

Environment Center Charles University in Prague

### Public acceptability of climate change mitigation policies: discrete choice experiments in three European countries

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### Public acceptability and support: why?

### **Motivation:**

- reluctance among politicians to implement policies lacking public support are factors that can inhibit the successful implementation of climate policies (e.g. Steg et al. 2006)
- failure to introduce the carbon-energy taxation (in France in 2010, etc.), even already implemented carbon tax can be repealed partially due to unpopularity among public, such as the Australian carbon tax in 2014 (Rootes, 2014)

### Aim:

 understanding of acceptability of climate change policies to preclude public resistance



## **Objectives and approch**

### **Objective**

- to analyse factors influencing public acceptance:
  - characteristics of policies and instruments
  - socio-demographic and socio-psychological variables

### Approach

- Systematic review of studies
- Own empirical studies

### Insights from the literature review

Climate policies tend to be acceptable by people where aware of the climate changes

- feel more responsible for the associated environmental problems
- feel a stronger moral obligation to contribute to the solution
- perceive the policies to be fair
  - distribution of costs / environmental benefits
  - preference for polluter-pays principle
- perceive the policies to be effective in reducing impacts
  - temperature increase
  - % reduction of GHG emissions

## **Our study**

- Surveys conducted in three EU countries: the Czech Republic, Poland, and the UK in September and October 2015
- representative of national populations aged 18 to 69 years in terms of gender, age, region and education
- web-based questionnaires administered either by interviewers personally (CAPI) or by online access panels (CAWI)

country	survey mode	valid obs.
	CAWI	1,150
Czech Republic	CAPI	431
	CAWI	837
Poland	CAPI	429
United Kingdom	CAWI	1,251

# The study: Discrete choice experiments

Two experiments on acceptability of policies

- 1. to reach the GHG emission target by 2020, 2030, and 2050
- 2. to reach the 2050 emission target when **policy instruments differ**

Acceptability is analysed by means of the discrete choice experiments

- Respondents are asked to choose a policy they prefer the best
- One of the presented policies is **a status quo**, i.e. the current policy that costs additionally nothing, but will not bring any further reductions
- Policies are described by their **attributes** (approach, cost distribution, burden sharing, policy instruments, use of revenues)
- One of the policy attributes is increased monthly **costs** for household

## **Econometric model**

- 1. Conditional Logit (CL)
  - only observed preference heterogeneity (not presented here)  $\rightarrow \hat{\beta}$
- 2. Mixed logit (Random Parameter Logit, MXL)
  - MXLd = MXL without correlated (random) parameters  $\rightarrow$  mean( $\beta_i$ ), s.d.( $\beta_i$ )
  - MXL = MXL with correlated (random) parameters → full covariance matrix
- 3. Latent Class Model (LC)
  - individuals who belong to the same class share the same preferences, whereas preferences between classes can considerably vary
  - − (if LC=1  $\rightarrow$  CL)
- 4. Hybrid Mixed Logit (HMXL)
  - combines MXL with the Multiple Indicators and Multiple Causes (MIMIC) model (Jöreskog and Goldberger 1975). Applied in transportation (Johansson et al. 2006; Daziano & Bolduc 2013) or enviro (Hess & Beharry-Borg (2011); Dekker et al. 2012; Czajkowski et al. 2016).
  - MXL combined with Latent attitudinal variables (Ščasný et al. 2015).

