Unrevealing Public Preferences for Climate Change Policies in Spain: A Hybrid Mixture Model

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PRELIMINARY DRAFT

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Mixture Model

Climate change has become a major concern for citizens across the world. The first worldwide poll on global warming, conducted by World Wide Views (2009), depicts a vast majority of people (close to 90%) favoring sizeable reductions in greenhouse gas (GHG) emissions for developed countries in the period 2020-1990. A similar proportion of citizens strongly supports keeping global warming within 2 degrees Celsius over pre-industrial levels. In Europe, the Eurobarometer Survey (2009) finds that two thirds of the European public considers that global warming is among the most serious problems faced by humankind today. Although there are some geographical differences within Europe, Spain is among the countries well above the EU average in rating climate change as a very serious problem. At the same time, most Europeans (again, roughly two thirds) believe that governments and industries are not doing enough to fight the problem.

Spain faces a complex situation regarding its climate change policies. On the one hand, GHG emissions have shown a large increase since 1990 (around 35% at the moment of writing, with a recent sharp reduction due to the recession), being far above the Kyoto commitment (15% over). On the other hand, Spain is likely to suffer significant impacts from climate change due to its geographical location: substantial temperature increases and an exacerbation of water shortages are to be expected in this century (AEMET, Spanish Agency of Meteorology, 2010). However, there has been a rather limited application of corrective policies, particularly in the field of energy prices, which are generally below European averages.

In this paper, we present evidence that certain programs for the reduction of GHGs would be publicly accepted even when they raise the price of energy. Although these programs are not necessarily ideal from a theoretical perspective, our evidence indicates that they could play an important role in climate change policy in Spain.

We employ a contingent valuation (CV) survey using a questionnaire that elicits respondents willingness to pay (WTP) for policies that reduce GHG emissions in a sector especially important in terms of GHG emissions: electricity. A major innovation of this paper is the use of a large amount of attitudinal questions with latent modeling approaches. Therefore, we provide information on the extent to which Spanish citizens know about the climate change phenomenon and how important they consider it to be. The paper is based on an in-person survey of a representative sample of the Spanish population conducted between May and June 2010.

The selected modeling technique overcomes some of the limitations of the continuous mixture models, specially related to the sensibility of coefficients and therefore, welfare results, based on the selected distributions. Therefore, our interest to provide insights into individual preferences, have led us to the application of behavioral mixtures models (Walker and Ben-Akiva, 2011). Behavioral mixture models employ latent constructs to represent the influence of higher-level attitudes and orientations on the choice process, such as preferences for green electricity policies in our case, and provide a behavioral rationale to the mixture distribution. We expect to contribute to the current narrow literature on latent constructs and valuation. The results show that Spanish households favor the application of an electricity program that makes electricity more expensive but uses the extra revenues for the promotion

of renewable sources to reduce carbon dioxide emissions. In particular, the mean willingness to pay per year and household is significant, and varies from about 12 to 33 Euros per year (depending on modeling specification issues) over the current electric bill which implies a significant increase in percentage terms. Special attention is also given to the impact of environmental attitudes on preferences and choices.

LITERATURE REVIEW

In the last decades, climate change has become one of the most important problems that must be addressed. In this sense, many studies have been conducted around the world with the aim to study citizens' preferences for different climate change policies. Attending to mitigation and adaptation policies Lee and Cameron (2008) studied the determinants of WTP for mitigation programs, finding that people with higher WTP are those who believe that the harm that climate change causes will be important. Solomon and Johnson (2009) studied through contingent valuation the public valuation of mitigation in order to know the WTP for biomass or cellulosic ethanol. Akter and Bennet (2009) analyzed the opinion of Australian citizens for a program to implement a carbon pollution reduction scheme. They found a positive demand to support this type of program. Other studies, such as the Carlsson *et al.* (2010) investigated the citizen´s WTP to reduce CO_2 emissions in three different countries as China, Sweden and the United States, finding that citizens of the three countries have in mind that average temperatures have increased in last years and that human actions are the principal responsible. Moreover, they also concluded that the American´s citizens are the most pessimists about climate change and that Swedish citizens have the higher WTP. Moreover, Markantonis and Bithas (2010) examined the monetary estimation of the Greek national mitigation and adaptation climate change costs. More recent studies, such as the Komarek *et al.* (2011) investigated preferences of stakeholders for greenhouse gas reduction

strategies, finding that there is a positive WTP for carbon emissions reductions, highlighting preferences for reductions in the shorter term rather than in the longer term. In Spain, some preference studies for climate change mitigation programs have been conducted by Hoyos *et al.* (2009) and Hanemann, Labandeira and Loureiro (2010).

