How resilient is public support for carbon pricing? Longitudinal evidence from Germany

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Motivation

- Carbon pricing is key to mitigate GHG emissions and reach climate targets (World Bank 2022)
- But it is unpopular compared to other instruments (Rhodes et al. 2017)
- There is a large and growing literature on citizens' support for climate policies and carbon pricing (Bergquist et al. 2022; Carattini et al. 2018; Drews and Bergh 2016; Sommer et al. 2022)
- Most research is (repeatedly) cross-sectional (e.g. Murray and Rivers 2015), and little is known about the dynamics of public support, but understanding them is key (Kallbekken 2023)
- Schuitema et al. (2010) and Mildenberger et al. (2022) are exceptions

This paper

- We conducted three panel surveys in Germany before (2019) and after the implementation (2021) of a carbon pricing scheme and the invasion in Ukraine (2022)
- We analyze the following two research questions
  1. How do attitudes to carbon pricing evolve over time?
  2. How do changes in support for carbon pricing depend on the policy's effects on expenditures and other factors?

$\Rightarrow$ We do not find that support changed over time

$\Rightarrow$ Among respondents who are vulnerable to high energy prices public support has decreased

Surveys

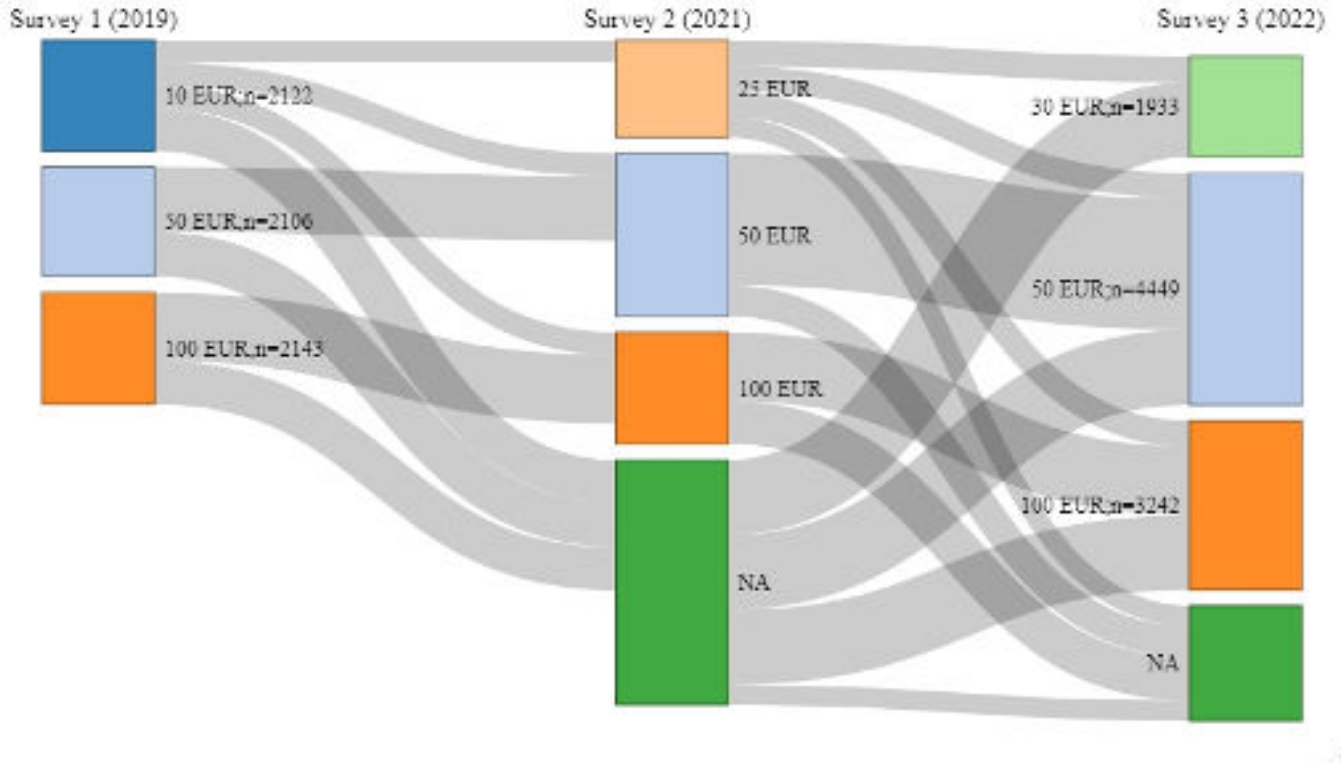
- We collaborated with a market research company and administered the first survey in the fall of 2019 (N=6,549 household heads)

