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Government Spending and Civic Engagement: Exploring the Role of Civil Society Participation and Voting in 28 Democracies

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ABSTRACT

This study offers causal evidence on how distinct forms of civic engagement affect government spending across 28 democracies between 2000 and 2024. Its main innovation lies in disentangling the fiscal effects of two channels of engagement—civil society participation and electoral turnout—through an original identification strategy that exploits exogenous variation in collective versus self-interested motives. Our findings reveal that civic engagement exerts distinct effects on public spending depending on the channel through which citizens participate in democratic life. On the one hand, stronger participation in civil society associations leads to higher government spending, consistent with a publicly spirited and collective mobilisation effect. On the other hand, greater electoral participation is associated with lower public expenditure, as more collective-interested individuals distance themselves from the traditional electoral channel, and more self-interested individuals ask for less public spending. We explore these underlying mechanisms, propose strategies to address key identification challenges and further consider the impact of civic engagement on environmental protection and green politics dynamics.

JEL Classification: H50, D72, Q54, Z18

1 | Introduction

This article explores whether more participative societies are associated with larger government size, measured by public spending, across 28 democratic countries between 2000 and 2024. Building on a well-established political economy literature (e.g., Lijphart 1997; Knack and Keefer 1997; Borisova et al. 2018; Keefer et al. 2022), this is the first study to the best of our knowledge to analyse within a unified empirical framework how different dimensions of civic engagement—specifically, participation in civil society organisations and electoral participation through voting—may exert distinct effects on government spending.

From a conceptual standpoint, while some studies find a positive association between civil participation and electoral

participation, indicating that people participating in civil society organisations are more likely to participate in politics (McFarland and Thomas 2006; Clark et al. 2024), the two concepts can also be in contrast (Theiss-Morse and Hibbing 2005). Civil society participation typically involves collective and cooperative efforts, with individuals voluntarily contributing to common goods (Ostrom 2000). While electoral participation tends to involve individual decision-making, where anonymity and self-interested motives may prevail (Feddersen 2004), potentially, these distinct forms of civic engagement can influence government spending in opposing directions, as we discuss and summarise in Section 2.

From an empirical perspective, we recognise that various endogenous factors may generate biases in a specific country

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and period—if, for instance, citizens' participation increases in times of more generous redistributive and expansionary fiscal policies, the relationship of interest includes reverse causation channels. As detailed in Section 3 after presenting the dataset, we identify arguably exogenous sources of variation in civic engagement to run two-stage least squares models. Specifically, in our main specifications we use a *collective motives* instrumental variable that varies both across countries and over time to measure how collective reactions to a period-specific force, which we identify as global warming, determine country-specific civic engagement choices along the two dimensions we model.

The empirical results presented in Section 4 indicate that collective motives increase civil participation and, through this channel, government spending and welfare programmes, which is compatible with the hypothesis that more participative societies call for more redistribution. Electoral participation, instead, decreases where more collective-interested individuals distance themselves from traditional electoral channels and more self-interested individuals ask for less public spending.

Next, we explore the possibility that, if collectivism can be directly linked to civil participation in third-sector activities and reflect a nonremunerative, publicly spirited, collective action (Olson 1965; Daughety and Reinganum 2010), the anonymity of voting might hide opportunistic behaviour within a group related to free-riding attitudes and personal interests (Ali and Benabou 2020). Instrumenting electoral participation with a proxy for *self-interested motives* that measures the perceived private cost of global warming, we document a negative impact on government spending. In Section 5, we run this and other robustness checks, and we further contextualise our proposed mechanism within broader global dynamics by exploiting time trends, which likely reflect the effects of global warming as well as other long-term international developments.

The last part of the paper focuses on green policy and politics, finding that in countries where citizens worried about the social consequences of global warming prefer engaging in civil society organisations, the political discourse focuses more on welfare expansion and less on environmental protection. Voting, instead, is associated with less government spending on environmental protection and lower programmatic supply of welfare in parties' manifestos. Section 7 concludes by discussing the positive and normative implications of our analysis and suggests future research directions.

Our work contributes to different strands of literature. It relates to the empirical studies investigating whether more participative societies and democratic forms of government are associated with more redistributive policies (Borisova et al. 2018; Besley 2020; Ponzetto and Troiano 2024). By explicitly contrasting civic engagement inside and outside the electoral arena, we challenge the conventional view that participation uniformly strengthens state intervention (Boix 2001; Mueller and Stratmann 2003; Aidt and Eterovic 2011). Exploiting cross-country heterogeneity in civic engagement and spending composition, we show that distinct participatory channels yield opposing effects on redistribution. Finally, our analysis of aggregate data on civil society

participation and electoral participation complements the public choice approach by showing that civic engagement is relevant not only for microeconomic frameworks and individual actions but also for collective decision-making. In this respect, this study provides new empirical evidence on how distinct forms of civic engagement, whether exercised through collective organisation or the ballot box, shape redistributive politics and policy priorities in the agenda of contemporary democracies.

2 | Related Literature and Conceptual Framework

Civic engagement is a broad and multifaceted concept, encompassing a wide range of political, social, and moral forms of participation in a society's civic life. Yet the two dimensions we analyse—*civil society participation* and *electoral participation*—are grounded in distinct motivational and behavioural logics. The former usually reflects collective and cooperative action, often driven by altruistic, prosocial motives and voluntary contributions to common goods (Ostrom 2000). These forms of engagement tend to internalise broader social protection considerations and may thus translate into demands for stronger redistributive and welfare-oriented public policies. The latter might involve individual decision-making under conditions where anonymity and potential self-interest can dominate (Feddersen 2004). Voting behaviour may incorporate strategic or expressive motives but does not necessarily involve the same cooperative mechanisms that underpin the associational life and voluntary sector (Theiss-Morse and Hibbing 2005). Ultimately, the two forms of engagement may influence public spending and specific public functions potentially in opposite directions.

2.1 | Civil Society Participation: Generalised Trust, Social Capital and Civic Taxpayers

As for participation in civil society organisations, we refer to the intensity at which citizens participate in the life of a community to improve conditions for others or to help shape the community's future (Schofer and Fourcade-Gourinchas 2001). In this context, the decisive role of voluntary civil society organisations represents a unique form of mutual support whose influence extends to various aspects of life, affecting social behaviours, economic decisions and policy outcomes.

It is worth noting that civil society participation depends on whether an individual trusts people outside her social network, that is, 'generalised trust', thus going beyond 'particularised trust' represented by people known personally, such as close friends and relatives (Uslaner 2002). Ultimately, trust in unknown people becomes crucial for the sustainability of the welfare state, leading to increased support for redistributive policies (Daniele and Geys 2015). Following this reasoning, this type of civic engagement, together with trust, networks and norms, enters the concept of social capital, defined as all the features of social life that enable individuals to act together more effectively to pursue shared objectives (Putnam 1995). A further distinction between the *structural* and *cognitive* dimensions of social capital suggests that civil and social participation mainly pertains to the former, referring to individuals' behaviours reflecting membership in voluntary organisations (Uphoff 2000).

Countries with higher social capital are found to spend a higher share of output on public spending and government redistribution (see, for instance, Borisova et al. 2018; Ponzetto and Troiano 2024) and higher citizens' attention towards governments' transparency and accountability in spending decisions (Albanese et al. 2021). Similarly, social capital, seen as the need to promote citizens' involvement, might represent a driver of welfare provision in countries where public social expenditure does not cover social gaps (Akaeda 2021). Indeed, even though different in structure and scope, active participation in civil society organisations meets common goals with redistributive targets and policies (Knack and Keefer 1997).

A similar reasoning is proposed by Besley (2020), who argues that higher levels of civic culture are associated with more people being intrinsically motivated to cooperate for the public good, leading to a greater demand for public services and, particularly, redistributive spending. In his case, the mechanism relies on a strong voluntary tax morale argument according to the reciprocal social contract: *civicness* makes better citizens who ask for more spending and voluntarily pay more taxes.¹

2.2 | Electoral Participation: Franchise Extension, Self-Interest and Anonymity

Voting is seen as a key expression of civic engagement when reflected in electoral participation (Almond and Verba 1963; François and Gergaud 2019). The political economy theories on the median voter and redistribution (e.g., Meltzer and Richard 1981; Boix 2001) argue that improving the political participation of less advantaged citizens might affect policy democratic outcomes (Mueller and Stratmann 2003), then increasing the size of the public sector. When the poor and most disadvantaged groups participate in the electoral process, higher electoral participation is likely associated with more redistributive policy support.

However, inconsistencies between item-by-item and aggregate spending preferences (Kristensen 1982), the inherited multi-dimensional and complex nature of public spending (Aidt and Eterovic 2011), the fact that the pivotal voter is not the median in the income distribution but is generally richer (Larcinese 2007), may ultimately push the public budget in either direction, making for excessive as well as deficient public spending (Musgrave 1985). Likewise, the extension of universal suffrage could lead politicians to spend more on public goods but less on targeted transfers that only benefit a fraction of the enfranchised society (e.g., Lizzeri and Persico 2004). The overall effect could be a shift in the composition of government spending, but not necessarily a larger public sector.