As we have mentioned above, the analysis of renewable energies has been another important topic for research. In this sense, Batley *et al.* (2001) assessed WTP for electricity generated from renewable sources, finding that this green electricity is supported by the majority. In addition, Nomura and Akay (2004) conducted a contingent valuation survey to analyze WTP of Japanese households. Otherwise, in the United States, Wiser (2007) explored the WTP but centering his attention in the payment vehicles and in the institution that provided the good. In this sense, the higher WTP is found using a collective payment rather than in voluntary payments and the private provision was more preferred than the government provision. Several studies take into account the payment vehicle, being this a key variable of study. For example, Borchers *et al.* (2007) estimated WTP and consumer preferences for voluntary participation in green energy programs. They concluded that there exists a positive WTP and finding that individuals preferred solar energy over green and wind, and that biomass and farm methane were the least preferred sources. Kataria *et al.* (2009) valued different environmental improvements for the hydropower regulated rivers, finding that Swedish households had preferences to improve environmental conditions while the cost to do so remained relatively low. Yoo and Kwak (2009), Scarpa and Willis (2010), Mozumder *et al.* (2011) and Susaeta *et al.* (2011) are other recent studies that have analyzed similar issues.

Another interesting area of study has for objective promoting energy saving measures. An example is Banfi *et al.* (2008), who studied the preferences for renewable systems and insulation of windows and facades in Switzerland. In the study of renewable energy there is some work that assessed the support for policies that promote the use of less contaminant

fuels, in this area, the work of Jensen *et al.* (2010), Petrolia *et al.* (2010) or Grösche and Schröder (2011), can be cited, among others.

Others studies that have investigated public preferences in order to protect forests or animal species affected by climate change, such as Layton and Brown (2000) who examined the preferences for mitigating impacts of climate change, specifically in forests; or Tseng and Chen (2008), who valued the potential economic impacts of climate change in the Taiwan trout, an endangered species.

Through this vast literature some research estimated households´ WTP to support the increase in energy research as Li *et al.* (2009) ,or studies that have proposed polices that reduce the risk of natural disasters (Glenk and Fischer, 2010). Furthermore, aspects that also have been investigated are the preferences to avoid power outages (Carlsson *et al.* 2011). Finally, other new research line in the climate change theme has been the one proposed by Ward *et al.* (2011) through an estimation of WTP to buy goods of companies that are members of a Green Power Partnership.

Throughout this literature review we have confirmed that preferences for mitigation and adaptation polices (as the renewables energies) have been the most studied aspects in the valuation literature of climate change. It is important to note that the methodologies most employed have been the contingent valuation and the choice experiments. Moreover, it is crucial to have in mind several control variables, such as the income status, political views, environmental engagement, uncertainty of climate outcomes, and more recently, attitudes (Johnson and Nemet, 2010). In this sense, Zografakis *et al.* (2010) evaluated citizens´ preferences for renewable energies in Crete, concluding that higher WTP comes from families with higher incomes and also come from of people who have awareness concerning climate change. The importance of attitudinal and latent variables in environmental choices

has been put forward by earlier work by Boxall and Adamowicz (2002) and Morey et al. (2006, 2008). These authors classify individuals among different classes depending on the responses to certain attitudinal questions. However, such treatment of latent variables may provide biased estimates, given that the responses to such attitudinal variables are just indicators of the latent attitudes that may be distributed across the population in a heterogenous way, and require a different treatment. Furthermore, such latent and unobservable attitudes may be highly correlated with other traditionally commonly used explanatory variables including income and age, for example. Recent work in the field of choice modeling has extended the framework of the classical choice modeling approach in order to include these latent variables via a hybrid choice model (HCM), or integrated choice and latent variable model, presented in the section below.