### Mixed Logit in WTP space

Indirect utility additive in attributes

$$V_{ijt} = \mathbf{X}_{ijt}\mathbf{b}_i + p_{ijt}a_i + e_{ijt}$$

Assuming IIA extreme value I  $\rightarrow$  probability is

$$P(j|J) = \frac{\exp\left(X_{ijt}\left(\sigma_{i}\mathbf{b}_{i}\right) + p_{ijt}\left(\sigma_{i}a_{i}\right)\right)}{\sum_{k=1}^{J}\exp\left(X_{ikt}\left(\sigma_{i}\mathbf{b}_{i}\right) + p_{ikt}\left(\sigma_{i}a_{i}\right)\right)}$$

WTP for non-monetary X, a money metric utility function  $\rightarrow$  estimating parameters in WTP space (Train and Weeks 2005)

$$U_{ijt} = \sigma_{i}a_{i}\left(X_{ijt}\frac{\sigma_{i}\mathbf{b}_{i}}{\sigma_{i}a_{i}} + p_{ijt}\right) + \varepsilon_{ijt} = \sigma_{i}a_{i}\left(X_{ijt} + p_{ijt}\right) + \varepsilon_{ijt}$$

the estimates can be readily interpreted as marginal WTP for X

## Mixed Logit in WTP space

- All X coefficients are random and freely correlated, i.e. df=54 for 9 covariates of the basic model (full cov matrix estimated, compare with df=(9+9) for MXLd or df=9 for CL)
- all coefficients are assumed to be normally distributed, with the exception of marginal utility of income, which is assumed to follow a lognormal distribution
- The **cost** enters the model with a negative sign and was scaled by a factor of 100 to facilitate convergence.
- the model is estimated using the maximum simulated likelihood method (Revelt & Train, 1998)

## **Results**

## Discrete choice experiment No. 1 Emission reduction targets

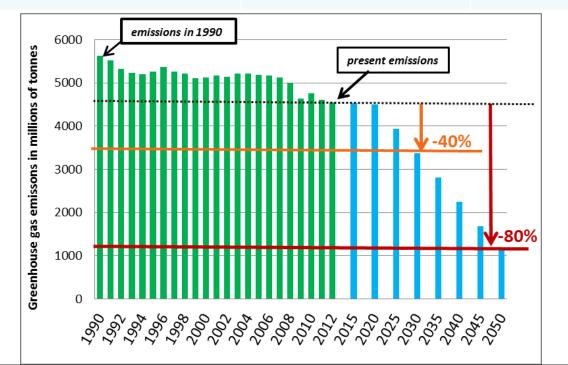
## **DCE1: Design**

Policies that may be introduced by the EU in order to mitigate climate change impacts differ in:

- GHG emission reduction targets at the EU
- Burden sharing across the EU Member States
- Cost distribution among inhabitants of a country
- Increased monthly **costs** for your household

## **DCE1: The EU emission reduction targets**

	20% reduction by 2020	40% reduction by 2030	80% reduction by 2050
GHG volume	emissions remain more- less as now, may slightly increase ( <b>black dotted line</b> )	-20% by 2020 -40% by 2030 then, remain stable <b>(light red line)</b>	-20% by 2020 -40% by 2030 -80% by 2050 <b>(dark red line)</b>
Policy status	policy that has been agreed at the EU and is currently being implemented	EU commitment, measures not implemented yet	EU commitment, measures not implemented yet



#### DCE1: Information about the EU emission reduction targets /2/

	20% reduction by 2020	40% reduction by 2030	80% reduction by 2050
Increase in global average temp. by 2100 (rel. to 1986-2005) - if the rest of the world adopts equivalent targets	2.6 °C to 4.8 °C	1.2 °C to 2.8 °C	0.7 °C to 2.2 °C
Likely impacts	<ul> <li>Severe</li> <li>large drop in agricultural production</li> <li>loss of most coastal areas</li> <li>substantial threat to human health caused by disease, malnutrition, heat waves, floods and droughts</li> <li>widespread extinction of animal and plant species, loss of their habitats</li> </ul>	disease, malnutrition, heat waves, floods and droughts	<ul> <li>Mild</li> <li>the most severe impacts of climate change are prevented</li> <li>some effects of global warming will be felt, however not as severe as in the other reduction scenarios</li> </ul>

## **DCE1: Experimental design**

Emissions reduction target for the European Union (increase in global average temperature by 2100)

Distribution of costs among the European Union countries (EU)

Distribution of costs among the citizens of [member state](MS)

