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The Populist Voter: A Machine Learning Approach for the Individual Characteristics

Abstract

Populist parties recently have shaken Western democracies, yet there is no consensus regarding the characteristics of populist voters. By using large-scale surveys from four European countries (France, Germany, Spain, and the U.K.), we investigate individual determinants of populist voting. Our methodological approach controls for model uncertainty by considering the responses to 100 questions that span social, economic, political, environmental, and psychological dimensions. We also include individual misperceptions across several domains. Our results show that left-wing populist voters are not religious, have lower misperceptions regarding foreign-national prisoners, distrust the police, are open to immigrants from poorer countries, and oppose dismantling the welfare state. The right-wing populist voters oppose incoming, racially diverse immigrants, distrust national and international institutions, and have high misperceptions regarding immigrant crimes and the share of social benefits in the GDP. Contrary to the previous literature, attitudes toward globalization, personality traits, labor-market status, and social media use are not consensus variables for either group.

JEL-Codes: C110, D720, P480.

Keywords: populism, random forest, Bayesian model averaging.

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1 Introduction

Populism is a political ideology that often appeals to people who feel left behind by mainstream political parties and perceive themselves as victims of economic, social, or cultural changes (Salmela & von Scheve, 2018). Populism can be associated with extremist or anti-democratic messages threatening democratic values and institutions (Alvares & Dahlgren, 2016). It is essential to investigate the characteristics of populist voters, as it helps us to understand their specific concerns or grievances and why populist messages resonate with them. Moreover, we can identify ways to promote social cohesion and address underlying social, economic, or cultural divisions that drive populist movements.

While there is a plethora of research on the determinants of populist voting, different studies tackled the issue from different perspectives and hence, leading to *model uncertainty*. Gender (Spierings & Zaslove, 2015), age (Foa & Mounk, 2019), economic fundamentals (Guriev, 2018), perceived economic standing (Bosch & Durán, 2019), personality traits (Bakker et al., 2016) were all put forward by the previous literature.

In this paper, we address the model uncertainty issue by using a novel, comprehensive data set which comes from large-scale surveys in four European Countries (France, Germany, Spain, and the United Kingdom). Our data set includes several questions that capture individual characteristics like demographics, attitudes, personality traits, and policy preferences, as suggested by existing studies. By combining several econometric methods (Random Forest, LASSO/Ridge regressions, and Bayesian Model Averaging), we reach an econometric consensus to pinpoint the most important individual characteristics of the populist voter.

Our results suggest that left-wing populist voters are not religious, have lower misperceptions regarding the percentage of prisoners who are foreign nationals and have lower trust in the police. At the same time, they support immigrants from poorer countries and the welfare state. Regarding the right-wing populist voters, we find that the most important determinant is being opposed to incoming, racially diverse immigrants. Additionally, right-wing populist voters are young and have high misperceptions regarding immigrant crimes and the ratio of social benefits to GDP; they also distrust national and international institutions. We also identify several other individual determinants that are of secondary importance that were chosen by some, but not all,

econometric models applied and examine the impact of interaction terms.

2 Previous Literature

2.1 Socio-Demographics

2.1.1 Gender

Gender is known to be a significant predictor of populist voting. Spierings and Zaslove (2015, 2017) document that populist radical right parties draw more votes from men than women. Coffé (2019) finds that gendered personal traits, in addition to gender, are a significant determinant as masculine personality traits have a significant and positive effect on supporting the Dutch radical right party, PVV. Men also tend to support populist politicians and parties on Facebook more than women do by providing likes to their content (Bobba et al., 2018). Therefore, a priori, we expect the male dummy to be one of the significant predictors of populist voting, especially for right-wing populist votes.

2.1.2 Age

The impact of age on populist voting is less clear. Zagórski et al. (2021) note that while the young are better educated and skilled, they suffer more from the effects of economic crises. Foa and Mounk (2019) argue that younger voters in much of continental Western Europe support left- and right-wing populists. Only left-wing political movements benefit from youth support in the United States and the United Kingdom. They explain this divergence by arguing for a distinction between democratic apathy (in the U.S. and the U.K.) and democratic antipathy (in Western Europe, due to social exclusion). Therefore, we do not expect, a priori, age to be a major determinant of populist votes.

2.2 Economic Variables

2.2.1 Macroeconomic Fundamentals

Several macroeconomic factors are documented to influence the share of populist votes. Guriev (2018) discusses factors such as increased unemployment during the Great Recession and skill-biased trade. Inequality (especially inequality of opportunity) has played an essential role in the recent rise of anti-establishment sentiment. Similarly, Pástor and Veronesi (2021) contend that countries with more inequality, higher financial development, and trade deficits are more vulnerable to populism. Within countries, regions experiencing industrial decline exhibit higher vote shares for populist parties (Dijkstra et al., 2020). Albanese et al. (2022) show that fiscal redistribution matters for populist voting. They use a regression discontinuity design (RDD) by comparing Italian municipalities receiving EU structural funds to those that do not. Economic shocks can explain well the phenomenon of populism in countries with low levels of trust (Boeri et al., 2018). A priori, we expect the labor market position (i.e., unemployment) to become a significant determinant for right-wing and left-wing populist voting.

2.2.2 Perceived Economic Standing

Rico and Anduiza (2019) find that the economic dimension matters for populist voting. However, it is not so much the personal vulnerability or hardship that matters but rather the perception of the economic situation in the country. Also, Algan et al. (2017) show that crisis-driven economic insecurity has led to populist voting in the aftermath of the European crisis; the economic insecurity drove up distrust in national and European political institutions[1]. Conversely, Margalit (2019) argues that voters' concern with immigration – a key issue for many populist parties – is only marginally shaped by its real repercussions on their economic standing. A smaller portion of studies points out that the interaction of worsening economic conditions with social factors is what matters. For instance, Bosch and Durán (2019) identify a negative evaluation of the economic situation and the perception of corruption as drivers of left-wing populist voting in Spain. Similarly, Boeri et al. (2018) contend that economic shocks can explain the phenomenon

[1]Similarly, Gozgor (2022) show that a higher World Uncertainty Index increases populism and right-wing populist voting behavior

of populism in countries with low pre-existent levels of trust. Therefore, a priori, we expect the interaction of perceived economic standing with some political attitudes (which we discuss in the next section) to be among the major drivers of populist voting.

2.3 Psychological Variables

2.3.1 Political Attitudes and Orientation

Akkerman et al. (2014) find that populist attitudes predict voting for populist parties in the Netherlands. The same result is obtained by Akkerman et al. (2017), who also stress that low levels of political trust unify voters for left-wing and right-wing populist parties. However, while right-populist voters have strong anti-immigrant sentiments, left-populist voters want more income equality. For Switzerland, Bernhard and Hänggli (2018) find that populist attitudes accompany a right-wing orientation in the political spectrum. A study with nine European countries (Van Hauwaert & Van Kessel, 2018) shows a common denominator of populist voters: they do not oppose democracy but are dissatisfied with its implementation or its practical working. Marcos-Marne (2021) argues that in Spain, populist-left voting occurs only when a person has populist attitudes and left-leaning preferences driven mainly by a preference for redistribution. For the key role of populist attitudes in Spain, see also Marcos-Marne et al. (2020). Similarly, Orriols and Cordero (2016) stresses that politically disaffected left-leaning voters voted for Podemos. In the 2018 regional elections in Andalucía and in the 2019 Spanish national election, the far-right populist party Vox got its votes not primarily due to anti-immigration sentiments; instead, national identity and worries about the devolution of the Spanish state played the dominant role (Turnbull-Dugarte, 2019; Turnbull-Dugarte et al., 2020).[2] Immigration has been shown as one of the main drivers of populist votes in many studies (Halla et al., 2017; Edo et al., 2019; Hangartner et al., 2019).

Consistent with the economic conditions literature, many previous studies highlight the importance of interacting factors (concerning attitudes) for populist voting. For instance, Loew and Faas (2019) argue that people tend to vote for left populist parties if they hold populist views and are critical towards markets. In contrast, right-populist voting is fostered by a combination

[2] Also fairly unusual, the high-income people were more inclined towards voting for Vox.

of populist attitudes and anti-open-society sentiment. In a multi-country study, Santana and Rama (2018) look into the determinants for left-wing populist voting compared to traditional left-wing voting and find anti-European (Union) and anti-immigration sentiments to be strong predictors. Margalit (2019) argues that disaffection from social and cultural change drives both economic discontent and support for populism. Similarly, Rooduijn et al. (2016) argues that political discontent is both cause and consequence of the rise of populist parties.

Our survey has several variables that measure political attitudes toward immigration, globalization, and trust in national and supranational institutions. Given the vast literature on the topic, it is unclear which particular attitudes will drive populist voting behavior. Using interaction terms will be essential to understand the complex relationship among the variables of interest.

2.3.2 Personality Traits

Bakker et al. (2016) contends that personal traits like low agreeableness are significant determinants of populist voting. Nowakowski (2021) document that unhappiness with one's personal well-being – and not merely dissatisfaction with governments – could play a significant role in the rise of European populism. As such, low levels of subjective well-being are proposed as a valid predictor of shifts toward extreme movements. The study of Spruyt et al. (2016) on Belgium voters shows that discontent with societal life in general and a feeling of a lack of political efficacy drives – often economically weak – voters toward populist parties. Hence, we expect that psychological measures of loneliness or life satisfaction might impact populist voting – especially in connection with poor economic conditions.