THE MODEL

The model to be estimated is an application of the hybrid choice model (HCM) earlier developed by Ben-Akiva et al. (2002). An important objective of this model is to extend the RUM modeling framework, including elements of cognitive and emotional processes. Given the recognition that an analyst can only capture part of the utility of an alternative, the utility U_{in} of alternative i for respondent n is made up of a deterministic component V_{in} and a remaining random component ε_{in}. In the presence of a random component, we move to a probabilistic framework, in which the probability of choosing an alternative increases with its utility, and where the probability of choosing alternative i (out of I alternatives) is given by:

$$U_{\text{in}} = P(U_{\text{in}} \geq U_{jn}, j = 1,...,n) \tag{1}$$

The specific form of this probability function depends on the assumptions made for the distribution of the error term.

It is now quite common practice to as part of the survey work also collect responses to a number of attitudinal questions, typically in the form of asking respondents to what extent they agree with certain statements. Let us assume that we capture K such indicators.

A single model may potentially make use of multiple such latent attitudes, while we rely on just a single such variable. Specifically, and following the notation by Hess and Beharry-Borg (2012) we define the latent attitude for respondent n as:

$$\alpha_n = l(\gamma, z_n) + \eta_n, \tag{2}$$

Where $l(\gamma, z_n)$ represents the deterministic part of α_n, with z_n being a vector of socio-demographic variables of respondent n, and γ being a vector of estimated parameters, and where a decision on the specification of l () needs to be taken (e.g. linear). The term η_n is a random disturbance, which we assume follows a Normal distribution across respondents, with a zero mean and a standard deviation of σ_α, say $g(\eta)$.

This latent variable α_n is then interacted with parameters in our choice model. As an example:

$$V_{in} = f(\beta, \lambda, x_{in}, \alpha_n), \tag{3}$$

Where λ is a vector of parameters that interact α_n with β and x_{int}. Our model is then estimated by interaction over the random components in α, i.e. :

$$L(\beta, \lambda, \sigma_\alpha) = \prod_{n=1}^{N} \int_{\eta} Pj_{nt}^*(\beta, \lambda, x_{nt}, \alpha_n) g(\eta) d\eta \tag{4}$$

However, this specific treatment of α_n is no different from a standard random coefficients approach such as in a Mixed Logit model. Once again, rather than just using these indicators I_{kn}, $k = 1,...,K$ as explanatory variables, we use them as dependent variables in a second component of the model, and make them dependent on the latent variable α_n. This use of α_n in the choice model as well as measurement model components means that the estimation of α_n is informed both by the data on choices and the data on responses to attitudinal questions.

The measurement model component is given by a set of equations that use the values for the attitudinal indicators as dependent variables. In particular, we have that the value for the kth indicator for respondent n is modeled as:

$$I_{kn} = \delta_{I_k} + \zeta_{I_k}.\alpha_n + v_{kn} \tag{5}$$

Where δ_{I_k} is a constant for the kth indicator, ζ_{I_k} is the estimated effect of the latent variable α_n on this indicator, and v_{kn} is a normally distributed disturbance, with a mean of zero and a standard deviation of σ_{I_k}.

The log-likelihood function for this model is composed of two different components, the probability of the observed sequence of choices, and the probability of the observed responses to the attitudinal questions. In our joint model, we let $L_n(y_n|\beta,\lambda,\alpha_n)$ give the vector of taste coefficients β, the vector of interaction parameter λ and the latent variable α_n, which itself is a function of γ and its random component η. This likelihood will thus be a product of discrete choice probabilities, with the specific form depending on model assumptions.

