CECILIA 2050
OPTIMAL EU CLIMATE POLICY

Acceptability of Climate Change Policies by Czechs

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Public acceptability and support: why?

Motivation:

- resistance and 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), such as failure to introduce the carbon-energy taxation (in France in 2010, etc.)

Aim:

- detailed understanding of acceptability of climate change policies to preclude public resistance

CECILIA2050's objectives and approch

Objective – to analyse **factors influencing public acceptance:**

- characteristics of policies and instruments - economics
- structural and individual factors (such as socio-demographic and socio-psychological variables) - sociology, social psychology

Approach

- Secondary data analysis (Eurobarometer, ISSP)
- Systematic review of studies
- Own empirical study across EU countries

Insights from the literature review

Climate policies tend to be acceptable by people who …

- are 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

(Zvěřinová, Ščasný, Kyselá, 2014)

Insights from the literature review: other factors influencing acceptance

- Environmental identity and concern, concern about climate change and energy security
- perception of effects of policies on lives of people (threaten people's freedom of choice)
- knowledge and providing information increase acceptability
- spatial distribution of CO2 reductions

- mixed evidence on social-demographic factors
- income (positive), age (negative), education (positive)

(Fuiji et al., 2004; Kallbekken and Aasen, 2010)

Insights from the literature review: tax-aversion

Support for Pigouvian taxes may be raised by

- **taking into account distributional consequences,** especially protecting from regressive effects
- **strengthening trust in government and public organizations** (transparency, public participation, etc.; see literature on public governance and public trust)
- **support acquiring information** about how the taxes work, how they can reduce the externalities and increase welfare and about their effectiveness**;**
- **earmarking the revenues** for environmental measures and revenues are targeted to narrowly specified groups
- public investments in **environmentally friendly technologies**, transport infrastructure, and renewable energy;

(Zvěřinová, Ščasný, Kyselá, 2014)

Our empirical study in CECILIA2050

- Willingness to pay elicited from **Discrete Choice Experiments** (Carson and Louviere 2011)
- Economic model enriched by a **social psychological model of behaviour** to control for the internal factors
- Surveys planned in 2014 on representative samples of the general population in three EU countries: the **Czech Republic**, **Poland**, and **the UK**

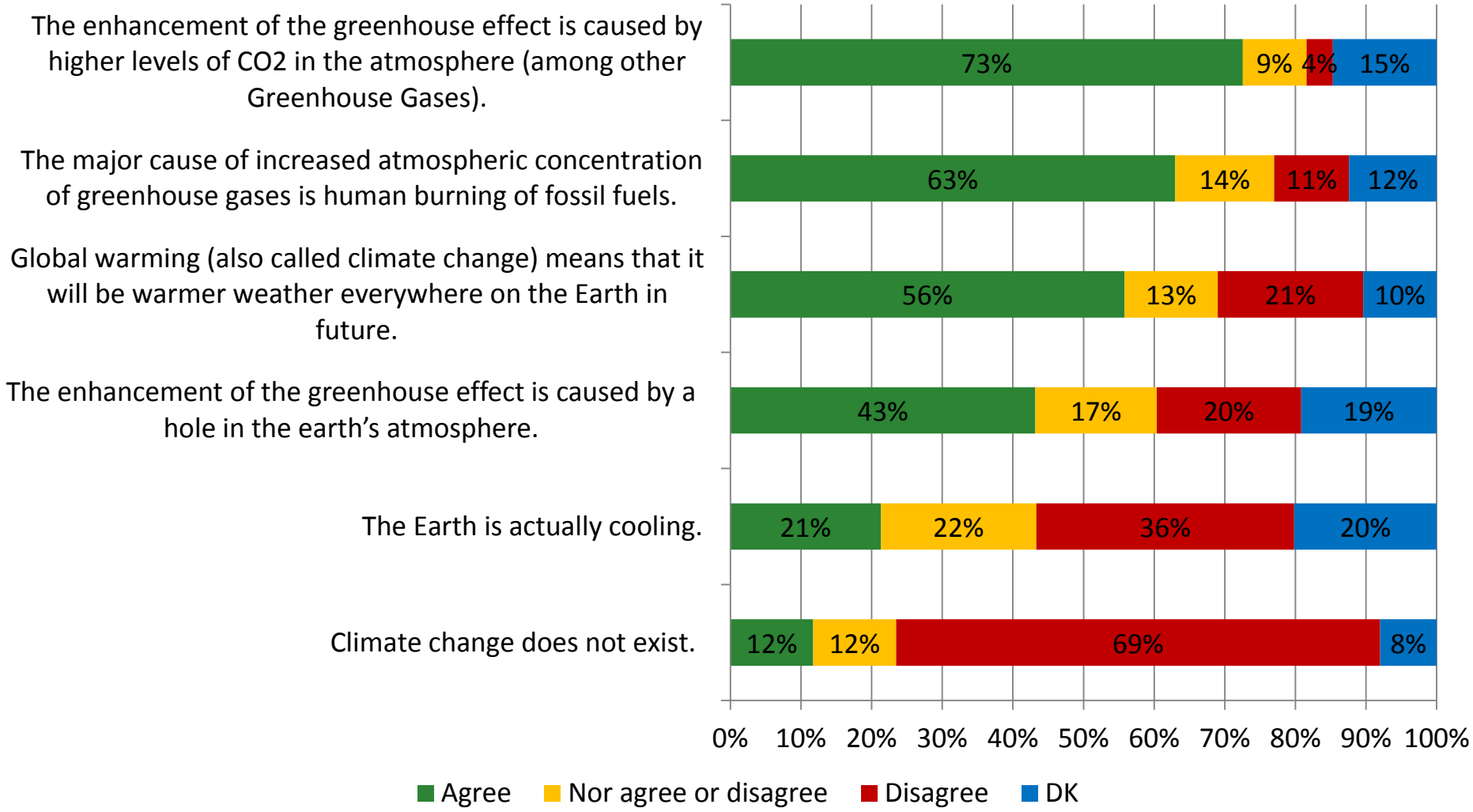
Datasets analysed in this presentation

I. representative of general population of Czechs (N=1,157) plus those who intend to buy an electric appliance next 12 months (N=1,031) --- we analyse here the general population only

II. representative of general population of Czechs (N=699)

- on-line CASI survey (FOCUS, Czech National Panel)

Perception of climate change and its causes (%)



Q: Please indicate on the scale from -3 to 3 how much do you personally agree or disagree with following statements.

(Own survey 2014– dataset II.)

