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Political ideology and views about climate change in the European Union

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ABSTRACT

There is a strong political divide on climate change in the US general public, with Liberals and Democrats expressing greater belief in and concern about climate change than Conservatives and Republicans. Recent studies find a similar though less pronounced divide in other countries. Its leadership in international climate policy making warrants extending this line of research to the European Union (EU). The extent of a left–right ideological divide on climate change views is examined via Eurobarometer survey data on the publics of 25 EU countries before the 2008 global financial crisis, the 2009 ‘climategate’ controversy and COP-15 in Copenhagen, and an increase in organized climate change denial campaigns. Citizens on the left consistently reported stronger belief in climate change and support for action to mitigate it than did citizens on the right in 14 Western European countries. There was no such ideological divide in 11 former Communist countries, likely due to the low political salience of climate change and the differing meaning of left–right identification in these countries.

KEYWORDS Climate change; political ideology; European Union; cross-national analyses

Introduction

Over the last two decades, the issue of anthropogenic climate change¹ has been thoroughly politicized in the United States, in large part due to the climate change denial activism of the American Conservative movement and its allies (McCright and Dunlap 2000, 2003, 2010, Oreskes and Conway 2010, Dunlap and McCright 2011, 2015, Powell 2011). Several recent studies document how politically polarized the US general public has become on this issue in recent years (Dunlap and McCright 2008, Hamilton and Keim 2009, Malka *et al.* 2009, Hamilton 2011, McCright and Dunlap 2011, Hamilton and Saito 2015). Indeed, such strong political polarization (mainly due to belief in and concern about climate change

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plummeting among Conservatives and Republicans over the past decade)² has contributed to the United States' outlier status among advanced industrial countries in comparative studies of public opinion on climate change (e.g., Brechin 2010, Leiserowitz 2008, Leonhardt 2014).

Yet, climate change has also become more politicized in several other countries around the world, including Australia, Canada, and the UK (Carter 2014, Rootes 2014, Young and Coutinho 2014, Carter and Clements 2015), at least in part because of organized campaigns in those nations to deny its significance - see Hamilton (2007) and McKewon (2012) on Australia, Hoggan and Littlemore (2009) and Greenberg *et al.* (2011) on Canada, and Lack (2013) and Gavin and Marshall (2011) on the UK. Not surprisingly, several recent studies document political divides on climate change views within the general publics of Australia (Tranter 2011, 2013), Canada (Lachapelle *et al.* 2012), the UK (Poortinga *et al.* 2011, Whitmarsh 2011, Clements 2012a, 2012b, Carter and Clements 2015), as well as a range of other countries (Tjernström and Tietenberg 2008, Kvaløy *et al.* 2012, Tranter and Booth 2015).

In this study, we examine the extent to which the well-established political divide in public opinion on climate change in the United States - whereby Conservatives and Republicans report lower levels of belief in and concern about climate change than do Liberals and Democrats - can be discerned in other nations (besides the UK, Canada, and Australia). Given its leadership in international climate policy making (Selin and VanDeveer 2012), the European Union (EU) is a vital region for extending this research. Analyzing data from the 2008 Eurobarometer 69.2 survey, we examine whether there was a left-right ideological divide on climate change views within the general publics of EU countries before the 2008 global financial crisis, the late 2009 'climategate' controversy and contentious COP-15, and related increases in organized denial and political conflict (Christoff 2010, Pooley 2010, Holliman 2012) - factors that likely have influenced public views of climate change and environmental issues more broadly (Capstick *et al.* 2015, Chaisty and Whitefield 2015, Rohrschneider and Miles 2015).

This survey, which was administered in all EU countries, operationalized political ideology along a left-right continuum (similar to the Liberal-Conservative continuum common in US studies) and included a substantial climate change module. Our analyses will establish a baseline of results with which to compare more recent EU data to examine whether the heightened politicization of climate change in recent years, at least in some European countries (for the UK, see Carter 2014, Carter and Clements 2015), has led to a wider left-right ideological divide in the general public.

In the next section, we briefly review those studies that examine the relationship between political orientation and climate change views in the United States and beyond. To contextualize our study, we then describe key differences between former Communist countries and Western European member states of the EU.