Increased monthly costs for your household

- -20% by 2020 (+2.6–4.8°C by 2100)
- -40% by 2030 (+1.2–2.8°C by 2100)
- -80 by 2050 (+0.7–2.2°C by 2100)

Status Quo: 20% reduction by 2020; current policy

- richer states pay more ('GDP')
- states with higher population pay more (*'person'*)
- higher emitting states pay more ('GHG')

Status Quo: richer states pay more

- everyone pays the same amount ('person')
- everyone pays the same income percentage ('income')
- the rich pay a higher income percentage ('rich')
- those who emit more pay more ('GHG')

Status Quo: everyone pays the same income percentage

€20, €33, €65, €95, €130, €150

*Status Quo:* €0

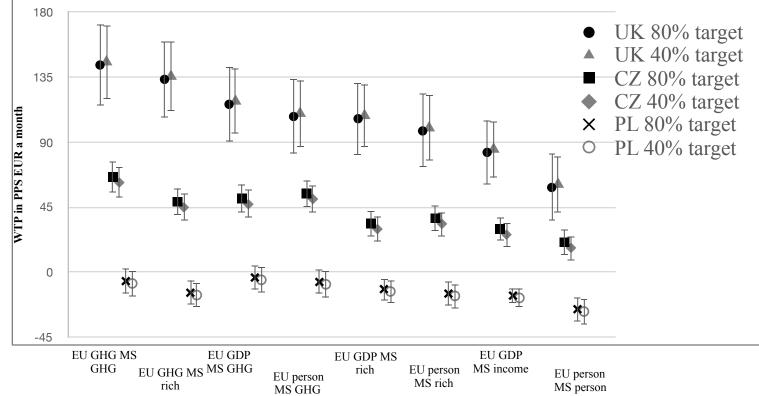
## **DCE1: Example of a choice card**

	Policy A	Policy B	<b>Current policy</b>
EU emission reduction target Increase in global average temperature by 2100 if the rest of the world complies equivalently	<b>40%</b> reduction by 2030 1.2 °C to 2.8 °C	80% reduction by 2050 0.7 °C to 2.2 °C	<b>20%</b> reduction by 2020 2.6 °C to 4.8 °C
Likely impacts	Moderate	Mild	Severe
Distribution of costs among the EU countries	states with higher population pay more	higher emitting states pay more	richer states pay more
Distribution of costs among the Czech citizens	every citizen pays the same amount	everyone pays the same income percentage	everyone pays the same income percentage
Increased monthly costs for your household	25 €	75 €	0€
Which policy do you consider the best taking into account you and your	X	X	X

household?

DCE1: MXL		Czech F	Republic	United <b>F</b>	Kingdom	Poland	
	space (in EUR, PPS)	means	standard deviations	means	standard deviations	means	standard deviations
	-	coefficient	coefficient	coefficient	coefficient	coefficient	coefficient
		(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)
	target = 20% (ref.)	0	0	0	0	0	0
		13.19***	37.05***	45.79***	97.55***	-1.76	31.15***
	target = 40%	(2.78)	(2.75)	(6.26)	(10.00)	(2.53)	(2.94)
	4222 - 4 - 200/	17.04***	46.77***	43.57***	149.21***	-0.14	32.59***
	target = 80%	(3.02)	(2.89)	(8.36)	(10.11)	(2.57)	(1.73)
	burden sharing EU = GDP (ref.)	0	0	0	0	0	0
	burden sharing EU = person	3.61	25.26***	-8.39	25.85***	-3.08	10.48***
		(2.56)	(3.04)	(5.43)	(8.07)	(2.16)	(1.68)
			22.14***	27.13***	47.36***	-2.49	11.88***
	burden sharing EU = GHG	(2.56)	(2.62)	(6.21)	(6.70)	(2.33)	(1.90)
	cost distribution MS = income (ref.)	0	0	0	0	0	0
		-12.78***	16.33***	-15.72**	41.23***	-6.28**	14.75***
	cost distribution MS = person	(2.96)	(2.88)	(7.49)	(7.37)	(3.05)	(1.59)
	cost distribution MS = rich	3.81	33.07***	23.21***	61.75***	4.47	22.23***
	cost distribution MS – fich	(3.09)	(3.28)	(8.02)	(12.15)	(3.02)	(2.32)
	$a_{ost}$ distribution MS = CHC	20.94***	49.10***	33.17***	81.69***	12.48***	24.31***
	cost distribution MS = GHG		(4.01)	(9.12)	(8.65)	(3.50)	(3.17)
ſ	status quo	-12.82***	81.80***	-39.07***	161.16***	15.95***	83.65***
	(alternative specific constant)	(3.82)	(5.44)	(8.82)	(16.57)	(3.03)	(4.83)
	-cost(100 EUR)*scale	1.39***	1.33***	0.58***	1.78***	2.02***	2.27***
	-cosi(100 EOR) scale	(0.07)	(0.17)	(0.08)	(0.24)	(0.16)	(0.36)