2.4 Background variables

The availability of broadband internet and the large-scale adoption of social media may also have contributed to the rise of populism (Guriev et al., 2020; Liberini et al., 2020). In a study of European and Latin American countries, Rovira Kaltwasser and Van Hauwaert (2020) see a large heterogeneity of populist voters across the countries; in all countries, however, populist voting occurs in more rural, non-cosmopolitan areas.

Information about political facts plays a crucial role. Kuklinski et al. (2000) show that

biased perception (e.g., about welfare recipients and the share of the budget devoted to welfare) influence policy preferences. Those with the most substantial distortion are also most confident about the accuracy of their information. This is also the group that reacts hardly to factual information.

3 Methodology

3.1 Data

The survey was programmed through Qualtrics by the authors and then conducted in all four countries by Respondi (https://www.respondi.com/EN/). Respondi has access to representative participants who receive survey links via email. We received responses from 31,568 respondents who completed the survey in their national language. The average completion time was 24 minutes. Compensation was only provided to those who finished the survey. The questionnaire, whose full list of questions is presented in Appendix A, asks respondents to state which party they voted for in the previous election and which party they plan to vote for in the next election. If respondents entered party names and did not select one of the provided party names, the responses to these questions were manually grouped to handle the different variants of a party's name.[3] We removed respondents who refused to answer these questions and filtered out responses that did not correspond to known parties for each country. Finally, we assigned populist tags to these parties, identifying if they belonged to the left or right. For the classification, we follow the comprehensive lists of populist parties for various European countries in Rooduijn et al. (2016) and Pew Research Center (2019). For parties not listed in these sources, we screened the party programs and other publicly available information on whether the parties should be classified as populist according to the criteria in Rooduijn et al. (2019) and Pew Research Center (2019). This classification of non-listed parties does not drive our results, as these are fringe parties with few mentions. The list of populist parties, based on our classification, can be found in Appendix B.

Further, the questionnaire asks respondents to self-identify their political orientation from

[3]For instance, National Front and National Rally in France

left to right and includes information about the respondents' demographics and socio-economic status. The questionnaire also asks a series of questions regarding the individual's sense of economic security, their trust in political parties and institutions, and their ability to process fake news. In addition, the questionnaire includes questions about the individual's feelings on declinism and social loneliness. Finally, we include questions that aim to identify misperceptions on topics such as economic status, migration, religion, and corruption. These questions aim to identify the respondent's understanding of these issues by asking factual questions and then comparing the responses with the actual figures.[4] Responses relating to misperceptions were winsorized at the 95% percentile.

We removed respondents who did not complete all the questions and those who completed the survey very fast (in less than 3 minutes). Our final sample includes 12,027 respondents aged 18 to 92 who completed the questionnaire. The sample is close to a representative in each country. The final per-country sample sizes are 3,551 for Germany, 2,556 for France, 3,214 for the United Kingdom, and 2,706 for Spain.

The descriptive statistics of the variables used in the final models are shown in Appendix D. Before running the models, all variables are scaled in a $[0, 1]$ range to ensure comparability in the coefficients of variables with different scales.

3.2 Random Forests

The first of the variable selection approaches implemented is Random Forests. Random Forests is a machine learning technique for regression and classification, which is appropriate when dealing with complex, non-linear relationships between input variables and an output variable. The approach, developed by Breiman (2001), combines the output of multiple decision trees to make predictions on the output variable, thus allowing for non-constant relationships between input and output variables.

In the Random Forest approach, each internal node in the decision trees represents a decision based on the value of a particular feature, and each leaf node represents a class label or a numerical value. Decision trees are constructed recursively by splitting the data at each node based on

[4]Further details on the measurement of misperceptions are supplied in Appendix C

the feature that maximizes the information gain or decrease in impurity. Each tree creates a prediction for the new data. These predictions are combined to constitute a model prediction, with each tree casting a single vote. The ensemble nature of Random Forests allows for more accurate and robust predictions as the errors made by individual decision trees are averaged out. Finally, Random Forests are generally robust to outliers and missing values.

After the trees are constructed, our Random Forest process computes two metrics that signify the importance of each of our questions in determining the dependent variable (whether the person has voted for a left/right populist party). The first metric is the Mean Decrease in Node Impurity (MDNI). MDNI is commonly used to gauge feature importance and demonstrates how the variable contributes to the homogeneity of the nodes and leaves of the final random forest. A high MDNI value suggests high importance. The second metric is the Mean Decrease in Prediction Accuracy (MDPA). The MDPA is calculated based on the change in the prediction accuracy if the variable were to be excluded from the model. This is achieved by examining the loss function after attempting to remove the association between each feature and the target variable. However, the association is not removed by simply excluding the variable, but rather by randomly permuting the values of the predicting feature.[5] We then measure the increase in the Mean Squared Error.

3.3 Bayesian Model Averaging

Our second variable selection approach is Bayesian Model Averaging (BMA). BMA is typically used as a statistical method for model selection and averaging that addresses the uncertainty of model selection. Unlike traditional frequentist methods, BMA provides a full probability distribution over models rather than a single-point estimate. This is particularly useful in cases where there is significant uncertainty about which model is the best representation of the data which links to our use.

The BMA process starts by assuming a prior distribution over models. This prior can be a subjective judgment, or it can be based on prior knowledge or experience or even on bootstrapping. Given the data, Bayes' theorem is applied to update the prior to a posterior

[5]This is preferable over selecting random values for the feature in order for the process to use values within a realistic range.

distribution over models. The posterior provides a measure of the relative strength of evidence for each model and can be used to make probabilistic predictions. In addition, given our information on the posterior distribution, BMA provides a "probability of inclusion" metric for each variable in the dataset, which suggests its importance in determining the output variable across the examined models.

The basic formula for Bayesian Model Averaging is:

$$p(M_j|y) = \frac{p(y|M_j)p(M_j)}{\sum_{k=1}^{K} p(y|M_k)p(M_k)} \tag{1}$$

$$p(y|M_j) = \int p(y|\theta, M_j)p(\theta|M_j)d\theta \tag{2}$$

where $p(M_j|y)$ is the posterior probability of model j, $p(y|M_j)$ is the marginal likelihood of model j, $p(y|\theta, M_j)$ is the likelihood of the data given the parameters θ and model j, and $p(\theta|M_j)$ is the prior distribution over parameters given model j. Following Raftery (1995), we compute the marginal likelihood by integrating over θ.

The main advantage of BMA for variable selection, as mentioned above, is that treating each variable as either included or excluded in a given model provides a way to rank variable importance based on the posterior probabilities of the models in which they appear. This can be useful in situations such as ours, where the number of potential predictor variables is large. In such cases, BMA is used to identify a smaller subset most relevant to the response variable, which in our case is the (left/right) populist vote.

3.4 LASSO

The Least Absolute Shrinkage and Selection Operator (LASSO) is a regularization method used for variable selection in linear regression models. It is a popular technique in machine learning and statistics that allows for simultaneous estimation and variable selection, which uses the size of the regression coefficients as an indicator of the impact on the output variable, thus providing an intuitive way to order variable importance but also to determine the direction of the relationship.

The LASSO approach involves adding a penalty term to the sum of squared errors objec-

tive function, which shrinks the magnitude of the estimated coefficients towards zero. The penalty term is proportional to the absolute value of the coefficients, which tends to push small coefficients to zero, effectively removing the corresponding variables from the model. This encourages a sparse solution where only a subset of the variables is used in the model.

The LASSO estimator is obtained by solving the following optimization problem:

$$\hat{\beta}^{LASSO} = \arg\min_{\beta} \left\{ \frac{1}{2n} \sum_{i=1}^{n} (y_i - \beta_0 - \sum_{j=1}^{p} x_{ij}\beta_j)^2 + \lambda \sum_{j=1}^{p} |\beta_j| \right\} \tag{3}$$

where $\hat{\beta}^{LASSO}$ is the LASSO estimator, β_0 is the intercept term, x_{ij} is the i-th observation of the j-th predictor variable, y_i is the response variable, λ is a tuning parameter that controls the strength of the penalty term, and p is the number of predictor variables.

The penalty term in the objective function is the sum of the absolute values of the coefficients multiplied by a tuning parameter λ. This tuning parameter determines the degree of regularization. Its value is typically chosen using cross-validation or information criteria such as the Bayesian Information Criterion (BIC) or the Akaike Information Criterion (AIC). As λ increases, the penalty term becomes more dominant, and the LASSO estimator becomes more sparse. Our approach selects the optimal λ to minimize the resulting model's Mean Squared Error (MSE).

The use of LASSO is apposite for our work because it provides a natural way to perform variable selection and feature extraction. This approach excludes irrelevant variables from the model by shrinking the coefficients toward zero. In addition, it is more computationally efficient and is thus applicable in high-volume or high-dimensionality data sets. In our case, we implement LASSO only after the initial preselection, additionally allowing for interaction terms.

3.5 Ridge

Similarly to LASSO, Ridge regression is a widely used regularization technique commonly employed to select variables in linear regression models, thus resolving potential overfitting problems related to high complexity. Ridge regression helps to resolve such issues by adding a

regularization term to the objective function that is being optimized.

The objective function for Ridge regression is:

$$\hat{\beta}^{Ridge} = \arg\min_{\beta}\left\{\frac{1}{2n}\sum_{i=1}^{n}(y_i - \beta_0 - \sum_{j=1}^{p} x_{ij}\beta_j)^2 + \lambda\sum_{j=1}^{p}\beta_j^2\right\} \tag{4}$$

where $\hat{\beta}^{Ridge}$ is the estimate of the coefficients obtained using ridge regression, x_{ij} is the i-th observation of the j-th predictor variable, y_i is the response variable, λ is a tuning parameter that controls the strength of the penalty term, and p is the number of predictor variables.

