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Supporting environmental protection in good and bad economic circumstances

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ABSTRACT

This article explores the scope conditions of the effect of individual political orientation on environmental beliefs, focusing on personal economic circumstances. Distinguishing between willingness and opportunity factors, it is argued that the positive effect of left-wing ideology on public support for environmental protection is more strongly pronounced when individuals' personal economic circumstances are better as potentially more costly regulations can be paid for. We test the theory using three different data sets from three different contexts: the German Longitudinal Election Study, the Cooperative Election Study (US), and Eurobarometer data. The analyses provide strong and robust evidence in line with our expectations. This research adds to our understanding of the role of political ideology as well as economic conditions in environmental public-opinion formation, and we shed light on the interactive influence of self-interest and political predisposition.


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KEYWORDS Environmental public opinion; Political behavior; survey data; German longitudinal election study; cooperative election study; Eurobarometer

Introduction

Public support is essential for environmental legislation and its effective implementation in democratic systems (see, e.g. Vandeweerd *et al.* 2015, Anderson *et al.* 2017, Bromley-Trujillo and Poe 2020, Bakaki *et al.* 2020, Schaffer *et al.* 2022). Among the most robust determinants of public opinion on the environment in developed democracies is individuals' political orientation or ideology (see, e.g. Bernauer 2013, Egan and Mullin 2017, Davidovic *et al.* 2019, Guber *et al.* 2020).¹ Voters with more left-wing views tend to be more in favor of interventionist policies, correcting market failures, and diverse values other than narrowly defined economic prosperity. In turn,

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this makes such individuals more likely to embrace pro-environment policies. Conversely, right-leaning people are commonly described as holding rather opposing views because of their skepticism toward state intervention and their strict preference for economic growth (Harring and Sohlberg 2017).

This generally well-established relationship between political orientation and public support for environmental protection in developed democracies (see Lewis *et al.* 2019) constitutes the starting point for our research as we examine some of its scope conditions: a moderating influence that may enhance or lower the impact of ideology on public opinion. Specifically, subscribing to the common effect in more advanced democratic countries that left ideology has on public support for environmental protection, we distinguish between willingness and opportunity factors, contending that the positive impact of leftist views is more strongly pronounced when left-leaning people's economic circumstances are better. In other words, an individual's own economic circumstance is the moderating factor and, in our context, it follows that left-wing individuals could have lower levels of support for environmental protection when they are worse-off economically.

We substantiate our argument by analyzing three different data sets, which are located at different units of analysis. First, we use data from the German Longitudinal Election Study (GLES), which covers respondents' preferences of fighting climate change over prioritizing economic growth in 2013–2018. The data's panel design allows us to explore the moderating effect of personal income for the same person while controlling for unobserved heterogeneity among individuals. In comparison to other countries, the German public is characterized by a rather high level of support for climate policy (Pew Research Center, PEW 2014), the German government frequently stresses its 'frontrunner' position in fighting climate change (Michaelowa 2008), and environmentalism is nowadays strongly embedded in Germany's partisan cleavages (Zilles and Marg 2023). While this makes the study of Germany a worthwhile and interesting exercise, we also evaluate our argument in other contexts to add to the external validity of our findings. Second, therefore, we employ the Cooperative Election Study (CES) from the US, which is a repeated cross-sectional data set at the individual level in 2006–2021. Next to the different country context, another benefit of the CES data is that because our theory applies to public support for environmental protection in general, and since the link between public opinion on climate change and broader environmental concerns may not always be given (see Egan *et al.* 2022), we operationalize the dependent variable differently in the CES analysis. That is, we explore data on supporting climate policies (independent from a tradeoff with economic growth), on environmental protection generally, as well as on more fuel-efficient regulations. Third, we analyze Eurobarometer (EB) data at the country level in 2002–2020. The dependent

variable in this last analysis is based on general environmental salience. The results across all these analyses robustly support the scope condition we argue for: more leftist political orientation paired with good economic circumstances likely leads to higher support for environmental protection. Such pro-environment opinion diminishes systematically when people's economic circumstances worsen.

This article seeks to contribute to the understanding of how public opinion is formed, how especially environmental attitudes are developed, and what role political ideology plays in this context. First, we add to the broader public opinion literature by strengthening the claim that the extent to which self-interest prevails in people's attitudes toward interventionist policies also depends on the potential costs at the individual level (Margalit 2013, Ballard-Rosa *et al.* 2017, Haselswerdt 2020). This is because we explicitly consider the counteractive effect of political ideology in our analysis – an aspect that we believe the existing literature has not yet fully taken into account (Marble and Nall 2021).