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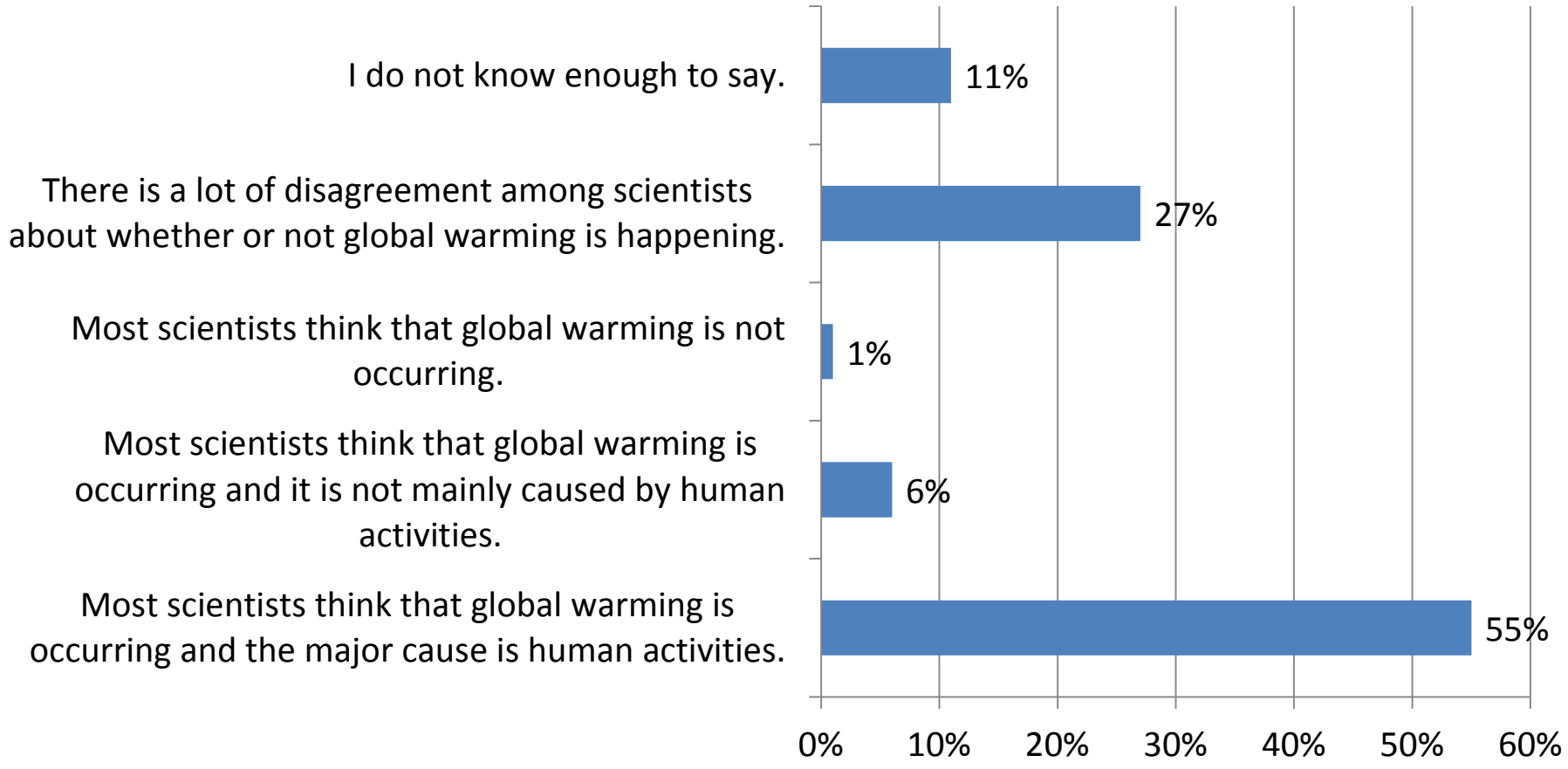
Perception of disagreement among scientists about whether or not global warming is happening

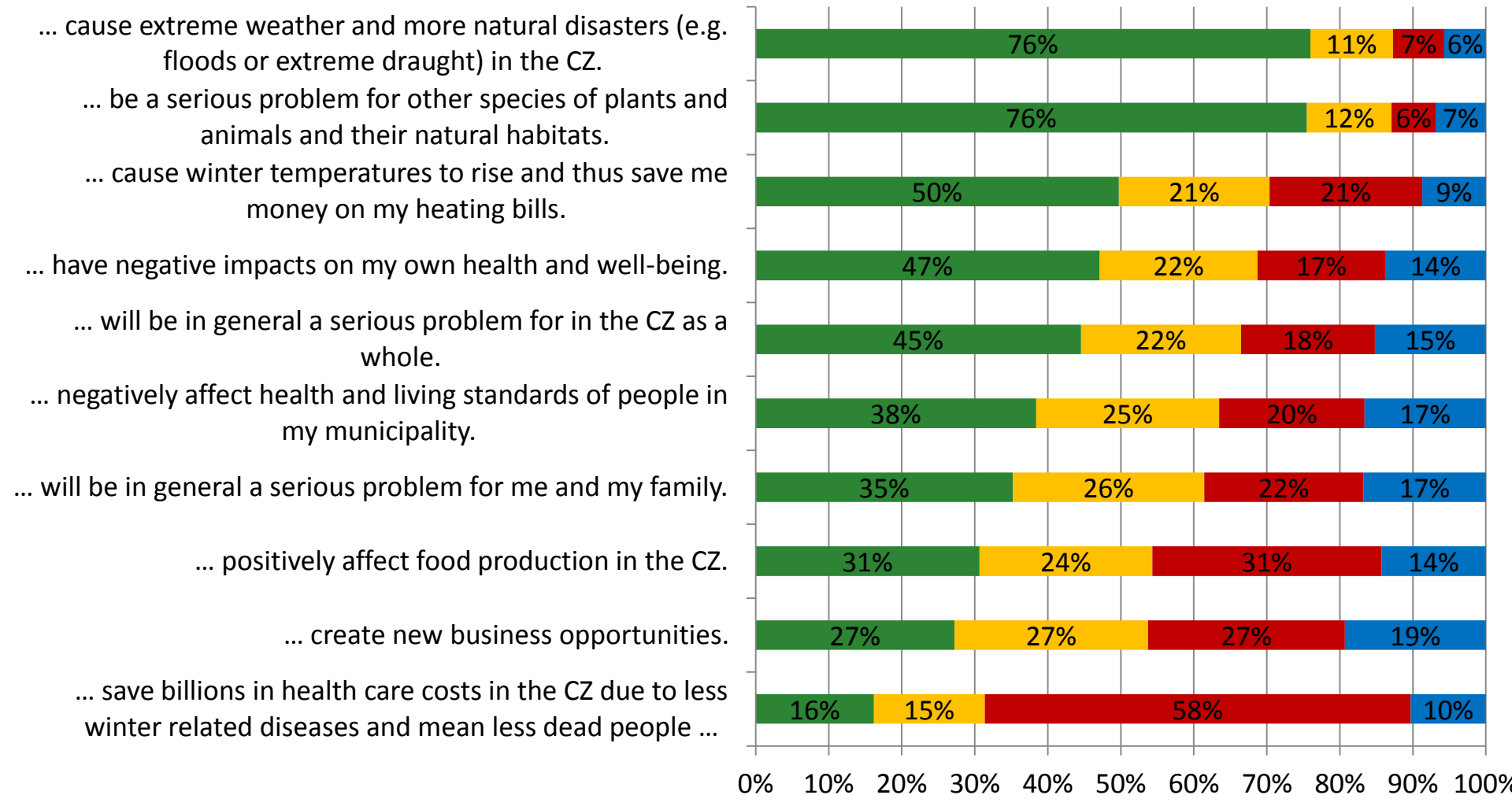
(Understanding Science, 2014)

Perception of disagreement among scientists about whether or not global warming is happening



(Own survey 2014– dataset II.)

Public perception of climate change impacts (%)



(Own survey 2014– dataset II.)