From the related literature, we also know that individual voting decisions are influenced by numerous factors, including the costs of voting, the perceived benefits of a preferred policy being enacted, the probability of casting a decisive vote, the anonymity of voting and that these dynamics can produce unexpected effects on policy outcomes (Mueller 2003; Geys 2006; Hillman 2010; Lo Prete and Revelli 2017; Ali and Benabou 2020). Alternative models of public expenditure propose different relationships between actual government spending and voter attitudes. These

models consider factors such as rational incentives to vote strategically rather than sincerely (Di Liddo et al. 2025), the influence of unsophisticated voters during opportunistic political cycles (Bohn 2018) and variations in risk and time preferences (Keefer et al. 2022). Importantly, if voters view public spending as crowding out private sector activity and are generally unopposed to it or as hindering their prospects of upward mobility (POUM hypothesis), higher electoral participation may not translate into increased demand for public goods (Benabou and Ok 2001; Facchini 2018).

Ultimately, the link between higher electoral participation and more public spending in specific areas, such as social and redistributive programmes, could not be taken for granted. Different values, ranging from more commonly shared values to more private values, could motivate electoral participation. This could be the case if voting action is determined by the desire to affect public policy to pursue self-interest instead of reflecting a non-rewarding, publicly spirited, collective action.²

2.3 | A Conceptual Framework for the Empirical Analysis

Our analysis does not seek to cover all the potential channels outlined in the literature reviewed above and summarised in Table 1. We focus on the possibility that civic engagement shaped by different—collective and self-interested—motivational drivers may draw into the electorate either more collectively oriented or more self-interested individuals, each carrying distinct policy preferences, which can shape public spending outcomes in opposite directions.

Specifically, in the first part of the empirical analysis, we use a *collective motives* instrument that captures cross-country differences in citizens' cultural orientation towards collectivism versus individualism interacted with global warming. We hypothesise that collective motives influence both civil society and electoral participation, under the assumption that civic engagement operates through distinct and independent channels. If these collective motives increase participation by collectively oriented citizens, they are expected to lead to higher government spending; if they mobilise groups with different preferences, the effect may be negative.

In the second part of the paper, we also construct a more targeted measure of *self-interested motives* capturing individual-level exposure to the personal costs of climate change. As summarised in Table 1, while we expect collective motives to influence both forms of participation simultaneously, we expect this second instrument to affect civic engagement exclusively through the electoral participation channel: If self-interested individuals are more likely to participate, they should reduce government spending; if participation increases among those with preferences for redistribution, instead, the effect may be positive.³ In Sections 5 and 6, we will further explore the mechanism linking civic engagement and fiscal outcomes running a battery of robustness checks and situating it within broader dynamics by incorporating a comparison of time trends, which may well capture the influence of global warming and other long-term global factors.

TABLE 1 | Theoretical approaches and potential drivers of civic engagement.

Dimensions of civic engagement	Expected effect on government spending		Drivers expected to affect government spending through civic engagement
<i>Civil society participation</i>	Civil society participation is expected to increase government spending according to the literature on <ul style="list-style-type: none"> • <i>Generalised trust</i> • <i>Social capital</i> • <i>Tax morale</i> 		<ul style="list-style-type: none"> • Collective motives
<i>Electoral participation</i>	Electoral participation is expected to increase government spending according to the literature on <ul style="list-style-type: none"> • <i>Franchise extensions</i> • <i>Median voter theorem</i> 	Electoral participation is expected to decrease government spending according to the literature on <ul style="list-style-type: none"> • <i>Anonymity of the voting action</i> • <i>Strategic voting</i> • <i>Prospects of upward mobility</i> 	<ul style="list-style-type: none"> • Collective motives • Self-interested motives

3 | The Empirical Framework

In this section, we describe the data and the key variables used in the analysis—the sample of countries, descriptive statistics of all variables and their definitions and sources are reported in Tables A1, A2 and A3 of Appendix S1. Then, we present the empirical strategy employed to analyse the relationship between civic engagement and public spending, followed by a detailed discussion of our identification strategy.

3.1 | The Data

We analyse government spending and civic engagement patterns across democracies for which relevant data, that we collect from different sources, are available for all or most of the 2000–2024 period. The dataset, introduced briefly in this section and in more detail in Appendix S1, includes information on 28 countries classified as democracies in the 2000s.⁴ To focus on how environmental concerns due to global warming affect government spending differently in different countries through different channels of civic engagement, we use average values of available observations within five non-overlapping subperiods of 5 years each, from 2000–2004 to 2020–2024. The choice of a period of 5 years is common practice in macroeconomic studies to conveniently smooth out cyclical relationships related to the business cycle (Shelton 2007; Thornton and Chambers 2013; Granger 2014), which may or may not be affected by the structural mechanisms we focus on, and is also compatible with the statutory term of office, which lasts between two and 5 years in the sample of countries we analyse.⁵

To measure government spending, we consider general government public expenditure as a share of GDP, a proxy for government size conventionally adopted in cross-country and macroeconomic analyses. Moreover, using data from the IMF Government Finance Statistics (GFS) database on the Classification of the Functions of Government (COFOG), we focus on specific tasks for which the funds are used. In particular, we consider a *Welfare* function aggregate composed of social protection and health spending, aiming at providing resources

and support to meet basic human needs, ensuring basic levels of well-being and allowing for redistributive purposes (Walker 2004; Herwartz and Theilen 2017; Haelg et al. 2022). We also analyse the effect of our civic engagement measures on the single welfare component, exploiting their different assignment given that *Social Protection* is normally provided in cash (e.g., unemployment benefits, welfare pensions and social transfers) and *Health* as in kind services (access to medical care, health treatment, prevention services, hospitals, etc.).

Benefiting from the COFOG approach, we also consider a definition of *Public Goods* that groups expenditure categories with high public services content, strongly connected with the geographical area and jurisdictional territory where they are provided, such as public order and safety, public transport and education as adopted in previous studies (Persson and Tabellini 1999; Shelton 2007).

To measure *civil society participation*, we use the ‘civil society’ indicator from IDEA’s Global State of Democracy database. This composite index reflects the extent to which citizens engage in civil society organisations and participate in policymaking processes. It captures various dimensions of civic activity, including public debate on major policy issues, open government and broader elements of social capital such as interpersonal trust and community-based associations (sports clubs, charities, independent non-political associations and other social entities). The indicator is reported annually and originally ranges from 0 (*Inactive*) to 1 (*Most active*). For ease of interpretation, we rescale it to a 0–100 scale.

To measure *electoral participation*, we use data on voter turnout, defined as the percentage of eligible voters who cast a ballot at a national election, from the IDEA’s Voter Turnout database. This is a standard measure of electoral participation that allows us to compare results with findings from previous literature in a macroeconomic perspective.

Our main specifications also consider the possibility that government spending correlates with GDP per capita,⁶ openness to trade, as well as for a set of demographic factors, such as the

level and the square of population, and for other demographic variables that control for their composition, namely, the young and old age dependency ratios, and for population aging (i.e., the change in the age dependency ratio of the old). All these variables are from the World Development Indicators Database by the World Bank.

3.2 | The Empirical Strategy

The basic specification we use to estimate the effect of civic engagement on government spending reads:

$$GOV_{it} = \alpha + \beta CE_{it}^d + X_{it}\theta + u_i + z_t + \varepsilon_{it} \quad (1)$$

The main dependent variable, GOV , is an indicator of *government spending* in country i , where t indexes the 5-year period. On the right-hand side of Equation (1), CE denotes civic engagement in one of its two d dimensions—namely, civil society participation and electoral voting. The vector X includes some variables potentially relevant to government spending. Finally, all models include u_i country fixed effect and z_t period fixed effects, and ε the error term.

In Equation (1), there is no reason to suppose that the random component of civic engagement is uncorrelated with the term it does not explain: The unobservable determinants of civic engagement might be related to those of government spending, as civic engagement is chosen to maximise an objective depending, among other things, on government spending. Therefore, we estimate two-stage least squares (2SLS) models, assuming that government spending is influenced by civic engagement, which itself is driven by suitable instrumental variables (IV) that drive endogenous participation decisions without directly impacting government spending. For comparison, we will also present results from fixed-effect (FE) models.

In two-stage least squares models, we estimate the first-stage specification that reads:

$$CE_{it}^d = \gamma Z_{it}^k + X_{it}\delta + u_i + z_t + \omega_{it}, \quad (2)$$

where Z is a source of variation in civic engagement that is orthogonal to the error term ε_{it} in Equation (1). Our identification strategy relies on arguably exogenous instrumental variables that vary across countries and over time, shaping responses to common drivers of civic engagement, built as

$$Z_{it}^k = G_t \times k_i. \quad (3)$$

These interactions capture how different countries react differently to the common global factor (G_t) due to some time-invariant type- k country-specific feature (k_i).⁷ The X vector in Equation (2) includes the global factor (G_t), ensuring that it is not empirically absorbed by the subperiod time effects, which are always accounted for in the empirical specifications.