Second, we shed new light on some of the scope conditions of the ideology-and-environmental-attitude nexus, i.e. the conditions under which left-leaning individuals in fact are more pro-environment. We distinguish between willingness and opportunity factors and demonstrate that 'willingness' (leftist political orientation) leads to people's support for environmental protection more strongly when there is sufficient 'opportunity' (economic well-being). We build upon previous work here, which emphasizes some contextual factors like institutional quality or issue framing (e.g. Harring and Sohlberg 2017, Davidovic *et al.* 2019); that said, we extend this stream as our focus on the economic circumstances at the individual or country level using three different data sets and empirical approaches allows us to relate the conditional relationship we find and its underpinning behavioral mechanism more directly. As environmental issues become increasingly central to political debate, the new insights regarding public opinion presented here may inform the scholastic literature as well as policy-makers, political institutions, and parties.

Environmental public opinion, political ideology, and personal economic circumstances

In developed democracies, people with a left-leaning political orientation are more supportive of more environmental action. This finding is generally established in the literature (see, e.g. Neumayer 2004, Bernauer 2013, Egan and Mullin 2017, Harring and Sohlberg 2017, Davidovic *et al.* 2019, Lewis *et al.* 2019, Guber *et al.* 2020, Egan *et al.* 2022). We treat political orientation or ideology as a willingness factor. In the words of Lipset *et al.* (1954, p. 1135): '[b]y "left" we shall mean advocating social change in the direction

of greater equality – political, economic, or social. By “right,” we shall mean supporting a traditional, more or less hierarchical social order, and opposing change towards greater equality.’ We broaden the relationship between political ideology and people’s attitudes on environmental issues by assessing the impact of personal economic conditions as a moderating influence, which we treat as an opportunity factor (Starr 1978, p. 368). Some factors may facilitate or hamper political behavior, even if the willingness to pursue or support some action actually exists. Hence, when cross-pressured by political predisposition (‘willingness’) and self-interest (‘opportunity’), the latter could prevail and push people who are otherwise supportive of more ambitious environmental policies to deviate from their ideological stances (see also Malhotra *et al.* 2013, Hankinson 2018, de Benedictis-Kessner and Hankinson 2019, Marble and Nall 2021).

The impact of political ideology on ‘green’ public opinion has been studied for several decades (see Chinn *et al.* 2020). Pierce and Lovrich (1980), for example, contend that left-leaning individuals value environmental quality at least as important as the economy, while people with more right-wing positions tend to prioritize narrowly defined economic prosperity over other issues including environmental protection. Since then, several studies have corroborated that, especially in democratic and more developed contexts, leftist voters are indeed more concerned about the environment and, thus, likely to support pro-environment legislation (e.g. Dunlap *et al.* 2001, Marquart-Pyatt 2008, McCright and Dunlap 2011, Dupont and Bateman 2012, Kvaløy *et al.* 2012, McCright *et al.* 2016). Several specific mechanisms link leftist orientation with pro-environmental positions, although the most prominent ones can be summarized as follows. On one hand, leftist attitudes ‘tend to be more interventionist in their economic policy making, [and] they might find it easier to accept that governments need to install environmental protection instruments such as command-and-control, environmental taxes or tradable pollution permits in order to correct market failures’ (Neumayer 2003, p. 204). In the words of Haring and Sohlberg (2017, p. 281), ‘individuals on the left are more pro-environment because it is compatible with their ideological belief that the market economy needs to be regulated and that the government should play a bigger role in society’ (see also Davidovic *et al.* 2019). On the other hand, ‘environmental pollution hits the poor and the working class more than the rich who can isolate themselves better from the damaging effects of environmental pollution’ (Neumayer 2003, p. 205). Both claims mirror Chang *et al.* (2015) and Wen *et al.* (2016) for why left-wing governments should pursue stricter environmental policies: more restrictions on the economic system are necessary to promote environmental policies, the working class is disproportionately affected by environmental pollution, and polluting industries must pay more to improve environmental performance (see also

Kammerlander and Günther 2021, p. 2). Moreover, the nexus between ideological divisions and public opinion on the environment could be self-fulfilling by leading people to have different normative judgements, with leftists tending to believe that environmental protection is the ‘morally right thing to do’ (Currie and Choma 2017).

