Green Day

Mini-research project for the Political Way of Thinking Course

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Abstract

The emergence of green parties is an important and relatively recent phenomenon which has potential to reshape the political landscape. In this small study I aim to examine who will be the drivers of this change by casting their vote on a green party. Based on the findings of the World Value Survey (2021) and the Manifesto Project (2021), I established a logistic model to outline what social and personal value factors have a positive or a negative relationship with a green vote. The summary of the model shows that Age, Education, Materialism, Religion, Participation in protests and Self-positioning on the political spectrum have a strong relationship with the dependent variable. Choosing these variables based on a theoretical analysis and literature review support the findings of the quantitative analysis.

Contents

1 Introduction

"Man possesses, for a small moment in his history, the most powerful combination of knowledge, tools, and resources the world has ever known. He has all that is physically necessary to create a totally new form of human society-one that would be built to last for generations."
(Meadows et al., 1972)

Being "green" seems to have become an omnipresent concept of the 21st century. The effects of climate change are exacerbating, and due to the wide array of available technological means, we know more about our planet than ever and therefore are able to measure, assess, discuss and even influence the anthropogenic effect on the processes and beings of the biosphere. The emergence of green movements as serious political forces is a relatively recent phenomenon, which is usually pinned to the 60's or 70's (Dobson, 2017). How does this new occurrence become widespread, who are the main supporters of green parties? What challenges do they face if they want to be serious competition to the classical political forces in their country? These are the questions I would like to discuss in this project, and use quantitative methods to make the relationship between certain social attributes and the popularity of green parties more tactile. All files related to the project are available here.

2 Quantitative Analysis

2.1 The Data

To be able to describe wide social phenomena, representative surveys are needed with large samples. This is why I chose the *World Value Survey* as a basis of my quantitative analysis, which uses 135 000 observations worldwide. The *Manifesto Project* is a database that analyses the stance and performance of political parties on certain issues using text mining. This data set was used to determine if the party a respondent would vote for is green or not (is_green), this will be the dependent variable in the regression. It was constructed by matching

the names of the green parties from the Manifesto Database to the World Value Survey and some manual adjustments. The "is_green" variable is TRUE if the respondent of the questionnaire would vote for a party that I classified as a green party, and FALSE if not. Missing and NA values were omitted from the analysis.

2.2 Descriptive Statistics

The WVS contains 135 000 responses. The number of people who answered that they would like to vote for a green party in the next election was 1033. This might seem like a low amount, however, it has to be taken into consideration that the data is from all around the world, including countries with a large population and no active green party, and almost half of the respondents refused to answer this question.

2.3 Explanatory Variables

One of the most serious challenges of the ecological movement in politics is that their main message - the importance of our planet and the necessity to rearrange our priorities in favour of the generations to come - is difficult to comprehend, as it is a systematically dependent network of phenomena and living beings (Castree, 2013). This is why in order to gain traction, green movements have to make compromises: to make their idea more palpable, they have to "water down" their messages to appeal to the broad public, and execute at least some of their objectives (Dobson, 2007). It has to be taken into account that the political system in a country can affect the performances of political parties in an election: in a majoritarian system, like the United States small parties will suffer proportionally more compared to larger parties (Lijphart, 2012). It can also be a reason why a citizen of a country with a majoritarian political system would not want to vote for a smaller party - they would perceive that their vote would "get lost". After outlining the main challenges an ecological party faces, it can be better understood, what influences a person in casting their vote on

a green party. When choosing which variables will explain the green vote, it is important to take into account multicollinearity and omit variables that can possibly explain each other, such as birth date and age, and take into account the skewness as well. Since most of these are categorical variables, they have to be converted into such.

The question of scarcity comes easily in mind when discussing the essence of ecologism (Simpson et al., 2005). A transition from quantity to quality is often an underlying principle of green policies and propositions of green parties. In other words, post-materialist thinking is a key characteristic of a green thinker. The World Value Survey measures post-materialism by constructing a variable from two other questions. The output is a numeric indicator, where 1 means materialist, 2 means mixed, and 3 means post-materialist. If the response is negative, the variable is not applicable or missing. *Y002*, which stands for post-materialism is therefore is a categorical variable.