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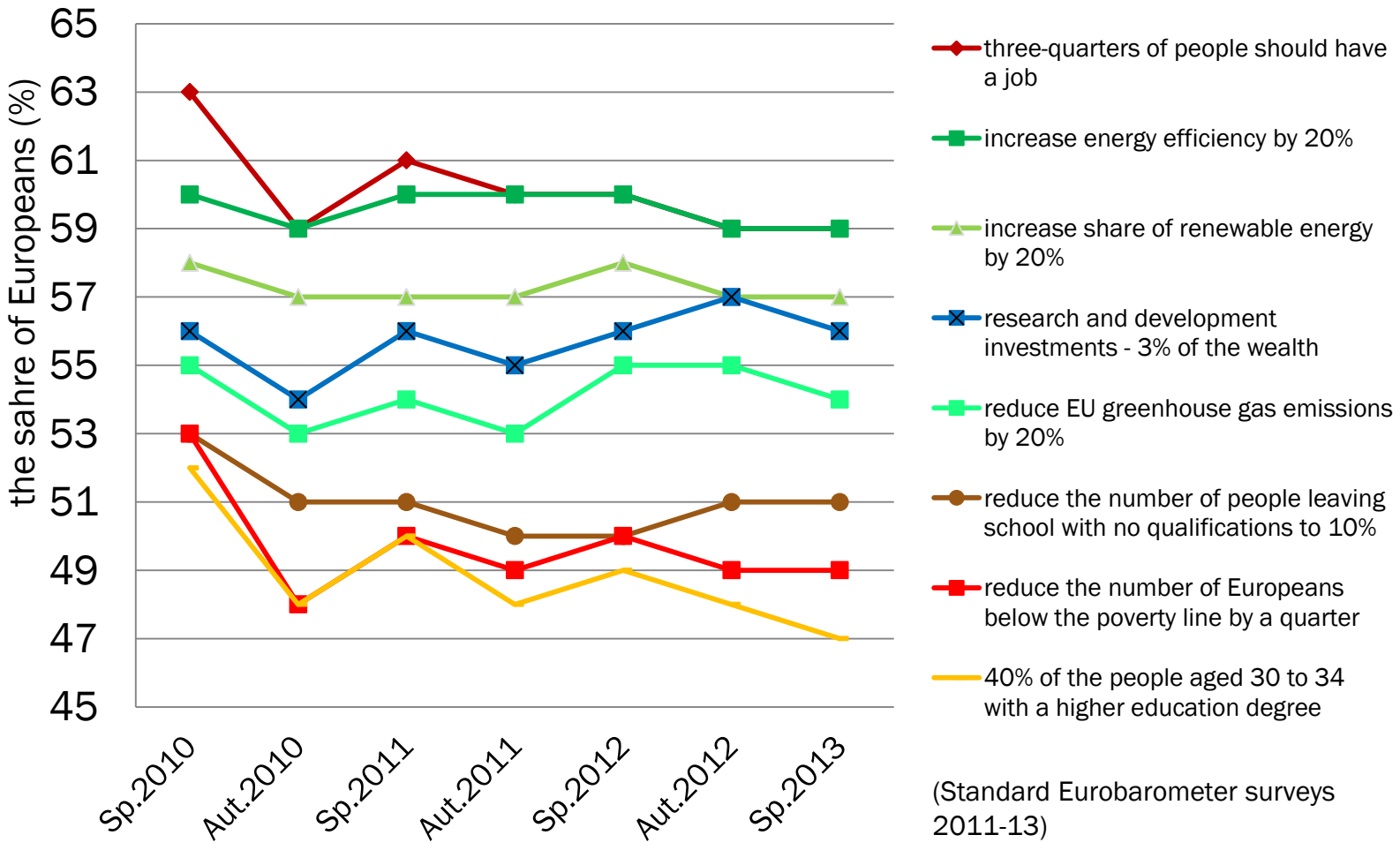
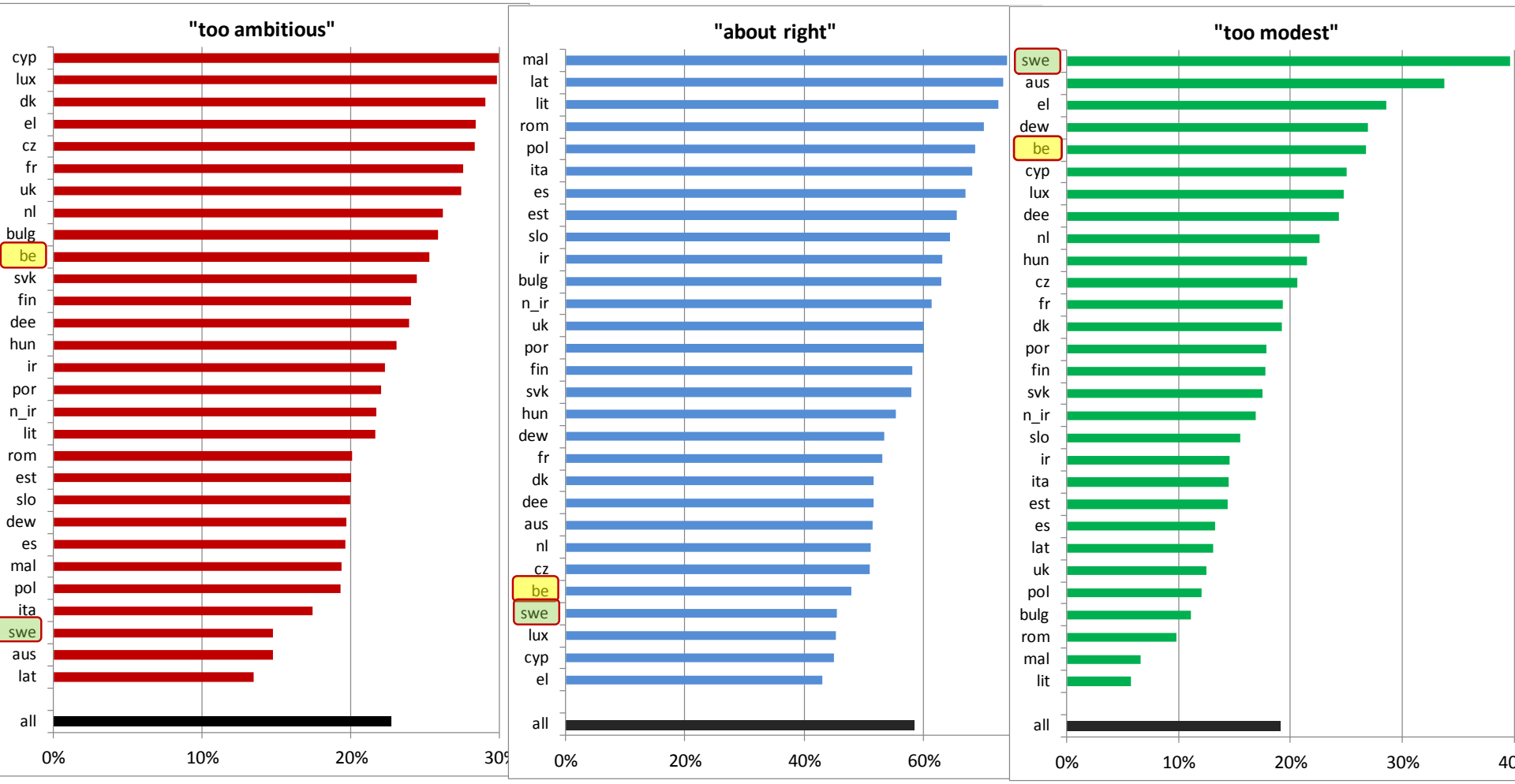
Perception of the 2020 targets: "about right"