Since civic engagement may be correlated to the error term $\varepsilon_{i,t}$, we look for instruments defined as in Equation (3), that shape civic engagement trajectories differently across countries, that

are only weakly, if at all, influenced by country-specific shocks and that should affect government spending only through civic engagement.

3.3 | The Identification Strategy

The instrument we use in our main specifications is a measure of *collective motives* ($Z^{Collective}$) and is built as follows. The time-invariant country-specific component k_i of the instrument is represented by preferences for *collectivism* versus *individualism* as measured by Hofstede (2011). Based on an extensive survey conducted in the 1960s and 1970s, the data assess differences in the degree to which societies are integrated into groups sharing goals and perceiving obligations and dependence. We use and rescale the cultural dimension index ‘individualism versus collectivism’ to range between 0 (*High individualism*) and 100 (*High collectivism*) to ease the interpretation. The indicator ranks countries based on whether citizens’ self-image is defined in terms of ‘we’ or ‘I’ and serves our purpose of capturing the possibility that global environmental concerns may shape civic engagement trajectories differently across countries, depending on whether individuals in each society integrated into groups with a common purpose, as opposed to a community where self-interest and loose interpersonal ties prevail. In Figure 1, attitudes towards collectivism are heterogeneous across countries—dark colours indicate more collectivism, and pale ones indicate more individualism.⁸

The time-varying component G_t of the Z instrument is subperiod-specific global warming. Following the United Nations, we define global warming as the long-term shifts in temperatures and weather patterns.⁹ NASA’s *global warming* index measures the annual land and ocean surface temperature change from the long-term average, using temperatures between 1951 and 1980 as a baseline. In Figure 2, we show annual mean temperature values using the solid black line and the lowest smoothing, which helps see the rising trend in temperature and represents our variable,¹⁰ using the dot grey line. The grey region represents the period we analysed. Since 2000, temperatures have been between 0.5°C and 1°C warmer than the long-term average.

The increase in temperatures, recognised by many as synonymous with climate change, can be due to natural phenomena (i.e., the sun’s activity and volcanic eruptions) and human activity, primarily related to using fossil fuels that generate greenhouse



FIGURE 1 | Collectivism around the world. The map shows all available data of Hofstede’s indicator of collectivism versus individualism. White areas indicate missing values.

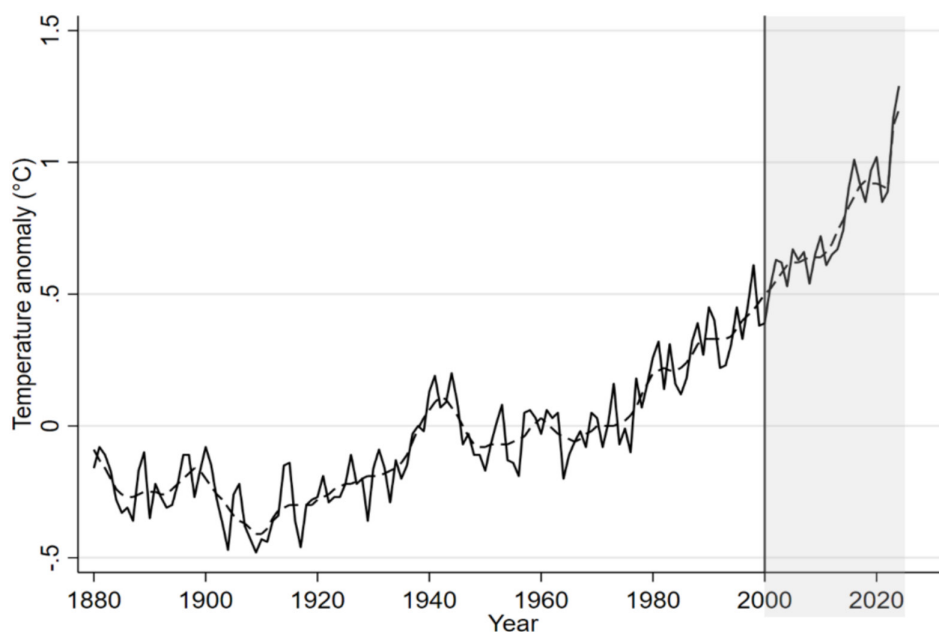


FIGURE 2 | Global warming between 1880 and 2024. NASA/GISS index of global land–ocean temperature, in Celsius degrees (°C), annual mean (black line) and lowess smoothing (dashed line). [Colour figure can be viewed at wileyonlinelibrary.com]

gas emissions, such as carbon dioxide and methane. The latter reflects much more on policy variables besides capturing climate inequality across countries (Callahan and Mankin 2022), which is one reason why we do not prefer them, along with the larger media coverage they received over the past years.

Similarly, other indicators of the consequences of climate change like the number of extreme events leading to natural disasters (flooding, droughts, severe fires and decline in biodiversity) are more likely associated with country-specific features and natural phenomena, from rainfall to earthquakes, which may affect electoral participation (Lind 2020; Lo Prete and Revelli 2021).¹¹ This would be the case of other social changes such as population aging, that in recent literature has been associated with increased government spending on welfare rather than on environmental protection, as shown using data on Germany (Andor et al. 2018) and comparative analyses of aging populations in the United Kingdom, Germany and France (Melo and Stockemer 2014).¹²

On a conceptual ground, our identification strategy hinges upon an extensive literature on behavioural economics, social science and psychology documenting the impact of environmental concerns on individual behaviour and activism (Fransson and Garling 1999). As an example, recent evidence on a large representative sample of US adults suggests that individual beliefs about social norms, preferences such as patience and altruism, as well as universal moral values, positively predict environmental preferences, revealing that those effects are strongest for individuals who are sceptical about the existence and threat of global warming (Andre et al. 2021). Likewise, individuals who experienced earthquakes became more likely to participate in community meetings, volunteer activities and the voting process (Bai and Li 2021; Buonanno et al. 2023). In political science, citizen participation is a crucial component of ‘civic environmentalism’,

defined and advocated as a social action that goes beyond voting to tackle environmental issues (John 1994). In those studies, civil participation should be higher in countries that value social cohesion more than in countries with a more individualistic culture. At the same time, citizens may not expect the government to solve social and environmental problems, thus making it an empirical question whether collective reactions to environmental threats translate into participation through traditional electoral channels.

3.4 | Exclusion Restrictions and Identification Challenges

Our identification strategy necessarily rests on several key assumptions and is therefore not without limitations. To support the validity of our approach, we begin by offering multiple layers of justification for our exclusion restrictions, carefully considering the possibility that both collectivism and global warming may independently influence civic engagement or related outcomes.

First, although cultural change over time is not entirely absent, Hofstede’s cultural dimensions exhibit a high degree of temporal stability. Summarising a long-standing debate in cross-cultural psychology and comparative sociology, we follow Beugelsdijk and Welzel (2018) who quantify cultural absolute and relative change. They show that cultural differences across countries persist over time, with half of the observed variation explained by economic development and changes in intergenerational values, and the other half by time-invariant geographical characteristics.¹³ This relative stability, together with the short temporal coverage of our sample, reduces the likelihood that changing cultural dynamics drive government spending independently of civic engagement.

Second, to eliminate potential sources of omitted-variable bias due to the correlation, if any, between period-specific forces and country-specific shocks, we include in all specifications country fixed effects absorbing time-invariant unobserved heterogeneity such as structural institutional features or persistent cultural traits. Similarly, subperiod time effects further control for common shocks, such as global political or economic trends.

Third, while global warming can influence national civic engagement by increasing environmental concern and political mobilisation, we assume that civic engagement at the national level does not directly affect global temperature trends. The issue is partly mitigated by the fact that global warming reflects environmental pressures experienced domestically but that are determined globally, outside the control of individual countries. In the absence of effective international coordination, national climate policies arguably have a limited capacity to influence global warming.

While the interaction between collectivism and global warming helps reduce the likelihood of direct effects on government size, some residual concerns may remain. For example, if temperature shocks influence political participation through channels unrelated to environmental concerns. To further limit these concerns, in Section 5, we use a second instrument of self-interested motives, we further account for broader dynamics by using a time trend, which may reflect global influences such as climate change, as time-varying component G_t of the Z instrument, and conduct robustness checks to test the sensitivity of our results to alternative specifications.

In Section 6, we also acknowledge that our instrument is best interpreted as valid for the historical context under study and may not generalise to different political or economic environments. Our sample covers a period characterised by heightened environmental awareness and mobilisation around major international agreements, such as the Kyoto Protocol and the Paris Agreement. While in more years, climate policies have become increasingly contested and viewed in some contexts as economically costly, as seen for instance in the United States, possibly weakening or even reversing these relationships.

Although, as discussed in the literature and particularly relevant for studies based on cross-country data, no instrumental variable can be proven valid beyond doubt, taken together these strategies are designed to address key identification challenges and offer a more robust foundation for our identification approach.