Recent studies extend the ideology effect on environmental public opinion along several lines. First, political ideology may not only have a direct effect on pro-environmental attitudes, but also an indirect one as it can regulate how people process relevant information (Zaller 1992). Individuals may change their environmental views in light of severe weather incidents, natural disasters, or international climate summits (Egan and Mullin 2012, Bakaki and Bernauer 2017b, Bergquist and Warshaw 2019, Kalatzi Pantera *et al.* 2022). However, people with more left-wing tendencies are more likely to absorb the influence from such events (Borick and Rabe 2010). Likewise, Schuldt *et al.* (2011) report that people whose political predisposition is inconsistent with progressive environmental protection are more prone to deny climate change when the issue’s framing changes. Second, some studies suggest that the impact of ideology may depend on specific contextual factors – constraints or possibilities under the ‘opportunity’ cluster. For example, Davidovic *et al.* (2019) argue that the quality of government moderates the influence of ideology on people’s willingness to pay for environmental taxes. And Harring and Sohlberg (2017) contend that the ideology-environmental support link is contingent on whether environmental issues are in contrast with economic growth in the first place. Our argument is based on these ‘extensions’ as we further explore one of the scope conditions of the well-established association between left-wing ideology and pro-environment public opinion in developed democracies. That is, we analyze the consequences for environmental attitudes of people being cross-pressured by their self-interest and ideology. Ultimately, we claim that people’s economic circumstances moderate how ideological disposition is associated with pro-environmental attitudes.

Hence, we focus on (personal) economic circumstances as a moderating factor and develop our claim along previous work related to wealth and support for environmental protection (Elliott *et al.* 1997, Franzen 2003, Pampel 2014). In general, individuals suffering economic hardship have lower levels of environmental-protection support. All else equal, economically insecure people are usually more worried about the macroeconomic impact on their own economic well-being (Compton and Lipsmeyer 2019). Their environmental views are consequently shaped by the fear that – potentially costly – environmental policies may adversely influence themselves. Scruggs and Benegal (2012, p. 505) conclude that ‘the decline in belief about climate change is most likely driven by the economic insecurity’ (see also Kenny 2020). Kahn and Kotchen (2011),

moreover, show that worsening national economy circumstances affect not only people's concerns over climate change negatively, but also their support for relevant mitigation policies. And Bakaki and Bernauer (2017a) find that many supporters of pro-environment legislation are nonetheless unwilling to pay for them. Having said that, the relationship between economic conditions and environmental concern seems to differ across national contexts. Bakaki and Bernauer (2018, p. 66), for instance, do not find conclusive results from Brazilian data and suggest instead that 'there is considerable room for ambitious environmental policy even under adverse economic conditions' while Pempel (2014, p. 57) concludes that economic factors matter significantly less 'in lower income nations with poor environmental conditions,' though some research on post-industrial countries produces similar findings (see, e.g. Fairbrother 2013). Moreover, the existence of an 'economy-environment trade-off' depends upon the nuances of both 'economy' and 'environment' (Mildenberger and Leiserowitz 2017), as well as how explicitly such a trade-off is presented (Tvinnereim and Ivarsflaten 2016, Arndt *et al.* 2022, Beiser-McGrath 2022).

We combine these perspectives on political ideology and personal economic circumstances when arguing that leftist individuals are more likely to have 'green' attitudes in general, but their support for environmental protection should be lower when their personal economic circumstances are not that good. More ambitious environmental legislation can be costly, affecting the behavior of all members of a society (Bernauer 2013). People may neglect or even embrace these additional costs when their pocketbooks allow them to do so. Conversely, the cost implication could be different when individuals face economic challenges. Already a marginal decline of personal wealth can provoke an attitudinal shift against environmental protection, even among those with views that are generally in favor of the environment, as costs are imminent but benefits will only materialize in the future in a diffuse way (see Laibson 1997, Finseraas *et al.* 2021). Furthermore, people's relative income position is likely to influence their perceived fairness of environmental policies, which also affects public support for environmental protection (Huber *et al.* 2019). Many environmental measures that impose costs on consumers are criticized for their regressive distributional effects, meaning that the poor have to pay more than the rich. People with lower incomes are less in favor of such inequality-fueling 'green' policies, despite their pro-environment predisposition, i.e. leftist ideology. We argue accordingly that the positive influence of left-wing orientation on pro-environment stances may be lower when personal economic circumstances are not that good. In other words, worsening economic conditions can drive left-leaning people to become more self-interested when assessing environmental protection and, thus, to support environmental protection to a lesser extent.