### Implicit WTP for policy packages, in EUR per month and household



Note: Burden sharing across the EU Member States (EU) and distribution of the cost within a member state (MS) is linked to greenhouse gas emissions released by a country or household respectively ('GHG'), to GDP or income, progressively to household income ('rich'), or is based on lump sum allocation ('person').

Estimates of means depicted as points and 95% confidence intervals as lines.

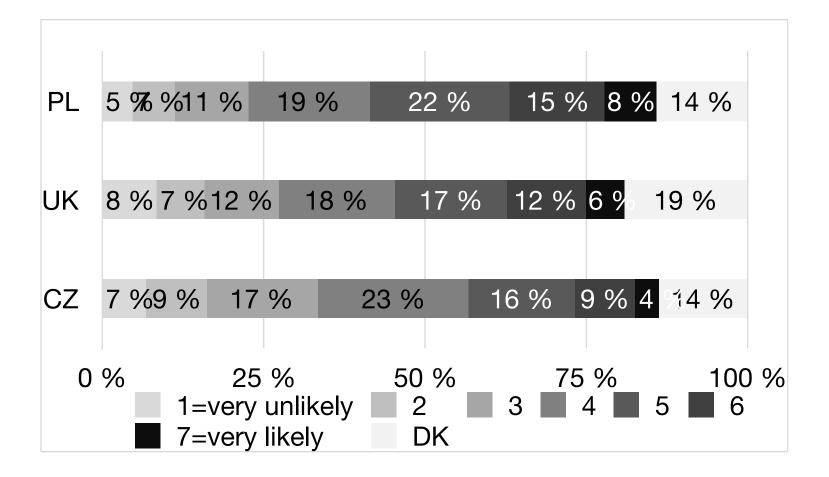
### Latent Class Model, CZ, 3 classes

J									
Variable		Class 1			Class 2			Class 3	
Utility model									
Variable	coef.	st.err.	p-value	coef.	st.err.	p-value	coef.	st.err.	p-value
SQ	-1.2780	0.1533	0.0000	3.0802	1.3155	0.0192	-0.2409	0.0297	0.0000
target = 40%	0.5767	0.0757	0.0000	-0.7239	0.3856	0.0604	0.0936	0.0210	0.0000
target = 80%	0.6702	0.0877	0.0000	-0.0233	0.1959	0.9053	0.1121	0.0225	0.0000
burden sharing = lump sum	-0.0430	0.0496	0.3860	-0.1290	0.1938	0.5057	0.0605	0.0204	0.0030
burden sharing = emission	0.3142	0.0552	0.0000	-0.1617	0.2072	0.4350	0.1150	0.0223	0.0000
cost distib = lump sum	-0.2193	0.0624	0.0004	0.0657	0.3220	0.8383	-0.1052	0.0242	0.0000
cost distib = progressive	-0.0117	0.0578	0.8399	1.0976	0.5404	0.0422	-0.0511	0.0245	0.0370
cost distib = emission	0.5999	0.0859	0.0000	1.0025	0.4721	0.0337	0.0185	0.0290	0.5237
-cost (100 EUR)	1.1457	0.1239	0.0000	0.9382	0.3307	0.0046	4.8612	0.5318	0.0000
Latent class probability model									