Similarly to LASSO, Ridge implements a penalty term in the objective function, which in this case however is the sum of the squared values of the coefficients multiplied by the tuning parameter λ, which determines the degree of regularization. Again, similarly to LASSO, the value of λ is chosen using cross-validation or information criteria such as the Bayesian Information Criterion (BIC) or the Akaike Information Criterion (AIC), and we selected it based on minimizing the Mean Squared Error (MSE) of the resulting model. The larger the value of λ, the more abruptly the size of coefficients is shrunk to reduce the complexity of the model. The effect of this regularization is that the Ridge regression solution is less sensitive to the input data and less likely to overfit.

Given the similarity of the two methods (LASSO and Ridge), it is important to note that our approach does not use Ridge for variable selection but for variable ranking. As we will see below, after the initial preselection step, we perform the final stage of variable selection using BMA and LASSO. However, in cases where variables are chosen by BMA only, the LASSO coefficient would be zero, thus hindering feature ranking. Since Ridge does not reduce coefficients to zero, we implement it as a consistent way to rank variable importance across different methodological approaches.

3.6 Methodological Order

We start our empirical investigation by pre-selecting variables using a dual approach (see Figure 1.). We run the Random Forests and combine the results with Bayesian Model Averaging (BMA). Combining Random Forests and BMA results in a complementary variable selection

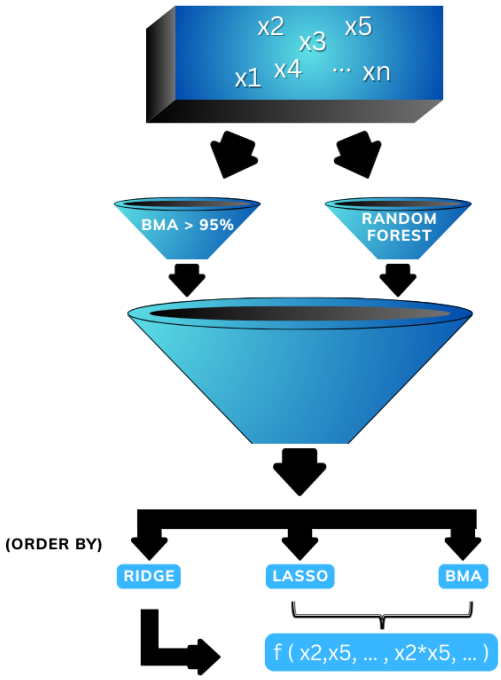


Figure 1: Methodological Order

approach that incorporates the strengths of both methods. We use Random Forests to rank the determinants of the voting behavior and then compute BMA probabilities to create an inclusion cutoff point, which we have set to 95%. Hence, in our final computation stage, we only include the top Random Forests variables with at least 95% BMA probability of being included in the final model. In other words, we identify the most important determinants through Random Forests and use BMA to build a more interpretable model with fewer variables.

We then proceed to estimate LASSO and Ridge coefficients for these variables, but now we include interaction terms to capture potential combined effects. We also re-run BMA (also with interaction terms) for robustness. By calculating the coefficients, we can conclude which of these variables has a positive or negative impact on the tendency towards populist voting behavior, distinguishing between left/right and past/next vote, based on the responses provided in the survey.

Table 1: Results of Combined Variable Preselection

Orientation	Past Vote	Next Vote
Left	Corruption Misperception	Corruption Misperception
	Dismantling Welfare State	Dismantling Welfare State
	Foreign Prisoners Misperception	Foreign Prisoners Misperception
	Importance of Traditions	Importance of Traditions
	Income Immigration	Income Immigration
	Religiosity	Religiosity
	Trust in Police	Trust in Police
	Self Worth	
		Poverty Misperception Nationals
		Trust in the European Parliament
Right	Age	Age
	Faith in Government	Faith in Government
	Homogeneous Immigration	Homogeneous Immigration
	Immigrant Crime Misperception	Immigrant Crime Misperception
	Racial Immigration	Racial Immigration
	Religious Conflict Muslims	Religious Conflict Muslims
	Tax Share Ordering Misperception	Tax Share Ordering Misperception
	Trust in Parliament	Trust in Parliament
	Trust in the United Nations	Trust in the United Nations
	Corruption Misperception	

***Note**: This table contains the determining characteristics of voting behavior towards populist votes that were selected by the combined Random Forests and BMA approach. The variables are ranked by importance, using Random Forest, and then BMA probabilities are computed to include only those features with a 95% or higher BMA probability.*

4 Results

4.1 Pre-Selection of Variables Using Random Forests and BMA

Table 1 shows the variables selected by Random Forests and BMA. For left-wing populist voting, seven variables are chosen for both past and future voting behavior. These include corruption misperceptions (which measures the error in the response as to where the country ranks in the Corruption Perceptions Index), dismantling the welfare state (which is based on a question asking

whether dismantling the welfare state is necessary to face competition from other countries), misperceptions about foreign prisoners, the importance of traditions, income immigration (which asks the respondents whether they support immigration from poorer countries), religiosity and trust in the police. For the past vote, a question gauging the respondents' self worth is selected. However, this variable loses its significance for the next vote, while misperceptions about the country's natural born citizens below the povery line and trust in the European Parliament are only important for determining the future tendency towards left-populist voting. We are not reporting the signs for those variables at this stage, as these will be discussed in more detail in the next section.

For populist right voting, we have a different set of potentially important variables common for past and present votes. The variables that are picked for both past and future voting are age, faith in government (whether we can trust people in the government to do the right thing), homogeneous immigration (whether people of the same race or ethnic group should be accepted as immigrants), misperceptions of the crimes by immigrants, racial immigration (whether people of a different race or ethnic group should be accepted as immigrants), the expectation of a religious conflict between Muslims and Christians in the future, tax share misperceptions (the accuracy of the response to the question of where the respondent's country ranks among the 27 European Union countries and the UK in terms of taxes and social contributions as a percentage of GDP) and finally trust in the national parliament and the United Nations. Corruption misperception is a potentially important determinant of the past right populist vote only and this is the only variable that is common across the political orientations.

4.2 Determinants of (Past/Next) Left-Wing Populist Vote

After variable preselection, we proceed to report the results of the combined LASSO, Ridge and BMA approach. Since we are using only the variables suggested in the previous step, this step also includes interaction terms, providing additional insights regarding potential combined effects. For left-wing populist voting, using the past vote as the dependent variable, the determinants are reported in Table 2. The variables reported in the first part of the table have been marked as important both by LASSO and by BMA (for BMA, the probability of inclusion is again 95%

or higher). Conversely, the second part includes the variables selected only by one of the two methods. Variables in each part of the table are sorted according to the absolute value of the Ridge coefficient.

Table 2: Determinants of Past Left-wing Populist Vote

Variable	LASSO	BMA	Coefficient
Income Immigration	+	+	0.5016
Self Worth	-	-	-0.3376
Trust in Police	-	-	-0.2616
Religiosity	-	-	-0.2239
Importance of Traditions	-	-	-0.2088
Dismantling Welfare State	-	-	-0.2065
Foreign Prisoners Misperception	-		-0.2261
(Importance of Traditions) X (Self Worth)		+	0.1836
(Income Immigration) X (Importance of Traditions)		-	-0.1517
(Trust in Police) X (Importance of Traditions)		+	0.1306
(Income Immigration) X (Trust in Police)		-	-0.1224
(Income Immigration) X (Religiosity)	-		-0.0601
(Trust in Police) X (Self Worth)	-		-0.0116

***Note**: This table reports the results of the combined LASSO, Ridge, and BMA approach for the past left-wing populist vote, including interaction terms. The first part of the table shows the variables that have been selected by both LASSO and BMA (for BMA, the probability of inclusion is 95% or higher). In contrast, the second part includes the variables selected by only one of the two methods. Variables in each part of the table are sorted according to the absolute value of the Ridge coefficient. We removed interaction terms where neither of the two methods did not select any of the components.*

Past voters of left-wing populist parties tend to support incoming immigration from poorer countries (the income immigration variable) and place themselves at the bottom of society, based on the self-worth question. They do not trust the police and are not religious. Finally, they put reduced importance on traditions but support the welfare state (or, equivalently, are against dismantling it). LASSO also suggests that they have low misperceptions regarding the number of foreign prisoners. Regarding interaction terms, the support for income immigration has an added impact on left-wing populist voting, when combined with a disregard for traditions,

distrust towards the police[6], and low religiosity. At the same time, low self-worth exasperates the impact of distrust towards the police and disregard for traditions.