Demographic variables may also be indicators of green thinking, as literature tends to agree that young, educated, non-religious people are more likely to cast their vote for a green party (Dolezal, 2010, Cowie, Greaves and Sibley, 2015, van Hiel and Mervielde, 2002). Variable *X003* describes the age of a voter, variable *X0251_01* indicates the education level as codes (this is a harmonised variable using the 2011 ISCED classification scheme), and variable *F034* indicates the religion of the respondent. Here, the value is 1 if the respondent is religious, and 3 if a convinced atheist, 2 is non-religious in-between.

Green politics emerged from apolitical movements, the main tools of which were attending protests (Dobson, 2007). Variable *E026* of the World Value Survey measures such activity by asking respondents their stance on attending peaceful demonstrations. If the response was 1, it means that the given person has already attended such a protest, 3 means that they would never do this. There are other variables measuring attitudes towards more radical political action (boycotts or strikes), which will not be included in the regression due to multicollinearity.

Green political movements are typically associated with the left side of the

political spectrum (Dobson, 2007). It can be tested how political self-assessment affects the green vote, ceteris paribus, using the *E033* variable, where one has to position themselves on a scale from 1 to 10 (1 stands for Left and 10 for Right).

2.4 Regression

Since the target variable is a logical one, I used a logistic or logit regression model. After converting the variables and running the model, we get the following regression equation:

$$
\begin{aligned}
is\_green = 2.599e-02 + (-7.589e-05) \times X003 \\
+ (-1.870e-03) \times X025A\_011 + (-2.063e-03) \times \\
emphX025A\_012 + (-1.479e-03) \times X025A\_013 \\
+ 9.109e-03 \times X025A\_014 + 3.684e-03 \times X025A\_015 \\
+ 8.104e-03 \times X025A\_016 \\
+ 3.950e-03 \times X025A\_017 + 1.186e-02 \times X025A\_018 \\
+ 5.799e-03 \times F0342 + 1.178e-02 \times F0343 \\
+ 2.989e-03 \times Y0022 + 1.319e-02 \times Y0023 \\
+ (-1.670e-03) \times E033 \\
+ (-1.142e-02) \times E0272 + (-1.581e-02) \times E0273
\end{aligned}
$$

2.5 Validation, Accuracy

To test if the model I created is accurate enough, I will use the Receiver Operating Characteristic (ROC) Curve. This depicts the diagnostic ability of a binary regression model, which visualizes the difference between Specificity and Sensitivity.

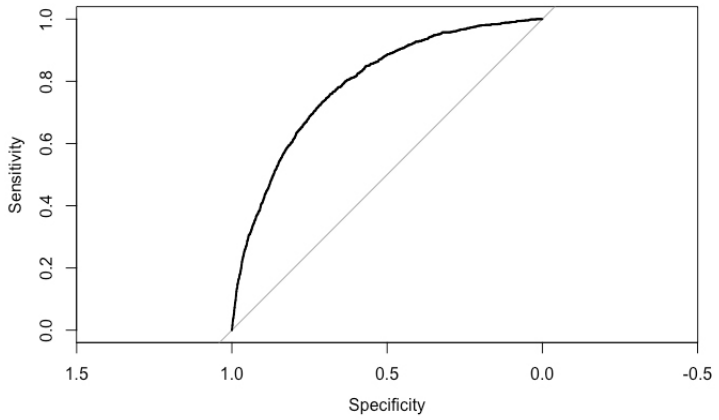

Figure 1: ROC Curve of the logit regression (Source: Own work, 2021)

It can be calculated that the Area Under the Curve (AUC) value is 0.791, the higher this value, the better specified the model (Békés and Kézdi, 2021).

The Wald-test can be used to determine the significance of the variables. The null hypothesis is that some parameter equals some value. If we get a non-zero value, it means that the H0 can be accepted and the variables should be included in the model (Békés, Kézdi, 2021).