Variable	coef.	st.err.	p-value	coef.	st.err.	p-value	coef.	st.err.	p-value
Constant	0.5628	0.4724	0.2335	-0.7015	0.4805	0.1443	-		
male	0.2743	0.1622	0.0908	0.5871	0.1649	0.0004	-		
age	-0.0065	0.0062	0.2900	0.0154	0.0061	0.0121	-		
income norm.	0.1244	0.0794	0.1171	0.0675	0.0877	0.4419	-		
income missing	-0.1656	0.1735	0.3397	0.2408	0.1743	0.1671	-		
HH size	0.0111	0.0888	0.9002	0.0895	0.0874	0.3060	-		
no. of children	-0.0081	0.1125	0.9424	-0.1108	0.1183	0.3491	-		
edu3	0.0752	0.2968	0.8000	-0.2758	0.2952	0.3500	-		
edu4	0.0846	0.3445	0.8061	-0.1019	0.3367	0.7621	-		
edu5	-0.8159	0.3778	0.0308	-0.9867	0.3932	0.0121	-		
edu6	-0.0081	0.2816	0.9771	-0.2871	0.2872	0.3176	-		
edu7-8	-0.2388	0.3274	0.4658	-0.5967	0.3376	0.0772	-		
edu9	-0.5454	0.3898	0.1617	-1.1764	0.4478	0.0086	-		
edu10-11	0.0190	0.3231	0.9530	-0.4929	0.3360	0.1424	-		
Average class probabilities	0.3874			0.3303			0.2822		

### Summary of the results - DCE1 Latent Class Model (3 classes)

		CZ			UK			PL	
	against	modest	green	against	modest	green	against	modest	green
SQ*	308	-24	-128	217	-27	-323	0	-8	-135
target = $40\%$ *	-72	9	58	-32	44	139	0	4	26
target = 80%*	0	11	67	-34	45	215	0	2	24
burden sharing EU	GDP	GHG person	GHG	GHG	indiffer	GHG	indiffer.	indiffer.	indiffer.
cost distribution	rich	GHG	GHG	indiffer	GHG	GHG rich	indiffer	indiffer	GHG rich
cl			ss pr	obabi	ility		I		<u>1</u>
Poland	45	%		29 %	ó	25 %	)		
UK	38 %	6	18 9	%	44	%		<b>_</b>	ainst dest
CZ	33 %		28 9	%	3	9 %		gre gre	en
0 %	2	5 %	50	%	75 %	6	100 %		