But when left-wing individuals' economic circumstances are good so that the potential additional costs of more ambitious environmental action can be compensated, their support for environmental action should be more strongly developed.

In the following, we present research designs and empirical findings that are derived from three different data sources (GLES, CES, and EB), diverse specifications of the outcome variable, and varying units of analysis. We focus our discussion on the key elements of each analysis, most importantly the dependent variables and the core explanatory items. In the appendix, we provide more detailed information on data sources, samples, and variable operationalizations. We also explore different specifications and designs. These additional models and estimations include a simulation of the interaction effect's coefficient using the GLES data, a binary specification for the GLES political-orientation item and the disaggregation of respondents' political ideology, considering GLES respondents' unemployment status and the omission of potential outliers as well as the lagged dependent variable, and we try to shed light on the effect of economic circumstances on political ideology in the GLES data. We estimate general error correction models for the GLES and the EB as well as a general dynamic model based on the CES to better focus on shifts over time. We treat each GLES wave as purely cross-sectional data, we employ a GLES survey weights, and we estimate a hierarchical model based on the GLES. Finally, we distinguish between Eastern and Western Europe in the EB analysis and adjust samples' sizes for the CES. All these additional analyses provide findings that are consistent with the results we discuss below: the positive impact of left-wing political ideology on environmental public support is more strongly pronounced under better personal economic circumstances.

Analysis 1: German Longitudinal Election Study (GLES)

We employ data from the German Longitudinal Election Study (GLES) for our first analysis (GLES 2018). In the first wave (2013), 2,725 eligible voters in Germany were sampled by the polling company *respondi* and then repeatedly surveyed until 2018 by web-based, self-administered questionnaires. In total, 1,109 respondents completed at least 17 of 18 waves. As 'there is a shortage of empirical evidence about public opinion on the growth versus environment dilemma' compared to people's unconditional environmental concern or general policy support (Gugushvili 2021, p. 224), our dependent variable in this analysis is based on a question asking respondents to choose between 'economic growth is priority' and 'fighting climate change is priority.' Higher values of this 7-point scale item represent a stronger preference for combating climate change (over economic growth). A key strength of the GLES is its panel design that allows to control for time-invariant and

unobserved individual confounders. We thus employ two-way fixed effects (waves and states/individuals) OLS regression models with three main explanatory variables to test the theory: *Leftist Ideology* (values in 1–11, with higher values standing for more left-wing positions), *Income* (values in 1–13, with higher values standing for better personal economic circumstances), and a multiplicative interaction of the two items. There is sufficient variation for these variables in our data. For instance, the average value of *Leftist Ideology* is around 6.4 during waves 3 and 4 before rising higher than 6.5 in the last wave; as of wave 7, the average value of *Income* increases from about 6.6 to almost 7. We also include a lagged dependent variable and control for gender, age, education, and religion (see appendix for details) (Table 1).

In Model 1, we merely consider individual political orientation and the income variable. In Model 2, we add the control variables. The setup in Models 3–4 mirrors Models 1–2, but we now include the multiplicative term *Leftist Ideology* \times *Income*. Model 5 fully exploits the panel design of our data by incorporating individual-level fixed effects and, thus, we omit the time-invariant explanatory variables. Models 3–5 allow for a direct test of our argument. All models include a temporally lagged dependent variable as well as fixed effects, either for the German ‘*Länder*’ or individuals (Model 5), and for GLES waves. While the inclusion of a lagged dependent variable next to fixed effects for units and time makes the model more complicated, the

Table 1. Environmental protection in good and bad economic circumstances, GLES data.

	Model 1	Model 2	Model 3	Model 4	Model 5
Lagged Dependent Variable	0.663*** (0.010)	0.659*** (0.010)	0.662*** (0.010)	0.658*** (0.010)	–0.005 (0.013)
Leftist Ideology	0.085*** (0.006)	0.085*** (0.006)	0.054*** (0.014)	0.053*** (0.014)	–0.018 (0.024)
Income	–0.007 ⁺ (0.004)	–0.009* (0.004)	–0.037** (0.013)	–0.040** (0.013)	–0.063* (0.029)
Leftist Ideology \times Income			0.005* (0.002)	0.005* (0.002)	0.009* (0.004)
Female		0.098*** (0.021)		0.099*** (0.021)	
Age		–0.001 (0.001)		–0.001 (0.001)	
Education		0.029** (0.010)		0.029** (0.010)	
Religion		0.004 (0.023)		0.005 (0.023)	
Constant	0.969*** (0.074)	0.888*** (0.087)	1.175*** (0.113)	1.102*** (0.122)	4.719*** (0.206)
Observations	15,055	15,010	15,055	15,010	15,055
State Fixed Effects	Yes	Yes	Yes	Yes	No
Individual Fixed Effects	No	No	No	No	Yes
Wave Fixed Effects	Yes	Yes	Yes	Yes	Yes