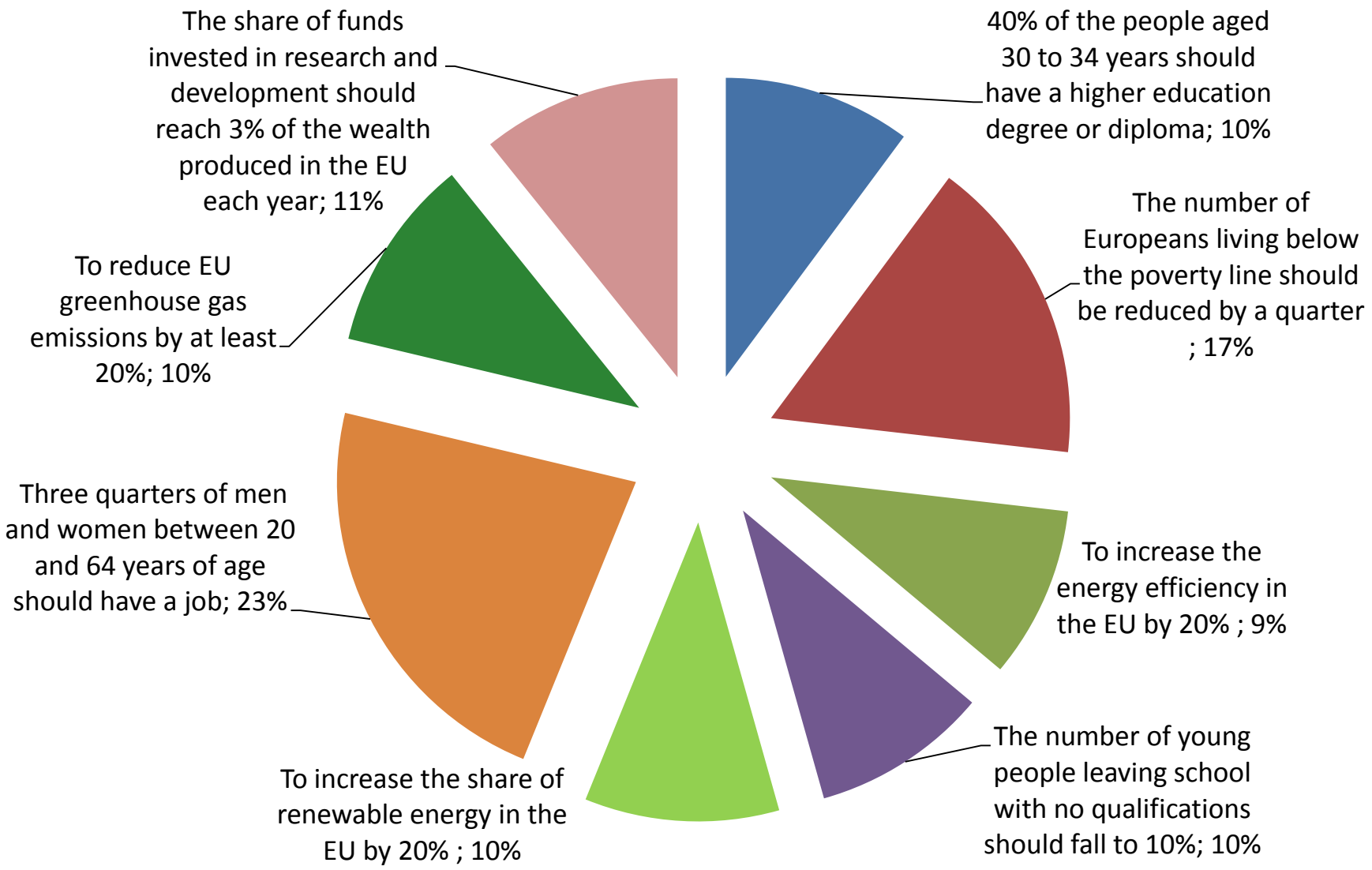
(Standard Eurobarometer surveys 2011-13)

Perception of climate change policy targets (in %)



(Standard Eurobarometer survey 2013)

Allocation of the EU budget for the next year to reach the objectives by 2020 in the EU (average percentage)



(Own survey 2014– dataset II.)

Acceptability of climate mitigation policies

- 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 present **a status quo**, i.e. the current policy or measures that cost additionally nothing, but will not bring further emission reductions
- Policies are described by their **attributes** (approach, cost distribution, burden sharing, use of revenues)
- One of the policy attributes is **cost** (an increase in one's cost or expenditures)

- Three experiments on acceptability of policies
  - to support **renewable energy & energy efficiency**
  - to reach **the GHG emission target by 2020, 2030, and 2050**
  - to reach the 2050 emission target when **policies differ in their instruments**

EXPERIMENT #1

Experiment no. I

Policies to support renewable energy & energy efficiency

- To investigate the preferences of individuals towards climate change mitigation policy options directly related to **residential energy use**, by means of a discrete choice experiments.
- to elicit preference for various policy instruments to support **renewable energy** or **energy efficiency**
- to derive **an implicit value per ton of CO_2 emission avoided**

Policies to support RES & EE

Key Findings

- Czech respondents prefer policies that promote **renewables** over policies that target energy efficiency
- all else the same, Czechs prefer **incentive-based policies** and disapprove of policies that impose **taxes or charges**
- their willingness to pay is **1,560 Kč per t CO_2** (s.e. 165 Kč) that corresponds to €57 (exchange rate) or €90€ (PPS)
- similar results found among Italian respondents with mean WTP of €130 per t CO_2

(Own survey 2014– dataset I.)

Experimental design

Attribute	Levels
Focus	Energy efficiency Renewables
Approach	incentives standards taxes information taxes + incentives taxes + standards taxes + information
CO_2 abated **(over a year)**	x tons a year *(5%, 10%, or 33% of current emissions)*
Costs **(annual over 10 years)**	400, 800, 2000, 5000 Kč (25, 50, 100, 300 Euro)

5 choice cards

3 alternatives

with a status quo
(i.e. current policy,
no cost, but also
no CO_2 reduction)

Policies to support RES & EE

Choice card

PRVNÍ VOLBA

Požádáme Vás celkem **pětkrát** volit mezi dvěma státními programy a současným stavem.

Uvažujte dva státní programy, program A a program B, které jsou popsány níže spolu se současným stavem.

	Program A	Program B	Současný stav
Cíle programu	Obnovitelné zdroje energie	Obnovitelné zdroje energie	-
Opatření programu	Daně na fosilní paliva + Informace	Daně na fosilní paliva	-
Snížení emisí CO_2 z domácností (ročně po dobu 10 let)	o 0.25 tun za rok (-5%)	o 1.65 tun za rok (-33%)	0 tun (žádné snížení)
Náklady na program pro Vaši domácnost (ročně po dobu 10 let)	800 Kč	2000 Kč	0 Kč

Upřednostnil/a byste program A, program B, nebo byste raději ponechal/a současný stav?

program A | program B | upřednostňuji stávající situaci

The Model

- responses to the discrete choice questions are driven by a random utility model (McFadden 1980), where the indirect utility *from an alternative depends on the attributes of that* alternative

$$\overline{V_{ij}} = \alpha_1 \cdot GOAL_{ij} + \alpha_2 \cdot INSTR_{ij} + \alpha_3 \cdot \Delta CO2_{ij} + \beta \cdot (y_i - COST_{ij})$$

where **GOAL** is a vector of dummies denoting the goal of the policy to reduce CO2 emission (i.e. RE or EE), **INSTR** is a vector of dummies denoting the specific instrument used by the policy (e.g., tax or incentives), **ΔCO2** is the CO2 emission reduction delivered by the policy in tons per year, **y** is respondent's income, **COST** is the cost of the program paid each year by respondent's household, and **i** and **j** denote the respondent, or the alternative, respectively. The coefficients **α's** are the marginal utilities and **β** is the marginal utility of income.