Next, let $L(I_n|\zeta_I,\sigma_I,\sigma_n)$ give the probability of observing the specific responses given by respondent n to the various attitudinal questions, conditional on the parameter vector ζ_I (grouping together $\zeta_{I_k}, k = 1,...,K$), the vector of standard deviations σ_I (grouping together $\sigma_{I_k}, k = 1,...,K$) and a specific realisation of the latent variable α_n. It can be seen that this probability is given by a product of Normal density functions, i.e.,

$$L(I_n\bigg|\zeta_I,\sigma_I,\alpha_n) = \prod_{k=1}^{K}\phi(I_{kn}) \qquad (6)$$

Where:

$$\phi(I_{kn}) = \frac{1}{\sigma_{I_k}\sqrt{2\pi}}.e^{-\frac{(I_{kn}-\zeta_{I_k}.\alpha_n)^2}{2\sigma_{I_k}^2}} \qquad (7)$$

Both $L(y_n|\beta,\lambda,\alpha_n)$ and $L(I_n|\zeta_I,\sigma_I,\alpha_n)$ are conditional on a specific realization of the latent variable α_n. Given the random component in α_n, we thus need to integrate over the distribution of η i.e. $g(\eta)$, and the combined log-likelihood function is thus given by:

$$LL(\beta,\lambda,\zeta_I,\sigma_I,\gamma) = \sum_{n=1}^{N}\ln\int_{\eta} L(y_n|\beta,\lambda,\alpha_n)\, L(I_n|\zeta_I,\sigma_I,\alpha_n)\, g(\eta)d\eta \qquad (8)$$

Where this integrated over the distribution of η, the random component in the latent variable, and where $n = 1,...,N$ is the index. Both components of this log-likelihood function are clearly also dependent on the specification of the latent variable. For identification reasons, the standard deviation of the random component of the latent variable α needs to be fixed, i.e. we set $\sigma_\alpha = 1$.

In addition to the parameters for the standard model, the use of this model thus entails the estimation of the vector of interaction parameters λ, the parameters of the measurement equations $\zeta_{I_k} \, \forall k$, the socio-demographic interactions terms γ used in the structural equation for the latent variable and the standard deviations of the normally distributed v_{kn} terms (having normalized the standard deviation of r_m, i.e. σ_α, to 1).

DATA

Our research method relies on the construction of a questionnaire to assess preferences towards climate change mitigation policies in Spain. Several stages were required to produce a comprehensive and easy survey instrument. To begin with, focus groups were carried out in several Spanish cities, including A Coruña (coastal) and Santiago de Compostela and Madrid (inland areas). The focus groups contained 10-12 individuals with different socio-economic profiles, who participated in two hours of organized discussion about the magnitude of the climate change problem and things that could be done in Spain by way of a solution. Information obtained from the first focus group on attitudes regarding climate change was utilized to design a draft version of the questionnaire, which was then tested and modified in subsequent focus groups. The final version of the questionnaire reflects information obtained from five different focus groups.

The questionnaire follows the same basic structure as in Malka, Krosnick and Langer (2009), adapted to the Spanish socio-economic context. At the beginning, the questionnaire asked questions about a variety of social issues, such as taxes, unemployment, and pollution. Next, specific questions were asked about the respondent's familiarity with climate change and his/her perception of the damages from climate change. The questionnaire continued by

describing some options which the Spanish government is considering to reduce GHG emissions, including an electricity program.[1] It was stressed that the objective for this electricity program is to fulfil the Spanish 20/20/20 objectives with respect to emission levels in Spain (that is, 20% reduction in GHG emissions, 20% renewable Energyies and 20% improvement in Energyy efficiency by 2020). Our goal was to measure the social preference for this program, in terms of willingness to pay the program's cost. Our intent was to provide some guidance for mitigation policy in Spain, rather than to value the damages from climate change. Since Spain can control its own GHG emissions, but it cannot control global GHG emissions and, therefore, it cannot control the specific impacts from climate change that might be felt in Spain, we believed this was a more appropriate focus for the CV questionnaire. After the payment question, there were questions about the reasons for the response to the payment question. Then there were some questions about attitudes to national and global policies to deal with climate change. The questionnaire concluded with several socio-demographic questions.

With regard to the payment scenario, the cost of the climate change mitigation program was described as a private cost linked to an "extra electricity price per month": The following wording was used:

The electricity we use in our homes and factories is the single largest source of greenhouse gas emissions in Spain. This accounts for 28% of Spain's greenhouse gas emissions.