⁺p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001. Robust standard errors clustered on individual in parentheses.

benefits are that we can control for temporal path dependencies (lagged dependent variable), unobserved unit influences (unit fixed effects), and temporal influences that are similar across waves (temporal fixed effects). Also, the fixed effects regressions exploit within-group variation over time: in Models 1–4, all between-state (‘Länder’) variation is eliminated, while we take care of all between-individual variation in Model 5. To this end, Model 5 focuses on changes of the same individual, e.g. fluctuating personal economic circumstances from time to time around the average, as the between-variation is absorbed by construction. The estimates are based on within-unit averages and can be interpreted directly as marginal effects. The interpretation of the interaction components requires additional efforts as discussed below.

Beginning with Models 1–2, i.e. the estimations without the interaction between *Leftist Ideology* and *Income*, the coefficient results mirror findings in earlier studies: we obtain evidence for a positive and significant impact of *Leftist Ideology*, while the income variable is negatively signed and statistically significant. Hence, when leaving out the interaction effect, more leftist individuals show stronger support for fighting climate change, while richer respondents are in less favor of prioritizing climate action over economic issues. The substantive effects suggest in Models 1–2, for example, that a one-unit increase in left-wing attitudes induces a rise on our dependent variable by 0.085 points. Meanwhile, increasing *Income* by one unit lowers environmental support by 0.008 points on average.

When including *Leftist Ideology* \times *Income*, the constituent terms’ signs and significance levels remain unchanged in Models 3–4, but there are differences in Model 5 where individual-level fixed effects are in place. Note, however, interpreting the constituent terms is more difficult here as the table entries capture one term’s marginal effect only when the other is set to 0. For example, the coefficient of the left-right self-placement item is negative and insignificant in Model 5, but this merely captures the marginal effect of *Leftist Ideology* when *Income* is set to 0, which is theoretically nonexistent. Hence, a more thorough investigation of our estimations is necessary (Brambor *et al.* 2006). Specifically, note that *Leftist Ideology* \times *Income* is positively signed and significant at conventional levels. This suggests that the positive effect of *Leftist Ideology* on *Environmental Support* becomes larger with higher values of *Income*. Similarly, the positive effect of *Leftist Ideology* on *Environmental Support* becomes smaller with lower values of *Income*. To assess the validity of this estimate, we calculate marginal effects of *Leftist Ideology* for given values of *Income* and visualize them in Figure 1. This graph provides strong support for our argument. The left panel in Figure 1 is based on the state-level fixed effects model with all control variables (Model 4), while the right panel relies on the individual-level fixed-effects estimation in Model 5. Across all levels of *Income* in the left

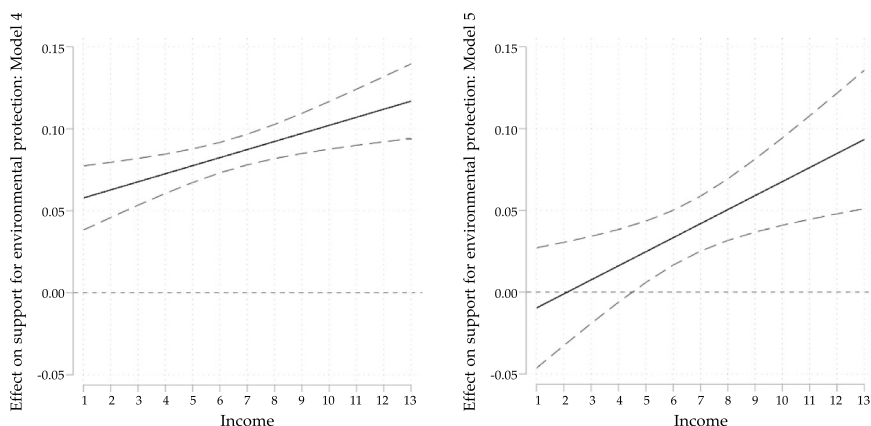


Figure 1. Marginal effect of Leftist Ideology on support for environmental protection, GLES data. Graph displays marginal effect of *Leftist Ideology* on the GLES dependent variable for values of *Income*; dashed lines signify 90% confidence interval; marginal effect of 0 marked by horizontal dotted line.