- Appending the determinist part by a stochastic term – i.i.d. standard type I extreme value error stochastic term εij, the probability that alternative k is chosen is (Train 2003):

$$\Pr(k) = \exp(\overline{V_k}) / \sum_{j=1}^{3} \exp(\overline{V_j})$$

which is a contribution to the likelihood in a conditional logit model

$$\log L = \sum_{i=1}^{N} \sum_{t=1}^{T} \sum_{k=1}^{3} y_{itk} \cdot \ln\left(\exp(\overline{V_{itk}}) \Big/ \sum_{j=1}^{3} \exp(\overline{V_{itj}}) \right)$$

where $\mathbf{y_{ijk}}$ is a binary indicator equal to one if respondent *i* selects option *k* in choice card *t*.

Estimation Results I

	Model Ia			Model Ib			Model Ic		
	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|
Energy Efficiency	0.1918	3.84	0.0000	0.0913	1.1	0.2730	0.1486	2.12	0.0340
Renewables	0.2698	5.21	0.0000	0.1592	1.89	0.0590	0.2165	3	0.0030
Incentives				0.2382	3.48	0.0000	0.1680	2.41	0.0160
Standards				0.1641	2.4	0.0160	0.1241	1.69	0.0910
Information				0.1035	1.47	0.1420	0.0322	0.41	0.6800
Taxes				-0.0804	-1.97	0.0480	-0.1406	-1.85	0.0640
Taxes + Incentives							0.1095	1.44	0.1500
Taxes + Standards							ref		
Taxes + Informations							-0.0591	-0.76	0.4500
CO_2 abated	0.3696	10.53	0.0000	0.3782	10.67	0.0000	0.3790	10.68	0.0000
COST	-0.0002	-20.33	0.0000	-0.0002	-20.43	0.0000	-0.0002	-20.24	0.0000
N	18150			18150			18150		
LR chi2(df)	597.71			622.25			622.77		
t test (EE=RE), chi2, Prob	4.33		0.0374	3.26		0.0708	3.25		0.0713
Kč per t CO_2	1 539 Kč			1 556 Kč			1 566 Kč		
Euro(ER) per t CO_2	55.98 €			56.57 €			56.93 €		

(Own survey 2014– dataset I.)

Policies to support RES & EE

Estimation Results II

	Model IIa			Model IIb		
	Coef.	z	P>|z|	Coef.	z	P>|z|
Energy Efficiency	0.0920	1.11	0.2690	0.1814	2.39	0.0170
Renewables	0.1595	1.89	0.0580	0.2484	3.31	0.0010
Incentives	0.2375	3.47	0.0010	0.1354	1.81	0.0700
Standards	0.1639	2.40	0.0160	0.0914	1.21	0.2250
Information	0.1028	1.46	0.1450			
Taxes	-0.1122	-2.19	0.0280			
Charges	-0.0490	-0.96	0.3360			
Taxes (alone)				-0.2157	-2.17	0.0300
Taxes + Incentives				0.0868	0.93	0.3500
Taxes + Standards				-0.0902	-0.94	0.3450
Taxes + Information				-0.0990	-1.03	0.3030
Charges (alone)				-0.1299	-1.30	0.1930
Charges + Incentives				0.0674	0.73	0.4650
Charges + Standards				0.0274	0.29	0.7750
Charges + Information				-0.0207	-0.22	0.8270
CO_2 abated	0.3784	10.67	0.0000	0.3792	10.68	0.0000
COST	-0.0002	-20.43	0.0000	-0.0002	-20.23	0.0000
N	18150			18150		
LR chi2(df)	623.31			624.72		

(Own survey 2014– dataset I.)

Interpretation of the results

- *Consider two policies that cost both **2000 Kč (approx. 70 Euro) a year**, and both use incentives. The model predicts that 31% of the respondents would prefer program focusing on EE, 33% would prefer a policy focusing on RE, while 36% would chose the status quo (Ex.1).*

	A	B	Status Quo
Ex. 1	EE incentives 31%	RE incentives 33%	36%
Ex.2	EE taxes 27%	RE taxes 29%	44%
Ex.3	EE incentives 34%	RE taxes 26%	40%
Ex.4	EE taxes 24%	RE incentives 36%	39%
Ex.5	EE taxes + incentives 30%	RE incentives 33%	37%
Ex.6	EE taxes + information 26%	RE incentives 35%	39%

EXPERIMENT #2

Experiment no.2

Emission reduction targets

Key features

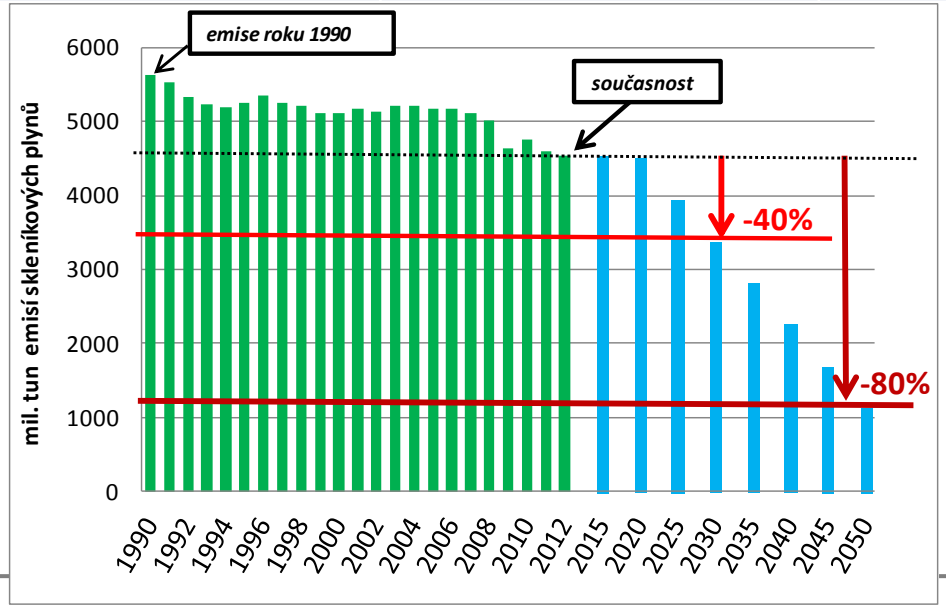
- Policies that may be introduced by the EU in order to mitigate climate change impacts
  - GHG **emission reduction targets** at the EU
  - **Burden sharing** across the EU Member States
  - **Cost distribution** among the Czechs
  - Monthly **costs**

- Pilot study (n=699)
  - General population of Czechs
  - On-line CASI survey carried out in October, 16-20, 2014

Reduction targets

Information about 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 (**black dotted line**)	-20% by 2020 -40% by 2030 then, remain stable **(light red line)**	-20% by 2020 -40% by 2030 -80% by 2050 **(dark red line)**
Policy status	policy that has been agreed at the EU and is currently implemented	EU commitment, measures not implemented yet	EU commitment, measures not implemented yet



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Reduction targets

Information about the EU emission reduction targets /2

	20% reduction by 2020	40% reduction by 2030	80% reduction by 2050
Increase in the Earth's temperature by 2010 (each country does its share)	2.2ºC and 2.8ºC if the rest of the world adopts equivalent emission reduction targets	2ºC and 2.4ºC if the rest of the world adopts equivalent emission reduction targets	1.5ºC and 2.2ºC if the rest of the world adopts equivalent emission reduction targets
Likely impacts	- large drop in agricultural production - the loss of most coastal areas - substantial burdens to human health caused by disease, malnutrition, heat waves, floods and droughts - widespread extinction of animal and plant spices, a loss of their habitats	- moderate drop in agricultural production - loss of many coastal areas - some burdens and in a lower extent to human health caused by disease, malnutrition, heat waves, floods and droughts - extinction of some animal and plant spices and a loss of their habitats (especially coral reefs, arctic animals)	- the most severe impacts of climate change are prevented - some effects of global warming, however, they would not be as severe as in the lower reduction cases

