Governance reform and public acceptance of regulatory decisions: a survey experiment on pesticides authorization in the EU

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Introduction

- Do governance reforms affect public acceptance of regulatory decisions, and if so how?
- Our study: a pair of linked survey experiments on public attitudes towards reform of EU pesticides regulation in 6 member states
- Our results: governance reforms which citizens strongly support can enhance public acceptance of regulatory decisions, even if these run counter to prior preferences on contentious and politicized issues

Previous research

- Little research on whether & under what conditions governance reforms enhance public acceptance of regulatory decisions
- Most studies focus on procedural fairness, esp. transparency & stakeholder consultation, in acceptance of regulatory decisions
  - Cf. literature review in Beyers & Arras (2020)
- Recent studies find that while perceived fairness of a decision-making procedure may enhance participants' assessment of its legitimacy, decision acceptance depends on substantive preferences about policy outcomes
  - Beyers & Arras (2020); Eliasson et al. (2016); Eliasson (2010); de Fine Licht (2014)

Pesticides regulation in the EU

- EU pesticides regulation has become increasingly controversial & politically salient over past decade
- Glyphosate, world's most widely used herbicide, designated as probable carcinogen by WHO's IARC, & led to large damage awards in US courts
- 2017 EU glyphosate reauthorization hotly contested & triggered public distrust in current regulatory framework
  - European Citizens' Initiative to ban glyphosate, & proposed national/regional bans
- Ongoing EU debate about which reforms should be adopted to address these concerns

Our research: aims and strategy

- Assess whether & how specific proposed reforms to decision-making procedures could impact public support for EU pesticides regulation
- Assess whether & how reform of EU pesticides authorization procedure could impact public acceptance of its outcomes
- Conducted a pair of linked online survey experiments on public attitudes to reform of EU pesticides regulation among a representative sample of adult population in 6 countries
  - DE, FR, IT, NL, PL, SE; n=9000
  - Survey conducted by IPSOS in June 2020; quotas for age, gender, education, & NUTS1 region of residence to assure representativeness

Experiment 1: a conjoint survey experiment on public attitudes to EU pesticides regulation

- Each respondent rates and ranks 6 proposed reform packages
- Respondents shown 3 pairs of proposed policy packages for regulation of pesticides in the EU
- For each pair, respondents were asked to choose between the proposed packages & rate them on a 5-point scale, from strongly oppose to strongly support
- Dimensions & options included in experiment selected to cover most salient issues & choices in EU debate on pesticides regulation

Overview of conjoint experiment dimensions and characteristics	
D1: At what level is the decision taken?	The European Union level only.
	The national level only.
	A combination of the EU and national levels.
D2: What other factors are considered in the decision, in addition to the effects on human health and the environment?	The effects on small and organic farmers.
	The effects on the international competitiveness of European farmers.
	No additional factors.
D3: What sources of scientific evidence are considered in the decision?	Only scientific studies conducted on behalf of the manufacturer.
	All relevant scientific studies.
	Only scientific studies conducted by an independent public body.
D4: If the pesticide is approved, are its effects systematically monitored?	No systematic monitoring after the approval decision.
	Yes, there is systematic monitoring, with the possibility of removing the pesticide from the market in the case of unexpected negative effects.
D5: How will this decision-making procedure affect food prices?	Food prices will stay the same.
	Food prices will rise by 1%.
	Food prices will rise by 3%.

Current question: **Block_Conjoint**, questiontype: **info**

A manufacturer submits a new pesticide for approval. How should the decision be taken? Please consider the following two options.

	Option 1	Option 2
What other factors are considered in the decision, in addition to the effects on human health and the environment?	The effects on the international competitiveness of European farmers	The effects on the international competitiveness of European farmers
If the pesticide is approved, are its effects systematically monitored?	Yes, there is systematic monitoring, with the possibility of removing the pesticide from the market in the case of unexpected negative effects	No systematic monitoring after the approval decision
What sources of scientific evidence are considered in the decision?	All relevant scientific studies	Only scientific studies conducted on behalf of the manufacturer
At what level is the decision taken?	The European Union level only	The national level only
How will this decision-making procedure affect food prices?	Food prices will rise by 1%	Food prices will stay the same

Which one of the two options do you prefer (or dislike the least)?

- ○ Option 1
- ○ Option 2

How much do you support or oppose option 1?

- ○ Strongly support
- ○ Somewhat support
- ○ Neither support nor oppose
- ○ Somewhat oppose
- ○ Strongly oppose

How much do you support or oppose option 2?

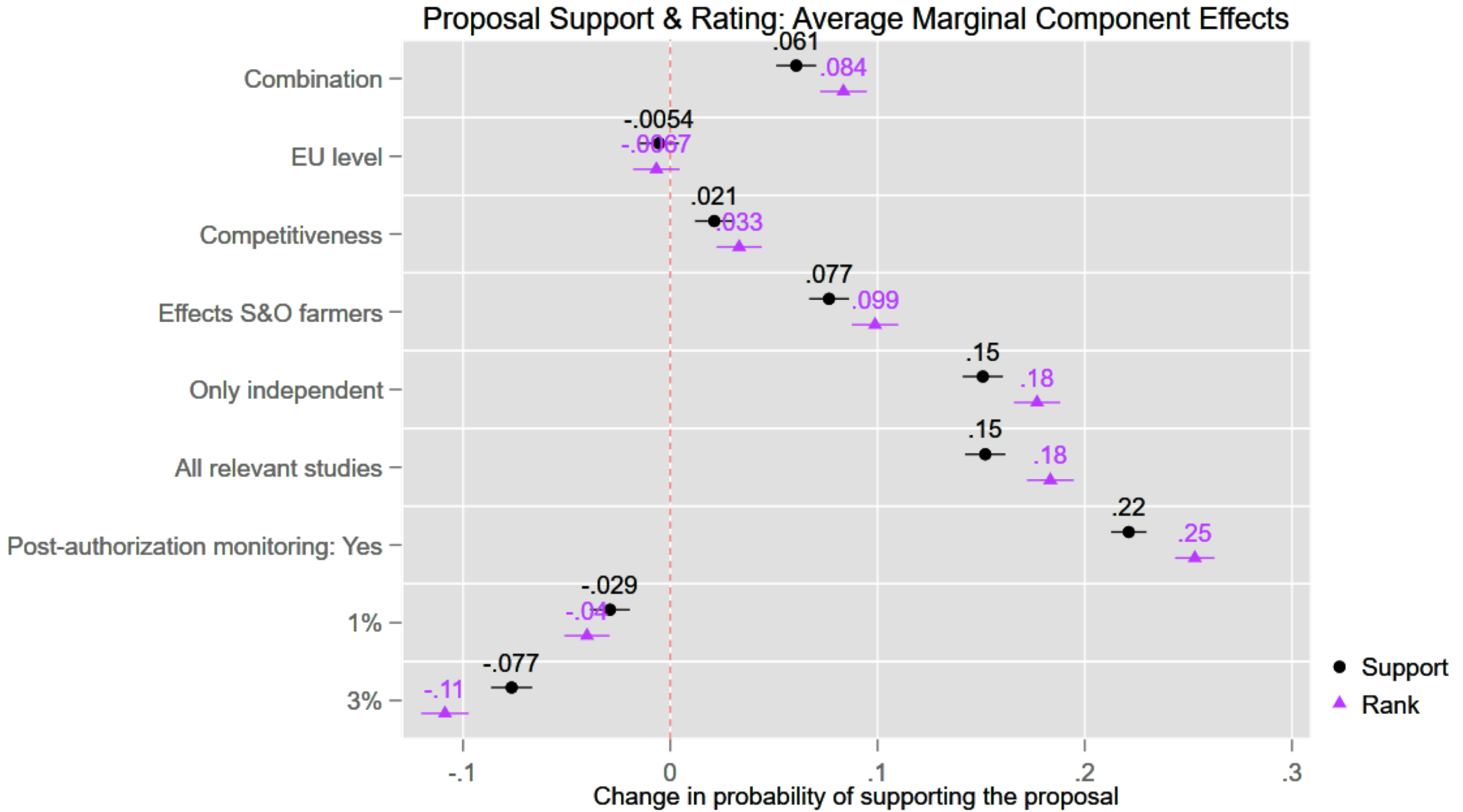
- ○ Strongly support
- ○ Somewhat support
- ○ Neither support nor oppose
- ○ Somewhat oppose
- ○ Strongly oppose