panel of Figure 1, the lower bound of the confidence interval is well above 0, reconfirming that we obtain a positive and significant marginal effect of *Leftist Ideology* in general. This finding also applies to the individual-level fixed-effects regression (right panel of Figure 1) to a large degree, albeit a substantial income level must apparently be secured in the first place: significant effects of *Leftist Ideology* only surface when *Income* is larger than 4, corresponding to around 1,250 Euros of net household income in Germany. There is no *a priori* explanation for why political orientation becomes statistically significant in influencing public support after this threshold, but both panels of Figure 1 show that the marginal effect of *Leftist Ideology* is more strongly pronounced under better personal economic circumstances. At lower levels of *Income*, one-unit increases in leftist self-placements lead to a rise of about 0.05 points for *Environmental Support* (both panels). Moving to the maximum level of *Income*, this impact almost doubles to about 0.1 units. Hence, when personal income is low, left-wing ideological views are associated with lower environmental support than when it is high.

Analysis 2: Cooperative Election Study (CES)

The Cooperative Election Study (CES) is administered by *YouGov* and one of the largest political surveys in the US. By interviewing a new nationally stratified sample of respondents each November, the data are repeated cross-sections. In the CES cumulative data set we analyze, there are around 550,000 respondents (before accounting for missing values) between 2006 and 2021

(Dagonel 2022). For this second analysis, we operationalize the dependent variable in three different ways to have meaningful variability along two dimensions, namely issue specificity and cost ambiguity. That is, our theory suggests worse economic circumstances are linked to lower support for environmental protection among more left-wing interviewees irrespective of whether the issue framing involves other (or even conflicting) matters, e.g. economic growth. Against this background, the first CES dependent variable asks respondents about their opinion on acting against climate change on a 5-point scale, with higher values signifying that immediate action is necessary. Second, climate change is not the only pressing environmental problem, even in post-industrial societies Egan *et al.* (2022) and, hence, we use a broader survey item that is based on ‘protecting the environment’ in general. The corresponding variable assumes five possible values, with higher values standing for a stronger preference for environmental protection over job availability.² Third, we turn to a binary variable on what people think about increased fuel efficiency. This item captures public opinion on a specific and cost-ambiguous environmental policy, with a value of 1 representing support for regulations implementing higher fuel efficiency (0 otherwise).

Again, we use OLS regression and include fixed effects for CES waves and US states. The core explanatory variables including the multiplicative specification *Leftist Ideology* \times *Income* as well as the control variables mirror those in the GLES analysis. The only exception is *Non-Whites*, which captures

Table 2. Environmental protection in good and bad economic circumstances, CES data.

	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Leftist Ideology	0.363*** (0.006)	0.339*** (0.006)	0.493*** (0.005)	0.465*** (0.005)	0.073*** (0.002)	0.067*** (0.002)
Income	−0.070*** (0.003)	−0.076*** (0.003)	−0.079*** (0.002)	−0.079*** (0.002)	−0.035*** (0.001)	−0.034*** (0.001)
Leftist Ideology \times Income	0.025*** (0.001)	0.025*** (0.001)	0.024*** (0.001)	0.024*** (0.001)	0.010*** (0.000)	0.010*** (0.000)
Female		0.009 (0.006)		−0.137*** (0.005)		−0.048*** (0.002)
Age		−0.001*** (0.000)		−0.001*** (0.000)		0.000** (0.000)
Education		0.046*** (0.002)		0.033*** (0.002)		0.006*** (0.001)
Religion		−0.196*** (0.008)		−0.119*** (0.006)		−0.021*** (0.002)
Non-Whites		−0.024** (0.008)		0.116*** (0.007)		0.003 (0.003)
Constant	2.329*** (0.033)	2.335*** (0.035)	2.426*** (0.030)	2.470*** (0.032)	0.525*** (0.011)	0.545*** (0.012)
Observations	137,303	137,253	133,952	133,943	197,427	175,906
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Wave Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Robust standard errors clustered on individual in parentheses.

differences in public opinion across racial segments in US society. The specific survey items and variable operationalizations can be found in the appendix. We present six models in Table 2: Models 6–7 are based on the question about fighting climate change, Models 8–9 focus on environmental protection rather than economic growth as a priority, and Models 10–11 use the fuel-efficiency data as dependent variable.³ We include (Models 7, 9, and 11) or omit (Models 6, 8, and 10) the control variables.