The relationship between political orientation and climate change views

Recent research on climate change views in the United States finds a strong effect of political orientation, whereby Liberals and Democrats report beliefs about climate change more consistent with mainstream climate science and express greater personal concern about global warming than do their Conservative and Republican counterparts (e.g., Hamilton and Keim 2009, Malka *et al.* 2009, Borick and Rabe 2010, Hamilton 2011, McCright and Dunlap 2011, Hamilton and Saito 2015). This relationship persists after controlling for the effects of relevant social and demographic variables that also affect climate change views. Indeed, the effect of political orientation on climate change views is so strong that political orientation moderates the relationship between educational attainment and views on climate change: the effect of educational attainment is positively associated with views on climate change consistent with the scientific consensus for Liberals and Democrats, but the association is weaker or negative for Conservatives and Republicans (e.g., Hamilton and Keim 2009, Hamilton 2011, McCright and Dunlap 2011).

Eleven recent studies also document a political divide on climate change in countries outside of the United States. Eight of these studies, which typically focus on respondents' political party identification, analyze data from the general public of a single country: Australia (Tranter 2011, 2013), Canada (Lachapelle *et al.* 2012),³ and the UK (Poortinga *et al.* 2011, Whitmarsh 2011, Clements 2012a, 2012b, Carter and Clements 2015). The remaining three studies (Tjernström and Tietenberg 2008, Kvaløy *et al.* 2012, Tranter and Booth 2015), which focus on respondents' left-right ideology, perform cross-national analyses on data from a wide range of countries, but are limited by their use of single-item indicators of climate change views. To our knowledge, these 11 studies are the only non-US examinations of this phenomenon to date.

Examining nationally representative data from the 2007 Australian Survey of Social Attitudes (AuSSA) and the 2007 Australian Election Study (AES), Tranter (2011) examines the influence of political party identification on climate change views. With the AuSSA data, Tranter (2011) finds that respondents self-identifying with the Labor Party or the Greens express greater willingness to pay more for renewable energy to

reduce global warming than do those self-identifying with the coalition (parties on the center-right). With the AES data, Tranter finds that adherents to the Labor Party or the Greens are more likely to believe that global warming will pose a serious threat in their lifetime than are coalition supporters, and that Labor supporters are more likely to believe that Australia should participate in the Kyoto Protocol than are coalition supporters.

In another study, Tranter (2013) examines similar data from the 2010 AES and 2011 AuSSA. The 2010 AES data reveal a pattern identical to that found with the 2007 AES data. Adherents to the Labor Party or the Greens are more likely to believe that global warming will pose a serious threat in their lifetime than are coalition supporters. Even when accounting for party identification, Tranter also finds that a measure of left–right political ideology produces a similar effect, with left-identifying Australians more concerned about global warming than their right-identifying counterparts. With the AuSSA, Tranter finds that adherents to the Labor Party or the Greens are more likely to perceive climate change as dangerous and to support a carbon tax than are coalition supporters.

Analyzing data from nationally representative surveys of Britain in 2009, Clements (2012a) examines the influence of political party identification and left–right political ideology on climate change views. Using data from Eurobarometer 71.1, he finds that right-identifying British respondents report greater skepticism about climate change than their left-identifying counterparts. Using data from the 2009 British Social Attitudes Survey, he finds that political ideology and party identification are both associated with concern about the effects of transportation on climate change; Right-wing beliefs and support for the Conservative Party are associated with lower levels of concern. In a separate study, Clements (2012b), examining data from the 2008–2009 nationally representative British Household Panel Survey, finds that Conservative Party supporters are less likely to perceive negative impacts of climate change than are Liberal Democrat supporters.

In their detailed study of climate change skepticism among the British public, Poortinga *et al.* (2011), using 2010 interview data from a nationally representative sample, find political affiliation to be one of the strongest predictors. They utilize two indicators of climate change skepticism: a single item that indicates whether respondents think the world's climate is changing, and a four-item climate change skepticism scale. Poortinga *et al.* find that respondents self-identifying with the Conservative Party express greater levels of climate change skepticism than do undecided respondents, while those expressing an intention to vote for Labour, Liberal Democrats, or other parties (e.g., Green Party, Scottish Nationalists, Welsh Nationalists) are not significantly different from the undecideds.

Similarly, using representative data from an autumn 2008 survey of residents of two English counties (Hampshire and Norfolk), Whitmarsh (2011) examines how socio-demographic characteristics, knowledge, and values influence respondents' climate change skepticism. Her skepticism scale consists of 12 items dealing with the causes and reality of climate change, the quality of the evidence for climate change, and the media coverage of climate change. In multivariate regression models, Whitmarsh finds that an intention to vote for the Conservative Party has a strong positive effect on the skepticism scale. Thus, respondents with right-of-center political views are significantly more skeptical of the reality and seriousness of climate change than are those who are affiliated with Labour, Liberal Democrats, Greens, and others.

