– DRAFT –
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How Misinformation Shapes the Preference to Leave or Remain in the European Union

Julia Partheymüller[*], Sylvia Kritzinger[+], Carolina Plescia[+]
James Wilhelm[*], Tanja Schüberl[*]

In recent years, EU politicians have become increasingly concerned about the possible distorting effects of European citizens being not only uninformed, but systematically misinformed about the European Union. Uninformed citizens, lacking accurate knowledge as well as confidence about what they know, are usually believed to stay at home or vote randomly so that potential detrimental effects form their lack of information tend to cancel out in the aggregate. In contrast, their misinformed counterparts, holding false beliefs with much greater confidence, might feel entirely ready to participate in politics while at the same time voting in systematically biased ways. Against this background, this study assesses the role of knowledge and confidence in knowledge in shaping the preference to leave or remain in the European Union. We make use of data from the RECONNECT surveys that were conducted simultaneously in eight European countries (i.e., Austria, Denmark, France, Germany, Hungary, Italy, Poland, Spain) at the 2019 EP elections. The survey included a newly designed item battery on EU knowledge where each item was paired with an instrument to capture their confidence in knowledge. Based on these new data and making use of scaling techniques, we study the preference to leave or remain in the European Union among voters of different degrees of political informedness. The results show that misinformation is associated with a preference to leave the European Union, whereas uninformed citizens tend to be undecided or not intending to vote and the well-informed prefer to remain. Overall, our findings contribute to the ongoing debates about the role of misinformation in EU politics and the challenges to democratic governance at the European level.

Keywords: Misinformation; European Union; Political Knowledge, Confidence in Knowledge; Citizens.

[*] Vienna Center for Electoral Research, University of Vienna
[+] Department of Government, University of Vienna

1 Introduction […]

2 Previous research and hypotheses […]

Previous research has shown that the accuracy of and confidence in knowledge are two distinct dimensions (Lee and Matsuo 2018). The accuracy of knowledge refers to whether the information is factually correct or not , whereas the confidence in knowledge is a meta-cognition of how certain a person feels about the accuracy of their beliefs. Although the origins of perceived confidence are not fully known, previous research suggest that these perceptions are affected by the availability and accessibility of information upon retrieval. Based on the two dimensions, citizens can be classified as misinformed, well-informed or uninformed (Table 1): Well-informed citizens hold highly accurate knowledge and are fairly confident of very knowledge: Misinformed voters, in contrast, hold wrong views with great confidence: lastly, uninformed voters mostly lack confidence in their knowledge, regardless of whether it happens to be correct or not. They might as well just be guessing. The underlying configuration of accuracy and confidence in knowledge may have considerable and important implications for political preferences, political behavior, and democratic governance which have not sufficiently been studied so far.

Table 1: Types of informedness

	Accuracy of knowledge	
Confidence in knowledge	Low	High
– High	Misinformed	Well-informed
– Low	Uninformed	

In recent years, political observers have become particularly concerned with the rise of the fairly vocal minority of misinformed in the context of decisions such as Brexit. Democratic decisions, and referenda in particular, require a fairly high degree of citizen competence. Critics of direct democracy worry that voters who are very poorly informed but high on confidence in their judgement may disproportionately affect the quality of collective decision-making. Against this background, this paper assesses the relationship between the accuracy of and confidence in knowledge and the preferences to leave and remain in the European Union. Specifically, we propose the following hypotheses which we will test in the following:

- Hypothesis 1: Well-informed voters prefer to remain in the European Union.
- Hypothesis 2: Uniformed voters remain undecided or prefer not to vote.
- Hypothesis 3: Misinformed voters prefer to leave the European Union.

3 Data and methods

To evaluate how the accuracy of and confidence in EU knowledge, we make use of the data gathered by the RECONNECT project at the 2019 European Elections. As part of this project, surveys were conducted simultaneously in eight European countries, namely Austria, Denmark, France, Germany, Hungary, Italy, Poland and Spain (Plescia et al. 2019). Here, we will make use of the pre-election data that was gathered in April 2019. In all countries, the data were collected as quota samples via online access panels, with quotas mirroring the population distributions of key demographics. In all analyses, in addition, post-stratification weights were applied to match population targets.