Previous Next

14%

Advantages of coinjoint survey experiments

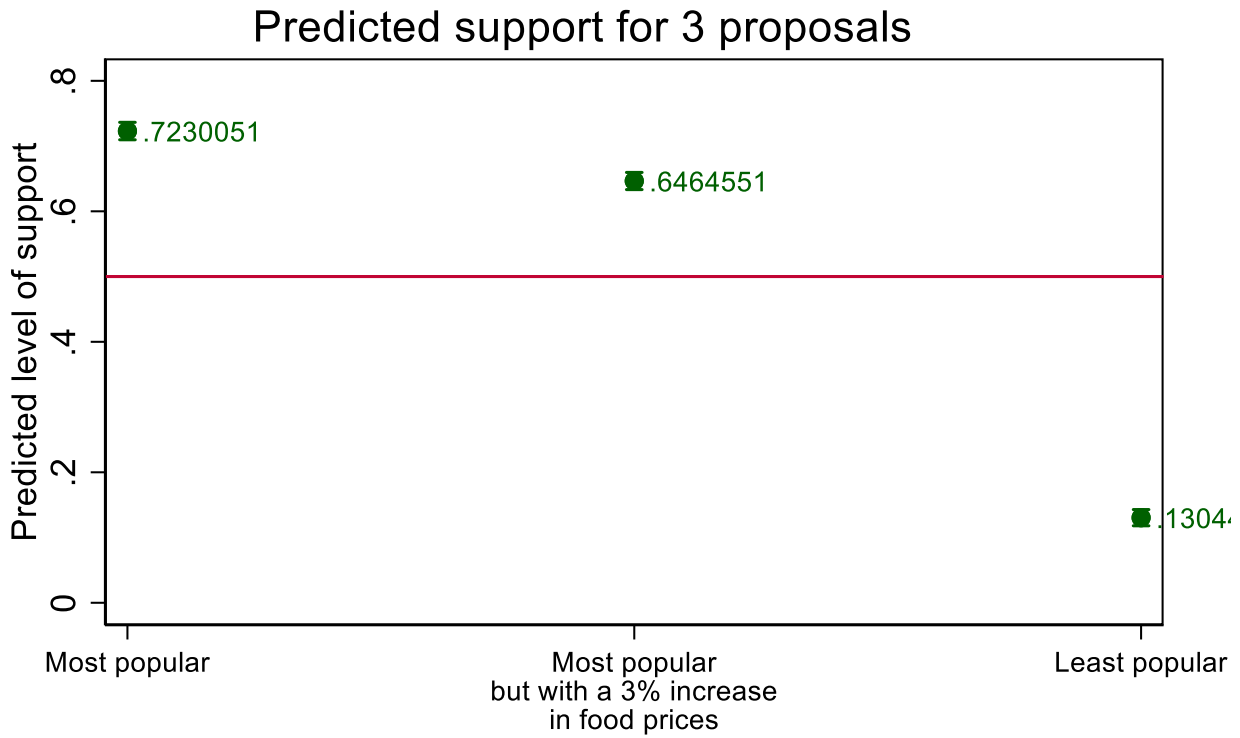
- Conjoints are survey-based experiments to estimate causal effects of policy design preferences for multi-dimensional issues
- Combination of proposed measures into multi-dimensional proposal packages allows respondents to be confronted with more realistic options and trade-offs on complex policy issues
- Widely used in political and public opinion research since introduction by Heinmuller et al (2014)


Proposal Support & Rating: Average Marginal Component Effects
Combination
EU level
Competitiveness
Effects S&O farmers
Only independent
All relevant studies
Post-authorization monitoring: Yes
1%
3%
.061
.084
-.0054
-.0067
.021
.033
.077
.099
.15
.18
.15
.18
.22
.25
-.029
-.04
-.077
-.11
-.1
0
.1
.2
.3
Change in probability of supporting the proposal
Support
Rank

Strongest effects (holding all else constant)

- Post-authorization monitoring & review
  - Inclusion increases likelihood of proposal support by **22.1%**
- All relevant scientific studies or only studies conducted by an independent public body considered in the authorization decision
  - Increases likelihood of proposal support by **15.2%** and **15.1%** respectively
- 3% increase in food prices
  - Decreases likelihood of proposal support by **7.7%**
- All effects stronger for proposal rating than proposal support (ranking)
- All effects (except EU-level decision making only) significant at 0.001 level
- Analysis based on simple OLS regressions with cluster-robust standard errors by respondent, with a battery of control variables, and fixed effects for country levels