Unlike the above, in-depth analyses of political cleavages, a final UK study, as well as one in Canada, simply reports frequency distributions in responses to questions about climate change across the major political parties in each nation. We include them because the former provides longitudinal data on partisan differences, while the latter is the sole source of data on such differences in Canada. Carter and Clements (2015) report results from YouGov surveys covering 2008–2014 that show much higher levels of skepticism toward human-caused global warming among those who identify with the Conservative Party than among those identifying with either Labour or Liberal Democrats. Skepticism rose from early 2008 to late 2010, as expected given the growing politicization of climate change during that period, then declined (albeit not monotonically) through 2014 for adherents of all parties – but with Conservatives remaining the most skeptical. In an early 2011 national survey in Canada, Lachapelle *et al.* (2012) find that adherents of the Conservative Party are noticeably less likely to believe there is 'solid evidence' of global warming than are those who identify with the Liberal, New Democrat, Bloc Québécois, or Green parties, with the magnitudes approaching the Republican–Democratic divide in their comparative US survey from late 2010.

We now turn to the three multinational studies. First, using data from the International Social Survey Program's 2000 environment survey administered in 26 countries, Tjernström and Tietenberg (2008) analyze the relationship between liberal political views (a dummy-coded variable created from a left–right scale) and an item measuring perceived dangerousness of global warming for the environment. In a multivariate probit model including all of the pooled data, they find that a liberal political view increases the probability of perceived dangerousness of climate change.

Second, employing data from the 2005–2009 World Values Survey administered in 47 countries, Kvaløy *et al.* (2012) examine the relationship between left–right political ideology (on a 1–10 scale) and an item measuring perceived seriousness of global warming for the world as a whole. The

authors create a series of political ideology dummy variables (with ‘center’ as the reference category) to utilize in their models: extreme left, moderate left, moderate right, and extreme right. In their multi-level random-intercept regression model, they find that respondents on the extreme left perceive global warming to be more serious than do those in the political center, while respondents on the moderate right and extreme right perceive global warming to be less serious than do those in the political center.

Third, using data from 14 nations covered in the 2010–2011 International Social Survey Program’s environmental survey, Tranter and Booth (2015) create a single measure of climate skepticism by combining an item asking respondents to rate the level of danger posed by a rise in the world’s temperature due to climate change with another on whether ‘environmental issues are exaggerated.’⁴ They then conduct binomial logit regressions in each nation, employing 14 predictor variables, including one that measures the degree to which respondents’ party identification falls on a left–right continuum created for each nation. In all nations, those identifying with a party on the left are less skeptical than are their counterparts, significantly so in seven nations: Australia, Canada, Denmark, New Zealand, Norway, the UK, and the USA. In a subsequent multi-level binary regression analysis, the authors find that party identification is a significant predictor of individual-level skepticism after country-level variation is controlled.

The above studies consistently find that a political divide on climate change, which is quite large in the United States, is also visible in the UK, Australia, Canada, and a number of other nations. We will examine shortly whether such a political divide can be discerned within the EU.

The EU context

The EU has been far more progressive on climate change policy than has the US (Selin and VanDeveer 2012). Further, compared with the United States, organized denial campaigns have been much less visible, and criticism of climate science and policy by political elites, industry, and citizens alike has been more muted in the EU. Still, acknowledging the reality and seriousness of climate change and advocating action to deal with the global problem pose a greater challenge to the right’s values (e.g., defending private property rights, reducing governmental intervention into markets, protecting national sovereignty) than it does to the left’s values. Given this and the results of the studies reviewed above, it seems reasonable to expect that for Western European countries: *citizens on the right are less likely than those on the left to believe that anthropogenic climate change is occurring, perceive climate change to be a serious problem, believe we should deal with*

climate change, express personal willingness to pay to deal with climate change, and support policies to reduce greenhouse gas emissions.

Yet, for the following two reasons, *this ideological divide on climate change views is not likely to manifest itself in former Communist countries.* First, climate change (Lorenzoni and Pidgeon 2006, Schreurs *et al.* 2009) and the environment more generally (DeBardeleben 1997, Haller and Hadler 2008, Marquart-Pyatt 2012) have been less salient political issues in the former Communist countries of Eastern Europe than they have in Western European countries, especially since the breakup of the Soviet Union. Political mobilization is less likely to occur on issues of low salience, and thus we expect lower levels of concern about climate change among Eastern European citizens. Two recent works document such East–West differences in citizens’ attitudes toward the environment (Chaisty and Whitefield 2015) and the extent to which these views are in sync with party stances (Rohrschneider and Miles 2015), and thus support the view that the former Communist countries are distinctive.