The Spanish government is considering taking action to reduce the greenhouse gas emissions caused by electricity generation and consumption. The Spanish government is considering a balanced program to reduce the energy we use in our homes and factories. This program

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[1] Due to the large uncertainly, no information was provided with respect to the expected climate change avoidance effects linked to the fulfilment (with respect to non-fulfilment) of the 20/20/20 objectives. However, individuals stated through various questions the level of knowledge, concern, awareness and commitment to fight climate change.

includes requiring power companies to make electricity in ways that don't put out greenhouse gases, such as with renewable energy. Also, the government will require factories to use highly efficient energy equipment, and to make products which meet climate requirements. The government will continue to regulate the price of electricity for households, so that electricity companies cannot gain excess profits.

In the end, this program will make electricity less expensive to produce, but for an initial period of some years, the price of electricity will be higher. At the end, cleaner technologies and higher energy efficiency will make the cost of living lower and electricity less expensive.

If the government goes ahead with this program, the extra cost to your household is likely to be $X or per month (or Y per year) until about 2020. Would you be in favour of this program?

☐ *YES* ☐ *NO* ☐ *DON'T KNOW*

The survey employed a multi-stage sample, firstly selecting different population areas in each region (Autonomous Community), including large, medium and small cities, and then using random digital dialling. In the following analysis all responses are included, even those that may be considered protest responses. In total, 750 surveys were collected.

RESULTS

Results are displayed in Tables 3 and 4. Baseline binary choice models are presented in Table 3. The first columns contain a model specification including only the bid amount and the income variable, whereas the second model displayed in the last columns features a specification including socio-economic and attitudinal variables. Some of these variables are

potentially highly correlated and endogenous to the dependent variable. Signs of the existence of these econometric issues are put forward by the unexpected lack of significance and unexpected signs of some coefficients. Nevertheless, and spite of these empirical problems, the use of these indicators as direct explanatory variables is quite frequent in econometrics. Such problems are expected to be corrected by the application of the HCM model, which provides the results displayed in Table 4. As is observable, results denote that at least there are two identifiable latent (and continuous) factors based on socio-demographic characteristics (one based on education), (and a second one based on age, and the location where the participant lives) that jointly interact with the various response indicators and also contribute in a statistically significant way to the WTP choice equation. We trust that the results provided by this new empirical model may be more accurate when predicting WTP estimates. Additional refinements may also deal with latent classification properly employing latent factors, instead of using the responses given to the indicators as direct latent variables in which classification tasks were performed.