  It included a hypothetical referendum about the support of a carbon price of €10, €50, and €100 (Sommer et al. 2022)
- In the summer of 2021, we conducted the second survey (N=8,677) with prices $\in [25,\ 50,\ 100]$ €
- In the summer of 2022, we conducted the third survey (N=8,028) with prices $\in [30,\ 50,\ 100]$ €

$\Rightarrow$ Overall, we were able to recruit 3,200 across all surveys

$\Rightarrow$ 1,451 individuals reported answers to all relevant questions used in the empirical analysis

Experimental design

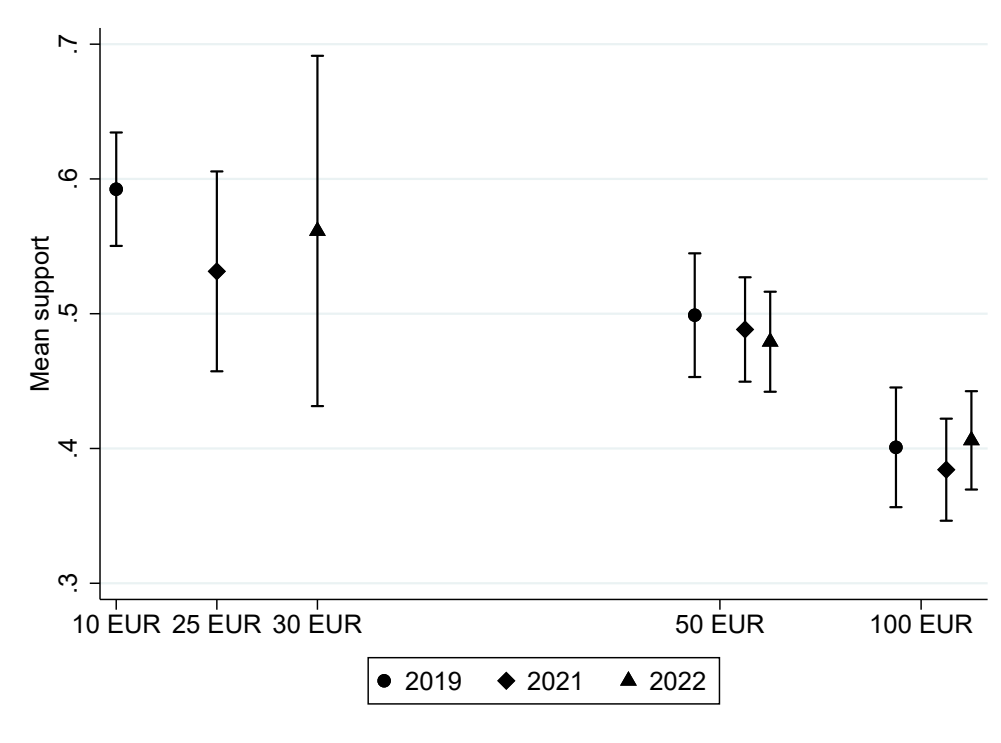


- Respondents who saw a price of €50 or €100 in the first round got the same price again
- Respondents with €10 and €25 were split randomly across the three prices