The surveys included a newly designed battery of knowledge questions on the European Union. The five questions covered, in particular, the major institutions of the European Union involved in the policy process at the European level such as the European Parliament, the European Commission, and the Council of the European Union. The battery also included one item on EU policies and the budget. Each knowledge question included four answering options, with one being correct and three being false. Respondents were instructed to give their best guess if they did not know the answer to avoid that unequal propensities to opt for a "don't know" answer affect the results (Mondak and Davis 2001). After answering the each of the knowledge questions, respondents were asked in a follow-up question to indicate how certain they are that their answer is correct on a scale from 0 to 10. Appendix A includes the full question wording.

Figure 1: Accuracy of and confidence in EU knowledge

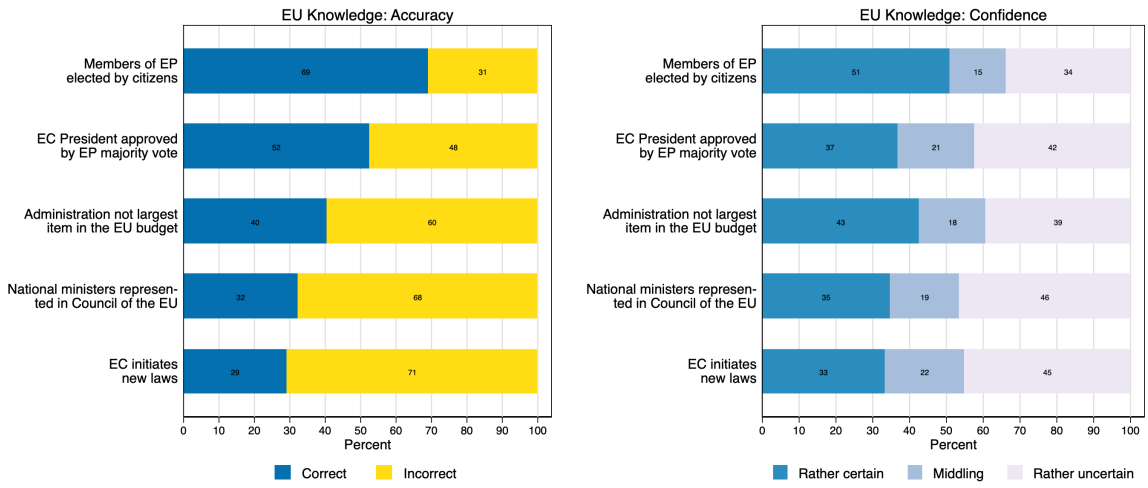
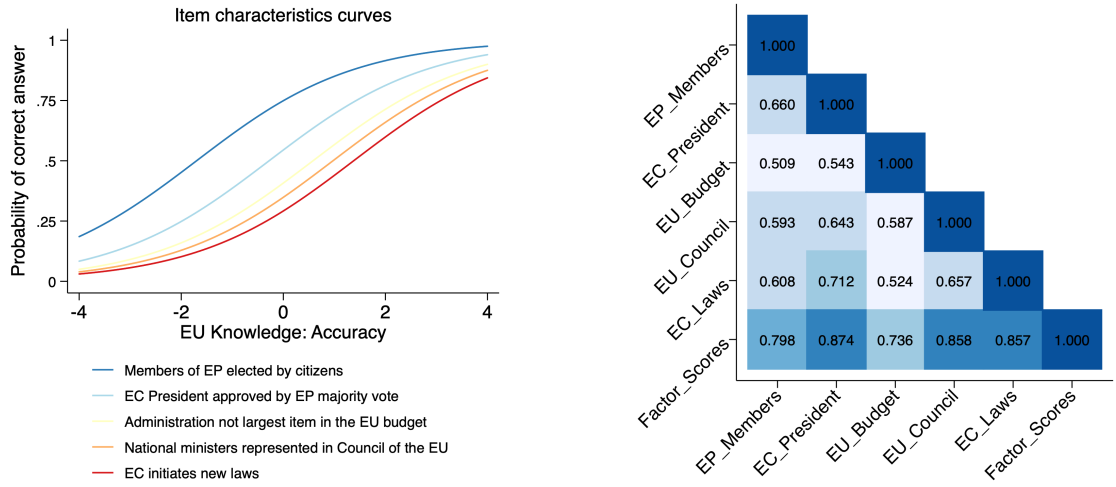