## Respondents who think that the stricter emission reduction policy will be implemented, in %



## **Results when controlling for a belief in policy implementation, MNL, preference space**

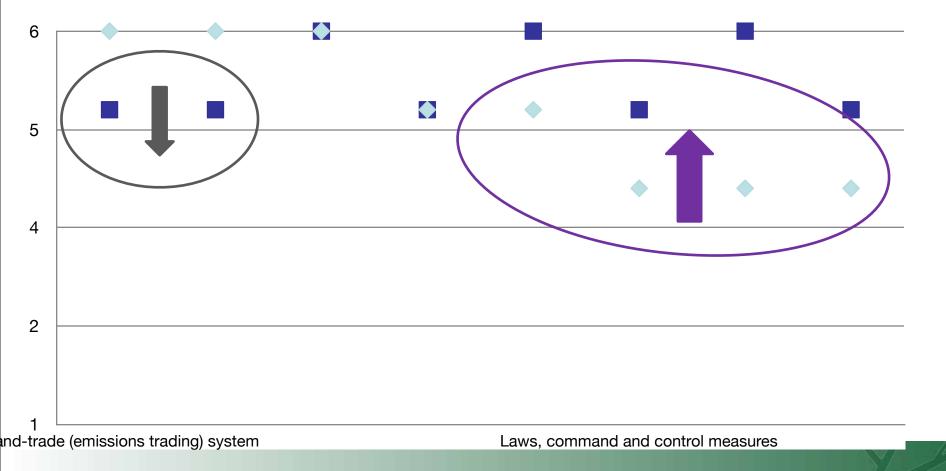
		Czech Rep			United King		Poland coef. st.err.			
	coef.	st.err.	p-value	coef.	st.err.	p-value	coel.	st.en.	p-value	
SQ	0.1432	0.0551	0.0093	0.7765	0.0705	<.0001	0.5345	0.0676	<.0001	
_*implYES	-0.2348	0.0939	0.0124	-0.2346	0.0872	0.0071	-0.6100	0.0931	<.0001	
_*implNO	0.3944	0.0901	<.0001	0.7993	0.1449	<.0001	0.3764	0.1085	0.0005	
target = 40%	0.4055	0.0462	<.0001	0.1784	0.0620	0.0040	0.4363	0.0590	<.0001	
_*implYES	-0.0551	0.1131	0.6263	0.0232	0.1147	0.8397	-0.2414	0.1182	0.041 <mark>2</mark>	
_*implNO	0.0467	0.1122	0.6771	0.0467	0.1954	0.8112	-0.0374	0.1405	0.7902	
target = 80%	0.5126	0.0474	<.0001	0.2333	0.0627	0.0002	0.6110	0.0555	<.0001	
_*implYES	0.1381	0.1121	0.2180	-0.1261	0.1184	0.2870	-0.2716	0.1095	0.0131	
_*implNO	-0.0351	0.1147	0.7592	0.1849	0.1934	0.3390	0.0829	0.1310	0.5268	
burden sharing EU = person	0.0272	0.0383	0.4768	-0.0299	0.0500	0.5496	-0.0499	0.0449	0.2665	
burden sharing EU = GHG	0.2705	0.0389	<.0001	0.0156	0.0497	0.7538	0.2555	0.0439	<.0001	
cost distrib MS= person	-0.3047	0.0473	<.0001	-0.0124	0.0603	0.8367	-0.0611	0.0557	0.2731	
cost distrib MS= rich	-0.0611	0.0445	0.1699	0.1487	0.0592	0.0120	0.2066	0.0510	<.0001	
cost distrib MS= GHG	0.3562	0.0444	<.0001	0.3280	0.0596	<.0001	0.2728	0.0521	<.0001	
cost (EUR)	-0.0164	0.0006	<.0001	-0.0174	0.0009	<.0001	-0.0065	0.0003	<.0001	
No ID	1581			1266			1251			
No obs.	9486			7596			7506			
LL	-9601			-6649			-7567			
LLO	-10421			-8345			-8246			

## **Results**

## Discrete choice experiment No. 2 Policy instruments

## How much would the following policy measures infringe on your personal freedom?

How likely is it that the following measures will succeed in reaching the goal of emissions reduction by 80%?



## **DCE2 Instruments: Experimental design**

Attribute	Level
Policy measure	<ul> <li>Technology &amp; energy performance standards</li> <li>Subsidies for energy savings</li> <li>Taxes on energy and emissions</li> <li>Emissions trading system</li> <li>Removal of environmentally harmful subsidies</li> <li>Information provision</li> </ul>
Revenue recycling in the country	<ul> <li>NO or YES <ul> <li>if YES then</li> </ul> </li> <li>Support for energy savings, envi programs, clean techs <ul> <li>Improvement of public services (health, education)</li> </ul> </li> <li>Public debt reduction <ul> <li>Social problems mitigation</li> <li>Research &amp; technology development</li> <li>Increase spending according to current allocation</li> <li>Reduce taxes on labour and goods</li> </ul> </li> </ul>
Increase in your monthly costs until 2050	<ul> <li>0€ [in SQ only]</li> <li>20€, 33€, 65€, 95€, 130€, 150€</li> </ul>