Descriptive statistics

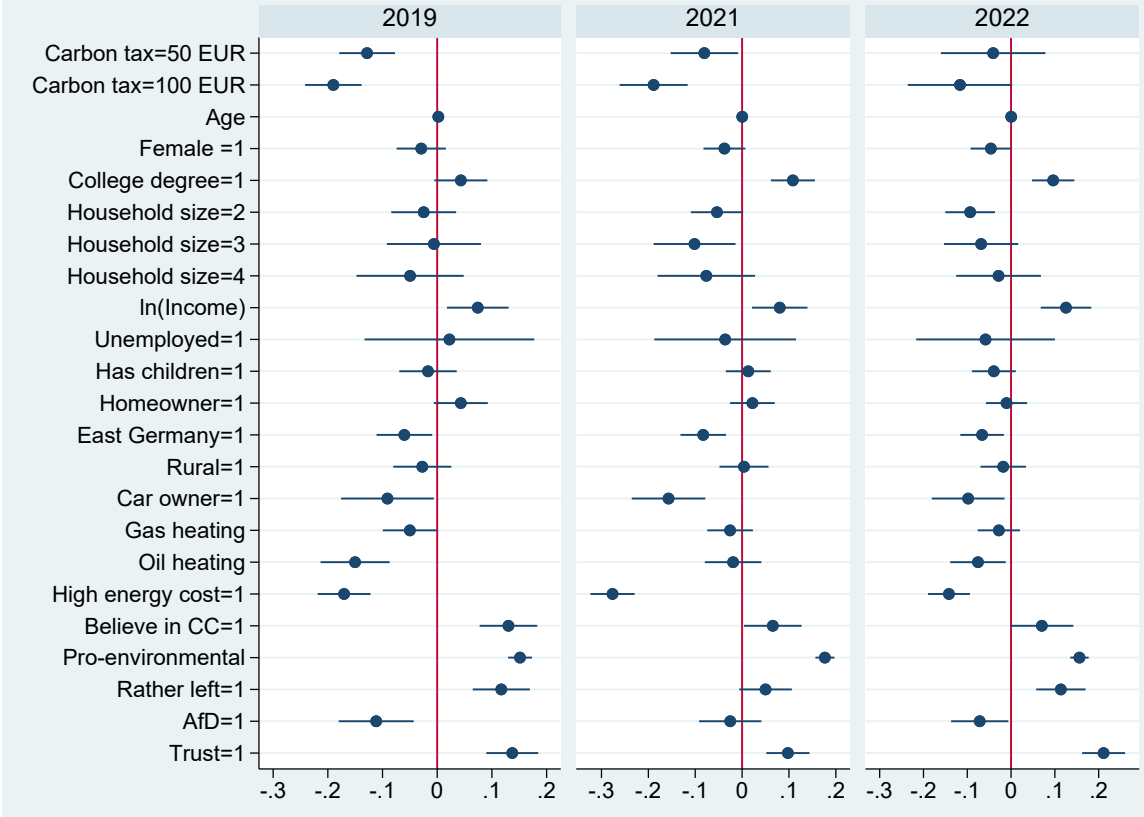
	2019	2021		2022	
	Mean	Mean	t-Stat.	Mean	t-Stat.
(A) Socio-economic characteristics					
Age	57.8	59.3	(2.744)**	60.4	(4.787)**
Female	0.341	0.341	(-0.000)	0.341	(-0.000)
College degree	0.287	0.288	(-0.041)	0.287	(-0.041)
Household size	2.008	1.979	(-0.874)	1.967	(-1.301)
Income	2,967	3,004	(0.816)	3,049	(1.808)
Unemployed	0.023	0.022	(-0.257)	0.019	(-0.898)
Has children	0.642	0.643	(0.116)	0.629	(-0.734)
Homeowner	0.580	0.587	(0.376)	0.584	(0.188)
East Germany	0.256	0.254	(-0.085)	0.255	(-0.043)
Rural	0.229	0.220	(-0.580)	0.219	(-0.625)
(B) Carbon tax related					
Car owner	0.908	0.912	(0.389)	0.908	(0.000)
Gas heating	0.517	0.510	(-0.409)	0.523	(0.297)
Oil heating	0.203	0.184	(-1.289)	0.170	(-2.245)**
Other heating	0.280	0.306	(1.543)	0.307	(1.584)
High energy cost	0.401	0.447	(2.517)**	0.664	(14.527)**
(C) Attitudes					
Believe in climate change	0.806	0.894	(7.158)**	0.919	(9.244)**
Pro-environmental attitudes	10.975	11.049	(0.707)	11.507	(5.052)**
Rather left	0.305	0.191	(-7.308)**	0.208	(-6.688)**
AfD	0.077	0.066	(-1.193)	0.056	(-2.312)**
Trust	0.385	0.509	(6.704)**	0.482	(5.244)**