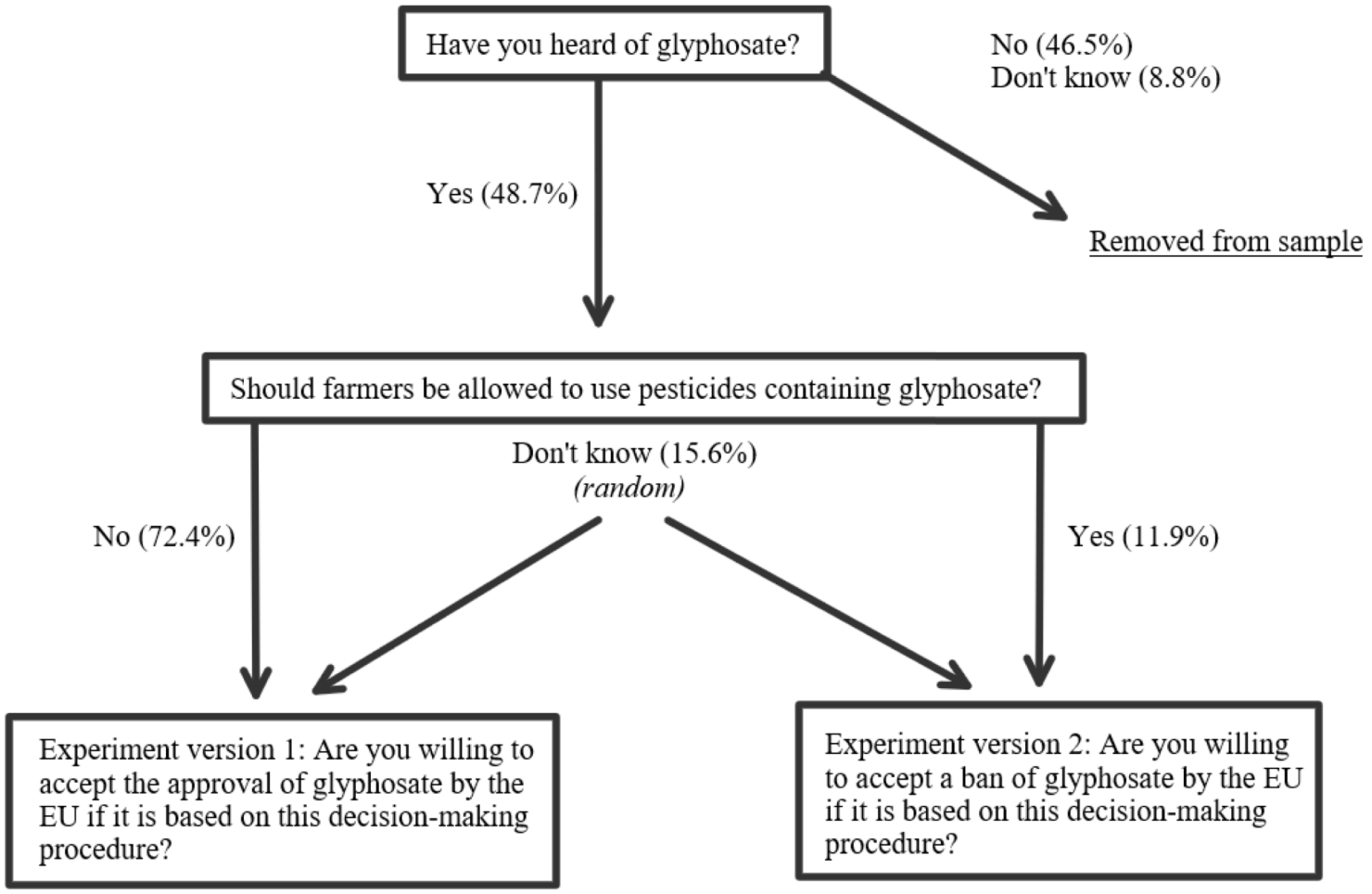
- Most popular: combined EU-national decision, effects on small and organic farmers considered, all relevant scientific studies considered, post-authorization monitoring & review, no increase in food prices
- Most popular combined with 3% increase in food prices decreases support only from 72.3% to 64.7%
- Least popular: no EU-level decision, no additional factors considered, only scientific studies conducted on behalf of the manufacturer considered, no post-authorization monitoring and review, 3% increase in food prices



Conclusions of experimental study 1

- *Key finding: Europeans in 6 member states have clear & strong preferences about how pesticides authorization decisions should be taken*

- But are citizens prepared to accept authorization decisions taken under a procedure they support, even when such decisions go against their prior preferences on policy outcomes?
- In other words, can the “right” governance procedure convince citizens to accept decision outcomes?



In each case, respondents were shown one of the policy packages from the conjoint experiment which they supported most strongly

Experiment 2: a nested survey experiment on public acceptance of regulatory decision making on pesticides authorization