Although employing different data from a different national context than in the GLES analysis and relying on three different operationalizations for the dependent variable, we also find evidence supporting our argument. The statistically significant multiplicative term emphasizes that the marginal effect of political orientation on support for environmental protection is moderated by personal economic circumstances. And in light of the positive sign of *Leftist Ideology* \times *Income*, the level of support for acting against climate change (Models 6–7), protecting the environment even at the expense of economic growth (Models 8–9), and more efficient fuels (Models 10–11) is higher among left-leaning individuals who benefit from good economic circumstances compared to left-wing respondents living in worse economic circumstances. In terms of the substantive effects, we estimate for Model 7 that one-unit increases in leftist political orientation induce a rise of about 0.36 points on supporting climate action. At the maximum of *Income*, this effect is calculated at 0.64 unit increases. We obtain similar substantive effects for the other models in Table 2 in Model 9 (protecting environment at expense of economic growth), the change in marginal-effect estimates of *Leftist Ideology* when moving from the lowest to the highest personal income level is about 0.26; in Model 11 (fuel efficiency, linear probability model), the likelihood to support higher fuel efficiency goes up for left-leaning respondents by 11% points when economic circumstances change from the worst to the best possible scenario.

Analysis 3: Eurobarometer (EB)

In our last analysis, we move beyond the study of single countries as we use Eurobarometer (EB) data (European Commission 2002), which allow us to further and more comprehensively assess the external validity of our main result. The EB data are based on face-to-face interviews conducted with new samples with about a thousand respondents per country for each new round. We identified one relevant survey item for our dependent variable that pertains to environmental salience and maximizes the coverage across countries (32) and years (2002–2020).⁴ For this variable, respondents were asked whether they regard environmental issues as one of the most important issues facing their country. Perception precedes support for action and, importantly,

dissonance reduction in psychology suggests that a decrease in the latter could in turn undermine the former (Scruggs and Benegal 2012). Hence, we also expect personal economic conditions to moderate the influence of political orientation on people's perceived salience of environmental issues.

Our empirical strategy for the EB analysis differs from above as we now aggregate individual survey responses to the country-year level. Hence, we change the unit of analysis. While our argument centers on 'personal economic circumstances,' the mechanism we postulate should apply at the more aggregated national level as well. To this end, if identifying results that mirror our earlier findings at the individual level, we confidently determine that the patterns on economic circumstances and political orientation we argue for are not driven by the unit of analysis chosen (see Mildenberger and Leiserowitz 2017). The resulting dependent variable theoretically ranges between 0 (0% of the population sees the environment as salient) and 1 (100% of the population sees the environment as salient). The political orientation variable is also taken from the EB and aggregated to the country-year level: the EB provides an item on respondents' left-right self-placement on a scale from 1 (left) to 10 (right). We calculate the inverse of this variable so that higher values pertain to more leftist views and take the mean value across individuals per country-year. For a country's economic circumstances, we take the World Bank's data on GDP per capita (logged). As before, central to evaluating our argument is the multiplicative term between these two items. The set of control variables differs from the previous analyses due to the different unit of analysis: to this end, we mainly follow Kalatzi Pantera *et al.* (2022) who use the same dependent variable on environmental salience and control for disaster fatalities, regime type, population, and the share of seats of environmental parties (Greens) in a country's parliament. The appendix provides details about these variables' data sources. Finally, there are a lagged dependent variable, fixed effects for years, and fixed effects for countries. Model 12 focuses on the multiplicative specification only, but we add the control variables in Model 13. Both models are based on OLS regression.

According to Table 3, we find evidence for a positively signed and statistically significant interaction. Hence, also the EB analysis, which assumes a comparative, cross-country perspective, lends support to our theory: more leftist views, even when aggregated at the country level, are more strongly linked to perceiving the environment as salient when general economic circumstances as measured by GDP per capita are good. In substantive terms, the effect of *Leftist Ideology* at the lowest country-income level is statistically insignificant and even negative; however, at the maximum of income, we estimate a marginal effect of *Leftist Ideology* on *Environmental*

Table 3. Environmental protection in good and bad economic circumstances, EB data.

