Department of Statistics and Probability
College of Natural Science
MICHIGAN STATE UNIVERSITY

Charting Climate Confidence through Institutional Trust in European Governments

Graham Diedrich, MPP
diedgr@msu.edu
www.grahamdiedrich.com

Introduction

Climate change is a pressing global challenge that demands concerted action from governments, citizens, and institutions alike. The urgency of addressing climate change has led to an exploration of various factors that influence public perceptions and behaviors towards environmental issues. One such factor under scrutiny is institutional trust, particularly in European countries where the nexus between governance and environmental stewardship holds significant sway. This research delves into the hypothesis that higher levels of institutional trust within European nations correspond to a greater belief among citizens that collective action spearheaded by governments will effectively mitigate the impacts of climate change.

Data and Methods

Variable Selection:
Data for this research were sourced from the European Social Survey (ESS) Round 10, a comprehensive cross-national survey covering various social attitudes and behaviors across European countries. The analysis focused on utilizing a country fixed-effect Generalized Linear Model (GLM) regression approach to examine the relationship between institutional trust and perceptions of governmental efficacy in addressing climate change. **Table 1** outlines the dependent, independent, and control variables utilized.

Model Specification:
A country fixed-effect GLM regression model was employed to account for unobserved heterogeneity across countries that could potentially influence the relationship between institutional trust and perceptions of governmental efficacy in addressing climate change. This modeling approach enables the examination of within-country variations over time, controlling for country-specific factors that remain constant across observations.

Weighting:
The R package "survey" was utilized to correctly weight the data, ensuring that the sample is representative of the population of interest. Proper weighting helps address potential biases arising from sample selection and enhances the generalizability of the findings to the broader population of European citizens.

Results and Discussion

Institutional Trust and Climate Change Perception:
A 1% increase in the trust in the European Parliament is associated with a 0.096% increase in the perceived efficacy of collective, cross-national government action. Meanwhile, a 1% increase in trust in politicians relates to a similar 0.096% increase in cross-national government action. No other trust indicators were statistically significant, perhaps indicating that specific institutional trust, rather than a general trust in political entities, plays a crucial role in shaping citizens' beliefs about the potential success of collaborative governmental efforts to tackle climate change. **Table 2** outlines regression results in further detail.

Control Variables:
Years of full-time education completed shows a significant negative association with the dependent variable, indicating that individuals with higher levels of education may be more skeptical about the effectiveness of government actions in mitigating climate change. Respondents' fear about climate change had a significant and positive relationship with the dependent variable.

Country-Specific Effects:
Respondents from Switzerland, Czech Republic, Great Britian, France, and Portugal exhibit significantly lower perceptions of governmental efficacy compared to Europe as a whole. Conversely, respondents from Hungary and Italy show significantly higher perceptions of governmental efficacy.
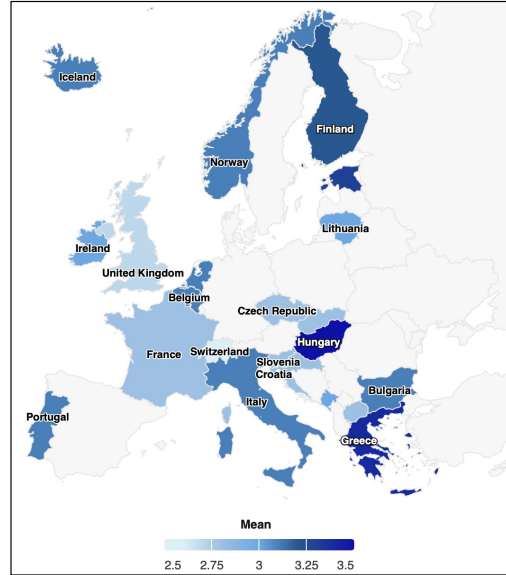

Figure 2. How likely, governments in enough countries take action to reduce climate change? (Source: European Social Survey)

Variable	Description
Dependent Variable	
gvsrdcc	How likely, governments in enough countries take action to reduce climate change? (0-10)
Independent Variables	
trstep	Trust in the European Parliament (0-10)
trstplt	Trust in politicians (0-10)
trstprl	Trust in country's parliament (0-10)
trstprt	Trust in political parties (0-10)
trstun	Trust in the United Nations (0-10)
Control Variables	
lrscale	Placement on left-right scale (0-10)
gndr	Gender
eduyrs	Years of full-time education completed
hinctnta	Household's total net income, all sources (1-10)
wrclmch	How worried about climate change? (1-5)