Second, the political histories of former Communist countries have problematized left–right identification in those countries. Within Western Europe, the left has historically been associated with social change and government efforts to promote greater political, social, and economic equality, while the right has opposed change and supported a more hierarchical social, political, and economic order (Lipset *et al.* 1954). Such distinctions are either much weaker or have disappeared entirely in former Communist countries (Van Hiel and Kossowska 2007, Tavits and Letki 2009). Indeed, the left in former Communist countries is not identified with social change and equality (Markowski 1997, Thorisdottir *et al.* 2007), and the standard relationship between right-wing orientation and traditionalism and acceptance of inequality is significantly weaker in former Communist countries than it is in Western Europe (Thorisdottir *et al.* 2007).

The study

We utilize publicly available data from the Eurobarometer 69.2 survey, titled *National and European Identity, European Elections, European Values, and Climate Change*, which was administered in the 27 EU member countries from March 25 to May 4, 2008. As the title suggests, the survey includes a module of several climate change items that measure respondents’ beliefs, attitudes, reported behaviors, willingness to pay, and support for policy proposals vis-à-vis climate change (see Eurobarometer 2009 for descriptive statistics). Surveys were administered via face-to-face interviews.

The target population was citizens of the EU aged 15 years and older residing in the 27 EU member countries.⁵ Respondents were drawn through multistage national probability samples. Given our interest in comparing Western European nations and former Communist countries and consistent with previous research, we exclude the two small island nations of Malta and Cyprus from our analyses due to their distinctive cultural and historical legacies. That is, neither neatly falls into our two groups of interest: Western European and former Communist countries. With the exception of Luxembourg ($N = 501$), the sample sizes for 24 of the 25 EU member countries in our study ranged between 1000 and approximately 1500. Further, we disaggregated Germany and included all West German cases in the Western European subgroup. This left us with 14 Western European countries ($N = 13,994$) and 11 former Communist countries ($N = 11,156$).⁶

Table 1 provides the description, coding, mean, and standard deviation for each of the variables we use in the analyses. We employ five indicators of climate change views: two single-item variables and three composite indexes. These items are similar to ones routinely used in the studies reviewed earlier. They measure crucial views about the reality, seriousness of, and need to take action on climate change: the extent to

Table 1. Coding, mean, and standard deviation for variables in the study.

Variable	Original items*	Coding	Mean	SD
Acceptance of anthropogenic climate change index	v720, v721, v722	1 (totally agree) to 4 (totally disagree)	2.86	0.65
Perceived seriousness of climate change	v707, v708	1 (not a serious problem at all) to 10 (extremely serious)	7.84	2.04
Beliefs about fighting climate change index	v712, v713, v714, v715	1 (doing too much to fight climate change) to 3 (not doing enough to fight climate change)	2.74	0.36
Personal willingness to pay to fight climate change	v757	0 (0% more) to 7 (more than 50%)	1.40	1.53
Support for EU greenhouse gas emission reduction policies index	v758, v759, v760	1 (too ambitious) to 3 (too modest)	2.01	0.52
Political ideology	v761	1 (Right) to 10 (Left)	5.56	2.01
Sex	v767	0 (male) to 1 (female)	0.52	0.50
Age	v768	15 to 98 (number in actual years)	45.29	18.37
Full-time education	v766	0 (no full-time education) to 9 (ended full-time education at age 22 or older)	5.22	2.62
Perceived understanding index	v709, v710, v711	1 (not at all informed) to 4 (very well informed)	2.55	0.72
Questionnaire version	v892	0 (version with 'global warming') to 1 (version with 'climate change')	0.50	0.50

Means and standard deviations for variables are for the full sample of 25 EU countries ($N = 25,150$) with one exception. The mean and standard deviation for 'personal willingness to pay to fight climate change' are based on 18,584 valid cases. Data are weighted by the post-stratification data weight.