4 | Main Results

In this section, we consider the impact of collective reactions to global warming, mediated through civic engagement as measured alternatively by civil society and electoral participation, on aggregate public spending and its functional components.

Table 2 reports FE estimates of Equation (2), which includes country- and period-specific effects and a set of control variables. In Column (1), civil society participation is significantly higher in countries where the intensity of the common global

TABLE 2 | Collective motives and civic engagement.

Dependent variable:	(1) Civil society participation	(2) Electoral participation
$Z^{Collective}$	0.36*** (0.10)	-0.47*** (0.15)
Global warming	-12.35 (9.42)	-3.44 (12.04)
GDP p.c. (log)	-1.50 (3.08)	17.53*** (5.16)
Openness	2.72 (4.82)	-9.40 (7.02)
Population	1.26 (0.89)	-0.22 (0.92)
Population (square)	-0.01 (0.01)	-0.00 (0.01)
Young dependency ratio	0.38** (0.18)	-0.57* (0.30)
Old dependency ratio	-0.17 (0.21)	-0.15 (0.29)
Aging	-1.82 (2.00)	5.39* (2.73)
Country effects	✓	✓
Period effects (PE)	✓	✓
Test of PE joint significance	2.51 [0.08]	1.92 [0.15]
R-squared	0.28	0.38

Note: The table reports FE estimates. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 137.

increase in temperature is associated with higher collectivism. This result is in line with the literature that has focused on how experiences of, and attention to, natural disasters promote the process of civil society and political participation (e.g., Fair et al. 2017; Bai and Li 2021; Buonanno et al. 2023).

In Column (2), electoral participation measures voter turnout at national elections and is lower in countries where $Z^{Collective}$ is higher. This may indicate that collectively oriented citizens who react to global warming can be discouraged from voting, preferring to engage through other channels, as predicted by models of civic environmentalism (John 1994).

In the instrumental variables regressions in Tables 3 and 4, we examine the determinants of government spending and its functional composition focusing on the role of civil society participation and electoral participation, respectively. Each table includes three panels: Panel A reports the structural two-stage least squares (2SLS) estimates; Panel B estimates from the linear FE model that should be used to provide consistent estimates when the endogeneity test fails to reject the null hypothesis of exogeneity in civic engagement; Panel C presents the reduced-form estimates that show the relationship between the dependent

TABLE 3 | Civil society participation and government spending.

Dependent variable:	(1) <i>Government spending</i>	(2) <i>Welfare</i>	(3) <i>Social protection</i>	(4) <i>Health</i>	(5) <i>Public goods</i>
<i>Panel A. Second-stage</i>					
Civil society participation	0.47** (0.23)	0.46*** (0.17)	0.46*** (0.16)	0.01 (0.04)	−0.03 (0.06)
Global warming	14.23*** (5.42)	10.99*** (3.90)	6.47** (3.30)	3.37*** (0.94)	3.16** (1.58)
GDP p.c. (log)	−5.67* (2.92)	−3.50** (1.78)	−3.34** (1.51)	0.68* (0.40)	−1.18 (0.82)
Openness (log)	−4.58 (3.45)	−3.33 (2.58)	−2.10 (2.35)	−1.50*** (0.47)	−0.72 (0.90)
Population	0.16 (0.47)	−0.05 (0.35)	−0.32 (0.31)	0.08 (0.10)	0.10 (0.11)
Population (square)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	−0.00 (0.00)
Young dependency ratio	−0.08 (0.18)	0.00 (0.15)	−0.00 (0.12)	−0.01 (0.03)	−0.02 (0.03)
Old dependency ratio	0.16 (0.15)	0.14 (0.11)	0.18** (0.09)	0.03 (0.03)	−0.06 (0.04)
Aging	1.04 (1.15)	0.87 (0.90)	1.40* (0.78)	−0.23 (0.20)	−0.10 (0.26)
Country effects	✓	✓	✓	✓	✓
Period effects (PE)	✓	✓	✓	✓	✓
Test of PE joint significance	43.76 [0.00]	20.27 [0.00]	10.20 [0.02]	42.26 [0.00]	10.33 [0.02]
Endogeneity test	4.82 [0.03]	5.83 [0.02]	6.19 [0.01]	0.43 [0.51]	0.02 [0.90]
Weak identification test	11.79	11.79	11.79	11.79	11.79
<i>Panel B. FE</i>					
Civil society participation	0.02 (0.07)	0.11 (0.09)	0.13* (0.07)	−0.02 (0.02)	−0.00 (0.01)
<i>Panel C. Reduced form</i>					
$Z^{Collective}$	0.17** (0.08)	0.16* (0.08)	0.16** (0.07)	0.00 (0.02)	−0.01 (0.03)

Note: The table reports 2SLS estimates using collective motives ($Z^{Collective}$) as instrument in Panel A; FE estimates for the linear model in Panel B; FE estimates for the reduced-form model in Panel C. The constant, country and period fixed effects are included in the estimates but not reported in the table. Weak identification test based on the Kleibergen-Paap Wald rk F -statistic, robust to non i.i.d. errors, under the null hypothesis that the equation is weakly identified. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 137.

variable and the instrument, included as an explanatory variable along with the control variables we include in our main specifications.

In Column (1) of Table 3, instrumented civil society participation positively affects aggregate government spending. This is consistent with the hypothesis that, when civic engagement through civil society participation increases due to more individuals engaging for *collective motives*, as first-stage estimates indicate, aggregate public spending rises. The magnitude of the effect suggests that civic engagement is both statistically and

economically relevant, as a one standard deviation increase in civil society participation is associated with a 6.6 percentage point rise in government spending as a share of GDP. Table 3 also shows that government spending is significantly lower in richer countries and tends to rise along with global warming across countries, consistent with expectations that governments address the increasing social and economic costs of climate change. Notably, global warming remains distinct from subperiod effects: The F -statistic reported at the bottom of Panel A shows that the coefficients of subperiod effects are jointly significant, suggesting that common trends in government spending

TABLE 4 | Electoral participation and government spending.

Dependent variable:	(1) Government spending	(2) Welfare	(3) Social protection	(4) Health	(5) Public goods
<i>Panel A. Second-stage</i>					
Electoral participation	−0.36** (0.18)	−0.35** (0.15)	−0.35** (0.14)	−0.01 (0.03)	0.02 (0.05)
Global warming	7.20 (6.60)	4.06 (4.91)	−0.41 (4.17)	3.24*** (1.18)	3.62* (1.95)
GDP p.c. (log)	−0.11 (4.17)	1.98 (3.22)	2.10 (2.85)	0.78 (0.65)	−1.54 (1.21)
Openness (log)	−6.66 (4.07)	−5.39* (3.24)	−4.13 (3.02)	−1.54*** (0.53)	−0.59 (0.96)
Population	0.67 (0.51)	0.46 (0.45)	0.18 (0.41)	0.09 (0.10)	0.07 (0.12)
Population (square)	−0.00 (0.00)	−0.00 (0.00)	−0.00 (0.00)	0.00 (0.00)	−0.00 (0.00)
Young dependency ratio	−0.11 (0.20)	−0.02 (0.17)	−0.02 (0.14)	−0.01 (0.03)	−0.02 (0.03)
Old dependency ratio	0.03 (0.15)	0.01 (0.13)	0.05 (0.13)	0.02 (0.03)	−0.05 (0.04)
Aging	2.11 (1.46)	1.93* (1.12)	2.44** (1.00)	−0.21 (0.24)	−0.16 (0.36)
Country effects	✓	✓	✓	✓	✓
Period effects (PE)	✓	✓	✓	✓	✓
Test of PE joint significance	38.87 [0.00]	12.46 [0.01]	4.82 [0.18]	41.00 [0.00]	8.20 [0.44]
Endogeneity test	4.40 [0.04]	6.35 [0.01]	6.85 [0.01]	0.42 [0.52]	0.30 [0.59]
Weak identification	10.30	10.30	10.30	10.30	10.30
<i>Panel B. FE</i>					
Electoral participation	−0.04 (0.04)	−0.04 (0.04)	−0.05 (0.04)	0.01 (0.01)	−0.00 (0.02)
<i>Panel C. Reduced form</i>					
$Z^{Collective}$	0.17** (0.08)	0.16* (0.08)	0.16** (0.07)	0.00 (0.02)	−0.01 (0.03)

Note: The table reports 2SLS estimates using collective motives ($Z^{Collective}$) as instrument in Panel A; FE estimates for the linear model in Panel B; FE estimates for the reduced-form model in Panel C. The constant, country and period fixed effects are included in the estimates but not reported in the table. Weak identification test based on the Kleibergen-Paap Wald rk F -statistic, robust to non i.i.d. errors, under the null hypothesis that the equation is weakly identified. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 137.

across countries are not fully captured by the variables included in the empirical model.