	Model 12	Model 13
Lagged Dependent Variable	0.721*** (0.084)	0.664*** (0.076)
Leftist Ideology	−0.173* (0.084)	−0.153+ (0.084)
GDP per capita (ln)	−0.108* (0.053)	−0.084 (0.056)
Leftist Ideology × GDP per capita (ln)	0.018* (0.009)	0.016+ (0.009)
Disaster Fatalities (ln)		0.002 (0.001)
Population (ln)		0.048 (0.056)
Greens in Parliament		0.003* (0.002)
Democracy		0.003 (0.005)
Constant	1.010* (0.511)	−0.122 (1.333)
Observations	514	514
Country Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes

+p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001 Robust standard errors clustered on country in parentheses.

Salience of about 0.04 units. The effect is statistically significant at the 5% level.

Conclusion

There is a broad literature on environmental public opinion and its determinants (see, e.g. Bernauer 2013, Egan and Mullin 2017, Harring and Sohlberg 2017, Davidovic *et al.* 2019, Birch 2020, Guber *et al.* 2020). Especially in (advanced) democracies, public support is essential for the effective implementation of policies (see, e.g. Vandeweerdt *et al.* 2015, Anderson *et al.* 2017, Bromley-Trujillo and Poe 2020, Bakaki *et al.* 2020, Schaffer *et al.* 2022). With this research, we sought to shed light on the scope conditions of the impact of political orientation on public support for environmental protection. We focus on personal economic circumstances and argue that economic hardship can lower the positive influence of left-wing political orientation on ‘green’ public opinion. Our main analyses presented above are based on three different data sets (GLES, CES, and EB) covering different country contexts and units of analysis. The corresponding findings and additional estimations in the appendix provide strong and robust evidence in favor of our claim: leftist individuals do have ‘greener’ attitudes, but less so when their economic circumstances are not that good.

To this end, we hope to have strengthened the claim that the prevalence of self-interest in shaping people's attitudes toward interventionist policies depends on the perceived policy cost at the individual level by explicitly considering the counteractive effect of political ideology – an aspect that existing scholarship may not yet have fully considered (Ballard-Rosa *et al.* 2017, Haselswerdt 2020, Marble and Nall 2021). Moreover, in contrast to previous work (e.g. Harring and Sohlberg 2017, Davidovic *et al.* 2019), our individual-level analyses (GLES and CES) allow us to better relate the conditional relationship we disclose to its underlying behavioral mechanism.

Several avenues for future work might emerge from this article. First, although the findings based on analyzing three different data sets (GLES, CES, and EB) point in the same direction, recall that the measures we focus on as dependent variables are different across countries and regions. For example, the EB analysis concentrates on issue salience, which may be more prone to temporal variation than concern over environmental protection (see Sisco *et al.* 2023). Hence, some caution is necessary for direct applicability and comparison across contexts. Second, it is our hope that this research encourages further work to extend our design to more diverse contexts where environmental protection might have a different meaning to citizens, where ideology is of less importance to people's attitudes, and where the material concern underlying public support for environmental protection is more nuanced (see Fairbrother 2013, Lewis *et al.* 2019, Egan *et al.* 2022).

Notes

1. We define individuals' political orientation along the traditional left-right scale in a one-dimensional (economic) policy space. The left-right dimension is arguably the most important common vocabulary for voters relating to the salient issues of governments' role in the economy (Schleiter *et al.* 2021) and, hence, ideal for our study of environmental attitudes. Note that individual political views are a strong determinant of environmental support only in more developed democracies (Lewis *et al.* 2019). As such, our argument and the empirical findings apply to this set of cases.
2. To this end, this item is similar to the GLES variable we analyze above, although the CES item is more general due to its focus on environmental protection as such.
3. Due to the binary nature of the dependent variable here, Models 10–11 are linear probability models.
4. Also note that according to, e.g. Schleiter *et al.* (2021), ideological structuring underlying the left-right scale is similar across Western Europe, but might be different in Central and Eastern European countries. The same might apply to environmental attitudes and the perception of environmental problems

(McCright *et al.* 2016, Fisher *et al.* 2022). As a result, the EB analysis, which comprises data from Western, Central, and Eastern Europe adds to extending the geographical scope of our main finding. We also return to this issue in the appendix.

Disclosure statement

No potential conflict of interest was reported by the authors.

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