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Reduction targets

Experimental design of discrete choice experiments

Attribute	Level
EU emission reduction target	• **-20%** by 2020 *(+2.2–2.8°C by 2100)* --- *[also in SQ]* • **-40%** by 2030 *(+2.0–2.4°C by 2100)* • **-80%** by 2050 *(+1.5–2.2°C by 2100)*
Distribution of costs among the EU countries	• linear wrt wealth --- *[also in SQ]* • per capita • emission
Distribution of costs among the Czech citizens	• lump-sum (same amount) • income (linear) --- *[also in SQ]* • income (progressive) • emission above a threshold
Monthly costs	• 0 Kč --- *[in SQ only]* • *150* Kč, 550 Kč, 1100 Kč, 1600 Kč, 2200 Kč *(€6, €20, €40, €60, €80)*

Reduction targets

Choice card

	Option 1	Option 2	Current policy
EU emission reduction target	**40%** reduction by 2030 2ºC to 2.4ºC temperature rise by 2100	**80%** reduction by 2050 1.5ºC to 2.2ºC temperature rise by 2100	**20%** reduction by 2020 2.2 – 2.8°C temperature rise by 2100
Distribution of costs among the EU countries	the more inhabitants a country has, the more pays	the more a country emits above the limit, the more pays	the wealthier country, the more pays
Distribution of costs among the Czech citizens	every citizen pays the same costs	the more a citizen emits above the limit, the more pays	every citizen pays the same share of costs
Monthly costs	25 €	75 €	**0** €
Which option would you prefer?	☐	☐	☐

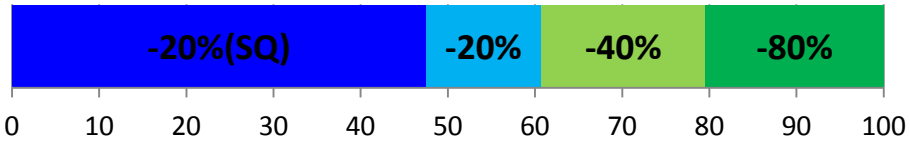
Experiment no.2

Emission reduction targets: Pilot study in the Czech Republic (n=699)

- Would you be willing to spend anything at all for implementing any European Union greenhouse gas emissions reduction policy?

- What is the main reason you would not be willing to spend anything on such a program? (N=194, 27.8%)
  - I can't afford spending any more 42%
  - Costs should be paid by state 16%
  - CC would not be harmful 15%
  - Program will not be implemented 14%
  - Do not believe in climate change 3%
  - Program would not mitigate CC 3%
  - I don't have enough information 3%
  - I will not benefit from such a program 2%
  - I don't care 1%

- 6 choice questions on the GHG **emission reduction targets** at the EU *(n=4,812)*



(Own survey 2014– dataset II.)

Reduction targets

Estimation results, MNL

	Estimate	s.e.	t value	Pr>|t|
SQ (TARGET-20% bs=wealth, dc=linear)	**0.3764**	0.0988	3.81	0.0001
TARGET-40%	**0.0809**	0.0674	1.20	0.2296
TARGET-80%	**0.2238**	0.0662	3.38	0.0007
bs_population	**-0.0658**	0.0663	-0.99	0.3205
bs_emission	**0.4213**	0.0615	6.85	<.0001
dc_lumpsum	**-0.1112**	0.0795	-1.40	0.1621
dc_progressive	**0.1426**	0.0844	1.69	0.0909
dc_emission	**0.7495**	0.0742	10.11	<.0001
COST	**-0.00066**	0.000041	-16.17	<.0001

N obs	4182
LogLik	-4117
LogLik(0)	-4594
McFadden's LRI	0.104

Reduction targets

Estimation results, simulation of probabilities (COST=500 Kč/month ≈20€/m)

	-20%	-40%	-80%
lin(SQ) *vs.* bc=pcap & dc=pcap	51%	23%	26%
lin(SQ) *vs.* bc=wealth & dc=linear	47%	25%	29%
lin(SQ) *vs.* bc=wealth & dc=progres	43%	26%	31%
lin(SQ) *vs.* bc=emis & dc=emis	21%	37%	42%

Reduction targets

Estimation results, WTP-space (implicit prices in Euro)

Multinomial Logit

var.	coef.	st.err.	p-value
SQ	**20.4832**	6.2264	0.0010
target_40	**4.4013**	3.6697	0.2304
target_80	**12.2102**	3.5672	0.0006
bs_population	**-3.6100**	3.6789	0.3265
bs_emissionsFEE	**22.9736**	3.8063	0.0000
dc_lumpsum	**-6.0952**	4.3726	0.1633
dc_progressive	**7.7587**	4.8251	0.1078
dc_emissions	**40.8869**	5.0229	0.0000
cost	**0.0183**	0.0011	0.0000
Model characteristics			
LL0	-4408.97		
LL	-4116.61		
Pseudo R2	0.0663		
AIC/n	1.9730		
n	4182		
k	9		

Mixed Logit

	Means			Standard Deviations		
var.	coef.	st.err.	p-value	coef.	st.err.	p-value
SQ	**6.3647**	5.6203	0.2574	**90.4856**	5.5933	0.0000
target_40	**11.3672**	3.0210	0.0002	**3.8842**	9.2546	0.6747
target_80	**15.3764**	2.9261	0.0000	**23.3980**	3.9835	0.0000
bs_population	**-3.6252**	2.6545	0.1720	**0.0000**	8.7511	1.0000
bs_emissionsFEE	**16.4404**	2.8486	0.0000	**19.4015**	4.3061	0.0000
dc_lumpsum	**-6.0366**	3.2939	0.0669	**0.0000**	11.8371	1.0000
dc_progressive	**-4.2382**	4.1275	0.3045	**24.9448**	5.3741	0.0000
dc_emissions	**31.4274**	4.0309	0.0000	**38.2312**	4.5763	0.0000
cost	**-3.4339**	0.0611	0.0000	**0.6101**	0.0918	0.0000
Model characteristics						
LL0	-4408.97					
LL	-3433.57					
Pseudo R2	0.2212					
AIC/n	1.6507					
n	4182					
k	18					