Regarding the composition of public spending, instrumented civil society participation is associated with higher welfare spending, as shown in Column (2). Within welfare spending, the social protection component in Column (3), identified as statistically endogenous, appears to drive the overall effect. This finding supports the conventional view that greater participation in civil society organisations is associated with increased social and redistributive spending, as discussed in Section 2.

Not surprisingly, spending on social protection also tends to be significantly higher in countries with lower levels of GDP per capita and where the population is aging. On the other hand, the instrumented civil society participation appears to have no significant effect on spending categories primarily related to locally provided public goods and services in Column (5).

From a statistical point of view, although we cannot directly test the validity of the exclusion restrictions, it is reassuring that in all our just-identified models the $Z^{Collective}$ instrumental variable demonstrates sufficient explanatory power—as indicated by the

weak instrument test—to foster confidence in the precision of our estimates. The endogeneity test reported at the bottom of Panel A indicates that 2SLS estimates are consistent in Columns (1), (2) and (3). They should therefore be preferred to the linear FE estimates reported in Panel B. The higher vulnerability of the FE estimator to measurement error in the regressor may explain the insignificance of its coefficient, which is also likely downward biased, as in Column (3). This could be the case if civil society participation is positively correlated with unobserved factors that exert a negative influence on government spending.¹⁴ Finally, estimates from the reduced form models in Panel C indicate that the instrument, which could be a long-term policy variable itself, is significantly related to government spending, welfare spending and social protection in regressions where it works through endogenous civil society participation.

In Table 4, we consider the effect of electoral participation on government spending. The second instrumented dimension of civic engagement appears to reduce total government spending in Column (1)—a one standard deviation increase in electoral participation is associated with a 5.4 percentage point decrease in government spending as a share of GDP. This finding of a negative effect aligns with empirical evidence from country-specific studies—such as Switzerland (Hodler et al. 2015), Austria (Hoffman et al. 2017) and Italy (Lo Prete and Revelli 2021)—which show that increasing electoral participation can reduce public spending and policy quality when the composition of the electorate changes bringing in less educated or less informed voters. Similarly, our second-stage estimates identify a local average treatment effect for the subpopulation of citizens whose participation is shaped by collective motives, and the lower participation in traditional electoral channels by individuals motivated by collective motives leads a more individualistic electorate to emerge and reduce public spending. Such a change in the composition of the electorate would offer a plausible explanation for findings, without contradicting the conventional expectation that increased civic engagement—as measured by voter turnout—for a given composition of the electorate leads to government expansion.

The analysis of specific public functions confirms that spending on social protection drives the result we observe for welfare spending in Columns (2) and (3). The explanatory power of the instrumental variable is above the conventional level, also when we use it to isolate the effect of electoral participation. IV estimates are consistent and preferable to FE estimates in Panel B that again appear insignificant and likely downward biased, suggesting that both our civic engagement dimensions might be endogenously higher in settings where unobserved conditions negatively affect the dependent variable. Finally, in Panel C, total government spending and spending on welfare and its social protection component are higher in countries where collective reactions to environmental threats are stronger.

5 | Discussion and Additional Results

In this section, acknowledging that country-specific preferences for collectivism alone may not fully account for variations in electoral participation in national elections, we discuss other conceptually relevant mechanisms and run a placebo test to qualify our findings.

5.1 | Self-Interested Motives Behind the Voting Action

Our $Z^{Collective}$ instrument compares countries based on citizens' attitudes towards collectivism as opposed to individualism and, by construction, cannot isolate the perceived *individual* cost of global warming from broader concerns that relate to its *collective* cost. To better approximate individuals' private environmental costs, we interact the global warming variable in Equation (3) with Welzel's (2013) 'cool water condition' index, which captures geoclimatic factors like temperature and freshwater availability. This index, available for all countries in our sample except for Switzerland, and rescaled from 0 (*Cold and wet*) to 100 (*Hot and dry*) to facilitate interpretation, is used here as a time-invariant country-level characteristic that moderates the perceived cost and urgency of environmental concerns, offering a plausible proxy for self-interested responses to climate risks.¹⁵

In Table 5, civic society participation is not influenced by *self-interested motives* ($Z^{Private}$) in Column (1), while this instrument is a strong predictor of electoral participation in Column (2) in line with the conceptual summary depicted in Section 2.3—we were not expecting self-interested motives to relate to civil society participation.

TABLE 5 | Self-interested motives and civic engagement.

Dependent variable:	(1) Civil society participation	(2) Electoral participation
$Z^{Self-interested}$	−0.13 (0.17)	0.65*** (0.16)
Global warming	9.03 (16.13)	−62.05*** (18.89)
GDP p.c. (log)	−2.35 (3.85)	18.39*** (5.87)
Openness (log)	0.60 (6.19)	−6.34 (8.16)
Population	0.20 (0.97)	1.16 (0.84)
Population (square)	−0.00 (0.01)	−0.01 (0.01)
Young dependency ratio	0.21 (0.21)	−0.70** (0.30)
Old dependency ratio	−0.06 (0.21)	−0.10 (0.32)
Aging	−1.76 (2.12)	5.27* (2.78)
Country effects	✓	✓
Period effects (PE)	✓	✓
Test of PE joint significance	2.73 [0.06]	2.58 [0.07]
R squared	0.20	0.39

Note: The table reports FE estimates. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 132.

The second-stage estimates presented in the first column of Table 6 indicate that electoral participation driven by self-interested motives leads to a reduction in aggregate government spending and that the size of the coefficient—and consequently the magnitude of this effect—closely mirrors the result in Table 4. Similarly, in Columns (2) and (3), higher electoral participation shows a negative and statistically significant coefficient, indicating that it is associated with lower public spending on welfare and social protection items.

From a statistical perspective, the $Z^{Private}$ instrument demonstrates sufficient strength to support confidence in the precision

of the estimates and exhibits a negative and statistically significant relationship with government spending in the reduced-form results presented in Panel C. IV estimates are consistent and preferable to FE estimates, and the latter are downward biased confirming previous findings of a correlation between electoral participation with adverse unobserved determinants of public spending.

By employing collective and self-interested motives as credible exogenous sources of variation in civic engagement in Tables 3 and 5, we have shown that motivational drivers may indeed have an opposite influence on individuals' electoral participation, as

TABLE 6 | Self-interested motives behind electoral participation.

Dependent variable:	(1) Government spending	(2) Welfare	(3) Social protection	(4) Health	(5) Public goods
<i>Panel A. Second-stage</i>					
Electoral participation	−0.34** (0.15)	−0.35*** (0.12)	−0.35*** (0.11)	−0.00 (0.03)	0.03 (0.05)
Global warming	9.98 (6.12)	8.77* (4.83)	4.51 (4.27)	3.59*** (1.05)	1.85 (1.48)
GDP p.c. (log)	−4.28 (3.42)	−4.91* (2.93)	−5.13* (2.84)	0.45 (0.44)	1.02 (0.95)
Openness (log)	−7.17* (4.06)	−5.99* (3.19)	−4.76 (3.05)	−1.52*** (0.52)	−0.46 (1.03)
Population	0.33 (0.49)	0.05 (0.37)	−0.24 (0.32)	0.10 (0.10)	0.16 (0.12)
Population (square)	−0.00 (0.00)	−0.00 (0.00)	0.00 (0.00)	−0.00 (0.00)	−0.00 (0.00)
Young dependency ratio	−0.14 (0.19)	−0.06 (0.17)	−0.06 (0.14)	−0.00 (0.03)	−0.01 (0.03)
Old dependency ratio	0.07 (0.15)	0.08 (0.12)	0.11 (0.11)	0.03 (0.03)	−0.07 (0.04)
Aging	2.26* (1.34)	2.22** (1.01)	2.76*** (0.89)	−0.22 (0.23)	−0.31 (0.37)
Country effects	✓	✓	✓	✓	✓
Period effects (PE)	✓	✓	✓	✓	✓
Test of PE joint significance	36.61 [0.00]	15.04 [0.00]	4.22 [0.24]	38.03 [0.00]	6.00 [0.11]
Endogeneity test	3.21 [0.07]	1.94 [0.16]	2.11 [0.15]	0.07 [0.79]	2.41 [0.12]
Weak identification test	15.06	15.06	15.06	15.06	15.06
<i>Panel B. FE</i>					
Electoral participation	−0.03 (0.04)	−0.04 (0.04)	−0.05 (0.04)	0.01 (0.01)	−0.00 (0.02)
<i>Panel C. Reduced form</i>					
$Z^{Self-interested}$	−0.21** (0.10)	−0.11 (0.07)	−0.11 (0.08)	0.01 (0.03)	−0.04 (0.04)

Note: The table reports 2SLS estimates using self-interested motives ($Z^{Self-interested}$) as instrument in Panel A; FE estimates for the linear model in Panel B; FE estimates for the reduced-form model in Panel C. The constant, country and period fixed effects are included in the estimates but not reported in the table. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 132.

discussed in Section 2. In particular, the anonymity associated with voting is likely to encourage individuals to act in their own self-interest without fear of social sanction and stigma (Daughety and Reinganum 2010; Ali and Benabou 2020).

