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Political orientation, environmental values, and climate change beliefs and attitudes: An empirical cross country analysis

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ABSTRACT

Based on unique data from representative computer-based surveys among more than 3400 citizens, this paper empirically examines the determinants of several climate change beliefs and attitudes in three countries which are key players in international climate policy, namely the USA, Germany (as the largest country in the European Union), and China. Our econometric analysis implies that political orientation in the USA is by far more relevant for general climate change beliefs and beliefs in anthropogenic climate change than in Germany and China. Furthermore, US and German citizens with a conservative, but not green identification significantly less often support publicly financed climate policy, while US and German respondents with a social–green identification and Chinese respondents belonging to the Communist Party have a significantly higher willingness to pay a price premium for climate-friendly products. However, our econometric analysis overall reveals that environmental values, which are measured by a New Ecological Paradigm (NEP) scale, are the major factors for climate change beliefs and attitudes in all three countries and thus play an even more dominant role than political orientation. In addition, environmental values weaken the differences in several climate change beliefs and attitudes between a right-wing and a left-wing identification. These interaction effects between political orientation and the NEP scale are especially strong in the USA, only relevant for the support of publicly financed climate policy in Germany, and negligible in China. Our estimation results suggest alternative strategies such as specific communication campaigns in order to reduce the climate change skepticism in conservative and right-wing circles in the USA and to increase the support of climate policies among such population groups.

1. Introduction

According to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2013, summary for policymakers of the Working Group I), global warming is unequivocal and human activities are very likely to have contributed to the increase of global temperatures. In order to limit climate change, drastic reductions of greenhouse gas emissions (e.g. IPCC, 2014, summary for policymakers of the Working Group III contribution to the IPCC Fifth Assessment Report), but also efforts to adapt to consequences of unavoidable global warming are needed. However, international climate policy has been very ineffective so far. Previous international climate negotiations have shown that their success involves several challenges such as the translation of agreements into national regulations. But even national climate policies (such as the German energy transition, "Energiewende") including efforts to stimulate individual climate protection activities have not led to strong decreases in greenhouse gas emissions until now.

One major success factor of international or national climate policy is its support in the population (e.g. Lee et al., 2015). Therefore, insights into this support, but also into the willingness for voluntary climate protection activities are certainly valuable for decision makers to implement specific policies. This paper empirically examines the determinants of these two attitudes toward climate change. It focuses on the relevance of political orientation and environmental values. Another obvious determinant of the aforementioned attitudes is the general concern about climate change (e.g. Dienes, 2015). It is even plausible to think that the belief in anthropogenic climate change is a main condition for the support of policies for mitigation activities and for climate protection activities (see also Joireman et al., 2010). Similarly, a main condition for voluntary adaptation activities and for the support of policies for adaptation efforts is that citizens generally believe in the existence of climate change. Therefore, we also examine the determinants of these two dimensions of climate change beliefs.

The contribution of our study is threefold: First, on the basis of representative data at the individual level, this paper compares the relevance of political orientation and environmental values for the support of publicly financed climate policy, the willingness to pay a price premium for climate-friendly products, general climate change

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beliefs, and beliefs in anthropogenic climate change in a combined empirical analysis. In contrast, previous empirical studies often focus only on climate change beliefs and concerns (e.g. Tjernström and Tietenberg, 2008; McCright and Dunlap, 2011), only on the acceptance or support of climate policies (e.g. Hammar and Jagers, 2006; Dietz et al., 2007), or only on voluntary climate protection activities (e.g. Kahn, 2007; Kotchen and Moore, 2007). In contrast to most previous studies which use data from only one country,[1] our analysis refers to three countries, which are key players in international climate policy, namely the USA, Germany (as the largest country in the European Union), and China.

Second, our categorization of political orientation is multidimensional (see also the discussion in Unsworth and Fielding, 2014). Previous empirical studies, especially for the USA, mostly consider one-dimensional indicators for a right-wing or a left-wing identification, for example, by including variables for liberal versus conservative orientation (e.g. McCright and Dunlap, 2011; Dastrup et al., 2012) and/or variables for the identification with the Democratic versus the Republican Party (e.g. Hamilton, 2011; Egan and Mullin, 2012; Shao et al., 2014). However, it is possible that different dimensions of political orientation are interrelated, especially in Europe. In Germany, for example, a conservative identification is often combined with a liberal identification, in contrast to the often very sharp differences between liberals and conservatives in the USA. In order to better understand the different drivers of political orientation across countries for beliefs and attitudes toward climate change, we consider four variables for a conservative, liberal, social, and green orientation, respectively.

Third, we consider the interrelationship between two highly correlated components of worldviews (e.g. Attari et al., 2009), namely political orientation and environmental values, which are measured by a New Ecological Paradigm (NEP) scale (Dunlap et al., 2000). As a consequence, it is problematic if only environmental values (e.g. Kotchen and Moore, 2007) or only political orientation (e.g. Tjernström and Tietenberg, 2008; Hamilton, 2011) is considered as explanatory variables in econometric analyses since this can lead to omitted variable biases. In this respect, Dietz et al. (2007) and Attari et al. (2009) show that the effects of some variables of political orientation on the support of several climate policies or several climate protection activities become insignificant if a NEP scale is additionally included as explanatory variable. However, to the best of our knowledge, no previous empirical study has examined interaction effects of the two factors so far in order to analyze whether environmental values influence the effects of political orientation on beliefs and attitudes toward climate change.