Hypotheses

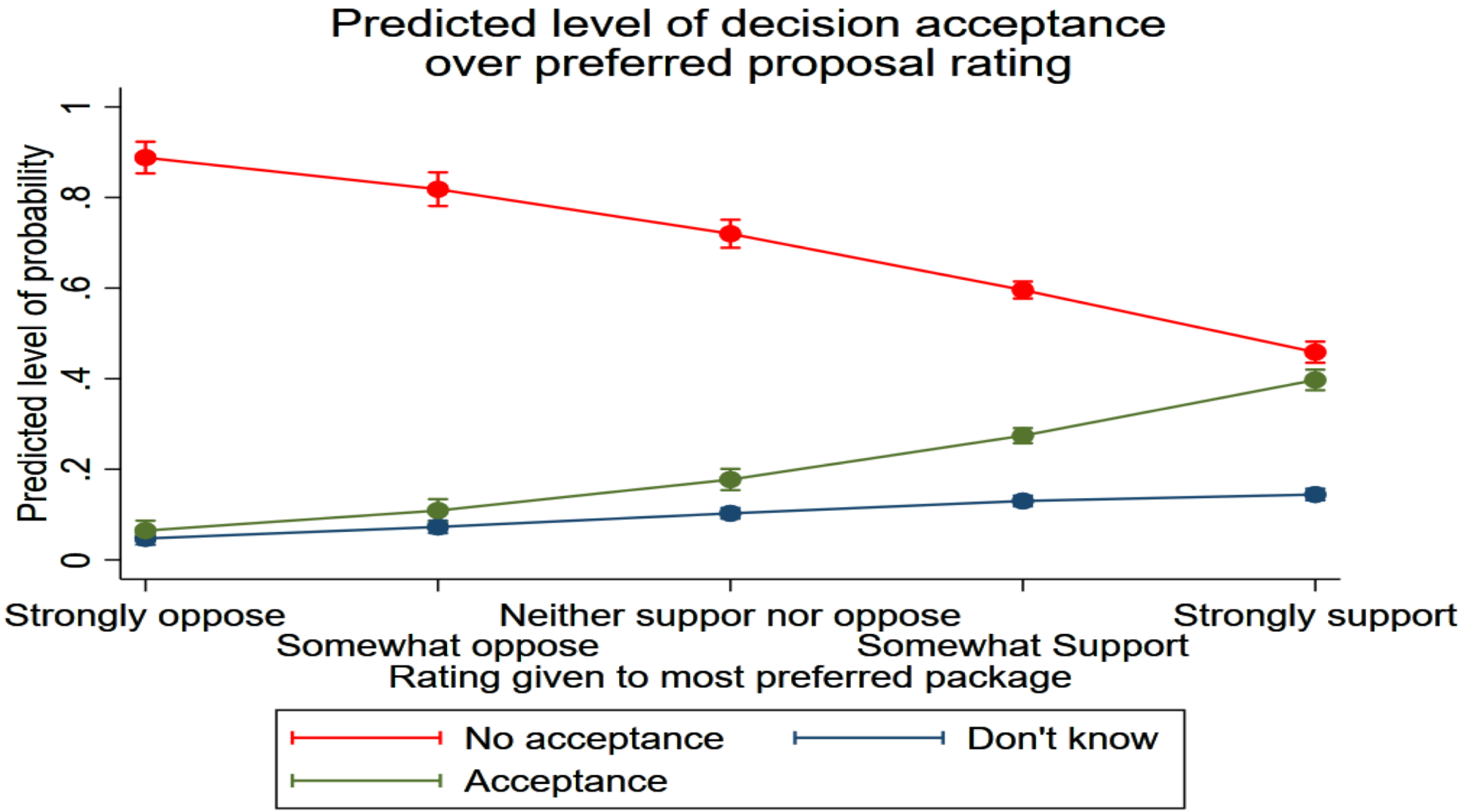
- Using ordinal logistic regression, we tested two hypotheses:

- *H1: If the hypothetical glyphosate authorization decision opposed to their prior expressed preference is based on a decision-making procedure proposal that they support, respondents are more likely to accept this decision than they are to refuse the decision*

- *H2: The stronger the support for the decision-making procedure on which the hypothetical glyphosate authorization decision opposed to respondents' prior expressed preference is based, the more likely they are to accept this decision*

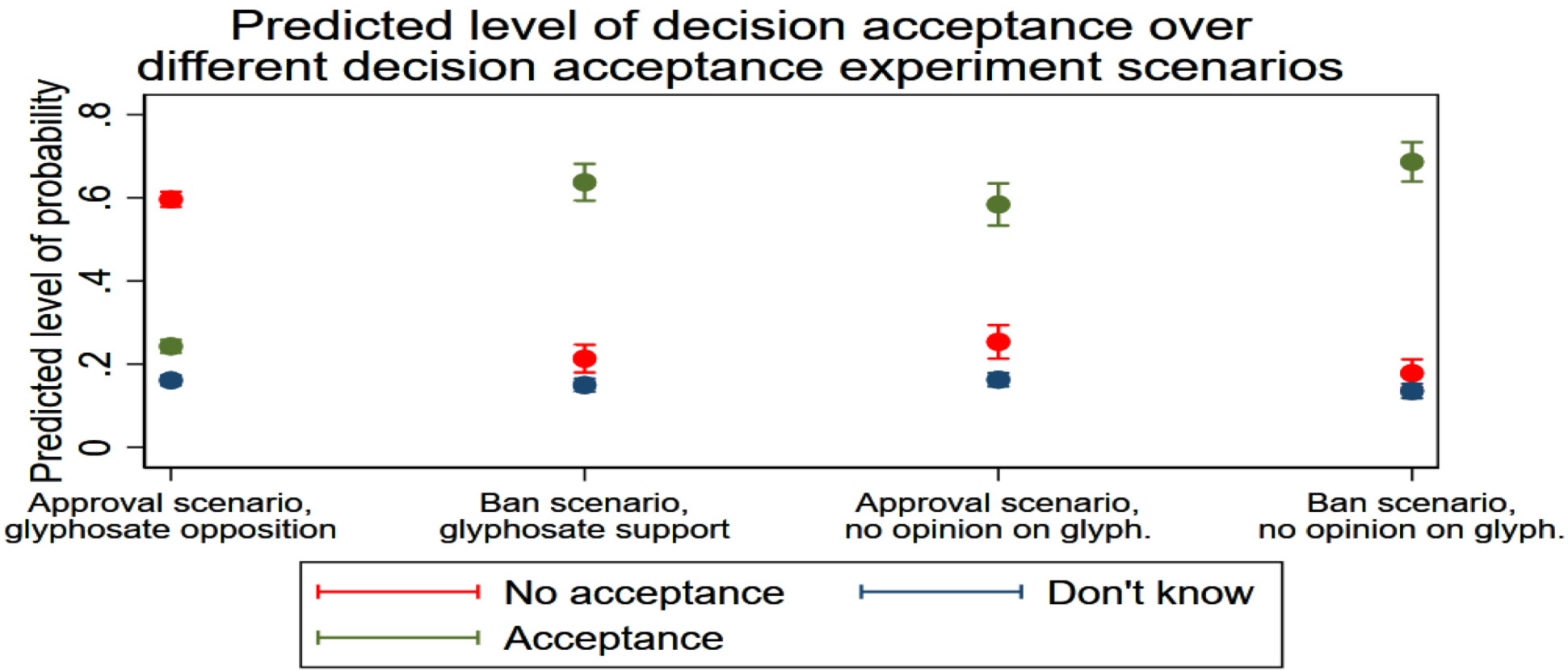
Results

- Both hypotheses confirmed:
- H1: The odds of accepting the decision are 2.43 times higher when the authorization decision opposed to respondents' prior preferences is based on a decision-making procedure proposal that they support compared to when this is not the case, holding all else constant
- H2: As rating given to the most preferred proposal package increases, respondents' predicted decision acceptance probability increases, while non-acceptance probability decreases; the probability of an ex-post don't know answer also increases slightly, indicating a weakening of opposition to decision acceptance