**Status quo** = current measures (emission targets will not be fulfilled after 2020) but costs nothing; revenue recycling and cost distribution not further specified

### **DCE2 Example of a choice card**

#### Instruments to reach 80% emission reduction by 2050

	Policy A	Policy B	Current policy
Emissions reduction target for the European Union	80% reduction by 2050	80% reduction by 2050	<b>20%</b> reduction by <b>2020</b>
Policy measure	Taxes on energy and emissions + Removal of environmentally harmful subsidies	Taxes on energy and emissions + Subsidies for energy savings	No additional
Generation of new revenues for state budget	yes	yes	No
Use of additional revenues in the Czech Republic	environmental programs	public services (health, education)	
Increased monthly costs for your household	25 €	75 €	0€
Which policy do you consider the best taking into account you and your household?	X	X	X

# Estimation results- DCE2: MXL model (WTP in EUR)

	<b>means</b>	<b>std.</b>	<b>means</b>	<b>std</b>	<b>means</b>	<b>std</b>
	coef.	œef.	<b>coef.</b>	coef.	<b>coef.</b>	<b>œef.</b>
	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)
instrument = tax (ref.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
= permits	<b>-7.73</b> ***	15.41***	<b>12.65***</b>	45.11***	<b>7.53***</b>	21.28**
	(1.52)	(1.88)	(4.64)	(9.52)	(1.86)	(3.91)
= removal of subsidies	<b>5.09***</b>	18.18***	-5.90	50.06***	4.61**	13.19**
	(1.49)	(2.19)	(4.96)	(9.51)	(1.97)	(2.55)
= bans and	0.53	7.06***	3.31	33.19***	<b>7.04</b> ***	7.78** <sup>,</sup>
standards	(1.63)	(1.84)	(5.04)	(9.36)	(1.89)	(1.72)
= information	-0.65	10.79***	3.63	45.05***	0.24	10.43**
	(1.58)	(1.74)	(5.04)	(8.40)	(1.86)	(2.59)
= subsidies	<b>4.45**</b>	6.27***	5.15	35.36***	0.12	23.29**
	(1.75)	(1.54)	(5.20)	(8.41)	(2.27)	(3.85)
status quo (ASC)	<b>-45.2* * *</b>	91.62***	<b>-86.3</b> * * *	228.2***	-4.46	83.43**
	(2.5)	(5.26)	(8.05)	(21.25)	(2.45)	(7.24)
-cost(100 EUR)*scale	<b>2.56***</b>	2.19***	<b>1.78***</b>	2.69***	<b>4.27</b> ***	3.91** <sup>*</sup>
	(0.14)	(0.18)	(0.15)	(0.25)	(0.38)	(0.41)

# Estimation results- DCE2: MXL model (WTP in EUR)

	means	<b>std.</b>	<b>means</b>	<b>std</b>	means	<b>std</b>
	œef.	œef.	œef.	œef.	œef.	œef.
	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)
revenue recycling = no (ref.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R = environment	<b>15.45</b> ***	35.71***	-2.99	124.87***	<b>-14.11</b> ***	58.88**'
	(2.63)	(3.55)	(8.69)	(16.49)	(3.73)	(5.99)
RR = public services	<b>14.25</b> ***	31.71***	<b>20.68**</b>	110.34***	-6.55	56.97**'
	(2.85)	(3.97)	(8.54)	(14.33)	(3.66)	(6.34)
RR = social problems	9.48***	18.16***	-13.54	123.18***	-3.68	42.81**'
	(2.30)	(3.26)	(9.98)	(16.75)	(2.72)	(5.72)
RR=R&D	8.32***	36.24***	11.13	108.96***	-6.00	50.22**'
	(2.58)	(3.30)	(8.13)	(13.29)	(3.63)	(6.45)
$\mathbf{R}$ = public debt	8.71***	35.39***	<b>18.50**</b>	98.55***	-2.18	45.23**'
	(2.84)	(2.99)	(9.07)	(15.43)	(3.20)	(6.90)
RR = current allocation	1.88	31.67***	2.36	81.44***	<b>-6.04**</b>	26.09**'
	(3.02)	(2.92)	(7.05)	(13.18)	(2.71)	(5.28)
R = reduce taxes	<b>14.46</b> ***	23.94***	9.80	67.46***	-8.26	78.34**'
	(2.51)	(3.30)	(7.16)	(11.88)	(4.72)	(8.80)
<b>Model diagnostics</b> Log-likelihood (constant only)		45.54	·	78.66		30.92
Log-likelihood	-6,87	71.11	-5,0	13.73	-4,53	37.10