The remainder of the paper is organized as follows: Section 2 reviews the related literature. Section 3 presents the data and the variables in our econometric analysis as well as descriptive statistics. Section 4 discusses the estimation results and Section 5 draws some conclusions.

2. Literature review

Previous empirical analyses reveal the high importance of political orientation for climate change beliefs and concerns (e.g. Tjernström and Tietenberg, 2008; Dunlap and McCright, 2008; McCright and Dunlap, 2011; Hamilton, 2011; Whitmarsh, 2011; Unsworth and Fielding, 2014), even in studies that do not focus on this factor[2] (e.g. Joireman et al., 2010; Li et al., 2011; Egan and Mullin, 2012; Shao et al., 2014; Marquart-Pyatt et al., 2014).[3] These analyses show that conservatives and citizens with a right-wing identification (especially with the Republican Party in the USA) have strongly lower climate change beliefs and concerns than liberals and citizens with a left-wing identification (especially with the Democratic Party in the USA) (see also the discussion in Pidgeon, 2012). The orientation of conservatives and Republicans seems to significantly contribute to the very high level of (anthropogenic) climate change skeptics[4] in the USA (e.g. Survey AXA/IPSOS, 2012; Carlsson et al., 2012).[5]

According to McCright and Dunlap (2011), one possible explanation for the polarization between a right-wing and a left-wing orientation is that conservatives have stronger system justification tendencies, which lead them to defend the status quo and to deny problems such as climate change that threaten system functioning. Another explanation is based on the solution aversion model of Campbell and Kay (2014), which isolates two components of worldviews and implies that the aversion to the climate change problem is also due to an aversion to the most popularly discussed solutions for the problem, i.e. restrictive government policies which strongly contradict the worldview of conservatives or Republicans in the USA. Instead, conservatives rather favor individual economic freedom, private property rights, and free markets (see also e.g. Shao et al., 2014). Against this background, it is not surprising that several empirical studies also reveal a negative effect of a right-wing orientation on the support of climate policies (e.g. Hammar and Jagers, 2006; Dietz et al., 2007; Attari et al., 2009; Jagers et al., 2010; Unsworth and Fielding, 2014) and on climate protection activities (e.g. Kahn, 2007; Dastrup et al., 2012; Costa and Kahn, 2013).

We therefore also expect a negative effect of a right-wing orientation on beliefs and attitudes toward climate change in our empirical analysis. In line with the social identity approach as discussed in Unsworth and Fielding (2014), individual beliefs and attitudes are affected by the social groups to which one belongs. Due to the strong polarization between the social and political groups on the issue of climate change (e.g. McCright, 2011), we hypothesize that the effect of political orientation is particularly pronounced in the USA. This polarization is especially based on very controversial (e.g. media) campaigns of conservative or right-wing circles and liberal or left-wing circles in this field (e.g. Hamilton, 2011). Since the different parties in Germany also have different views on climate policy designs, we also expect that political identification is relevant for the support of climate policy and for climate protection activities in this country. However, all main parties in Germany including right-wing parties (e.g. Christian Democrats) and also the leading media recognize that climate change is an important challenge so that we do not hypothesize strong effects of political orientation on both dimensions of climate change beliefs. Similarly, the

[1] Exceptions are the cross country analyses of Tjernström and Tietenberg (2008), Carlsson et al. (2012), Dienes (2015), and Lee et al. (2015).

[2] These studies especially focus on weather patterns or perceived weather experiences and are in this respect in line with, for example, Spence et al. (2011), Zaval et al. (2014), Herrnstadt and Muehlegger (2014), or Dai et al. (2015).

[3] Most previous studies focus on the USA. Exceptions refer to other Anglo-Saxon countries such as the UK (e.g. Whitmarsh, 2011; Spence et al., 2011) or Australia (e.g. Li et al., 2011; Unsworth and Fielding, 2014). Dai et al. (2015) are one of the very few analyses for China in this field. Cross country analyses of climate change beliefs and attitudes can, for example, be found in Carlsson et al. (2012) for the USA, Sweden, and China, and in Tjernström and Tietenberg (2008) for 26 worldwide countries including the USA and Germany. Recently, Dienes (2015) examines climate change concerns on the basis of data from 35 mostly European countries and Lee et al. (2015) analyze the climate change awareness for 119 worldwide countries. However, none of these two latter studies consider correlations with political orientation or environmental values (as discussed below).

[4] In line with Carlsson et al. (2012), we define climate change skeptics as citizens who do not believe in climate change, i.e. who believe that the global temperature has neither increased in the past nor will increase in the future. Whitmarsh (2011) even develops a skepticism scale on the basis of several attitude statements.

[5] Survey AXA/IPSOS (2012) reports on the basis of data from 13 countries in Europe, North America, and Asia that only about 72% of the US respondents believe that the climate has changed significantly in the past 20 years, whereas more than 95% of the respondents in Mexico, Hong Kong, Indonesia, and Turkey share this view. Similarly, Carlsson et al. (2012) show that the share of climate change skeptics is by far the highest in the USA, where more than 24% of the respondents state that the temperature has not increased globally. In contrast, these shares are only about 6% in Sweden and even less than 5% in China. Furthermore, almost 27% of the US respondents do not believe in anthropogenic climate change, whereas the corresponding share is only 4% in China.