Predicted level of decision acceptance
over preferred proposal rating
Predicted level of probability
0
.2
.4
.6
.8
1
Strongly oppose
Somewhat oppose
Neither suppor nor oppose
Somewhat Support
Strongly support
Rating given to most preferred package
No acceptance
Don't know
Acceptance

Asymmetry of decision acceptance

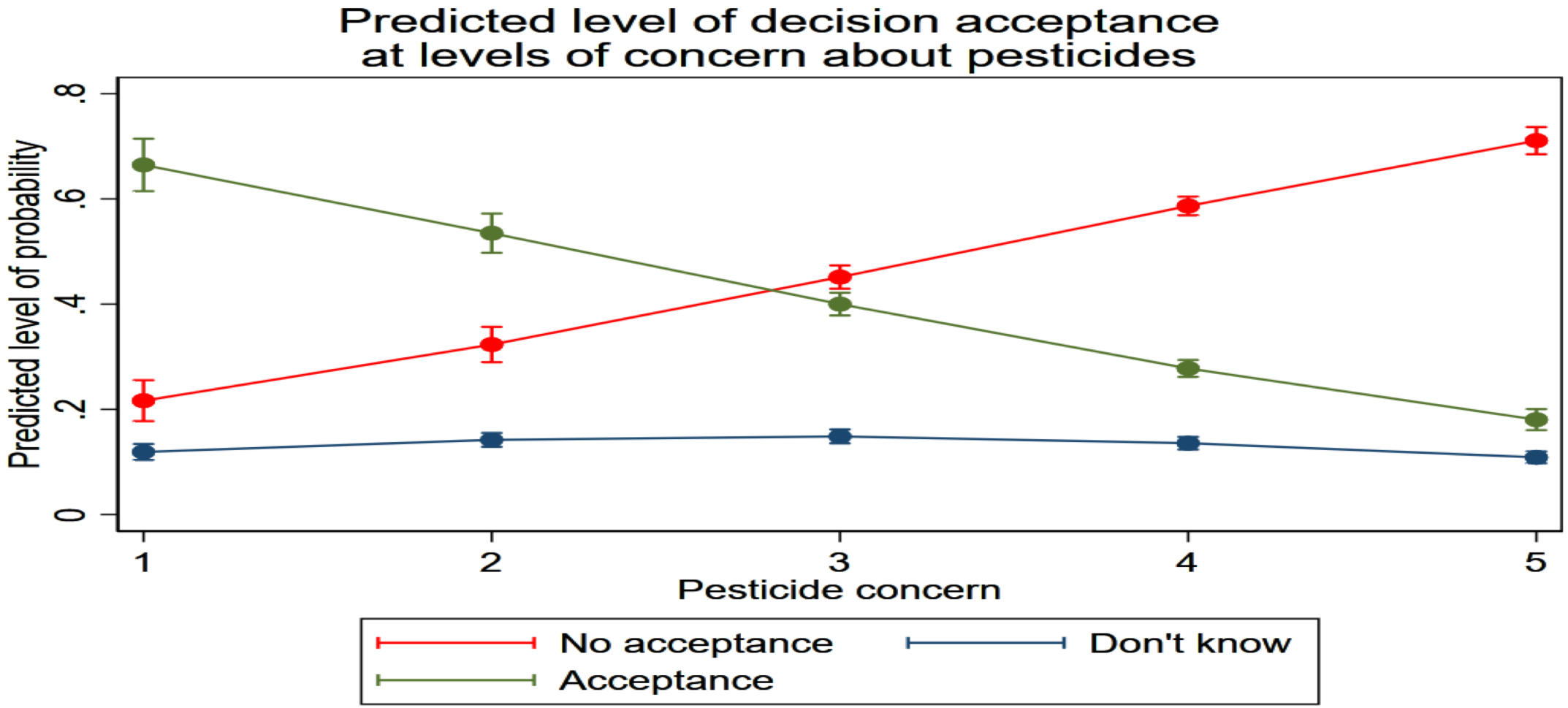
- Respondents more likely to accept than to reject outcome of an authorization decision counter to their prior expressed preference if it is taken under a procedure they support
- Less true of ex-ante opponents of glyphosate
- But even for this group, an authorization decision taken under a procedure they support reduces probability of opposition by 40%
- Respondents with no prior opinion on use of glyphosate (‘ex ante don’t knows’) had a 59% acceptance probability for an approval decision & 70% acceptance probability for a ban