Estimation results- DCE2: hybrid mixed logit, WTP-space Which segments of population accept the 80 % target?

Perceived knowledge

**Know more** about the climate change:

- less likely to choose the 20% reduction by 2020 (SQ) in all 3 countries
- WTP larger for **permits** and in favour of revenues on **R&D** in CZ
- have stronger preferences for the removal of harmful subsidies and revenues on env. protection in the UK

Climate change concern

#### More concerned about climate change:

 in favour of removal of harmful subsidies and even less likely to choose the status quo

- stark differences between the countries
- for the 40% or 80% GHG emission reductions
  - the Czechs: 13-17 EUR per month
  - the British: 44-46 EUR per month
  - the Poles: not statistically significantly different from 0 (reference the current 20% target).
- Huge (unobserved) heterogeneity

### 'green' supporters

- 44% in the UK and 39% in 
   the Czech Republic, 25%
   in Poland
- Strong preference for the principle of distribution linked to emission volumes, dislike the lump sum (per capita) cost allocation

#### 'against'

- It is the dominant class in Poland (45%)
- indifferent with respect to the cost allocation rule in UK and POL, as they do not like the mitigation policy at all
  - less educated

### **Policy instruments**

- UK: strong preference for the emissions **permit system**
- POL: prefer the emissions permit system, providing bans and technological standards followed by harmful subsidy removal
- CZE: prefer removal of **harmful subsidies** and **subsidy** provision, **permits** are considered even worse than tax.
- Using tax in combination with other instruments does not improve acceptability of taxes.

### Earmarking the revenues

- UK: support using the revenues for **public services** (such as public health or education) and reducing **public debt**
- POL: their preferences for instruments that generate additional budget revenues were the weakest among 3 countries; dislike using revenues according to current allocation
- CZE: prefer environmental projects, public services and reducing current taxes the most

Public acceptability of policies to reach the GHG emission reduction targets may be raised by

- taking into account distributional consequences, especially introducing distribution of costs based on the emissions, i.e. implementing the polluter-pays principle
- strengthening trust in government and public organizations (transparency, public participation)
- campaign focused on perception of climate changes, the policy roadmap supported by a binding policy commitment, as people prefer the stricter emission targets more, if they believe that the policy is likely to be implemented

### Thank you for your attention

### More details

Ščasný, M., Zvěřinová, I., Czajkowski, M., Kyselá, E., Zagórska, K. (2016), Public Acceptability of Climate Change Mitigation Policies: A Discrete Choice Experiment. *Climate Policy (*In Press), doi: 10.1080/14693062.2016.1248888.

- Ščasný, M., Zvěřinová, I., Czajkowski, M., Kyselá, E., Zagórska, K. (2015), EU Climate Policy as the Public Likes it: Understanding the Public Acceptability of Policies and Policy Instruments. Report from Task 4.8 Public acceptability of implementing different policy instruments, CECILIA2050 Report, 30th October 2015.
- Zvěřinová, I., Ščasný, M., & Kyselá, E. (2014). What Influences Public Acceptance of the Current Policies to Reduce GHG Emissions? (WP2 Deliverable 2.5.). Prague: Charles University Environment Center. Retrieved from http://cecilia2050.eu/publications/239
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