, the study aimed to answer the question: who are those people in Romania who are the most dedicated to pay for climate change mitigation by accepting higher prices for clean energy, respectively which are those individual level variables that increase, respectively limit respondents' dispositions towards monetary sacrifice. When the dependent variable was dichotomous by taking into account only the refusal/acceptance options of monetary sacrifice and did not differentiate between the various degrees of the accepted sacrifice, we notice that the income (measured through a proxy variable) does not dramatically influence the acceptance option. In this case, the positive attitude towards climate change, aka trust in the existence of the phenomenon and a positive attitude towards the fight against climate change, along with a high education level and a younger age are crucial variables that determine the disposition to accept a supplementary monetary sacrifice.

These aspects change when the willingness to pay variable is operationalized in an ordinal fashion, taking, therefore, also into account the price-premium the respondent would agree with to constitute its contribution to clean energy. In this case, income plays a decisive role: respondents that deem their income adequate are prone to accept higher amounts for the monetary sacrifice. Education, the other variable among resources, keeps being important, but the attitudes towards the climatic change become less relevant in the structure of the financial sacrifice. However, for 2009, the respondents with the lowest income are significantly less disposed to accept in-principle willingness to pay. Therefore, it seems that in 2009, in the context of economic crisis, economic resources had a significant impact already on the in-principle willingness to pay in the case of the most affected category of respondents.

The comparative analysis of those respondents who cannot formulate a concrete 'yes' or 'no' option regarding the in-principle willingness to pay show that this category is very similar to those respondents' who are not willing to

pay: they are older, lower educated respondents who are less informed about climate change.

According to my results, supporters of climate change mitigation have a dominant profile (are better educated, have more resources) and are more sensitive towards climate change. If we try to follow the recommendation made by Menegaki (2012) according to which WTP studies, besides focusing on the socio-demographic determinants of the WTP, should go deeper and indicate ways for the exploitation of the results, it may be asserted that in the case of Romania, limited resources are the main impediment towards expressing in-principle willingness to pay; but given the influence of education on willingness to pay, it can be also assessed that in order to gain further supporters for climate change mitigation it is necessary that climate change oriented campaigns and programs focus on the less elite category as well (lower education, fewer economic resources, less information) by providing them with alternative and financially less burdensome opportunities to take part in fighting climate change. For instance, recycling, commuting via public transport, etc. might be proper alternatives in the fight against climate change and seeing that these activities are rather time-consuming than money-consuming, they can certainly serve as arenas of participation for the economically less better off citizens as well (cf. Starr 2009). My assumption is that it would be too reductionist to conclude that fighting climate change is only a matter of paying more for energy efficient appliances and for green energy – an approach according to which the solution seem to lie solely in the hands of the wealthier public. On the contrary, the ethics of climate change mitigation is categorically a matter of joint activity which implies economically more or less burdensome measures that avoid marginalizing people as a function of their available resources for entering the WTP arena.

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