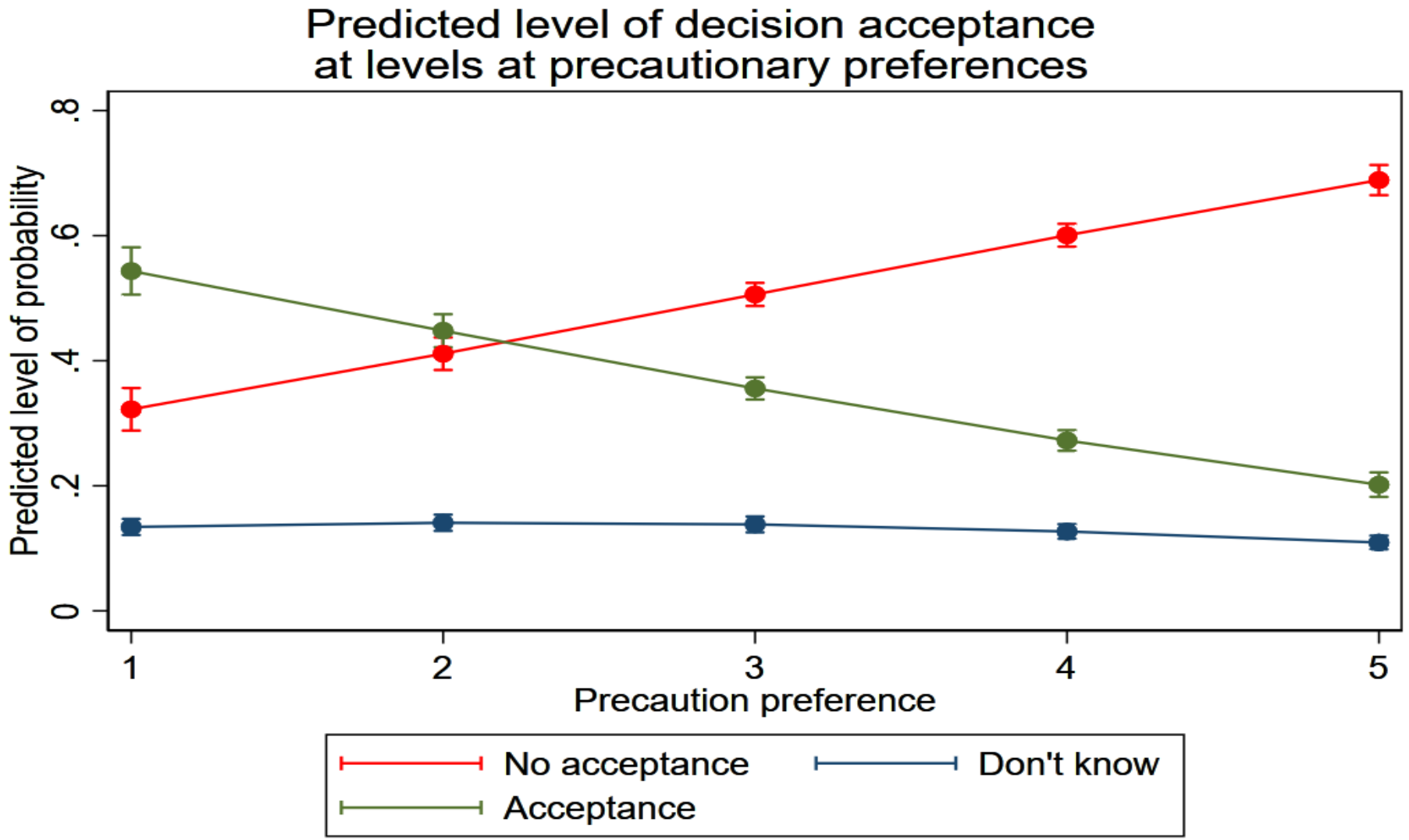


Note: the two rightmost plots show outcomes for people who don't know whether they support glyph.

What explains resistance to glyphosate decision acceptance?

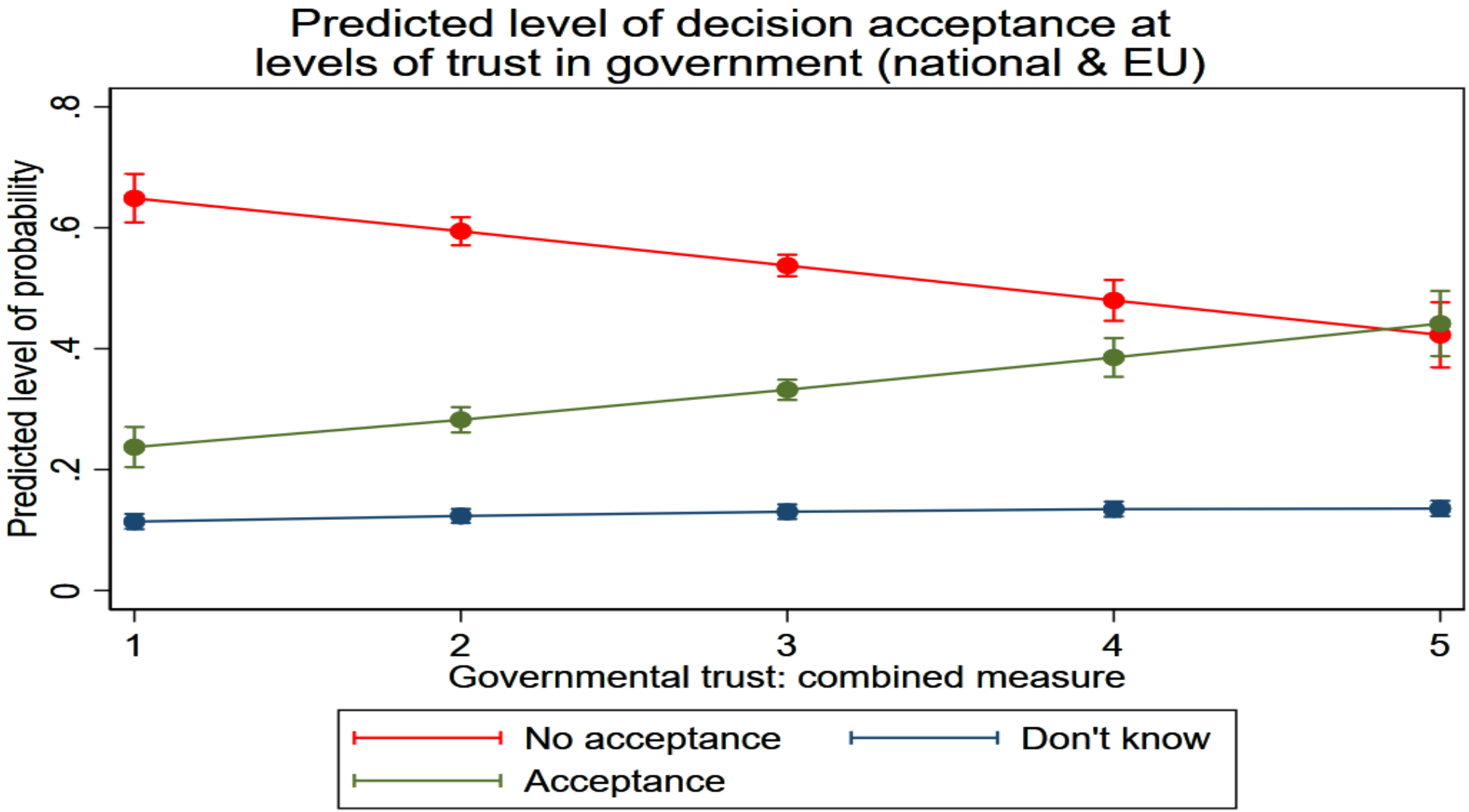
- Most important predictors of respondents' unwillingness to accept a hypothetical glyphosate approval taken under a decision-making procedure they support:
- Expressed level of concern about pesticides
- Degree to which they think that EU pesticides regulation should be precautionary