Figure 1: Framework for Choice Modeling with Latent Attributes

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┌─────────────────┐              ╭──────────────────────╮              ┌──────────────────────────┐
│ Characteristics │              │   Latent Attributes: │              │ Indicators of Knowledge, │
│ of Respondent   │  ─────────▶  │ Knowledge, Concern,  │  ─────────▶  │ Concern and Responsibility│
│ (X)         and │              │    Responsability    │              │                          │
│ Attributes   of │              ╰──────────────────────╯              └──────────────────────────┘
│ the Policies    │                        │
└─────────────────┘                        │
         ╲                                  │
          ╲                                 ▼
           ╲                      ╭──────────────────────╮
            ╲                     │                      │
             ▼                    │       Utility        │
                                  │                      │
                                  ╰──────────────────────╯
                                            │
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                                  ┌──────────────────────┐
                                  │ Stated Preferences and WTP │
                                  │ equation    for    a   Green │
                                  │ Electricity Program  │
                                  └──────────────────────┘
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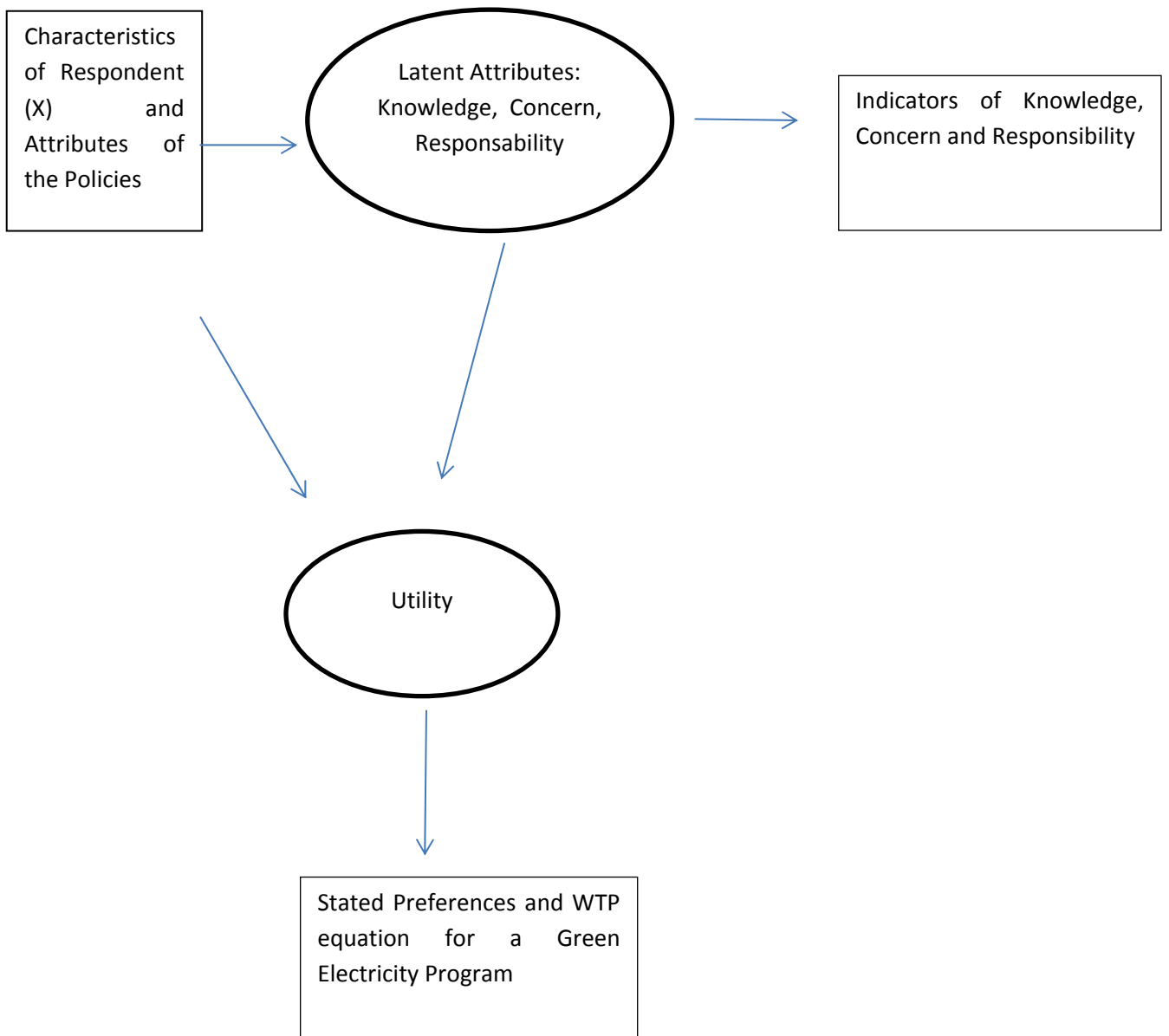
TABLES

Table 1. Socio-demographic variables of the sample vs 200x census (percentages)

Variable	Sample	Census
Sex		
Female	*51.8%*	*51.0%*
Male	*48.2%*	*49.0%*
Educational background		
No Studies	*1.4%*	*3.9%*
Primary School/First part of secondary and similar	*34.6%*	*39.9%*
Vocational school	*23.0%*	*17.5%*
Secondary school complete or partial or similar	*17.0%*	*17.0%*
Undergrad college tech school or similar	*9.7%*	*9.6%*
Graduate Studies or similar	*12.2%*	*12.2%*
DK/NA	*2.0%*	
Age		
18-34	*33.1%*	*29.0%*
35-54	*34.0%*	*37.4%*
55 or older	*32.9%*	*33.6%*
Occupation		
Employee	*43.9%*	*39.8%*
Self-employed	*9.7%*	*8.0.%*
Unemployed (looking for first-time employmen/has never worked before)	*0.9%*	*1.0%*
Unemployed (previously employed)	*8.7%*	*11.8%*
Student	*9.4%*	*5.7%*
Housekeeper	*13.7%*	*11.5%*
Retired	*12.3%*	*18.4%*
Other	*0.6%*	*3.9%*
DK/NA	*0.7%*	
Gross Annual Salary		
<3,600	*2.0%*	
>=3,600<7,200	*2.6%*	
>=7,200<10,800	*7.6%*	
>=10,800<14,400	*18.5%*	*n.a.*
>=14,400<18,000	*16.3%*	
>=18,000<2,.600	*14.6%*	
>=21,600	*21.2%*	
DK/NA	*17.3%*	
Place of residence		
Inland	*73.1%*	
Coast	*26.6*	*n.d.*
DK/NA	*1%*	
	0.3%	