This dynamic is also consistent with free-riding attitudes when the private benefits of doing so outweigh the collective benefits of group participation (Olson 1965). Ultimately, more self-interested voters in the electorate would ask for less social spending and redistribution (Dhami and al-Nowaihi 2010; Taniguchi and Marshall 2018).

5.2 | Other Country-Specific and Period-Specific Features and Some Robustness Checks

Although we cannot rule out a set of alternative mechanisms due to data limitations, we can test the relevance of other cultural dimensions. Indeed, other country-specific and period-specific factors could be theoretically relevant drivers of the willingness to engage beyond the collective and self-interested motives we have explored so far.

Based on Hofstede's model (2011) of national cultural dimensions, culture is a collective phenomenon, and each country can be positioned relative to other countries along six cultural dimensions that are statistically different, among them the index of collectivism that serves as a country-specific time-invariant component of the instrument $Z^{Collective}$ in our main specifications.¹⁶ Other factors related to civic engagement can be, for example, indicators of social capital, such as trust in other people or in institutions (government, parliament, political parties, church, etc.) or of the extent to which people adhere to social norms (pay taxes, accept bribes and justify corruption). Crucially for our identification strategy, all those dimensions might not be exogenous determinants of government spending to the extent to which they produce long-run supply and demand of public goods.

In any case, we rely on the dimension 'uncertainty avoidance' by Hofstede (2011) that considers if citizens prefer to abide by social norms and avoid uncertainty, as opposed to being more critical and valuing independence more,¹⁷ 'tax morale' (as in Besley 2020) and an inversely related measure of social capital, represented by the 'intensity of family ties' in Marè et al. (2020) as robustness checks. Table A4 in Appendix S1 reports the weak identification test from the model where we replaced the *collectivism* component with, alternatively, uncertainty avoidance, tax morale and the intensity of family ties. It shows that, while theoretically plausibly related to the mechanisms under analysis, these instruments are weak and cannot serve as drivers of civic engagement.

Next, we explore the possibility that time trends may capture the influence of global warming and other long-term factors beyond government control, potentially affecting spending patterns across countries. To this end, we construct an instrument based on the interaction between collective cultural characteristics and a time trend. As discussed in Section 3, we expect it to serve as a valid instrument provided that both global warming

and time trend variables capture forces that influence government spending patterns across countries but are beyond their control. Indeed, the results in Columns (1) and (2) of Table 7 suggest that a time trend effectively captures the influence of global warming and other long-term global forces. By focusing on global warming, we aimed to control for confounding factors, without suggesting that environmental concerns are the sole exogenous force at play during the period under analysis. Narrowing our focus to a specific trending variable allows for a more refined analysis, leading to interpreting the results through a plausible explanation, subject to the robustness of our checks.

In Table 7, we report the results from models that consider government spending per capita as the dependent variable as robustness checks. Our finding that civil society participation increases total and welfare spending holds in Columns (3) and (5). Again, electoral participation decreases the same spending functions in Columns (4) and (6), and we detect no significant effect of both forms of civic engagement on the public goods aggregate, as shown in the last two columns of the table.

6 | Green Attitudes Towards Policy and Politics

In the last section, we explore whether civic engagement driven by the $Z^{Collective}$ instrument fosters government spending on environmental protection and how it relates to green politics.

6.1 | Salience of Environmental Concerns

According to our identification strategy, the instrument, built as the interaction between time-invariant country preferences for collectivism (or other private and cultural motives as discussed above) and global warming, affects government spending only through civic engagement. However, this exclusion restriction might not hold on theoretical grounds if, for example, countries with different levels of civic participation might have developed different political institutions, and those same institutions might have responded differently to global warming. To provide evidence supporting this exclusion restriction, we frame a placebo analysis in Table 8 and test whether there are differences in government spending as a function of our instrument, before the temperature increase starting around 1980 (see Figure 2).

Consistent with our identification strategy, collective reactions to environmental threats played no role in explaining government spending between 1960 and 1979, in Column (1), in the smaller sample of countries for which data on government spending were available for that early period.¹⁸ They did play a role during the 2000–2024 period, when we assumed that global warming became a perceived threat and acted as a driver of civic engagement with different intensities in different countries, depending on preferences for collectivism. Estimates from the reduced-form model in Column (2) of Table 8 indicate that the instrument, which could be a long-term policy variable, is related to government spending in regressions where it works through endogenous civil participation.

TABLE 7 | Robustness check: government spending per capita.

Dependent variable:	(1) Government spending	(2) Government spending	(3) Government spending per capita	(4) Government spending per capita	(5) Welfare spending per capita	(6) Welfare spending per capita	(7) Public goods spending per capita	(8) Public goods spending per capita
<i>Panel A. Second-stage</i>								
Civil society participation	0.45** (0.22)		0.02** (0.01)		0.06*** (0.02)		0.01 (0.01)	
Electoral participation		-0.37* (0.19)		-0.02* (0.01)		-0.05*** (0.02)		-0.00 (0.01)
Global warming	14.25*** (5.37)	7.03 (6.73)	2.35*** (0.26)	1.99*** (0.30)	2.55*** (0.38)	1.64*** (0.50)	2.35*** (0.31)	2.27*** (0.34)
GDP p.c. (log)	-5.69** (2.89)	0.04 (4.37)	0.20 (0.13)	0.48** (0.19)	0.34* (0.18)	1.06*** (0.32)	0.21 (0.16)	0.28 (0.21)
Openness (log)	-4.55 (3.40)	-6.72 (4.15)	-0.20 (0.17)	-0.31 (0.24)	-0.61** (0.25)	-0.88** (0.42)	-0.15 (0.19)	-0.17 (0.20)
Population	0.16 (0.46)	0.68 (0.51)	-0.09** (0.04)	-0.06** (0.03)	-0.12*** (0.04)	-0.05 (0.04)	-0.08** (0.04)	-0.08** (0.04)
Population (square)	0.00 (0.00)	-0.00 (0.00)	0.00** (0.00)	0.00* (0.00)	0.00*** (0.00)	0.00 (0.00)	0.00* (0.00)	0.00* (0.00)
Young dependency ratio	-0.08 (0.18)	-0.11 (0.20)	-0.01 (0.01)	-0.01 (0.01)	-0.02* (0.01)	-0.03 (0.02)	-0.01 (0.01)	-0.01 (0.01)
Old dependency ratio	0.16 (0.15)	0.03 (0.16)	-0.01 (0.01)	-0.01* (0.01)	0.00 (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.02*** (0.01)
Aging	1.01 (1.13)	2.16 (1.50)	0.08 (0.05)	0.13* (0.08)	0.18* (0.09)	0.32** (0.14)	0.04 (0.05)	0.06 (0.07)
Country effects	✓	✓	✓	✓	✓	✓	✓	✓
Period effects (PE)	✓	✓	✓	✓	✓	✓	✓	✓
Test of PE joint significance	44.36 [0.00]	34.12 [0.00]	2.33 [0.31]	2.19 [0.33]	6.29 [0.04]	3.88 [0.14]	0.58 [0.75]	0.52 [0.77]
Endogeneity test	4.74 [0.03]	4.34 [0.04]	3.93 [0.05]	3.79 [0.05]	13.33 [0.00]	11.79 [0.00]	0.25 [0.62]	0.13 [0.72]
Weak identification test	13.51	9.87	11.79	10.30	11.79	10.30	11.79	10.30

(Continues)

TABLE 7 | (Continued)

Dependent variable:	(1) Government spending	(2) Government spending	(3) Government spending per capita	(4) Government spending per capita	(5) Welfare spending per capita	(6) Welfare spending per capita	(7) Public goods spending per capita	(8) Public goods spending per capita
<i>Panel B. FE</i>								
Civil society participation	0.02 (0.07)		0.00 (0.01)		0.01 (0.01)		0.00 (0.01)	
Electoral participation		-0.03 (0.04)		-0.00 (0.00)		-0.00 (0.00)		-0.00 (0.00)
<i>Panel C. Reduced form</i>								
<i>Time trend*Collectivism</i>	0.02 (0.01)	0.02 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.00 (0.01)	0.00 (0.01)

Note: The table reports 2SLS estimates in Panel A using, in Columns 1 and 2, the interaction between a time trend and collectivism as instrument, in Columns 3 to 8, collective motives ($Z^{Collectivity}$) as instrument; FE estimates for linear models in Panel B; FE estimates for reduced-form models in Panel C. The constant, country and period fixed effects are included in the estimates but not reported in the table. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 137.

TABLE 8 | Placebo analysis.