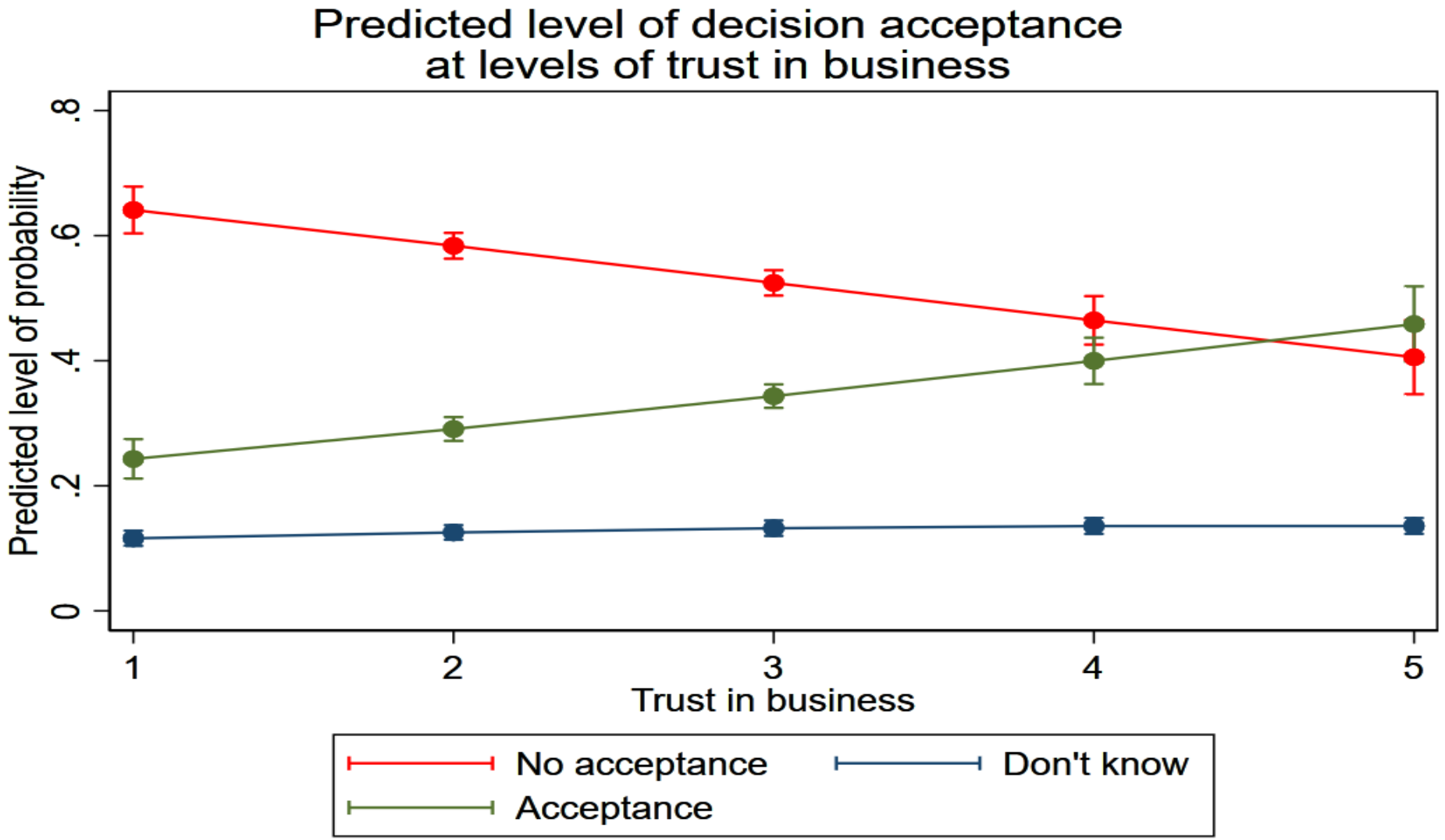

Predicted level of decision acceptance
at levels of concern about pesticides
Predicted level of probability
0
.2
.4
.6
.8
1
2
3
4
5
Pesticide concern
No acceptance
Don't know
Acceptance