Table 3: Determinants of Next Left-wing Populist Vote

Variable	LASSO	BMA	Coefficient
Income Immigration	+	+	0.5375
Trust in the European Parliament	-	-	-0.2136
Dismantling Welfare State	-	-	-0.1853
Religiosity	-	-	-0.1453
Foreign Prisoners Misperception	-		-0.2841
Trust in Police	-		-0.2630
Importance of Traditions	-		-0.1780
(Trust in the European Parliament) X (Dismantling Welfare State)		+	0.1415
(Income Immigration) X (Religiosity)	-		-0.0618
(Trust in Police) X (Trust in the European Parliament)	-		0.0480
(Foreign Prisoners Misperception) X (Trust in the European Parliament)	-		0.0475

***Note**: This table reports the results of the combined LASSO, Ridge, and BMA approach for the next left-wing populist vote, including interaction terms. The first part of the table shows the variables selected by both LASSO and BMA (for BMA, the probability of inclusion is 95% or higher). In contrast, the second part includes the variables selected by only one of the two methods. Variables in each part of the table are sorted according to the absolute value of the Ridge coefficient. We removed interaction terms where neither of the two methods did select any of the components.*

Turning towards the determinants of future voting behavior for left-wing populists (see Table 3), support for income immigration, support for the welfare state, and low religiosity are once again important determinants. A new variable is distrust towards the European Parliament, while misperceptions about foreign prisoners, distrust towards the police, and low regard for traditions are picked by LASSO only. There is no consensus among the two approaches regarding the significance of interaction terms, with BMA suggesting that the impact of distrust towards the European Parliament is exacerbated by support for the welfare state; LASSO suggests an added impact for the coexistence of distrust towards the police and low misperceptions about foreign prisoners with distrust towards the European Parliament. Finally, an added impact is noted by

[6]We use the term "distrust" since the "Trust in Police" variable has a negative coefficient, suggesting that, in this example, tendencies towards left-wing populist voting are lower when trust in the police is higher. In the rest of the paper, we use the term "distrust" to signify "trust with a negative coefficient".

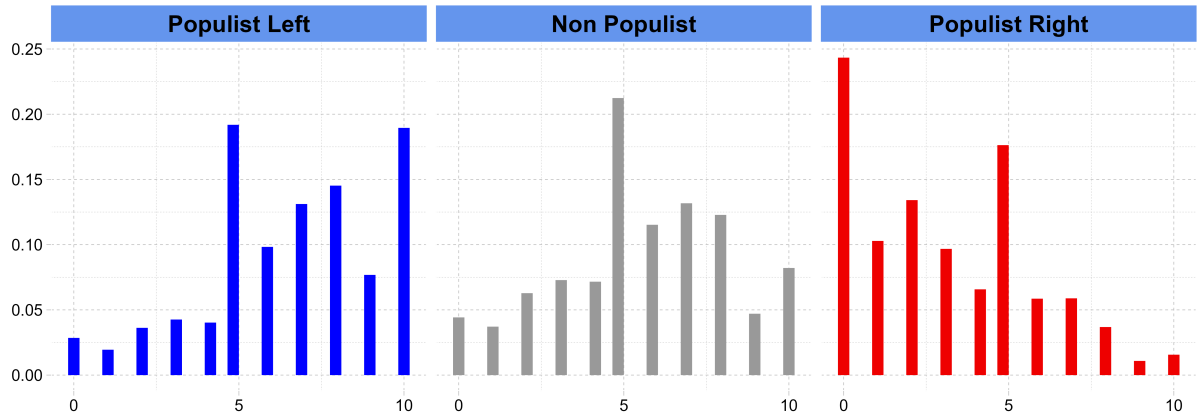
LASSO when support for income immigration is combined with low religiosity.

The pattern that emerges from the above approaches is that low religiosity, support for income immigration, and support for the welfare state are particularly important for the past and the future vote for left-wing populists. In addition, distrust for international institutions (the European Parliament in this case) and the police are also determinants and disregard for traditions. At the same time, misperceptions of foreign prisoners have a negative impact, meaning the lower the misperceptions, the more likely the left-wing populist vote. These variables are common for both votes, albeit not ubiquitous for our two methodologies.

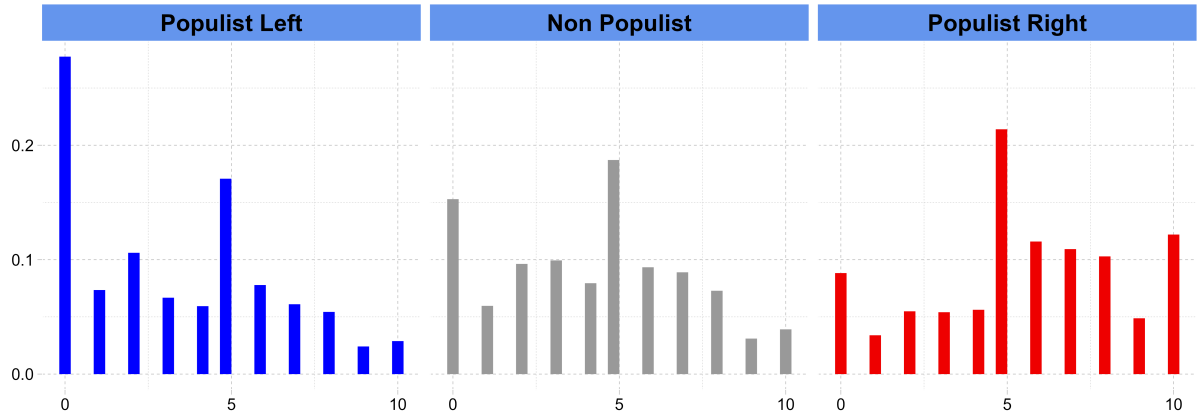
The above patterns are demonstrated in Figure 2, which shows normalized histograms of the responses to income immigration, dismantling the welfare state, and the importance of traditions questions for different voter groups. For the first variable (income immigration), we note the different distributions between the three voter groups, with the responses of non-populist voters having a roughly normal distribution, and those of left (right) populist voters being skewed to the left (right), suggesting the left-populist voters tend to favor income immigration more than other groups. Similarly, we note that left-wing populist voters have significantly lower support for dismantling the welfare state and lower regard for the importance of traditions than the other two groups. Comparable distribution patterns are noted for the other variables that are picked up as important.

4.3 Determinants of (Past/Next) Right-Wing Populist Vote

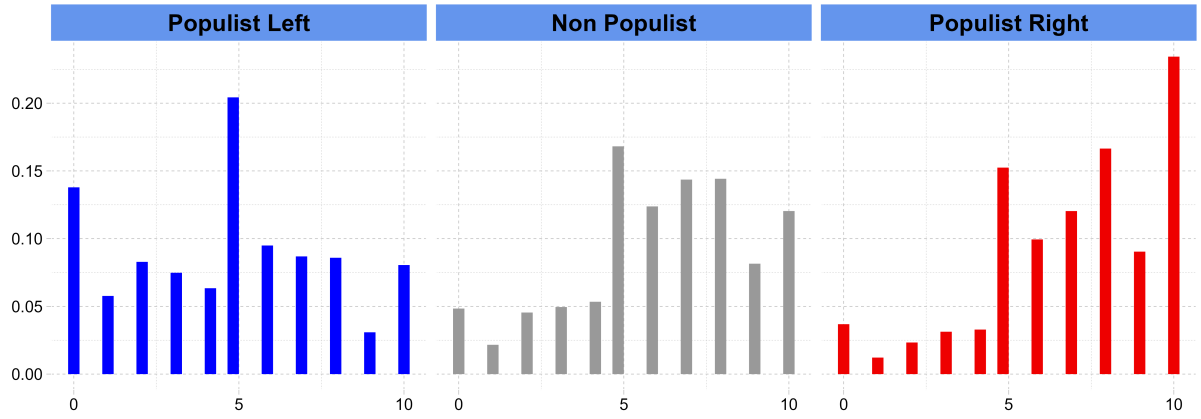
Right-wing populists are against immigrants if they come from another race or ethnic group (this is the racial immigration variable), they have increased misperceptions about the crimes committed by immigrants and have low faith in government and distrust for the United Nations (see Table 4). BMA suggests that past voters of right-wing populist parties are younger and have increased misperceptions about how their country ranks regarding the ratio of taxes and social benefits to GDP. At the same time, LASSO adds distrust for the country's parliament as an important component. Many interaction terms are also significant, with young voters being more prone to right-wing populist voting if they have increased misperceptions regarding taxes and benefits and are against racial immigration. The impact of opposition to racial immigration



(i) Income Immigration



(ii) Dismantling Welfare State



(iii) Importance of Traditions

Figure 2: Histograms of Important Variables for Populist Left Voters

Note: *This figure demonstrates normalized histograms for three important variables that determine the tendency towards populist left voting. Each histogram is normalized so that the total area of each voter group adds up to 1 to facilitate comparisons across different groups.*

Table 4: Determinants of Past Right-wing Populist Vote

Variable	LASSO	BMA	Coefficient
Racial Immigration	-	-	-0.3875
Immigrant Crime Misperception	+	+	0.3054
Faith in Government	-	-	-0.2786
Corruption Misperception	-	-	-0.1873
Trust in the United Nations	-	-	-0.1689
(Immigrant Crime Misperception) X (Faith in Government)	-	-	-0.1237
(Faith in Government) X (Racial Immigration)		+	0.3130
(Immigrant Crime Misperception) X (Racial Immigration)		-	-0.2541
Tax Share Ordering Misperception		+	0.1963
(Faith in Government) X (Trust in the United Nations)		+	0.1449
(Racial Immigration) X (Corruption Misperception)		+	0.1205
(Faith in Government) X (Corruption Misperception)		+	0.0864
Trust in Parliament	-		-0.0646

***Note**: This table reports the results of the combined LASSO, Ridge, and BMA approach for the past right-wing populist vote, including interaction terms. The first part of the table shows the variables selected by both LASSO and BMA (for BMA, the probability of inclusion is 95% or higher). In contrast, the second part includes the variables selected by only one of the two methods. Variables in each part of the table are sorted according to the absolute value of the Ridge coefficient. We removed interaction terms where neither of the two methods did select any of the components.*

is increased when combined with distrust in government and increases misperceptions about crimes committed by immigrants. Distrust in government has an added impact when combined with distrust towards the United Nations, opposition to racial immigration, and misperceptions of immigrant crime. In general, for the past vote, we see that the important interaction terms are combinations of almost all the individual variables. This suggests that when a voter combines more than one of these traits, the tendency towards right-wing populist voting increases.