Dependent variable:	(1) Government spending 1960–1979	(2) Government spending 2000–2024
$Z^{Collective}$	-0.86 (2.17)	0.17** (0.08)
Global warming	219.06 (134.82)	8.43 (7.06)
GDP p.c. (log)	-6.02 (24.49)	-6.38** (2.53)
Openness (log)	-20.76 (15.92)	-3.30 (3.09)
Population	-2.71 (3.41)	0.75 (0.47)
Population (square)	0.02 (0.02)	-0.00 (0.00)
Young dependency ratio	-0.72* (0.35)	0.10 (0.16)
Old dependency ratio	1.74 (1.92)	0.08 (0.18)
Aging	-19.29 (11.25)	0.19 (0.82)
Country effects	✓	✓
Period effects (PE)	✓	✓
Test of PE joint significance	1.65 [0.22]	16.18 [0.00]
R squared	0.79	0.57

Note: The table reports FE estimates. The constant, country and period fixed effects are included in the estimates but not reported in the table. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 42 in column (1); 137 in column (2).

6.2 | Environmental Protection Spending and Green Politics

When studying people's preferences about what policies should be implemented to tackle climate change, it is possible that even if many citizens declare to be concerned about the environment, they do not know what to do in practice, namely, what specific environmental protection policies to ask for (Eurobarometer 2020). Alternatively, they do not want to ask for specific policy proposals due to low political trust or free rider attitudes in the case of a global public good such as the climate change issue, as confirmed by the unwillingness to pay for, for example, reductions in CO2 emissions (Fairbrother 2022; De Sario et al. 2023).

In our sample, the share of environmental protection on total government spending accounts for between 0% in Singapore in the early 2000s and almost 1.6% in the Netherlands. Table 9 shows that over the 2000–2024 period, higher civil society participation in response to collective environmental threats spurs

TABLE 9 | Environmental protection.

Dependent variable:	(1) Environmental protection 2000–2024	(2) Environmental protection 2000–2024	(3) Environmental protection 2000–2019	(4) Environmental protection 2000–2019
<i>Panel A. Second-stage</i>				
Civil society participation	0.03* (0.02)		0.02 (0.02)	
Electoral participation		−0.02* (0.01)		−0.02 (0.01)
Global warming	1.26*** (0.34)	0.78** (0.38)	1.64*** (0.40)	1.45*** (0.35)
GDP p.c. (log)	−0.23 (0.15)	0.14 (0.25)	−0.31** (0.16)	−0.08 (0.21)
Openness (log)	−0.48** (0.24)	−0.62** (0.29)	−0.71*** (0.27)	−0.75*** (0.25)
Population	−0.03 (0.04)	0.01 (0.03)	−0.06 (0.05)	−0.03 (0.04)
Population (square)	−0.00 (0.00)	−0.00 (0.00)	0.00 (0.00)	−0.00 (0.00)
Young dependency ratio	0.00 (0.01)	0.00 (0.01)	0.02** (0.01)	0.02* (0.01)
Old dependency ratio	−0.01 (0.01)	−0.02** (0.01)	−0.02** (0.01)	−0.03** (0.01)
Aging	0.13** (0.06)	0.20** (0.09)	0.02 (0.06)	0.04 (0.07)
Country effects	✓	✓	✓	✓
Period effects (PE)	✓	✓	✓	✓
Test of PE joint significance	10.99 [0.01]	6.15 [0.10]	8.95 [0.01]	5.88 [0.05]
Endogeneity test	3.44 [0.06]	3.06 [0.08]	0.99 [0.32]	0.40 [0.53]
Weak identification test	11.79	10.30	21.01	19.65
<i>Panel B. FE</i>				
Civil society participation	0.00 (0.01)		0.01 (0.01)	
Electoral participation		−0.01 (0.00)		−0.01** (0.00)
<i>Panel C. Reduced form</i>				
$Z^{Collective}$	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)

Note: The table reports 2SLS estimates using collective motives ($Z^{Collective}$) as instrument in Panel A; FE estimates for the linear model in Panel B; FE estimates for the reduced-form model in Panel C. The constant, country and period fixed effects are included in the estimates but not reported in the table. Covariates are those used in Table 1. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 137 in columns (1) and (2); 109 in columns (3) and (4).

government spending on environmental protection in Column (1), while lower electoral participation in response to collective environmental threats decreases it in Column (2).

However, the effect of civic engagement on government spending on environmental protection is not significant when we limit the analysis to the 2000–2019 period, in Columns (3) and

TABLE 10 | Green politics in electoral manifestos.

Dependent variable (contents in parties' electoral manifestos):	(1) Welfare state expansion	(2) Welfare state expansion	(3) Call for sustainable economic development	(4) Call for sustainable economic development	(5) 'Green' policies	(6) 'Green' policies
<i>Panel A. Second-stage</i>						
Civil society participation	1.00** (0.45)		0.14 (0.13)		-0.25 (0.17)	
Electoral participation		-0.83* (0.49)		-0.12 (0.12)		0.21 (0.15)
Global warming	28.89** (12.13)	17.03 (13.84)	18.80*** (4.62)	17.16*** (4.09)	-1.00 (4.78)	2.03 (4.84)
GDP p.c. (log)	7.58 (6.27)	21.30* (12.68)	0.95 (1.53)	2.86 (3.02)	0.86 (2.36)	-2.64 (4.06)
Openness (log)	-7.77 (8.96)	-10.82 (11.84)	-6.88* (3.62)	-7.30* (3.96)	-0.45 (4.27)	0.33 (4.74)
Population	0.23 (1.00)	1.02 (1.33)	-0.45 (0.35)	-0.34 (0.40)	0.24 (0.43)	0.03 (0.53)
Population (square)	-0.00 (0.01)	-0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Young dependency ratio	0.30 (0.42)	-0.11 (0.49)	-0.10 (0.13)	-0.16 (0.13)	-0.25 (0.17)	-0.15 (0.20)
Old dependency ratio	-0.73* (0.39)	-1.40** (0.68)	-0.15 (0.13)	-0.24 (0.18)	0.11 (0.16)	0.28 (0.22)
Aging	1.28 (2.96)	2.03 (3.10)	-0.11 (0.76)	-0.01 (0.79)	-1.38 (1.05)	-1.57 (1.24)
Ecoparty	-2.87 (3.51)	-1.35 (4.61)	0.03 (0.88)	0.24 (0.89)	0.58 (1.40)	0.19 (1.54)
Country effects	✓	✓	✓	✓	✓	✓
Period effects (PE)	✓	✓	✓	✓	✓	✓
Test of PE joint significance	8.03 [0.04]	6.79 [0.08]	3.61 [0.31]	3.03 [0.39]	7.64 [0.05]	6.32 [0.10]
Endogeneity test	3.94 [0.05]	4.52 [0.03]	0.37 [0.54]	0.66 [0.42]	2.16 [0.14]	3.06 [0.08]
Weak identification test	11.20	11.91	11.20	11.91	11.20	11.91
<i>Panel B. FE</i>						
Civil society participation	-0.05 (0.06)		-0.06 (0.05)		0.06 (0.04)	
Electoral participation		-0.01 (0.05)		-0.03 (0.06)		-0.03 (0.03)
<i>Panel C. Reduced form</i>						
$Z^{Collective}$	-0.14* (0.07)	-0.14* (0.07)	-0.12 (0.07)	-0.12 (0.07)	0.06 (0.07)	0.06 (0.07)

Note: The table reports 2SLS estimates using collective motives ($Z^{Collective}$) as an instrument in Panel A; FE estimates for the linear model in Panel B; FE estimates for the reduced-form model in Panel C. The constant, country and period fixed effects are included in the estimates but not reported in the table. Robust standard errors are in parentheses. Significant at * 10 percent, ** 5 percent, *** 1 percent. Observations: 102.

(4) of Table 9. The temporal sensitivity analysis, not including the effect of the Covid-19 spending spike, tests robustness and shows how results may vary across subperiods. This might indicate that individual attitudes towards acting on environmental policies may have evolved gradually over time, as discussed in Section 3. Before the surge in public spending in response to the Covid-19 pandemic, these attitudes may not have been particularly sensitive to media coverage or to the scientific community's focus on global warming.

It is also possible that the disaffection towards politics and electoral participation decreases parties' incentives to tackle environmental issues in their programmes. To address this issue, we use information on policy preferences of national parties from the Manifesto Project Dataset (Lehmann et al. 2025). Cross-country comparative data are available for election manifestos of parties that have won at least one seat in national elections to the lower house and for 25 countries in our sample.¹⁹

In Table 10, we compare the effect of civic engagement on parties' programmatic supply in relation to three policy domains. Columns (1) and (2) use as the dependent variable the share of sentences including favourable mentions of the need to expand the welfare state through government spending; Columns (3) and (4), of favourable mentions of anti-growth politics, in opposition to growth causing societal and environmental harm; Columns (5) and (6), of mentions in favour of protecting the environment, fighting climate change and other 'green' policies that have the goal of environmental protection.

To account for the possibility that such topics and issues are part of the political agenda of many parties, with different degrees of relevance in each manifesto and at the national level depending on the share of seats won by each party, we weight each indicator of content for the number of seats that each party won. Finally, in all models, we control for the presence in the lower house of (at least) one green ecology party.