Support for carbon tax



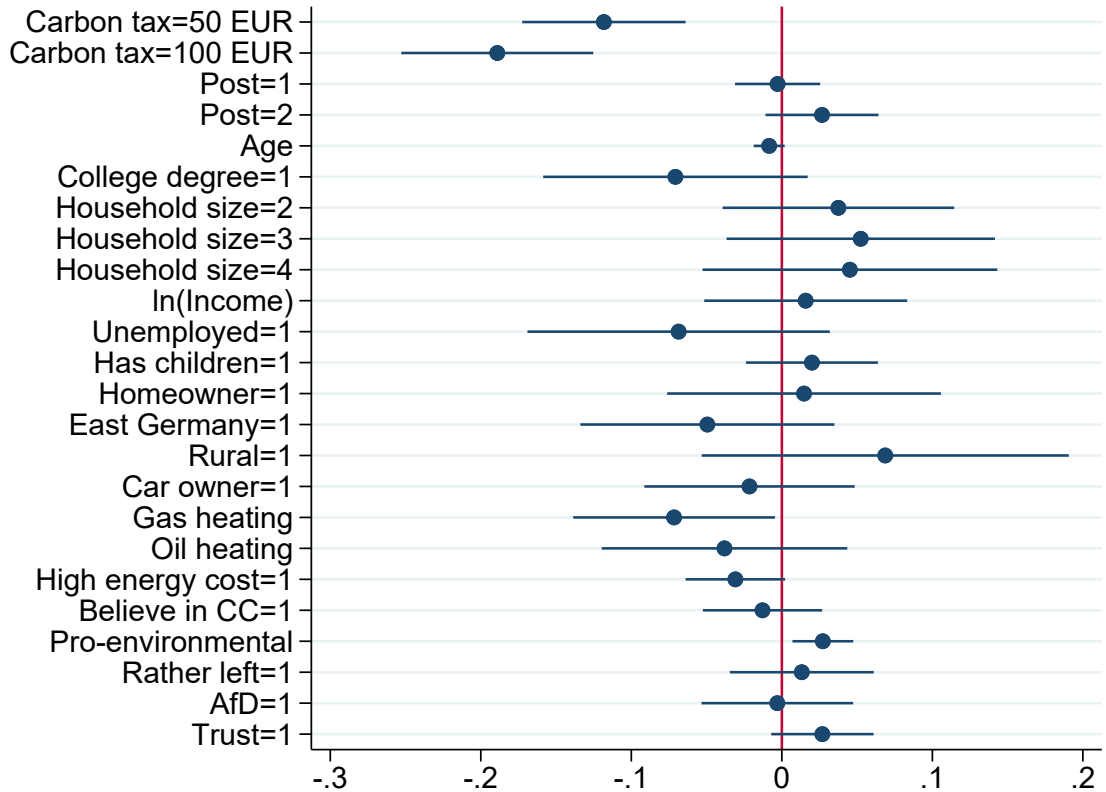
- In autumn 2019, 60% supported a carbon price of €10
- Support decreases with price level
- The support rates for a given price are very similar across the three waves

Determinants of support in cross-sectional analysis



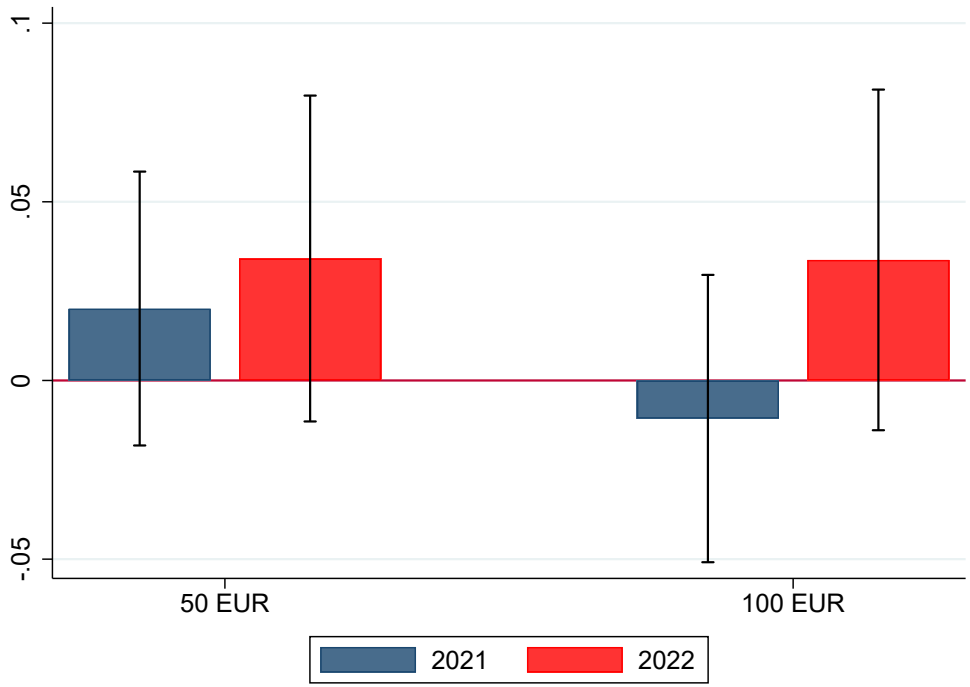
- E.g., support is higher among well-educated and more affluent individuals and linked with pro-environmental attitudes
- The determinants are similar in magnitude across the three waves