*Variable names are taken from Papacostas (2008).

which people believe that anthropogenic climate change is occurring, perceive it to be a serious problem, believe we should deal with it, express a willingness to pay to deal with it, and support policies to reduce greenhouse gas emissions. *In each case, a higher value represents a stronger belief in anthropogenic climate change or willingness to support actions to deal with it.*

Our first indicator, the ‘acceptance of anthropogenic climate change index,’ is a composite measure created from three survey items: ‘For each of the following statements, please tell me whether you totally agree, tend to agree, tend to disagree, or totally disagree: (a) Climate change is an unstoppable process, we cannot do anything about it; (b) The seriousness of climate change has been exaggerated; and (c) Emission of CO₂ (Carbon dioxide) has only a marginal impact on climate change.’ We recoded cases with missing values to the mid-point (2.5) of the Likert scale. We employed principal component analysis (PCA) and Cronbach’s alpha reliability test to determine the appropriateness of combining these items into a single measure of acceptance of anthropogenic climate change. The PCA factor loadings for the items range between 0.74 and 0.79, and Cronbach’s alpha is 0.64, justifying combining them into a single measure. We therefore calculated a mean score for each respondent across the three items as our index of acceptance of anthropogenic climate change.

The second indicator, ‘perceived seriousness of climate change,’ is a single item based on this question asked at the beginning of the climate change module: ‘How serious a problem do you think global warming/ climate change is at this moment? Please use a scale from 1 to 10; 1 would mean that it is not a serious problem at all, and 10 would mean that it is extremely serious.’⁷ We recoded cases with missing values to the sample mean.⁸

Our third indicator, the ‘beliefs about fighting climate change index,’ is a composite measure created from four survey items: ‘In your opinion, are each of the following currently doing too much, doing about the right amount, or not doing enough to fight climate change?: (a) The [national] government; (b) The European Union; (c) Corporations and industry; and (d) Citizens themselves.’ We recoded cases with missing values to the sample mean. Given that the PCA factor loadings range between 0.73 and 0.83, and Cronbach’s alpha is 0.77, we calculated a mean score for each respondent across the four items, as with our index of beliefs about fighting climate change.

Our fourth indicator, ‘personal willingness to pay to fight climate change,’ comes from the survey questions: ‘Personally, how much would you be prepared to pay more for energy produced from sources that emit

less greenhouse gases in order to fight the climate change? On average, how much, in percent, would you be ready to pay more?' To guard against the influence of outlier cases, we utilized an ordinal item created by the Eurobarometer that grouped responses into the following categories: 0%, 1–5%, 6–10%, 11–20%, 21–30%, 31–40%, 41–50%, and more than 50%. Ultimately, 6915 cases had missing values, and we did not use these cases in our analyses of this variable.⁹

Our fifth indicator, 'support for EU greenhouse gas emission reduction policies index,' is a composite measure created from three survey questions: 'The European Union has the objective of reducing its greenhouse gas emissions by at least 20% by 2020 compared to 1990. Thinking about this objective, would you say that it is too ambitious, about right or too modest?'; 'In order to limit the impact of climate change, the European Union is also proposing an international agreement which would commit the major world economies to a target of 30% reduction of greenhouse gas emissions by 2020 compared to 1990. Thinking about this objective, would you say that it is too ambitious, about right or too modest?'; and 'The European Union has the objective of increasing the share of renewable energy to 20% by 2020. Thinking about this objective, would you say that it is too ambitious, about right or too modest?' We recoded cases with missing values to the sample mean. Since the PCA factor loadings range between 0.85 and 0.89, and Cronbach's alpha is 0.84, we calculated a mean score for each respondent across the three items as our index of support for EU greenhouse gas reduction policies.

In addition, because self-assessed understanding of climate change has been found in past studies to be related to climate change views (Hamilton 2011, McCright and Dunlap 2011), we employed a 'perceived understanding index' as a control variable. We created this composite measure from three survey items: 'Personally, do you think that you are very well informed, fairly well informed, not very well informed, not at all informed about: (a) The different causes of climate change; (b) The different consequences of climate change; (c) Ways in which we can fight climate change.' We recoded these items so that greater values signify greater perceived understanding, and we recoded cases with missing values to the sample mean. The PCA factor loadings range between 0.91 and 0.94, and Cronbach's alpha is 0.92, and we therefore calculated a mean score for each respondent across the three items as our index of perceived understanding.

To assess respondents' left–right 'political ideology,' the Eurobarometer used the following survey question: 'In political matters people talk of "the left" and "the right." How would you place your views on this scale?' Respondents were then shown a card with a scale of 1–10, where 1 stood for 'left' and 10 stood for 'right.' We use this item as our measure

of left–right political ideology – recoded so that smaller numerals denote a right orientation and larger ones a left orientation. We recoded cases with missing values to the median category.¹⁰

Following recent research on the correlates of public concern for the environment (Marquart-Pyatt 2007, 2008, 2012), we also employ three demographic variables as statistical controls. ‘Sex’ of the respondent, which was initially recorded by the interviewer, is coded 0 for males and 1 for females. ‘Age’ is recorded as the respondent’s age at the time of the survey, in response to the following question: ‘How old are you?’. ‘Full-time education’ is a 10-category measure created by the Eurobarometer that simplifies respondents’ answers to the following survey question: ‘How old were you when you stopped full-time education?’