The results in Table 10 indicate that civil society participation increases the supply of welfare-expanding policies in electoral manifestos in Column (1) and that electoral participation decreases it in Column (2) as parties seem to capture citizens' attitudes towards redistribution on welfare spending. On the other hand, we find no effect of civic engagement on the supply of policies that oppose growth that may cause harm to the environment in Columns (3) and (4).

Column (5) suggests a mild decrease in green political agendas in countries where civil society participation is driven by concerns about the collective consequences of global warming. Conversely, Column (6) indicates an increase in green politics in countries where lower electoral participation by more collectively oriented voters may allow more self-interested voters to shape policy outcomes.

7 | Concluding Remarks

This paper provides evidence on how different forms of civic engagement shape government spending across 28 democracies between 2000 and 2024. Its key contribution lies in distinguishing

the fiscal effects of two distinct channels of engagement—civil society participation and electoral participation—by employing an identification strategy that leverages arguably exogenous variation in the collective and self-interested motives driving civic engagement.

The results indicate that participation in civil society organisations tends to foster higher levels of government expenditure, particularly in functions related to social protection and welfare support for vulnerable groups (the old, families and children, the disabled, survivors and the unemployed), suggesting that collective action through civil participation may strengthen demands for redistributive and inclusive policies. Conversely, when civic engagement operates through the electoral channel, collective motives appear to bring less collectively oriented individuals into the electorate. Similarly, self-interested motives seem to increase participation among more self-interested voters, and both dynamics are ultimately associated with lower public expenditure.

Considering that while more comprehensive data would improve the precision of our estimates and allow for broader normative conclusions, our instruments remain valid within the specific historical context under study and may not necessarily generalise to different political or economic environments. While acknowledging the limitations of the available data, we still believe that the insights provided offer valuable normative implications.

From a policy perspective, our results stress the importance of plural forms of civic engagement. Civil society in our framework works not merely as a counterpart in policy consultation but as a mechanism through which social preferences are articulated and transmitted to the public sector. However, in contexts where citizens exhibit more collectivist orientations, disengagement from formal political processes can undermine the fiscal capacity of democratic governments to respond effectively to social needs.

Our analysis offers valuable insights on the importance of strengthening civic infrastructure—for example, through civic education, transparency in the use of public resources and participatory mechanisms—to help maintain a balance between representation and participation, mitigating the risk that disaffection with traditional electoral channels is eroding both trust and the willingness to fund collective goods (Albanese et al. 2021). More broadly, it suggests that policies aimed at enhancing citizens' sense of collective responsibility—particularly in contexts marked by environmental, demographic or technological transformations—can contribute to preserving the sustainability of welfare systems in an era of globalisation and interdependent frameworks.

This study paves the way for future research along several connected dimensions. At both the aggregate and individual levels, future studies could investigate how environmental concerns shape the medium- and long-term trajectories of tax compliance, institutional trust and the demand and supply of green policies, with particular emphasis on the mediating role of civic engagement. As noted in recent studies (Revelli 2025), an important area related to our analysis could be assessing how welfare and

environmental protection policies, driven by civic engagement, affect citizens' quality of life, health outcomes, income and migration prospects. Another promising line of research involves examining the extent to which environmental policies are implemented through regulatory instruments rather than direct public spending. While this study focuses on downstream effects that materialise in public budgets, these mechanisms are not mutually exclusive. As we show in our data, collective action on environmental issues, even when not immediately visible through regulatory measures, can still exert meaningful effects on fiscal outcomes.

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Data Availability Statement

The data that support the findings of this study are available from open databases. Additional details are available from the corresponding author upon reasonable request.

Endnotes

- ¹ The role of tax morale in countries where voluntary organisations are strong is also investigated by Marè et al. (2020) in affecting the size of underground economy.
- ² Empirical evidence on the negative impact, or no impact, of an increased electoral participation—measured by voter turnout—on government welfare expenditure is provided by Hodler et al. (2015) for Switzerland, Hoffman et al. (2017) for Austria and Lo Prete and Revelli (2021) for Italy. On the other hand, Aggeborn (2016) finds that the higher voter turnout resulted in higher taxes and greater per capita public spending at the municipal level in Sweden.
- ³ Including self-interested motives allows us to test our predictions regarding which drivers are expected to affect each specific channel of civic engagement. This approach helps to mitigate potential overlap between endogenous participation channels—by using a distinct instrument for each participation dimension, we can demonstrate the robustness of our findings across alternative identification strategies. As a simpler alternative, one could collapse the framework so that collective motives identify the effect of civil society participation only, while self-interested motives identify the effect of electoral participation.
- ⁴ We follow previous literature on democratic policy outcomes and their determinants by including nations that, according to the Freedom House indicator of political and civil liberties (Gorokhovskaia and Grothe 2025), are classified as 'free' or 'partly free' democracies (see, e.g., Persson and Tabellini 2004). They represent liberal and/or electoral democracies where citizens have the right to express their ideas and cast a vote freely at elections.
- ⁵ On the political economy ground, our results do not challenge the political business cycle theories arguing that electorally motivated politicians increase social expenditures before elections—given

that those expenditures are more visible to the voters than others—and they are also not likely to decrease them after elections (Haelg et al. 2022).

- ⁶ Controlling for GDP per capita also helps capture underlying institutional and governance characteristics—in our sample, as in previous analyses (e.g., Easterly and Rebelo 1993), indicators, such as the “rule of law” from the IDEA Global State of Democracy database, which reflect the exercise of political power, security from political violence and the integrity of public administration and the judiciary, are not included due to their correlation with our key variables.
- ⁷ A similar approach to constructing instrumental variables—based on interactions between global trends assumed largely exogenous to domestic policies and time-invariant country characteristics—was also employed by Bertola and Lo Prete (2013) to study how financial transactions responded to exogenous trade shocks through policy channels.
- ⁸ Data on cultural dimensions were first collected in the 1980s and updated to compute values for countries that ceased to exist and were not included in the sample (e.g., USSR, Yugoslavia, Czechoslovakia) in more recent years.
- ⁹ See ‘What Is Climate Change?’ online definition by the United Nations (www.un.org/en/climatechange/what-is-climate-change).
- ¹⁰ No significant difference is found using one indicator or the other.
- ¹¹ According to Intergovernmental Panel on Climate Change reports, the observed 1.1°C warming may correlate with disasters, but it is not the sole driver of such events. Rising temperatures are also likely to have small effects on GDP per capita for already rich countries (Meierrieks and Stadelmann 2024).
- ¹² Government spending over any 5-year period is shaped by demographic factors that influence the long-term supply and demand for public goods and services. In addition, population aging may indirectly affect government spending by changing the composition of the electorate to the extent to which different segments of society hold systematically different preferences regarding redistribution (as it could be the case across age groups).
- ¹³ Among such country-specific characteristics, exposure to ultraviolet radiation, a factor that can affect and be affected by global climate change along with changes in the stratospheric ozone and that Ezcurra (2024) associates with cultural change and tax and administrative state capacity, does not question the validity of our instrument.
- ¹⁴ Such bias would arise, for instance, if civic society participation was endogenously higher in countries experiencing weakening institutions or worsening economic outcomes, which themselves negatively affect the outcomes of interest. For example, increased participation may reflect citizens dissatisfaction with poor governance or economic performance, in countries where negative economic outcomes (e.g., recession, fiscal cuts, or rising inequality) or institutional decline also reduce government spending. Conversely, and upward bias would emerge if civil society participation was endogenously higher in countries where unobserved positive economic outcomes or institutional improvements lead to higher government spending.
- ¹⁵ While this is an approximation, like many cross-country instruments, which does not perfectly capture private costs, it enables us to explore how geoclimatic conditions directly affected personal well-being, making it possible to examine how a time-invariant country-level characteristic that moderates the perceived cost and urgency of environmental threats, offering a plausible proxy for private responses to climate risks.
- ¹⁶ The other cultural traits in Hofstede (2011) are based on the five dimensions: ‘power distance’, ‘uncertainty avoidance’, ‘masculinity versus femininity’, ‘long-term versus short-term orientation’ and ‘indulgence versus restraint’; they relate, respectively, to social preferences over inequality, risk aversion, emotional roles attributed to genders, attachment to tradition values and hedonism.

¹⁷ Differently from the other cultural dimensions, uncertainty avoidance has been used along with the indicator of collectivism (versus individualism), inverted, for example, as an instrument for the level of competence that can ease citizens' understanding of public policies (Lo Prete 2024).

¹⁸ Data on government spending over the 1960–1979 period are available for 16 countries, namely, Australia, Austria, Belgium, Canada, Denmark, El Salvador, Finland, France, Iceland, Italy, Japan, Luxembourg, Malta, the Netherlands, New Zealand, Norway, Singapore, Sweden, Switzerland and the United Kingdom.

¹⁹ The dataset is updated twice a year. It does not include information for El Salvador, Malta and Singapore. Moreover, its last release includes data for the 2021–2024 period for Australia, Germany, Iceland, the Netherlands and Sweden only. The results in Table 10 are robust to balancing the sample by excluding these observations and limiting the analysis to the 2000–2019 period.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Appendix S1:** Supporting information.