Determinants of support in longitudinal analysis



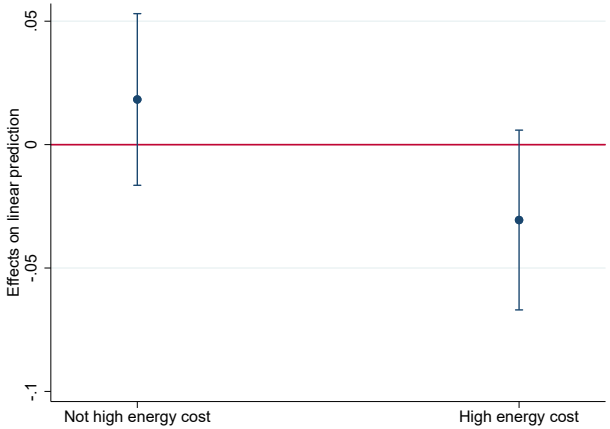
- Most of the determinants lose their explanatory power when using individual fixed effects
- No change in support over time for low prices (*Post*)

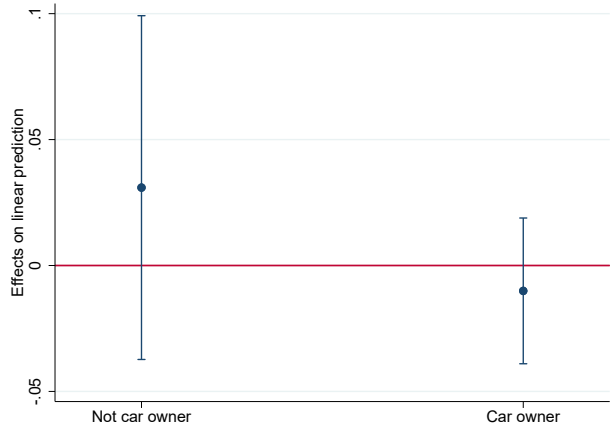
Determinants of support in longitudinal analysis

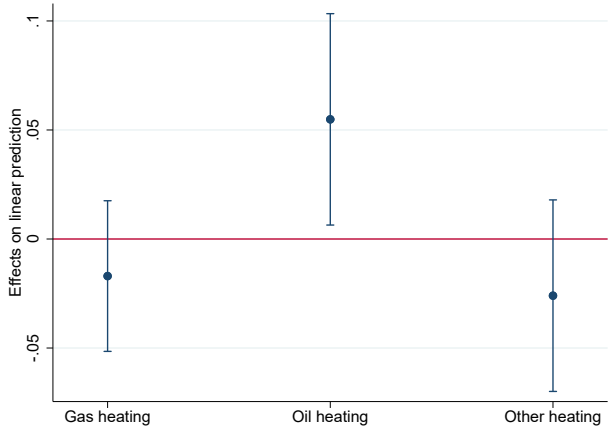


- The negative effect of higher prices does not change over time (insignificant interactions of *Post* × *Price*)