We ran two sets of pooled multivariate OLS regression models¹¹ for each of our five dependent variables to examine the effect of left–right political ideology on climate change views: one with data from 14 Western European countries and one with data from 11 former Communist countries.¹² In each of these models, we utilized the optional ‘post-stratification weight’ suggested by the Eurobarometer. We report standardized coefficients in the remaining tables to facilitate comparison across countries and models.

We begin by discussing the performance of the left–right ideology variable, first in the Western European subgroup and then in the former Communist subgroup. We then discuss the performance of our control variables across both tables. Consistent with much social science research predictive of environmental concern with socio-demographic variables, the adjusted R^2 values across the models are relatively small (Marquart-Pyatt 2007, 2008).

Results

Table 2 presents the results for our pooled regression analyses with data from 14 Western European countries and 11 former Communist countries, respectively. Consistent with our expectations, there is a significant ideological divide in citizens’ climate change views in Western European countries, reflected in all five measures. Specifically, citizens on the right are less likely than those on the left to believe that anthropogenic climate change is occurring, perceive climate change to be a serious problem, believe we should deal with climate change, express a personal willingness to pay to deal with climate change, and support policies to reduce greenhouse gas emissions. This weaker belief in the reality and seriousness of climate change and weaker support for dealing with this global problem among citizens on the right is likely due to these individuals perceiving that dealing with climate change will limit private property

Table 2. OLS regression predicting climate change views in 14 Western European countries and 11 former Communist countries.

	Acceptance of anthropogenic climate change index			Perceived seriousness of climate change			Beliefs about fighting climate change index			Personal willingness to pay to fight climate change			Support for EU greenhouse gas emissions reduction policies index		
	Western European countries	Former Communist countries		Western European countries	Former Communist countries		Western European countries	Former Communist countries		Western European countries	Former Communist countries		Western European countries	Former Communist countries	
Political ideology	0.08***	-0.01		0.09***	-0.01		0.08***	-0.00		0.07***	-0.03**		0.08***	0.01	
Sex	0.08***	0.06***		0.07***	0.03***		0.07***	0.02		-0.01	-0.00		0.02*	0.04***	
Age	-0.03***	0.03**		-0.05***	-0.04***		-0.02	0.02*		-0.10***	-0.12***		-0.04***	-0.01	
Full-time education	0.05***	-0.01		0.10***	0.07***		0.08***	0.03***		0.13***	0.13***		0.06***	0.01	
Perceived understanding	0.13***	0.16***		0.11***	0.17***		-0.09***	-0.09***		0.14***	0.19***		0.02*	-0.02	
Adjusted R ²	0.07	0.06		0.03	0.09		0.05	0.04		0.15	0.11		0.06	0.03	
N	13,994	11,156		13,994	11,156		13,994	11,156		10,558	8,026		13,994	11,156	

Entries are standardized coefficients. Reference category country for Western European countries subsample is West Germany. Reference category county for former Communist countries subsample is Poland. Country dummy variables in each subsample are not reported.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

rights, increase governmental intervention into markets, and further erode national sovereignty.

The effect of left–right ideology in Western Europe is considerably weaker than the effect of political ideology (and party identification) in the USA (see, e.g., McCright and Dunlap 2011), where climate change has been thoroughly politicized since the early 1990s (e.g., McCright and Dunlap 2000, 2003, 2010, Oreskes and Conway 2010, Dunlap and McCright 2015). Yet, in spring 2008 – before the 2008 global financial crisis, the late 2009 climategate controversy, and the resulting politicization of climate change in the EU – there was a robust, modestly sized left–right divide on climate change views in the general publics of Western European countries.

In contrast, as expected, there is no consistent ideological divide on climate change views in the general publics of the Eastern European countries. Indeed, political ideology has a statistically significant albeit weak effect in only one model. Perhaps unexpectedly, citizens on the right report greater personal willingness to pay to fight climate change than do citizens on the left in former Communist countries. Overall, the lack of a consistent ideological divide in the former Communist countries is likely due to the low political salience of climate change and the differing meaning of left–right identification in these countries.