Finally, turning to the future right-wing populist vote, we note again that racial immigration, immigrant crime misperceptions, and distrust towards the government and the United Nations are common across LASSO and BMA as important variables (see Table 5). BMA adds young age and misperceptions about the country's rank in the ratio of taxes and social benefits to GDP (with misperceptions towards a higher share having a positive impact on right-wing populist

Table 5: Determinants of Next Right-wing Populist Vote

Racial Immigration	-	-	-0.3635
Immigrant Crime Misperception	+	+	0.3032
Faith in Government	-	-	-0.2538
Trust in the United Nations	-	-	-0.2005
(Tax Share Ordering Misperception) X (Age)		-	-0.3678
Tax Share Ordering Misperception		+	0.3121
(Faith in Government) X (Racial Immigration)		+	0.2904
(Immigrant Crime Misperception) X (Racial Immigration)		-	-0.2099
(Faith in Government) X (Trust in the United Nations)		+	0.1845
(Racial Immigration) X (Age)		+	0.1821
(Faith in Government) X (Immigrant Crime Misperception)	-		-0.1744
Trust in Parliament	-		-0.1032
Age		-	-0.0650

***Note**: This table reports the results of the combined LASSO, Ridge, and BMA approach for the next right-wing populist vote, including interaction terms. The first part of the table shows the variables selected by both LASSO and BMA (for BMA, the probability of inclusion is 95% or higher). In contrast, the second part includes the variables selected by only one of the two methods. Variables in each part of the table are sorted according to the absolute value of the Ridge coefficient. We removed interaction terms where neither of the two methods did select any of the components.*

tendencies), while LASSO adds distrust for the parliament as an important variable, similar to what we noted in the past vote. Again, voters that exhibit any combination of most of these characteristics are more likely to vote for right-wing populist parties in their next vote.

The ubiquity of racial views on immigration as an essential determinant of past and future right-wing populist voting, with the variable leading all others in importance (as denoted by the standardized coefficient) in both datasets. Distrust for both local and international institutions is also important, as are misperceptions of crimes by immigrants. A notable characteristic is a negative coefficient for age, suggesting that younger voters are more likely to vote for right-wing populist parties, particularly when combined with other characteristics. Finally, the positive BMA coefficient for misperceptions regarding the country's rank on taxes and benefits as a share of GDP. This suggests that right-wing voters tend to exaggerate how their country ranks, thinking that their countries are further up in the ranking of high-tax/high-benefit countries.

This is consistent with the right-wing populist view of huge welfare spending on immigrants (de Koster et al., 2013; Cavaille & Ferwerda, 2017).

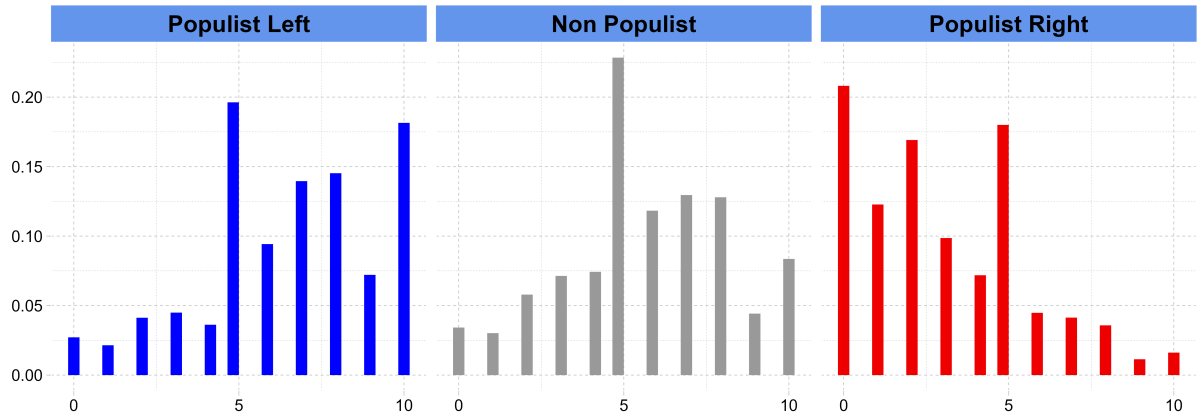
Figure 3 demonstrates the above patterns, based on the distributions of the responses to the questions regarding racial immigration, misperceptions on crimes by immigrants, and faith in government. We note that while the distributions for the responses of left populist and non-populist voters are roughly similar for the three variables presented, the distribution of responses of the populist right voters differs significantly. More specifically, in the populist right voter group, responses demonstrating low support for racial immigration and low faith in the government are more frequent (hence the negative coefficients of these variables). At the same time, the misperceptions regarding crimes committed by immigrants are significantly higher. We note similar patterns in the other variables selected by our methodological approach.

4.4 Robustness Checks

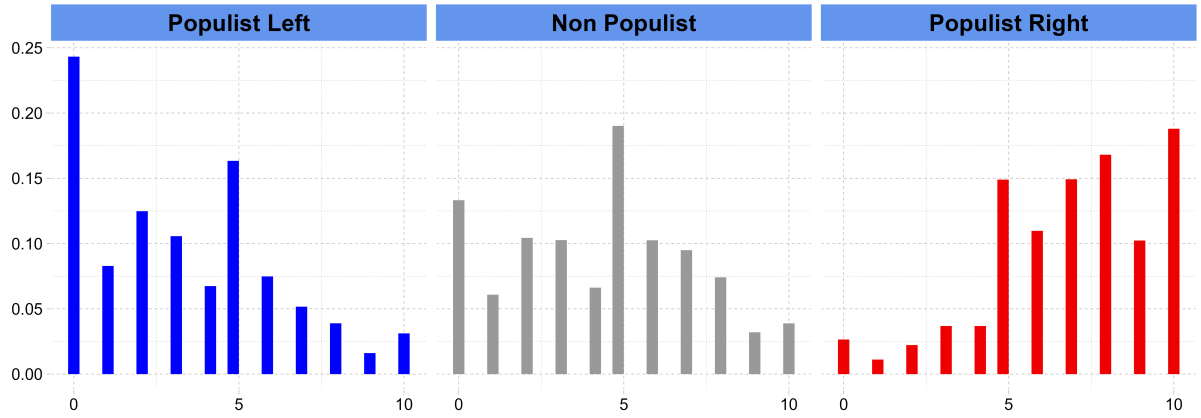
For robustness, we rerun the process with a series of differing methodological choices. We combine different variables using Principal Component Analysis (PCA), we compute coefficients using linear regression, we add the self-identified political orientation variable, we use the classification of populist parties strictly based on Pew Research Center (2019), we change the winsorizing percentiles for misperception variables (from 95% to 90%), and finally, we run the process for each country separately. The results are presented below.

4.4.1 Combining Variables with Principal Component Analysis

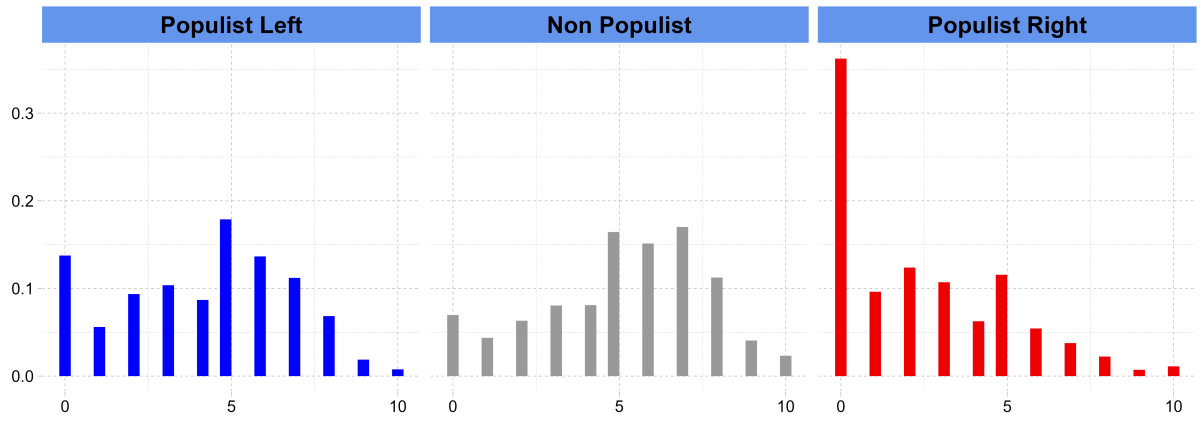
The first robustness test combines multiple questions using Principal Component Analysis (PCA). This process could be useful in cases where questions are meant to gauge similar underlying characteristics of the respondent. For our robustness check, the questions combined using PCA are demonstrated in Table 6, while the results are presented in Table 7. We note that most variables are similar to our baseline model.