Reduction targets

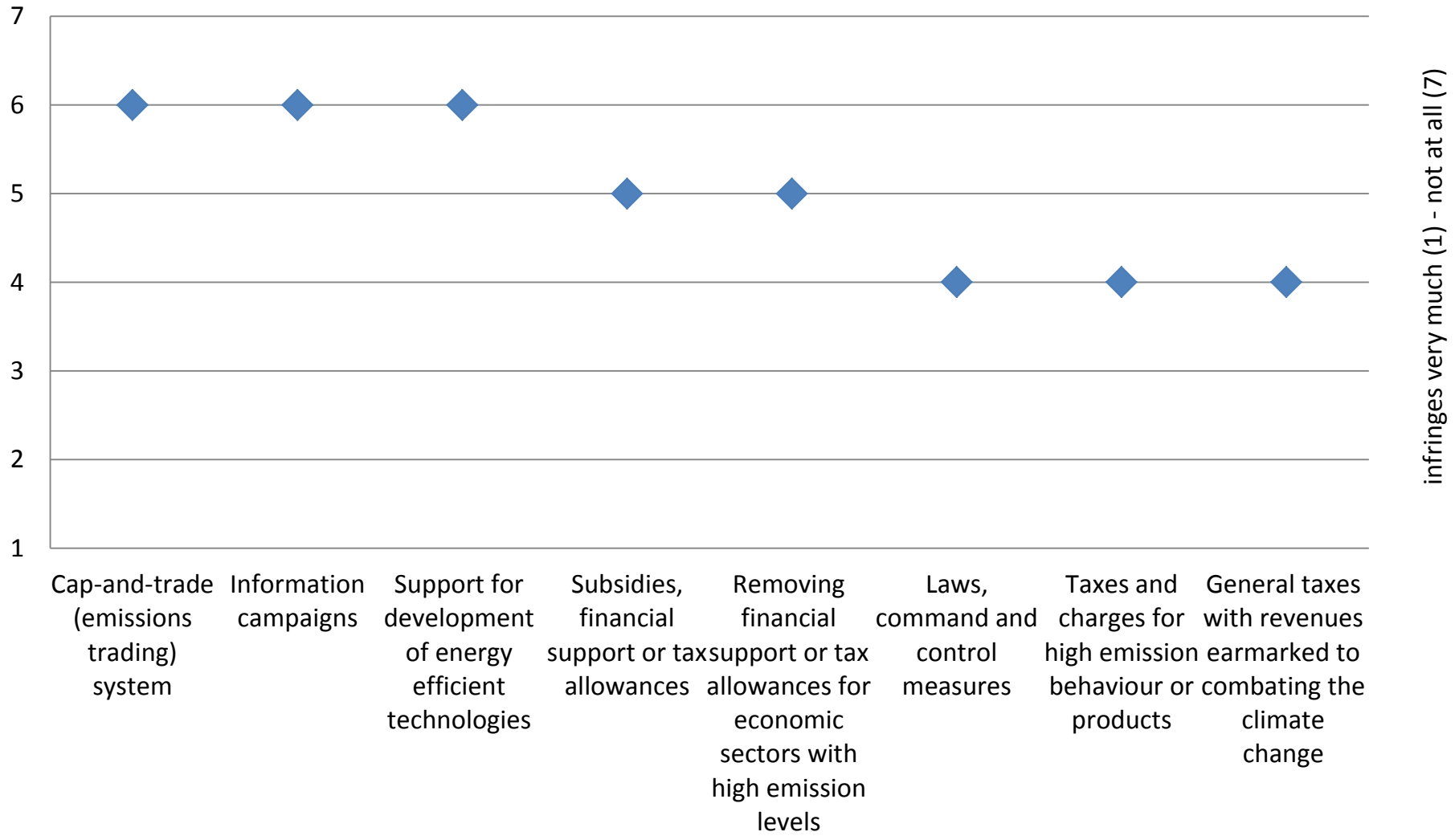
Contingent scenario: Debriefing (in %)

	Completely disagree						Completely agree	dk	agree 567
	1	2	3	4	5	6	7		
If the program was implemented it would bring **expected results** as described	5	4	11	20	23	17	5	15	**45**
It is likely that such a program will be **implemented**	5	9	15	20	18	9	3	20	**30**
It is likely that the European Union will **enforce** the program, if implemented	4	5	9	17	23	20	11	12	**54**
Each European Union country will fulfill its emission reduction requirements	12	12	17	20	13	9	4	12	**26**
Other countries in the world will adequately reduce their emissions	18	17	15	18	11	7	3	12	**21**
	Very unlikely						**Very likely**	**dk**	
How **likely** do you think it is **for the other countries** in the world to reduce their share of emissions?	14	22	20	17	11	3	2	11	**16**

EXPERIMENT #3

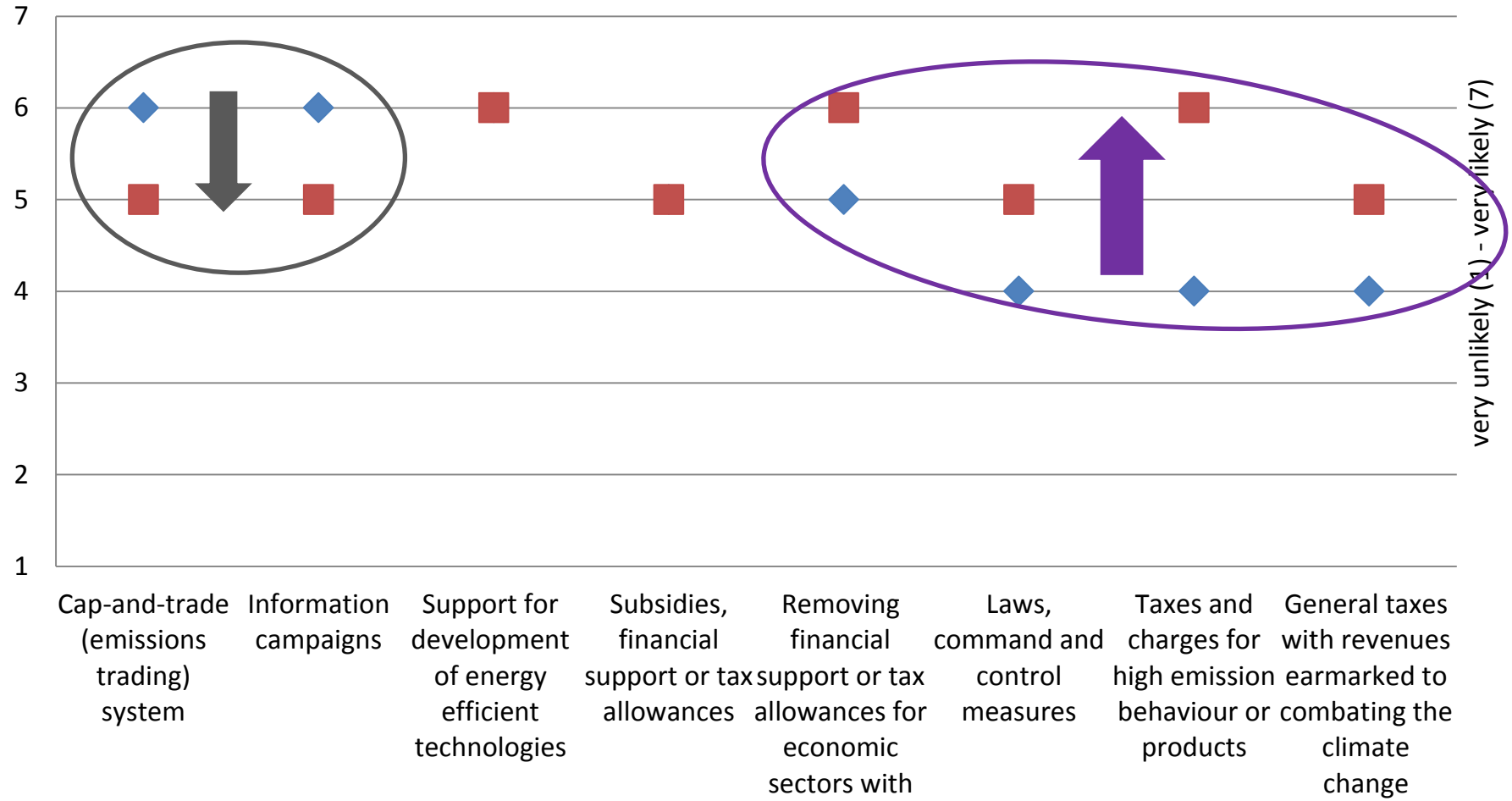
How much would the following policy measures infringe on your personal freedom?

(e.g. limiting your purchasing choices, your behaviour or habits etc.)



(Own survey 2014– dataset II.)

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



(Own survey 2014– dataset II.)