2.6 Interpretation

The variables that are significant on all common significance levels are the following: Age, Education (Post secondary non tertiary, Bachelor or equivalent and Doctoral or equivalent), Religion, Post-materialist views, Attendance of protests and Self-positioning. As it can be seen from the coefficients on Fig. 1, Age has a strong negative correlation with green vote, which supports the

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Call:
glm(formula = is_green ~ X003 + X025A_01 + F034 + Y002 + E033 +
    E027, data = raw.EVS)

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-0.05849  -0.01769  -0.00851  -0.00104   1.01012

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  2.599e-02  2.778e-03   9.356  < 2e-16 ***
X003        -7.589e-05  1.989e-05  -3.816 0.000136 ***
X025A_011   -1.870e-03  2.470e-03  -0.757 0.448946
X025A_012   -2.063e-03  2.387e-03  -0.864 0.387485
X025A_013   -1.479e-03  2.282e-03  -0.648 0.516819
X025A_014    9.109e-03  2.519e-03   3.617 0.000298 ***
X025A_015    3.684e-03  2.510e-03   1.468 0.142171
X025A_016    8.104e-03  2.384e-03   3.400 0.000675 ***
X025A_017    3.950e-03  2.451e-03   1.612 0.107034
X025A_018    1.186e-02  3.651e-03   3.248 0.001162 **
F0342        5.799e-03  7.733e-04   7.499 6.47e-14 ***
F0343        1.178e-02  1.199e-03   9.825  < 2e-16 ***
Y0022        2.989e-03  8.129e-04   3.677 0.000236 ***
Y0023        1.319e-02  1.133e-03  11.640  < 2e-16 ***
E033        -1.670e-03  1.447e-04 -11.541  < 2e-16 ***
E0272       -1.142e-02  9.639e-04 -11.844  < 2e-16 ***
E0273       -1.581e-02  9.875e-04 -16.013  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Figure 2: Summary of the logit regression with significance indicators (Source: Own work, 2021)

findings of the above mentioned literature. A higher education level indicates a bigger likelihood of casting a vote for a green party, and the coefficients of the Religion variable (F0342 and F0343) show that if a person is an atheist or does not identify themselves as religious, it is more likely that they will do the same. The results of the regression support the claim that if someone has more post-materialistic values, they are more likely to vote for a green party. E033, the variable which stands for political self-identification, has a negative correlation with the dependent variable. This is also no surprise, as the lower end of the scale indicates proximity to the political left. The coefficient of the protest attendance variable (E027) is negative as well, and as a higher number indicates a lesser likelihood of attending a protest, this seems to support the claims of the literature as well.

3 Limitations

It is inevitable to mention that even though the model is well-specified and the survey which I used is representative on a global scale, by no means can causal relations be established between the variables, even if there is high correlation. For instance, there might be a factor that can explain both an explanatory variable and the dependent variable. This model merely shows the relationship between the willingness to vote for a green party and certain personal values. Other factors can influence the success of a green party than values and political system (which was only briefly mentioned). There might be variables that were left out of the analysis and would have been significant. In many aspects, green politics aim to disrupt the current system, however, in order to do so (in a lawful way), they need to get a large number of votes. According to spatial theory, a party cannot reach a large number of voters if they position themselves on the extreme wings of the political spectrum (Enelow and Hinich, 1984). This is just one of the paradoxes that can hinder the growth of a green party. In general, such models have to be established with consideration.

4 Conclusion

Green parties are a political force that have to be reckoned with, especially considering how climate change has an increasing effect on our lives. They are relatively new organizations that originate from an activist background. To expand their leverage, examining where their current votes come from are essential. Based on quantitative analysis, it can be established that their voters have well-defined characteristics in terms of values. To establish stronger, causal relationships, more country- and party-specific factors like media appearance or political system could be taken into consideration. The world is on the brink of a huge change, and green politics offer a sustainable alternative to our current ways. By careful analysis and the tools technology has given us, we should strive to examine phenomena in careful detail to find the political solutions best for us, our children and all living beings of Earth, as we have every means to do so.

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