We now turn to a brief discussion of the performance of the control variables across the two sets of models. In general, the effects of sex, age, education, and perceived understanding on the five outcome variables in the Western European subgroup are consistent with those found in earlier studies in the United States and beyond. Yet, the effects of these same variables are weaker and less consistent in the former Communist subgroup, something that has been found in research on general environmental concern (e.g., Marquart-Pyatt 2007, 2008, 2012).

Females (Hamilton and Keim 2009, McCright 2010, Kvaløy *et al.* 2012) and younger adults (Tjernström and Tietenberg 2008, Malka *et al.* 2009, Hamilton 2011, McCright and Dunlap 2011) report greater belief in the reality of climate change, greater perceived seriousness of climate change, and stronger support for taking action to deal with climate change than their male and older counterparts. Education (e.g., Tjernström and Tietenberg 2008, McCright 2010, Kvaløy *et al.* 2012) and perceived understanding of climate change (McCright and Dunlap 2011) are positively related to most climate change views, with one unexpected exception. In both Western European countries and former Communist countries, the more respondents claim to understand climate change, the more they believe that various groups across society are doing too much or the right amount (as opposed to not enough) to fight climate change.

Conclusion

Recent research finds a notable political cleavage on climate change views within the general publics of the United States, Australia, Canada, the UK, and a range of other countries around the world, with citizens on the left reporting greater belief in, concern about, and support for action on climate change than citizens on the right do. Our study examined the extent of a similar ideological divide on climate change views within the general publics of EU countries in spring 2008.

Our analyses found a consistent ideological divide on climate change views in Western European countries, where citizens on the right were less likely than those on the left were to believe that anthropogenic climate change is occurring, perceive climate change to be a serious problem, believe we should deal with climate change, express a personal willingness to pay to deal with climate change, and support policies to reduce greenhouse gas emissions. In contrast, such an ideological divide on climate change views was not found among the general publics of former Communist countries, presumably for the reasons outlined above. Our results thus reinforce those of Chaisty and Whitefield (2015), who report a similar pattern on general environmental attitudes, and attribute it to the 'post-Communist effect.'

Since the 2008 global financial crisis, and the 'Climategate' controversy and conflictual Copenhagen COP-15 of late 2009, climate change likely has become more politicized in the EU (Clements 2012a, Carter 2014, Carter and Clements 2015, Capstick *et al.* 2015) – though still not to the degree that it has been in the USA, Australia, or Canada. Our analyses establish a baseline of results with which to compare more recent EU data to examine whether this increased politicization of climate change has led to a wider left–right ideological divide in the general public.

Future research should examine arguments explaining variation in this left–right divide in citizens' climate change views over time. Of course, doing so requires that the EU data sets contain high-quality measures of the key variables that are central in such explanations (e.g., trust in the government, political party identification, strength of party support, sources of information on climate change). Such research should also investigate country-level characteristics that might help explain change in this left–right divide over time. Here, scholars might examine such factors as the activities and visibility of organized climate change denial groups, the mobilization of key political parties to deal with climate change, or the percentage of climate change news coverage in major media outlets that features skeptical views, among others.

Notes

1. We use climate change and global warming interchangeably, although the former technically connotes *all* forms of climatic variability introduced by the warming of Earth's surface and oceans resulting from the increased accumulation of greenhouse gases in the Earth's atmosphere stemming from human activities (see US National Research Council 2001).
2. Polarization denotes *increasing* divergence over time, and is thus a longitudinal phenomenon (McCright and Dunlap 2011).
3. Lachapelle *et al.* (2012) compare their Canadian results to those from a US survey.
4. We question the wisdom of combining the two, as the second item does not deal with climate change *per se*.
5. It also included the populations (15 and above) of national citizens of the three EU candidate countries (Croatia, Turkey, and Macedonia), citizens of the EU member countries residing in those three, and those in the Turkish Cypriot Community.
6. The 14 Western European countries are (with sample sizes in parentheses): Austria (1000), Belgium (1003), Denmark (1005), Finland (1004), France (1040), Ireland (1004), Italy (1022), Luxembourg (501), the Netherlands (1041), Portugal (1001), Spain (1033), Sweden (1007), the UK (1306), and West Germany (1027). The 11 former Communist countries are (with sample sizes in parentheses): Bulgaria (1000), Croatia (1000), Czech Republic (1014), Estonia (1006), Hungary (1000), Latvia (1008), Lithuania (1021), Poland (1000), Romania (1019), Slovak Republic (1085), and Slovenia (1003).
7. To investigate if citizens responded differently to 'global warming' versus 'climate change' in this survey question, the Eurobarometer 69.2 included an embedded experiment that varied these terms across alternate versions of the questionnaire. Eurobarometer (2009) concludes that the choice of terminology has no significant impact on responses to this item. In preliminary, country-specific analyses, we confirmed this lack of an effect. Indeed, a dummy variable for questionnaire version only had a statistically significant effect in one country. Czech Republic citizens responding to 'global warming' perceive the problem to be more serious than do those responding to 'climate change.' Because of this general lack of an effect in nearly all countries, we did not include this dummy variable in our analyses.
8. For almost all of the Eurobarometer items, <5% of cases had missing values (typically it was around 2–3%). We generally followed quite conventional strategies for dealing with cases with missing data. For instance, we either chose the sample mean or the mid-point in a Likert scale where appropriate. Running the same models without those cases with missing data produced substantively similar results. When an item had a larger percentage of cases with missing values (the 'personal willingness to pay to fight climate change' item), we simply dropped the cases with missing values from the analysis.
9. Eurobarometer 69.2 did not include an item asking respondents to report their personal or household income, so we cannot control for this variable in our analysis of willingness to pay.