Figure 1 shows the distributions of the responses on the knowledge questions. It can be seen that respondents answered some questions more correctly than others. The question on the European Parliament being elected by citizens was answered correctly by 69 percent of the respondents, whereas 31 percent answered incorrectly. This apparently was the easiest question for the respondents. A slim majority, 52 percent, also answered the question on the approval vote of the President of the European Commission correctly. The remaining three questions were answered incorrectly by the majority. 60 percent were not able to identify the statement regarding the administrative costs of the EU as false. 68 percent could not identify

the institution at the EU level were national governments are represented. And, 71 percent could not name the institution with the formal right to initiate laws at the EU level. These apparently were harder knowledge questions.

Despite the variation across the items measuring the accuracy of knowledge, there are fewer differences in the level of certainty, as shown by the right-hand panel in Figure 1. The most certain respondents felt when answering the question on the European Parliament, with 51 percent indicating that they felt very or rather certain about their answer (scale points 0 to 4). For the remaining questions the level of certainty was slightly lower ranging from 43 percent to 33 percent. Interestingly, although 60 percent answered the question on the share of the administrative costs on the EU budget incorrectly, only 39 percent felt uncertain whether their answer was correct or not. Overall, the patterns suggest that greater accuracy is sometimes, associated with greater confidence, but confidence in knowledge is by no means perfectly determined by accuracy.

Figure 2: Item characteristics curves for knowledge measure and correlation matrix of confidence measures



To build a scale of the accuracy of EU knowledge, we fit an one parameter logistic item response theory model using the binary knowledge items (Thissen and Orlando 2001). This allows us to take into account the varying difficulty of the items in our knowledge scale. Figure 2 shows the items characteristics curves. The characteristics curves confirm that the item on the European Parliament was the easiest one, whereas the item of the right to initiate new laws was the hardest. At the lowest end of the latent scale respondents, the probability to answer the any of the items correctly is very low. In contrast, at the highest level of the knowledge scale, the respondents have a high propensity to answer all items correctly. We extract the latent scores from the response model which will serve as one of our main independent variables in the subsequent analyses.

To build a scale of the confidence in knowledge, we ran a principal component analysis on the interval-level items. The results suggested that these items strongly load on one single factor. The right-hand panel in Figure 2 shows the correlation matrix between the individual items and the factor scores extracted from the principal component analysis. It can be seen

that all items are strongly correlated with this scale of confidence in knowledge. The factor scores will be used as our second major independent variable to assess the role of confidence in knowledge in preference formation. The correlation between our scale of accuracy and confidence in knowledge is 0.34. Thus, although there is a weak positive association between accuracy and confidence, we can confirm in line with previous research (Lee and Matsuo 2018) that two distinct analytical concepts are also empirically distinguishable.

The dependent variable in our analysis is the question of how respondents would vote in a hypothetical referendum. The question wording was as follows: "If there was a referendum about staying or leaving the EU in [COUNTRY], how would you decide?". The answering options were "[COUNTRY] staying in the EU", "[COUNTRY] leaving the EU", "I am undecided", and "I would not vote". We collapse the undecideds and non-voters into one category as we have no distinct hypothesis for these two categories. As a result, our dependent variable groups respondents into three categories (Remain, Leave, and Undecided/Non-Voter).