(i) Racial Immigration



(ii) Immigrant Crime Misperception



(iii) Faith in Government

Figure 3: Histograms of Important Variables for Populist Right Voters

***Note**: This figure demonstrates normalised histograms for three important variables that determine tendency towards populist right voting. The each histogram is normalised so that the total area of each voter group adds up to 1 to facilitate comparisons across different groups.*

Table 6: Questions Combined using Principal Component Analysis

New Variable Name	Questions Included	Explained Variance
Blame	Fake News Responsibility Public (Q55)	0.5296
	Fake News Responsibility Government (Q56)	
	Fake News Responsibility Social Media (Q57)	
	Fake News Responsibility Media (Q58)	
Globalization	Globalization Impact on National Factory Workers (Q74)	0.5201
	Globalization Impact on Local Multinationals (QID99)	
	Globalization Impact on Family (QID98)	
	Globalization Impact on National Economy (QID97)	
Migration Misperceptions	Immigration Misperception (Q79)	0.3687
	Unemployment Misperception Nationals (Q81)	
	Unemployment Misperception Immigrants (QID164)	
	Poverty Misperception Nationals (Q82)	
	Poverty Misperception Immigrants (QID163)	
	Immigrant Crime Misperception (Q87)	
	Foreign Prisoners Misperception (Q88)	
Religious Misperceptions	Christianity Misperception (Q80_1)	0.2889
	Islam Misperception (Q80_2)	
	Buddhism Misperception (Q80_3)	
	Hinduism Misperception (Q80_4)	
	Atheist Misperception (Q80_5)	
	Islamic Terrorism Misperception (Q85)	
	Terror Victim Misperception (Q86)	
Social Isolation	Self Worth (Q94)	0.2988
	Emptiness (Q95)	
	Social Support (Q96)	
	Loneliness (Q97)	
	Rejection (Q98)	
	Existence of Opportunities (Q99)	
	Sense of Belonging (Q100)	

***Note**: This shows the questions that we combined using Principal Component Analysis (PCA). The explained variance refers to the first principal component only.*

4.4.2 Using Linear Regression

Another robustness test examines the original variables (i.e. without combining any of them with PCA) but implements a linear regression approach. The results are demonstrated in Table 8 the outcomes are very similar to the original model as almost the same variables are selected.

Table 7: Determinants of Populist Vote using Principal Component Analysis

Group	Left Populist		Right Populist	
	Previous Vote	Next Vote	Previous Vote	Next Vote
Trust in the European Parliament	-	-		
Dismantling Welfare State		-		
Income Immigration		+		
Religiosity		-		
Faith in Government			-	-
Tax Share Ordering Misperception			+	+
Trust in the United Nations			-	-
Racial Immigration				-

***Note**: This table shows the variables selected by both LASSO and BMA for each of the populist votes, after combining responses using Principal Component Analysis (PCA) as in Table 6.*

4.4.3 Adding Political Orientation

The survey contains a question asking respondents to self-identify in terms of political orientation, with 0 suggesting left and 10 suggesting right orientation. We had removed this variable from the baseline model as the left-right location might simply proxy several of the other variables already taken into account. If a respondent opposes immigration and distrusts international organizations, this will almost certainly lead to self-positioning in the right of the political spectrum, but the placement itself contains no additional information. Here, we run another robustness check that includes this variable to examine if its impact changes our findings, with the results shown in Table 9. First, the variable has a negative sign for left-wing populist voters, suggesting left political orientation, while the sign is positive for right-wing populist voters, suggesting right political orientation. The remaining variables are similar to our baseline model.

4.4.4 Using a More Restrictive Party List

Our classification of populist parties is based on Pew Research Center (2019). As this list includes only the most prominent parties, we expanded the list based on each party's program

Table 8: Determinants of Populist Vote using Linear Regression

Group	Left Populist		Right Populist	
	Previous Vote	Next Vote	Previous Vote	Next Vote
Dismantling Welfare State	-	-		
Foreign Prisoners Misperception	-	-		
Importance of Traditions	-	-		
Income Immigration	+	+		
Trust in Police	-	-		
Corruption Misperception		-	-	
(Importance of Traditions) X (Corruption Misperception)		+		
(Income Immigration) X (Corruption Misperception)		-		
(Income Immigration) X (Dismantling Welfare State)	+			
Faith in Government			-	-
Immigrant Crime Misperception			+	+
Racial Immigration			-	-
Tax Share Ordering Misperception			+	+
Trust in the United Nations			-	-
(Faith in Government) X (Trust in the United Nations)			+	+
Religious Conflict Muslims			+	
(Faith in Government) X (Immigrant Crime Misperception)				+
(Immigrant Crime Misperception) X (Corruption Misperception)			+	
(Immigrant Crime Misperception) X (Faith in Government)			+	
(Tax Share Ordering Misperception) X (Corruption Misperception)			+	

***Note**: This table shows the variables selected for each of the populist votes using a linear regression model.*

and publicly available information. To validate our findings, we exclude here observations where the respondent either had voted or will vote for a populist party that is not in the Pew Research Center (2019) list. We present the findings in Table 10; the important variables are similar to our baseline model.

4.4.5 Changing Winsorizing Percentiles

Another robustness check relates to the winsorizing percentiles of misperception variables. As mentioned earlier, we winsorized the responses at the 95% percentile in order to exclude potentially extreme responses to such questions. Given that the responses to these questions

Table 9: Determinants of Populist Vote when Political Orientation is Included

Group	Left Populist		Right Populist	
	Previous Vote	Next Vote	Previous Vote	Next Vote
Political Orientation	-	-	+	+
Foreign Prisoners Misperception	-	-		
Trust in Police	-	-		
Corruption Misperception		-		
Importance of Traditions	-			
Income Immigration	+			
Religiosity	-			
Trust in the European Parliament	-			
(Political Orientation) X (Income Immigration)	-			
Racial Immigration			-	-

***Note**: This table shows the variables selected by both LASSO and BMA for each of the populist votes when the political orientation is included in the selection process.*

Table 10: Determinants of Populist Vote with Limited List of Populist Parties

Group	Left Populist		Right Populist	
	Previous Vote	Next Vote	Previous Vote	Next Vote
Income Immigration	+	+		
Religiosity	-	-		
Trust in Police		-		
Trust in the European Parliament		-		
Dismantling Welfare State		-		
Faith in Government			-	-
Racial Immigration			-	-
Trust in the United Nations			-	-
Immigrant Crime Misperception				+
Tax Share Ordering Misperception			+	

***Note**: This table shows the variables selected by both LASSO and BMA for each of the populist votes when the list of political parties is limited according to Pew Research Center (2019).*

Table 11: Determinants of Populist Vote after Changing Winsorizing Percentiles

Group	Left Populist		Right Populist	
	Previous Vote	Next Vote	Previous Vote	Next Vote
Dismantling Welfare State	-	-		
Income Immigration	+	+		
Importance of Traditions	-			
Religiosity	-			
Self Worth	-			
Trust in Police	-			
Trust in the European Parliament		-		
Faith in Government			-	-
Immigrant Crime Misperception			+	+
Racial Immigration			-	-
Trust in the United Nations			-	-
Corruption Misperception				-

***Note**: This table shows the variables selected by both LASSO and BMA for each of the populist votes after changing the winsorizing percentiles from 95% to 99%.*

were often free-form (i.e. the respondents entered their response without selecting it from a list of options), extreme responses would tend to reduce the impact of middle values as the normalization process would shrink these values to accommodate the extremes. We examine the robustness of our choice to implement a 95% winsorization by changing the percentile to 99% and running the process again. The results are shown in Table 11. Two conclusions can be yielded from this table. First, again the variables selected are similar to our baseline model and, second, some misperceptions have not been selected.

4.4.6 Examining Voters by Country

Finally, we re-run the entire process, but we split our entire sample into subsamples by country to examine potential heterogeneity between populist voting determinants across the four countries. The results are demonstrated in Table 12. Most of the important variables are selected again at a country level, with distrust for institutions being almost ubiquitous for the left and right in all countries.

Table 12: Determinants of Populist Vote by Country

Group	Left Populist		Right Populist	
	Previous Vote	Next Vote	Previous Vote	Next Vote
Germany				
Dismantling Welfare State	-	-		
Income Immigration	+	+		
Positive Impact of Immigration			-	-
Faith in Government			-	
Racial Immigration			-	
France				
Faith in Government	-	-	-	-
Income Immigration	+	+		
Loss of Sense of Belonging		-		
Trust in Police		-		
Racial Immigration			-	-
Immigrant Crime Misperception				+
Religious Conflict Muslims				+
United Kingdom				
Immigrant Crime Misperception	-	-		
Religiosity	-	-		
Positive Impact of Immigration			-	-
Faith in Government			-	
Trust in Parliament				-
Spain				
Immigrant Crime Misperception	-	-		
Religiosity	-	-		
Positive Impact of Immigration			-	-
Faith in Government			-	
Trust in Parliament				-

***Note**: This table shows the variables selected by both LASSO and BMA for each of the populist votes by country.*

5 Conclusions

Populist parties have become a significant force in many democracies around the world. They often challenge established political norms and institutions and can threaten democratic governance. Understanding the characteristics of their voters can help identify potential threats to democracy and inform strategies for safeguarding democratic institutions. Populist movements also shape public discourse and influence social norms; therefore, understanding the characteristics of their voters can help identify potential areas of conflict or division within society and inform strategies for addressing them.

Prior research in political science, psychology, sociology, and economics has identified several individual characteristics that are associated with support for populist parties, which creates a model uncertainty issue that makes understanding the individual characteristics a daunting task. Contrary to the previous literature, we do not find significance for several variables, including attitudes toward globalization, personality traits, social media use, and labor market status. Our combined methodological approach shows that populist voters (both left and right) seem to hold extreme opinions on specific social topics, such as immigration or welfare. At the same time, they distrust different national and international institutional actors. There seem to be no inherent personality characteristics of the populist voter; societal issues and skepticism towards institutions make populist parties attractive to these voters.