10. Eurobarometer 69.2 did not include an item asking respondents to self-identify the political party with which they most closely associate.
11. Readers interested in examining the 25 separate *country-level* multivariate OLS regression models for each of our five dependent variables can find the results in Appendices A1–A5, respectively, in our online supplement (available at <http://www.aaronmccright.com/publications.html>). In each of these models (with two exceptions), we utilized the optional ‘post-stratification weight’ suggested by the Eurobarometer. When running models for the UK and Germany, we utilized the suggested ‘population size weight’ for each respective country. In preliminary analyses, we also controlled for the effects of respondents’ employment status and community size but found them to be inconsequential.
12. Pooling observations and including country dummy variables or fixed effects to account for heterogeneity is empirically appropriate, as it accounts for clustering but does not attempt to explain it (Steenbergen and Jones 2002, Marquart-Pyatt 2008). We selected this approach for pragmatic reasons. Conceptually, we are interested in examining whether the political divide on climate change views found in the US and possibly beyond also is found in the EU (though likely only in Western Europe). While we recognize the utility of a multi-level modeling approach, there are some instances when it is not warranted. Our empirical results did not provide strong justification for the use of a multi-level approach.

However, in response to reviewers’ suggestions, we ran a series of multi-level models to account for cross-national variation in key variables (e.g., carbon dioxide emissions per capita, gross domestic product per capita, percentage of total energy consumption from fossil fuels, and pump price for gasoline) that might further explain individual-level variation in climate change views. For each of our five outcome variables, the intraclass correlation coefficient (ICC) was quite low (<0.05), indicating such minimal between-nation variation that multi-level modeling is not necessary. That is, $<5\%$ of the total variation in each of the outcome variables is between-country variation; the rest is within-country variation across individuals. Further, inclusion of these nation-level predictors in the multi-level models did not explain away the effect of political ideology at the individual level – the primary focus of our study. Yet, since some readers may be interested in the results of these multi-level models, we briefly summarize the performance of the nation-level predictors here. (Appendix B in the online supplement describes in detail how we created these models and presents the full table of results.)

Results of the multi-level models show minimal effects for national-level factors in explaining differing mean levels of climate change views for four of the five measures. Only one model had three significant country-level predictors; status as a former Communist country, GDP per capita, and pump price for gasoline are each positively related to personal willingness to pay to fight climate change. CO₂ emissions are negatively related to the beliefs about fighting climate change index and the support for EU greenhouse gas emissions reduction policies index. The pump price for gasoline is positively related to the acceptance of anthropogenic climate change index and negatively related to perceived seriousness of climate change.

Even though there was a sprinkling of statistically significant effects across the dependent variables, introducing these national-level factors accounts for little to no variability in countries' mean levels of climate change views. Introduction of these national-level factors does not account for variability in countries' mean levels of either the acceptance of anthropogenic climate change index or perceived seriousness of climate change. Country characteristics do account for 6.5%, 10%, and 32.5% of variability in countries' mean levels of the support for EU greenhouse gas emission reduction policies index, the beliefs about fighting climate change index, and personal willingness to pay to fight climate change, respectively. Again, though, these effects are quite small. For instance, the explained variability in countries' mean levels of personal willingness to pay to fight climate change is only 32.5% of the approximately 5% of the total amount of variation in the outcome variable that is found across countries.

Disclosure statement

The authors report no potential conflict of interest.

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