Table 1. Variable List

$$gvsrdcc = \beta_0 + \beta_1 \cdot trstep + \beta_2 \cdot trstplt + \beta_3 \cdot trstprl + \beta_4 \cdot trstprt + \beta_5 \cdot trstun + \beta_6 \cdot lrscale + \beta_7 \cdot gndr + \beta_8 \cdot eduyrs + \beta_9 \cdot hinctnta + \beta_{10} \cdot wrclmch + \sum_{i=1}^{n} \beta_{i+10} \cdot country_i + \epsilon$$

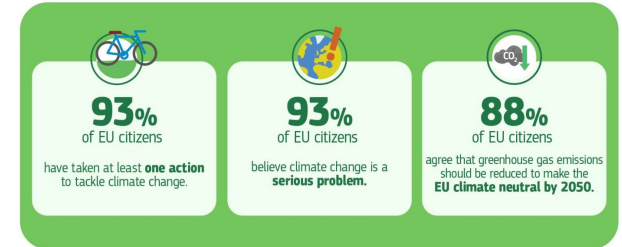Equation 1. GLM Functional Form

Figure 1. Survey results indicating the propensity of the climate change debate in Europe. (Source: Eurobarometer)

Variable	Estimate	Std. Error	T-value	P-value
(Intercept)*	1.06477872	0.13534363	7.86722451	4.56E-15
trstep_log*	0.09624166	0.03109435	3.09514946	0.00197986
trstplt_log*	0.09622512	0.030289	3.17690034	0.00149918
trstprl_log	-0.0215257	0.03244752	-0.6633998	0.50711027
trstprt_log	0.01919945	0.03444874	0.55733377	0.57732858
trstun_log	0.01149269	0.03449618	0.33315833	0.73903111
lrscale_log	0.02592895	0.02932601	0.88416194	0.37665851
gndr	0.01457392	0.02122897	0.68651102	0.49242814
eduyrs_log	-0.0879939	0.03775058	-2.3309288	0.01980337
hinctnta_log	-0.0110965	0.02344287	-0.473343	0.63599268
wrclmch_log	0.10936894	0.05331973	2.05119086	0.04030916
factor(cntry)BG	0.05605415	0.04194175	1.33647623	0.18146477
factor(cntry)CH*	-0.1937951	0.03580797	-5.4120647	6.57E-08
factor(cntry)CZ*	-0.1119795	0.0370954	-3.0186882	0.00255369
factor(cntry)EE	0.04789162	0.03301777	1.45048004	0.14699805
factor(cntry)FI	-0.0079167	0.03284778	-0.2410131	0.8095565
factor(cntry)FR*	-0.0918328	0.03259782	-2.8171441	0.00486751
factor(cntry)GB	-0.1001825	0.04178526	-2.397557	0.01654745
factor(cntry)GR	0.08988378	0.05721174	1.57107216	0.11623988
factor(cntry)HR	-0.0458991	0.03990135	-1.1503157	0.25007821
factor(cntry)HU	0.06938102	0.03355997	2.06737444	0.03875892
factor(cntry)IE	-0.049351	0.04901925	-1.006768	0.31410324
factor(cntry)IS	-0.0229869	0.03926642	-0.5854087	0.55830382
factor(cntry)IT*	0.06311964	0.03410539	1.85072365	0.06427824
factor(cntry)LT	0.01911752	0.03954016	0.48349624	0.62876819
factor(cntry)ME	-0.0265506	0.05644246	-0.4704012	0.63809241
factor(cntry)MK	-0.0348666	0.05109984	-0.6823238	0.49507121
factor(cntry)NL	-0.0251487	0.03310464	-0.7596736	0.44749162
factor(cntry)NO	-0.0218757	0.03846032	-0.5687869	0.56953062
factor(cntry)PT	-0.0932208	0.04377181	-2.1296993	0.0332534
factor(cntry)SI	-0.0048753	0.03391276	-0.1437591	0.88569745
factor(cntry)SK	-0.0225741	0.0443031	-0.5095373	0.61040192

Table 2. Model Results