Experiment no. 3

Instruments to reach 80% emission reduction by 2050

	Policy A (target will be reached)	Policy B (target will be reached)	Current policy (targets after 2020 won't be reached)
Approach used by the policy	Taxes on energy and emission	Subsidies or support for energy savings	Current already implemented measures
Distribution of costs among the Czech citizens	every citizen pays the same costs	the more a citizen emits above the limit, the more pays	
Use of revenues in the Czech Republic	environmental programs	public services (health, education)	
Increase in your household's monthly expenditures	**25 €** monthly	**75 €** monthly	**0 €** monthly
Which option would you prefer?	☐	☐	☐

Instruments

Experimental design

Attribute	Level
Approach of the policy	• **taxes (charges)** on energy and emission • **incentives** on energy efficiency • removal of **environmentally adverse subsidies** • tradable emission **permits** • bans, **command-and-control**
Revenue recycling in the Czech Republic	• **environmental** programs • **public services (health, education)** • reduction **public debt** • mitigating **social problems** • **R&D** support
Distribution of costs among the Czech citizens	• lump-sum (same amount) • income (linear) • income (progressive) • emission above a threshold
Increase in your monthly costs until 2050	• 0 Kč --- *[in SQ only]* • *150* Kč, 550 Kč, 1100 Kč, 1600 Kč, 2200 Kč *(€6, €20, €40, €60, €80)*

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

Instruments

Estimation results

	Coeff	s.e.	t Value	Pr > |t|
SQ	-0.4461	0.0913	-4.89	<.0001
tax	-0.2056	0.0778	-2.64	0.0083
pervsubs	0.0363	0.0772	0.47	0.6377
permits	-0.2220	0.0758	-2.93	0.0034
bans	-0.1378	0.0762	-1.81	0.0706
dc_lumpsum	-0.0041	0.0699	-0.06	0.9533
dc_progres	0.1532	0.0689	2.22	0.0261
dc_emis	0.6308	0.0675	9.34	<.0001
rr_public	0.1693	0.0794	2.13	0.0329
rr_social	0.0542	0.077	0.7	0.4814
rr_R&D	-0.0803	0.0792	-1.01	0.3105
rr_debt	0.0661	0.0769	0.86	0.3899
cost	-0.0008	3.31E-05	-24.45	<.0001

N obs	4182
LogLik	-4159
LogLik(0)	-4594
McFadden's LRI	0.0949

(Own survey 2014– dataset II.)

Instruments

Estimation results

		Coeff	s.e.	t Value	Pr > |t|
SQ	1	-0.5104	0.0895	-5.7	<.0001
Ttax	1	-0.3467	0.1005	-3.45	0.0006
Tcharge	1	-0.0821	0.0944	-0.87	0.3841
pervsubs	1	0.0371	0.0772	0.48	0.6305
permits	1	-0.2210	0.0759	-2.91	0.0036
bans	1	-0.1376	0.0762	-1.81	0.071
dc_lumpsum	1	-0.0050	0.0699	-0.07	0.9431
dc_progres	1	0.1532	0.0689	2.22	0.0262
dc_emis	1	0.6297	0.0676	9.32	<.0001
rr_env	1	-0.0645	0.0769	-0.84	0.4021
rr_publ	1	0.1047	0.0764	1.37	0.1704
rr_soc	1	-0.0097	0.0756	-0.13	0.8975
rr_tech	1	-0.1457	0.0764	-1.91	0.0563
cost	1	-0.0008	0.0000331	-24.42	<.0001

N obs	4182
LogLik	-4156
LogLik(0)	-4594
McFadden's LRI	0.0954

(Own survey 2014– dataset II.)

Instruments

Estimation results, WTP-space (implicit prices in Euro)

Multinomial Logit

var.	coef.	st.err.	p-value
SQ	**-19.83**	4.0072	0.0000
tax	**-9.16**	3.6022	0.0110
pervsubs	**1.66**	3.4799	0.6328
permits	**-9.95**	3.4470	0.0039
bans	**-6.14**	3.4379	0.0739
dc_lumpsum	**-0.08**	3.1973	0.9798
dc_progressive	**6.96**	3.0807	0.0239
dc_emissions	**28.35**	3.0470	0.0000
rr_public	**7.60**	3.5316	0.0314
rr_social	**2.48**	3.4979	0.4791
rr_R&D	**-3.58**	3.5637	0.3151
rr_debt	**2.96**	3.4649	0.3934
cost	**0.02**	0.0009	0.0000
Model characteristics			
LL0	-4582.19		
LL	-4158.54		
Pseudo R2	0.0925		
AIC/n	1.9950		
n	4182		

Mixed Logit

	Means			Standard Deviations		
var.	coef.	st.err.	p-value	coef.	st.err.	p-value
SQ	**-46.86**	5.8847	0.0000	**134.78**	9.1972	0.0000
tax	**-4.77**	3.1992	0.1358	**0.00**	8.4273	1.0000
pervsubs	**1.31**	3.3860	0.6985	**23.79**	4.9518	0.0000
permits	**-8.47**	3.1664	0.0075	**3.81**	7.0480	0.5884
bans	**-3.65**	3.3793	0.2801	**21.57**	5.3106	0.0000
dc_lumpsum	**-2.31**	2.8613	0.4186	**0.00**	8.5390	1.0000
dc_progressive	**3.95**	3.0236	0.1919	**22.87**	4.1034	0.0000
dc_emissions	**27.05**	3.0731	0.0000	**24.65**	4.1786	0.0000
rr_public	**7.79**	3.5267	0.0272	**27.55**	4.5903	0.0000
rr_social	**2.03**	3.3566	0.5457	**22.51**	5.0448	0.0000
rr_R&D	**-3.91**	3.4624	0.2593	**24.41**	4.1872	0.0000
rr_debt	**0.43**	3.3405	0.8966	**29.17**	3.9375	0.0000
cost	**-3.09**	0.1078	0.0000	**1.00**	0.1450	0.0000
Model characteristics						
LL0	-4582.19					
LL	-3133.82					
Pseudo R2	0.3161					
AIC/n	1.5112					
n	4182					

(Own survey 2014– dataset II.)

CECILIA 2050
OPTIMAL EU CLIMATE POLICY

Conclusions (for the Czechs)

- respondents prefer policies that promote **renewables** over policies that target **energy efficiency**
- **incentive-based policies** are strongly preferred followed by **removal of envi-perversed support**, whereas policies that impose **pricing** are disapproved**.** In line with others (Kallbekken et al. 2011; Shogren 2012), Czechs just did not like the *"t-word"*—tax, and; second, re-framing the tax as a "charge" increased support.
- Revenue recycling option matters — Czechs prefer using the additional revenues for **public services** (health, education) and **to mitigate social problems**, while they support **R&D support** the least; support of **environmental programs** stands somewhere in the middle out of the five RR options.
- Burden sharing based on **an excess of GHG emissions** is accepted the most, **per capita sharing** is the least option.
- Cost distribution should be linked to attributable **emissions**, the lump-sum (per capita) cost payment is least accepted.

Conclusions (for the Czechs)

- willingness to pay **per t CO_2 abated** is **1,560 Kč** (s.e. 165 Kč; €57 or PPS€90)
- Implicit price of reducing carbon if the targets are set is **€6 for the -20%**, **€11 for the -40%**, and **€15 for the -80%**
- This price is **increased by €16 and €31** if burden sharing at the EU and cost distribution within the EU is linked to **emissions produced**
- Similar implicit prices confirmed by the Experiment #3; WTP is **€47 for CC mitigation policy** stricter than the current one, and the implicit price is increased if the revenues are used to fund public services (€8), while supporting R&D tend to decrease WTP

- However, only 30% of Czech respondents agree it is likely that such a policy will be implemented…

Thank you for your attention

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