Heterogeneity analysis

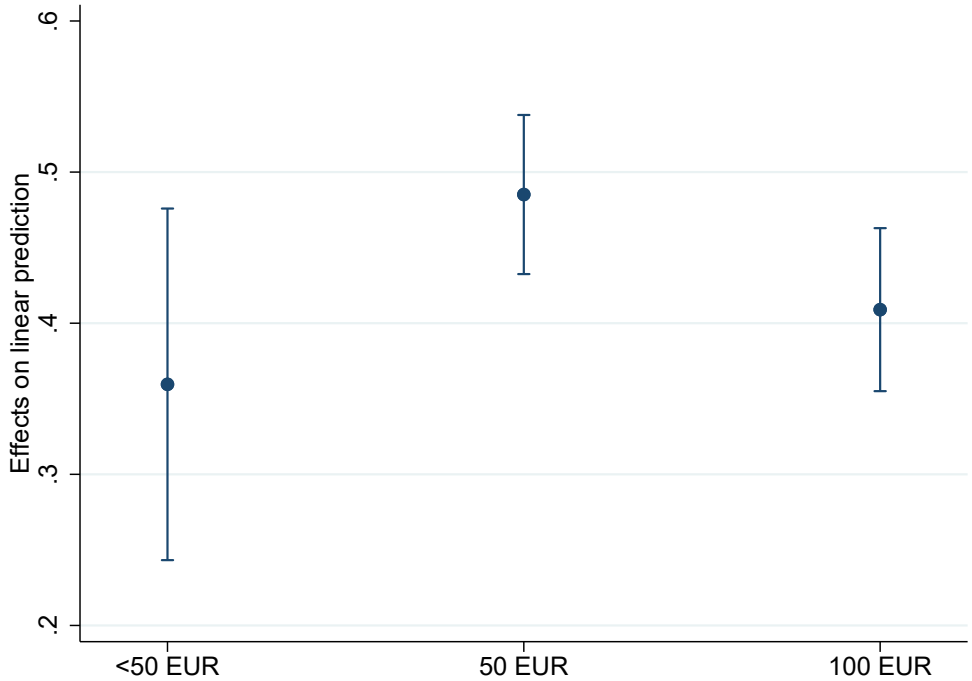






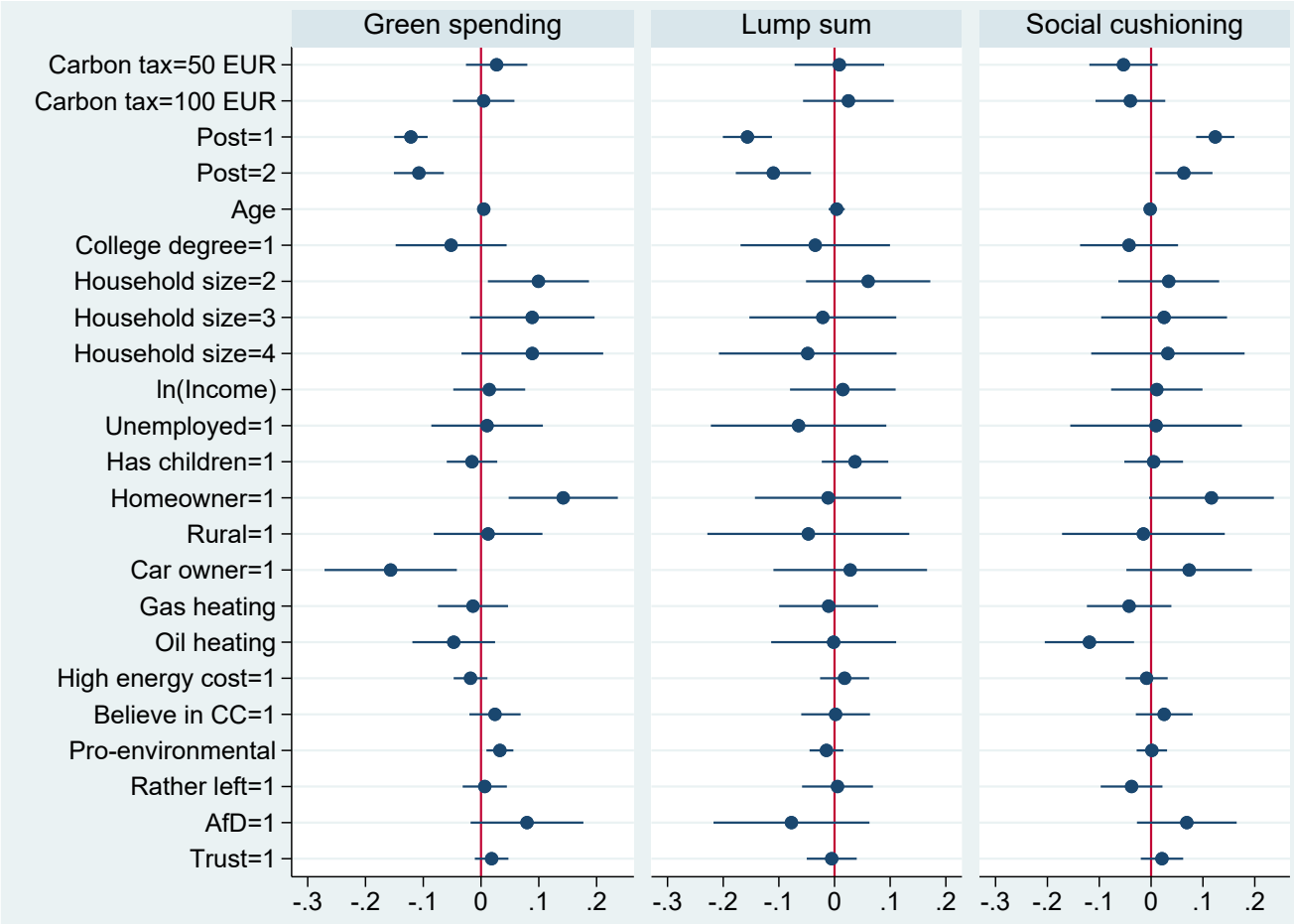
- The change in support depends on energy and transport related activities
- It does not vary with socio-economic characteristics and attitudes