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Appendix A UK version of the questionnaire

Q1 Were you born in the United Kingdom? Yes / No

Q2 What is your gender? Male / Female

Q3 What is your age?

Q4 What is your gross weekly household income? Less than £400 / £400–£600 / £600–£1.000 / More than £1.000

Q5 Please indicate your marital status. Single / Couple, Married / Separated or Divorced / Widowed

Q6 How many children do you have? I do not have children / 1 / 2 / 3 / 4 / 5 / More than 5

Q7 Which category best describes your highest level of education? Compulsory Education / High School / University (but not finished) / Bachelor's degree / Master Degree / Doctoral Degree

Q8 Which of these descriptions best describes your situation? Please select ONLY one. In paid work / In education / Self-employed / Unemployed and actively looking for a job / Unemployed, wanting a job but not actively looking for a job / Permanently sick or disabled / Retired / In community or military service / Doing housework, looking after children or other persons / Refusal

Q9 Have you ever had a paid job? Yes / No / Refusal-Don't know

Q10 In what year were you last in a paid job?

Q11 In your main job are/were you. . . Please select ONLY one. An employee / Self-employed / Working for your own family's business / Refusal-Don't know

Q12 How many employees (if any) do/did you have?

Q13 Do/did you have a work contract of...Unlimited duration / Limited duration / Do/did you have no contract / Refusal-don't know

Q14 Including yourself, about how many people are/were employed at the place where you usually work/worked?

Q15 In your main job, do/did you have any responsibility for supervising the work of other employees? Yes / No / Refusal-Don't know

Q16 Please indicate on a scale of 0-10 how much the management at your work allows/allowed you to influence policy decisions about the activities of the organization

Q17 Have you ever been unemployed and seeking work for a period of more than three months in the last five years? Yes / No / Refusal-Don't know

Q18 Have any of these periods lasted for 6 months or more? Yes / No / Refusal-Don't know

Q19 Please consider the total income of all household members. What is the main source of income in your household? Wages or salaries / Income from self-employment / Pensions / Unemployment/redundancy benefit / Any other social benefits or grants / Income from investment, savings, insurance or property / Income from other sources / Refusal/Don't know

Q20 Which of the descriptions comes closest to how you feel about your household's income nowadays? Living comfortably on present income / Coping on present income / Finding it difficult on present income / Finding it very difficult on present income / Refusal-Don't know

Q21 Please indicate on a scale of 0-10 how interested you would say you are in politics

Q22 Please indicate on a scale of 0-10 how much you would say the political system in the United Kingdom allows people like you to have a say in what the government does

Q23 Please indicate on a scale of 0-10 how able you think you are to take an active role in a group involved with political issues

Q24 Please indicate on a scale of 0-10 how confident you are in your own ability to participate in politics

Q25 Please indicate on a scale of 0–10 how much you personally trust each of these institutions (0 = Do not trust at all; 10 = Complete trust). Country's parliament / The legal system / The police / Politicians / Political parties / The European Parliament / The United Nations

Q26 Some people don't vote nowadays for one reason or another. Did you vote in the last national election in December 12th, 2019? Yes / No / Refusal-Don't know

Q27 Which party did you vote for in that election? Conservative / Labour / Liberal Democrat / UKIP / Paid Cymru / Green Party / SNP / Brexit Party / Other (write in) / Refusal/Don't know

Q28 Which party do you plan to vote in the next national election? Conservative / Labour / Liberal Democrat / UKIP / Paid Cymru / Green Party / SNP / Brexit Party / Other (write in) / Refusal/Don't know

Q29 In politics people sometimes talk about "left" and "right". Please indicate on a scale of 0-10 where you would place yourself (0 = Left; 10 = Right).

Q30 Please indicate on a scale of 0-10 how religious you think you are (0= Not religious at all; 10 = Very religious) Please indicate on a scale of 0–10 whether you agree or disagree with the following statements (0= Completely disagree; 10 = Completely agree).

Q31 The opinion of ordinary people is worth more than that of experts and politicians.

Q32 Politicians should listen more closely to the problems the people have.

Q33 Ministers should spend less time behind their desks, and more among the ordinary people.

Q34 People who have studied for a long time and have many diplomas do not really know what makes the world go round. For the next two questions, notice that we consider an ethnic group as a community or population made up of people who share a common cultural background.

Q35 Please indicate on a scale of 0–10 to what extent you think the United Kingdom should allow people of the same race or ethnic group than the majority of the British people to come and live here (0 = Allow none; 10 = Allow many to come and live here).

Q36 Please indicate on a scale of 0–10 to what extent you think the United Kingdom should allow people of the different race or ethnic group than the majority of the British people to come and live here (0 = Allow none; 10 = Allow many to come and live here).

Q37 Please indicate on a scale of 0–10 to what extent you think the United Kingdom should allow people of different religious faith than the majority of the British people to come and live here (0 = Allow none; 10 = Allow many to come and live here).

Q38 Please indicate on a scale of 0–10 to what extent you think the United Kingdom should allow people from poorer countries outside Europe to come and live here (0 = Allow none; 10 = Allow many to come and live here).

Q39 Please indicate on a scale of 0–10 to what extent you think the United Kingdom has become a worse or a better place to live by people coming to live here from other countries (0 = Worse place to live; 10 = Better place to live).

Q40 Typically, how often do you access news? By news we mean national, international, regional/local news and other topical events accessed via radio, TV, newspaper or online. (Several times a day / Once a day / Several times a week / Once a week / Several times a month / Once a month / Less often than once a month / Whenever I come across by coincidence / Almost never / Never) Thinking about your news habits, please indicate on a scale of 0-10 how often do you. . . (0 = Never; 10 = Always).

Q41 Read any newspapers in print?

Q42 Listen to news on the radio?

Q43 Watch television news?

Q44 Get news from a social media site (such as Facebook, Twitter, or Snapchat)?

Q45 Get news from a news website or app?

Q46 Which, if any, of the following sources of information do you use to keep up with political issues? Please select all that apply (Friends, relatives or colleagues / National printed newspapers and/or their online sites/apps / Radio broadcasters and/or online sites/apps / TV broadcasters and/or online sites/apps / Politically focused magazines and/or online sites/apps / Political parties and/or their newsletters or online sites / Online specialist sites or political blogs / Social media such as Facebook and Twitter / Don't know / None of these)

Q47 Please indicate on a scale of 0-10 how much trust and confidence you have in the mass media – such as newspapers, TV and radio – when it comes to reporting the news fully, accurately and fairly (0 = None at all; 10 = A great deal).

Q48 Please indicate on a scale of 0-10 how much trust and confidence you have in the social media – such as Twitter, Facebook, Instagram and YouTube – when it comes to reporting the news fully, accurately and fairly (0 = None at all; 10 = A great deal).

Q49 Please indicate below whether you get news about politics and current affairs regularly from each of the following sources. For each item, please indicate on a scale of 0-10 if it is something you do regularly (0 = Never; 10 = Always). [The Guardian / The Sunday Times / The Times / Daily Mail / The Independent / The Sun / Channel 4 / BBC / ITV / Film 4]

Q50 Please indicate on a scale of 0-10 how much trust and confidence you have in the following sources when it comes to reporting the news fully, accurately and fairly (0 = None at all; 10 = A great deal). [The Guardian / The Sunday Times / The Times / Daily Mail / The Independent / The Sun / Channel 4 / BBC / ITV / Film 4]

Q51 On a typical day, about how much time do you spend using the internet on a computer, tablet, smartphone or other device, whether for work or personal use? Please give your answer in hours and minutes.

Q52 Please indicate on a scale of 0-10 how often you come across news stories about politics online that you think are not fully accurate (0 = Never; 10 = Always).

Q53 Have you ever shared a political news story online that you later found out was made up? (Yes / No / No answer)

Q54 Have you ever shared a political news story online that you thought at the time was made up? (Yes / No / No answer) As you may have heard, there have recently been some instances of so called "fake news stories" circulating widely online. Please indicate on a scale of 0-10 how much responsibility each of the following has in trying to prevent made up stories from gaining attention (0 = No responsibility at all; 10 = A great deal of responsibility).

Q55 Members of the public

Q56 The government, politicians, and elected officials

Q57 Social networking sites like Facebook, Twitter, WhatsApp and search sites like Google

Q58 Media

Q59 Please indicate on a scale of 0-10 how confident you are in your own ability to recognize news that is made up (0 = Not at all confident; 10 = Very confident).

Q60 Please indicate on a scale of 0-10 how much you think these kinds of news stories leave people confused about the basic facts of current issues and events (0 = Not at all; 10 = A great deal).

Please indicate on a scale of 0–10 whether you agree or disagree with the following statements (0= Completely disagree; 10 = Completely agree).

Q61 There is too much moral decay today

Q62 The sense of belonging together that we used to have is irrevocably lost

Q63 Parents no longer adequately educate their children

Q64 People don't care for each other any more

Q65 The United Kingdom will face a situation of ever-increasing job insecurity

Q66 Even more enterprises will move to low-wage countries, threatening employment in the United Kingdom.

Q67 In order to face the competition of other countries we will have to dismantle our welfare state.

Q68 Multinational enterprises will become increasingly powerful, small enterprises are bound to suffer.