Table 2. Knowledge, Attitudes and Behavior

Knowledge of Climate Change	%
Have you heard about climate change?	
Yes	*98.3%*
No	*1.7%*
Extent to which s/he is informed on climate change	
Very Informed	*10.0%*
Quite informed	*45.1%*
Little informed	*39.1%*
Uninformed	*5.0%*
D.K.	*0.8%*
In your opinion is climate change real or not?	
It is real	*77.3%*
Real but exaggerated	*17.2%*
Not real or serious	*3.2%*
D.K./N.A.	*2.4%*
Could climate change be good or bad for you and your family?	
Good	*1.6%*
Bad	*91.0%*
Neither good nor bad	*7.4%*
Attitudes	**%**
Extent to which Spanish households should assume responsibility in reducing atmospheric pollution	
No responsibility	*5.2%*
Small responsibility	*25.3%*
Large responsibility	*51.5%*
Total responsibility	*17.7%*
DN/NA	*0.3%*
Extent to which firms should be responsible for reducing atmospheric pollution	
No responsibility	*1.3%*
Small responsibility	*3.0%*
Large responsibility	*32.5%*
Total responsibility	*62.2%*
D.K./N.A.	*1.0%*
Likelihood of finding technological solutions to avoid the negative affects of climate change	
Very likely	*18.9%*
Quite likely	*44.8%*
Neither likely nor unlikely	*14.0%*
Little likely	*14.7%*

Very little/hardly likely	*7.4%*
DN/NA	*0.1%*
How necessary are measures nowadays to control GHG emissons?	
Absolutely necessary	*41.8%*
Quite necessary	*46.8%*
Little necessary	*7.4%*
unnecessary	*2.2%*
D.K./N.A.	*1.9%*
The Spanish government should do something to control GHG emissions	
Only if developing countries cooperate and control their emissions	*29.0%*
Regardless of whether or not developing countries cooperate	*62.1%*
No, Spain should do nothing:	*4.3%*
D.K./N.A.	*4.6%*

Consumption Habits		
Habits	**Yes**	**No**
Separates and recycles solid residues	*81.0%*	*19.0%*
Uses Energyy-saving equipment and/or recyc	*47.5%*	*52.5%*
paper	*5.0%*	*95.0%*
Attends courses on environmental education	*2.2%*	*97.9%*
Member of an environmental organization	*0.0%*	*100.0%*
Other	*6.7%*	*93.3%*
D.K./N.A.	*8.3%*	*91.7%*
None		

Table 3: Binary Choice Models

Variable	WTP 1			WTP 2		
	Coefficients	Std. Err.	P>|z|	Coefficients	Std. Err.	P>|z|
Constant	-1.329	0.407	0.001	-4.840	1.366	0.000
Bid	-0.053	0.007	0.000	-0.054	0.008	0.000
Income	0.274	0.071	0.000	0.204	0.082	0.013
Education				0.063	0.089	0.483
North				0.122	0.322	0.704
South				0.037	0.266	0.890
Age				-0.019	0.008	0.015
Info climate				0.007	0.174	0.966
Climate problem				0.698	0.336	0.038
Degree own responsibility				0.218	0.170	0.199
Degree firm responsibility				0.199	0.235	0.397
Need for action				0.420	0.184	0.023
Spain should do something				-0.103	0.224	0.646
Log-likelihood	-273.318			-234.818		
LR χ^2	88.750			113.550		
LR P-value	0.000			0.000		