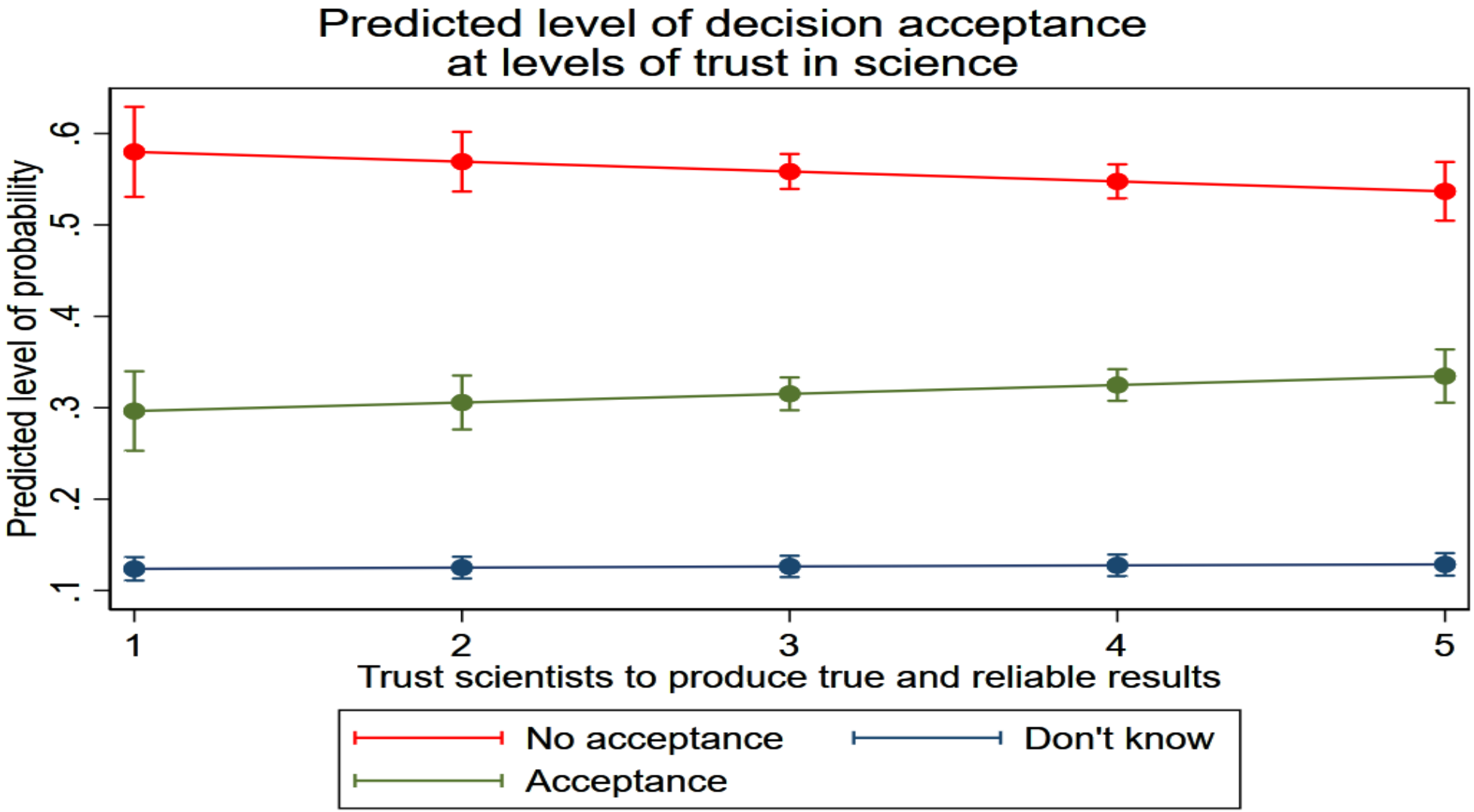

Predicted level of decision acceptance
at levels at precautionary preferences
Predicted level of probability
0
.2
.4
.6
.8
1
2
3
4
5
Precaution preference
No acceptance
Don't know
Acceptance

Effects of trust in government & business and attitudes toward science on probability of decision acceptance

- Conducted further analyses on the effects on decision acceptance of government trust, business trust, and attitudes towards science, both separately and in a combined model
- Both trust in government & business increase odds of decision acceptance
- Attitudes towards science have little effect on the probability of decision acceptance, compared to trust in government and business
- *Respondents' support for proposed governance reforms (rating given to the most preferred decision-making proposal) has a stronger effect on probability of decision acceptance than general trust in government & business (in a combined model)*


Predicted level of decision acceptance at levels of trust in government (national & EU)
Predicted level of probability
0
.2
.4
.6
.8
1
2
3
4
5
Governmental trust: combined measure
No acceptance
Don't know
Acceptance


Predicted level of decision acceptance
at levels of trust in business
Predicted level of probability
0
.2
.4
.6
.8
1
2
3
4
5
Trust in business
No acceptance
Don't know
Acceptance


Predicted level of decision acceptance
at levels of trust in science
Predicted level of probability
.1
.2
.3
.4
.5
.6
1
2
3
4
5
Trust scientists to produce true and reliable results
No acceptance
Don't know
Acceptance

Conclusions (1)

- Our study provides strong evidence that governance reforms citizens strongly support can enhance acceptance of regulatory decisions counter to their prior expressed preferences, even on highly politicized issues such as authorization & use of pesticides
  - Most strongly supported reforms: post-authorization monitoring & review, non-reliance on scientific studies conducted on behalf of manufacturer
- Effects not uniform but vary between ex-ante supporters & opponents of glyphosate, depending on levels of concern & precautionary preferences
  - But even among ex-ante glyphosate opponents, 40% would not oppose a positive authorization decision if it were taken under a regulatory decision-making procedure they support

Conclusions (2)

- Compared to previous experimental studies focused on procedural fairness, our results show much stronger effects of citizens' support for a regulatory decision-making procedure on acceptance of policy outcomes opposed to their prior preferences

- Conjecture: our study finds stronger effects of support for a regulatory decision-making procedure on decision acceptance than previous studies because the treatment we offer in the conjoint experiment is much richer than those in previous experiments, and contains policy proposals respondents value more highly

Supporting tables

Main effects of conjoint experiment

	Proposal support		Package ranking	
National level	0.000	(.)	0.000	(.)
Combination	0.061***	(0.005)	0.084***	(0.006)
EU level	-0.005	(0.005)	-0.007	(0.006)
No additional factors	0.000	(.)	0.000	(.)
Competitiveness	0.021***	(0.005)	0.033***	(0.006)
Effects S&O farmers	0.077***	(0.005)	0.099***	(0.006)
Only manufacturer	0.000	(.)	0.000	(.)
Only independent	0.151***	(0.005)	0.177***	(0.006)
All relevant studies	0.152***	(0.005)	0.183***	(0.006)
No	0.000	(.)	0.000	(.)
Yes	0.221***	(0.004)	0.253***	(0.005)
No increase	0.000	(.)	0.000	(.)
1%	-0.029***	(0.005)	-0.040***	(0.006)
3%	-0.077***	(0.005)	-0.109***	(0.006)
Constant	0.193***	(0.016)	0.232***	(0.007)
Observations	51804		51804	
Adjusted R-squared	0.088		0.116	

Standard errors in parentheses, Models control for gender, age, education and subjective income (not shown).

="* p<0.05 ** p<0.01 *** p<0.001"

Decision acceptance main table: excluding ex-ante "don't knows" (Odds ratios)										
	Model 1		Model 2		Model 3		Model 4		Model 5	
Support most preferred package	2.432***	(0.318)								
Rating given to most preferred package			1.790***	(0.096)	1.775***	(0.097)	1.855***	(0.104)	1.767***	(0.100)
Approval scenario					1.000	(.)				
Ban scenario					5.632***	(0.635)				
Pesticide concern							0.556***	(0.024)		
Precaution preference									0.659***	(0.021)
Nat. gov. trust										
EU trust										
Cutoff 1	1.639*	(0.371)	9.267***	(2.803)	13.247***	(4.139)	1.393	(0.472)	1.906	(0.641)
Cutoff 2	2.986***	(0.677)	17.103***	(5.198)	25.689***	(8.073)	2.660**	(0.903)	3.541***	(1.191)
Observations	3214		3214		3214		3214		3128	
Pseudo R-squared	0.037		0.050		0.092		0.082		0.082	
Note: Odds ratios, standard errors are in brackets. * p<0.05 ** p<0.01 *** p<0.001										

Effects of trust in government & business & attitudes to science on decision acceptance

	Model 1		Model 2		Model 3		Model 4	
	O.R.	s.e.	O.R.	s.e.	O.R.	s.e.	O.R.	s.e.
Governmental trust: combined measure	1.413***	(0.065)					1.293***	(0.068)
Science								
True and reliable results			1.149***	(0.047)			1.051	(0.046)
Beneficial discoveries			0.848***	(0.042)			0.877**	(0.045)
Too influenced by funding			1.167***	(0.041)			1.073	(0.040)
Trust in business					1.458***	(0.071)	1.305***	(0.070)
Rating given to most preferred package	1.705***	(0.092)	1.774***	(0.098)	1.792***	(0.098)	1.740***	(0.098)
Observations	3211		3107		3204		3101	
Pseudo R-squared	0.060		0.059		0.061		0.070	

Exponentiated coefficients; Standard errors in parentheses; control variables suppressed from the table

* p<0.05, ** p<0.01, *** p<0.001"