Dynamics of support



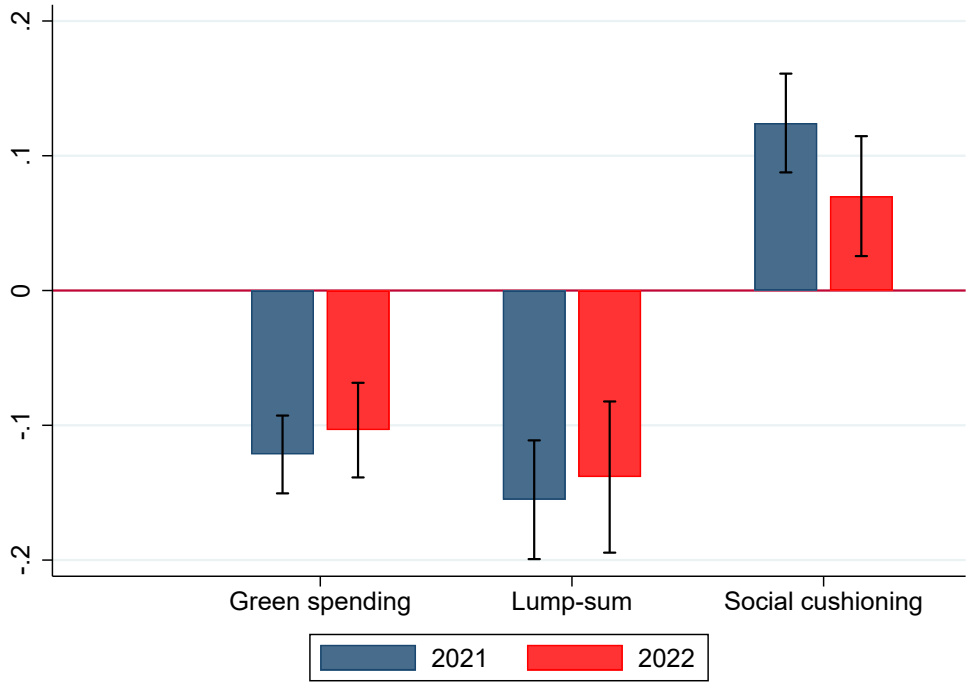
- A lagged-dependent variable model indicates high auto-correlation of support
- This effect is very similar across the range of price levels

Support of revenue uses in longitudinal analysis



- Also when we ask for support of revenue uses, most variables do not show up as significant determinants

Support for revenue uses



- Support for green spending and lump-sum payments has declined over time
- Support of social cushioning has increased over time

Summary of findings

- Support decreases with price level, but not over time
- There are few changes in drivers of support and they cannot explain changes in support
- Panel methods identify that having high energy cost as being particularly relevant for policy support
- Green spending is most popular, but has lost popularity over time

Policy implications

- As support does not change over time, it is crucial to gather support early on
- As support is not caused by environmental values, convincing people of climate change is unlikely to influence public opinion going forward
- As support decreases among respondents who are hit hard, environmental policies might be accompanied by social cushioning and policies addressing energy poverty

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