	Mean	95% Confidence Interval	
WTP 1	1.215	0.559	1.872
WTP 2	3.073	1.702	4.445

Table 4: Hybrid Choice Model

	Variables	Coef	s.e.	T-value	P-value	Wald(0)
Hybrid Choice Model Results						
Latent Variables						
LatentFactor1	*Education*	*0.2433*	*0.0885*	*2.748*	*0.006*	*7.5514*
LatentFactor2	*North*	*1.0989*	*0.4441*	*2.4746*	*0.013*	*6.1237*
LatentFactor2	*South*	*0.5217*	*0.2728*	*1.9126*	*0.056*	*3.6581*
LatentFactor2	*Age*	*-0.0046*	*0.0075*	*-0.6088*	*0.54*	*0.3707*
Attitudinal Indicators						
infoclimate(1)		*-0.7305*	*0.3827*	*-1.9089*	*0.056*	*107.5914*
infoclimate(2)		*1.5577*	*0.2581*	*6.0358*	*1.60E-09*	
infoclimate(3)		*0.9946*	*0.124*	*8.0223*	*1.00E-15*	
infoclimate(4)		*-1.8218*	*0.5267*	*-3.4589*	*0.00054*	
Infoclimate	*LatentFactor1*	*1*	.	.	.	
climateproblem(1)		*-1.3967*	*0.3425*	*-4.0779*	*4.50E-05*	*19.7229*
climateproblem(2)		*0.3631*	*0.1817*	*1.9987*	*0.046*	
climateproblem(3)		*1.0335*	*0.2342*	*4.4123*	*1.00E-05*	
Climateproblem	*LatentFactor1*	*1.3322*	*0.6599*	*2.0187*	*0.044*	*4.0752*
heardclimatechange(0)		*-2.7893*	*0.8936*	*-3.1214*	*0.0018*	*9.7433*
heardclimatechange(1)		*2.7893*	*0.8936*	*3.1214*	*0.0018*	
Heardclimatechange	*LatentFactor1*	*3.5428*	*2.1978*	*1.612*	*0.11*	*2.5984*
degree_own_responsability(1)		*-1.8276*	*0.3101*	*-5.8932*	*3.80E-09*	*124.0056*
degree_own_responsability(2)		*0.4716*	*0.1271*	*3.7113*	*0.00021*	
degree_own_responsability(3)		*1.409*	*0.1455*	*9.683*	*3.60E-22*	
degree_own_responsability(4)		*-0.053*	*0.2458*	*-0.2155*	*0.83*	
degree_own_responsability	*LatentFactor2*	*0.3939*	*0.129*	*3.054*	*0.0023*	*9.3272*
degree_firms_responsability(1)		*-5.7385*	*1.5936*	*-3.601*	*0.00032*	*23.4433*
degree_firms_responsability(2)		*-1.3094*	*0.3166*	*-4.1364*	*3.50E-05*	
degree_firms_responsability(3)		*3.0849*	*0.7677*	*4.0182*	*5.90E-05*	
degree_firms_responsability(4)		*3.963*	*1.0359*	*3.8257*	*0.00013*	
degree_firms_responsability	*LatentFactor2*	*1*	.	.	.	
need_for_action(1)		*-2.4228*	*0.3947*	*-6.1387*	*8.30E-10*	*88.2436*

need_for_action(2)		-0.5599	0.1589	-3.523	0.00043	
need_for_action(3)		1.6118	0.1849	8.7164	2.90E-18	
need_for_action(4)		1.3709	0.256	5.3541	8.60E-08	
need_for_action	*LatentFactor2*	0.3764	0.1718	2.1906	0.029	4.7987
spain_should_do_something(1)		-1.499	0.1533	-9.7784	1.40E-22	134.6933
spain_should_do_something(2)		0.3216	0.0903	3.5613	0.00037	
spain_should_do_something(3)		1.1774	0.1015	11.5993	4.20E-31	
spain_should_do_something	*LatentFactor2*	0.1593	0.0873	1.8241	0.068	3.3273
WTP Choice Equation	*Constant*	-0.7883	0.2477	-3.1825	0.0015	
	LatentFactor1	0.2458	0.1677	1.4657	0.14	
	LatentFactor2	0.1094	0.059	1.8554	0.064	
	Bid	-0.0278	0.0039	-7.0631	1.60E-12	
	Income	0.1145	0.041	2.7946	0.0052	

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