Q69 Opening the European frontiers means that our employers will prefer the low-cost workers from poorer countries to our own workers.

Q70 In the future we will become even less open and tolerant with regard to people from other cultures

Q71 The relationship between Christians and Muslims is bound to become violent in the future

Q72 The relationship between Christians and Jews is bound to become violent in the future

Q73 You can generally trust the people who run our government to do what is right.

Q74 For the next question, please consider globalization as the increased trade between countries in goods, services, and investments. Please indicate on a scale of 0–10 whether you think globalization has had a negative or a positive effect on each of the following (0= Completely negative effect; 10 = Completely positive effect) [British factory workers / Multinational corporations based in the United Kingdom / You and your immediate family / The British economy] Please indicate on a scale of 0–10 whether you agree or disagree with the following statements (0= Completely disagree; 10 = Completely agree).

Q75 It is important to live in secure and safe surroundings.

Q76 People should follow rules at all times, even when no-one is watching.

Q77 It is important that the government is strong and ensures safety against all threats.

Q78 It is important to follow traditions and customs handed down by religion or family.

In the following questions, we refer to legal immigrants as people who were not born in the United Kingdom and legally moved here at a certain point of their life. We are NOT considering irregular migration.

Q79 Think about all of the currently living in the United Kingdom. Out of every 100 people in the United Kingdom, how many are born in another country?

Q80 Fill in the boxes below to indicate how many out of every 100 people in the United Kingdom you think practice each religion. Christianity; Islam; Buddhism; Hinduism; Other Religions/Atheist/No religious affiliation

Q81 Out of every 100 people, who are between 20 and 64 years old, in the United Kingdom how many are currently unemployed? By unemployed we mean people who are currently not working but searching for a job (and maybe unable to find one). Now let's compare this to the number of unemployed among foreign-born people. Out of every 100 foreign-born people how many do you think are currently unemployed?

Q82 The poverty line is the estimated minimum level of income needed to secure the necessities of life. Out of every 100 adult people born in the United Kingdom, how many live below the poverty line? Let's compare this to poverty among legal immigrants. Out of every 100 legal immigrants in the United Kingdom today, how many do you think live below the poverty line?

Q83 The International Organization for Migration (IOM) defines irregular migration as "movement that takes place outside the regulatory norms of the sending, transit and receiving country". A migrant in an irregular situation may fall within one or more of the following circumstances: He or she may enter the country irregularly; he or she may reside in the country irregularly; he or she may be employed in the country irregularly. Think about the evolution of the irregular migration flows in Europe in the last 3 years. It has increased over time / It has decreased over time / It has kept constant over time / Don´t know

Q84 Think about the evolution of detections of illegal border crossing at the EU's external borders in the last 3 years. It has increased over time / It has decreased over time / It has kept constant over time / Don´t know

Q85 How many Islamist terrorists do you think have been arrested in the United Kingdom in 2018?

Q86 How many people do you think have been killed during terror attacks committed by Islamist terrorists in the United Kingdom in the last 5 years?

Q87 Please indicate on a scale of 1–10 whether you agree or disagree with the following statement (o = Completely disagree; 10 = Completely agree): Most crimes in the UK are committed by foreigners.

Q88 What percentage of the prison population in the United Kingdom are foreign national prisoners?

Q89 What do you think is the income share of the poorest 20% of all people living in the United Kingdom?

Q90 What do you think is the income share of the richest 10% of all people living in the United Kingdom?

Q91 How large is the share of taxes and social contributions in percentage of GDP in the United Kingdom?

Q92 According to the share of taxes and social contributions as a percentage of GDP, in which position do you think the United Kingdom is among the 28 Union European countries? Notice that a higher position in the list implies a larger share.

Q93 Please consider corruption in a broad sense, including offering, giving, requesting and accepting bribes or kickbacks, valuable gifts and important favors, as well as any abuse of power for private gain. Transparency International is the leading global civil organization on the fight against corruption. Each year they elaborate a Corruption Perceptions Index which ranks 180 countries and territories by their perceived levels of public sector corruption according to experts and business people. In which position do you think the United Kingdom is among the 28 Union European countries?

Q94 There are people who tend to be towards the top of our society and people who tend to be towards the bottom. Below is a scale that runs from top to bottom. On a scale of 1–10 Where you would put yourself (1 = Bottom of our society; 10 = Top of our society).

Please indicate on a scale of 0-10 to what extent you agree with the following statements (0= Completely disagree; 10 = Completely agree).

Q95 I experience a general sense of emptiness

Q96 There are many people I can trust completely

Q97 I miss having people around me.

Q98 I often feel rejected.

Q99 I have enough opportunities to advance in life

Q100 I know exactly where I feel at home and where I belong

Appendix B List of Populist Political Parties

Party Name	Populist Left	Populist Right
Germany		
Alternative fur Deutschland		•
Burger in Wut		•
Die Linke	•	
Die Republikaner		•
Nationaldemokratische Partei Deutschlands		•
France		
Debout la France		•
La France Insoumise	•	
Les Patriotes		•
Nouveau Parti Anticapitaliste	•	
Parti Communiste Francais	•	
Parti de Gauche	•	
Rassemblement National		•
Union Populaire Républicaine		•
UK		
Brexit Party		•
Democratic Unionist Party		•
UK Independence Party		•
Spain		
Euskal Herria Bildu	•	
Junts per Catalunya		•
Unidas Podemos	•	
Vox		•

Appendix C Definitions and Data Sources of Actual Statistics

To compare the perceptions of our respondents with actual statistics, we used the following definitions and data sources.

C.1 Foreign born

For the question "Out of every 100 people in [country], how many are born in another country?", we used the share of foreign-born in the entire population. Data are taken from Eurostat, Population and Migration Statistics, code: migr_pop3ctb. We employed the most recent data available at the time of the survey, which were the population figures for 2018. The share of foreign born amounts to 12% in France, 17% in Germany, 13% in Spain and 14% in the UK.

C.2 Muslim population

The respondents' estimate for the Muslim share was captured by the question "How many out of every 100 people in [country] you think practice each religion." There is no uniform database to cover the actual share of people practicing Islam. In Germany, the share of the Muslim population is 5.1%; the estimate refers to 2018 and is taken from *Forschungsgruppe Weltanschauungen in Deutschland* (https://fowid.de/meldung/religionszugehoerigkeiten-2018). For France and UK, we relied on the CIA World Factbook (https://www.cia.gov/the-world-factbook/countries/). The median estimate for France is 8% and refers to 2015. For the UK, the most recent estimate is from 2011 with a value of 4.4%. The number of Muslims residing in Spain is 2,091,656, according to the Demographic Study of the Muslim Population, prepared by the Union of Islamic Communities of Spain (UCIDE) and by the Andalusian Observatory, which collect data as of December 31, 2019 (http://observatorio.hispanomuslim.es/estademograf.pdf). With a total population of 47 m. (https://www.ine.es/jaxiT3/Datos.htm?t=31304), Spain has a Muslim share of 4% in the entire population.

C.3 Poverty

Respondents were asked ”The poverty line is the estimated minimum level of income needed to secure the necessities of life. Out of every 100 adult people born in [country], how many live below the poverty line?”. Eurostat sets this threshold of being at risk of poverty at 60% of median equivalised income after social transfers. We used the poverty rate of the population aged 18 and over from Eurostat (Quality of life, code: ilc_li31). In March 2020, the most recent data were available for the year 2018 (2017 for UK). The poverty rates were 10% in France, 16% in Germany, 18% in Spain and 16% in the UK.

C.4 Income share of the top decile

We elicited the respondents' estimates for the income share of the top 10% earners by asking: ”What do you think is the income share of the richest 10% of all people living in [country]?” We contrast these estimates with data from Eurostat (Quality of life, code: ilc_di01), which provides the distribution of incomes by quantiles. The income shares for 2018 (available in March 2020) were 24% in France, 26% in Germany, 24% in Spain and 26% in the UK.

Appendix D Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Pctl. 25	Pctl. 50	Pctl. 75	Max
Age	12,027	48.54	15.92	18	36	49	62	92
Trust in Parliament	12,027	4.77	2.73	0	3	5	7	10
Trust in Police	12,027	6.43	2.45	0	5	7	8	10
Trust in the European Parliament	12,027	4.11	2.78	0	2	4	6	10
Trust in the United Nations	12,027	4.79	2.67	0	3	5	7	10
Religiosity	12,027	3.32	3.22	0	0	3	6	10
Homogeneous Immigration	12,027	5.96	2.53	0	5	6	8	10
Racial Immigration	12,027	5.33	2.75	0	3	5	7	10
Income Immigration	12,027	5.28	2.82	0	3	5	7	10
Dismantling Welfare State	12,027	4.36	2.94	0	2	5	7	10
Religious Conflict Muslims	12,027	5.54	2.94	0	3	5	8	10
Faith in Government	12,027	4.56	2.74	0	2	5	7	10
Importance of Traditions	12,027	6.11	2.79	0	5	6	8	10
Self Worth	12,027	5.07	1.84	0	4	5	6	10
Poverty Misperception Nationals	12,027	9.71	21.21	-18	-6	4	19	90
Immigrant Crime Misperception	12,027	4.66	2.96	0	2	5	7	10
Foreign Prisoners Misperception	12,027	11.80	23.17	-31	-5	8	28	90
Tax Share Ordering Misperception	12,027	1.93	5.37	-1	-1	0	1	21
Corruption Misperception	12,027	0.71	1.39	-1	-0	0	2	4