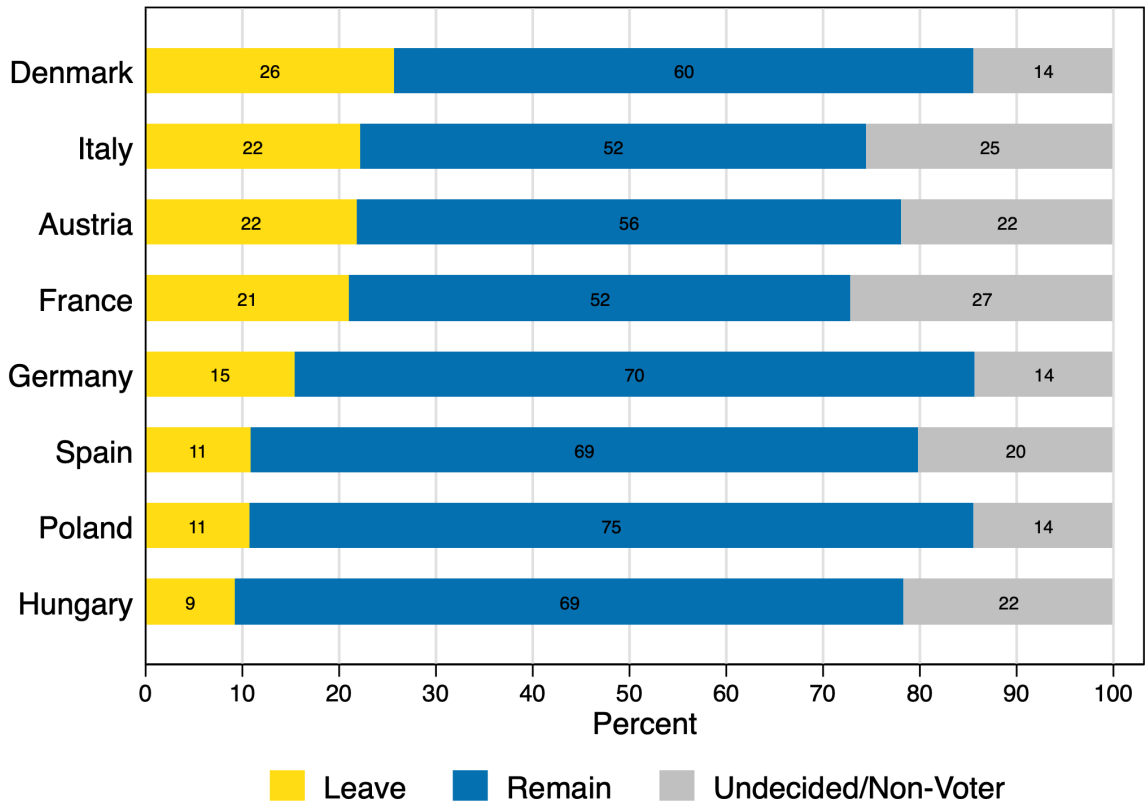
The analysis proceeds in two steps: First, we explore the univariate and bivariate distributions of dependent and main independent variables. Then, we run a multivariate logistic regression model for each of the three categories of our dependent variable. We include as control variables key sociodemographic factors such as age, gender, and education country-fixed effects as well as measures of political attitudes and political involvement. The latter include measures of political self-place on the left-right and the European integration scale, political interest, and a measure of internal political efficacy. The scale of internal political efficacy was formed based on two items ("I have a good understanding of the important political issues facing the European Union.", "I consider myself well qualified to participate in EU politics.") using a principal component analysis. Apart from the control variables, the models include the scales of EU knowledge accuracy and confidence as well as an interaction between these two primary independent variables. The interaction is particularly critical at it allows us to test for the distinct effect of misinformation, when people feel well informed, but in truth are not.

4 Results

Before testing our hypotheses, we first take a look at our dependent variable and how it relates to our main independent variables. Figure 3 shows the distribution of preferences to remain and to leave the European Union in the eight member states that were part of the study. The country sample covers a variety of European democracies, including old and new member states as well as countries from East and West and North and South. In all countries, a majority of citizens would vote to remain in the European Union. However, in some countries this majority is fairly slim, with 52 percent in France and Italy and 56 percent in Austria. The preference for leaving the European Union is strongest in Denmark, Italy, Austria, and France, with values ranging from 26 to 21 percent. It is smallest in the Eastern European member states, Poland and Hungary, and in Spain, with about 9 to 11 percent. Germany, with 15 percent of leavers, lies in the midfield. Although, thus, preference to leave are a minority position, this minority is quite sizeable in some member states. It is also worth

noting that a sizeable minority is undecided or preferring not to vote on this question, with the share of respondents in this group ranging from 14 to 27 percent.

Figure 3: Preferences to leave or remain in the European Union

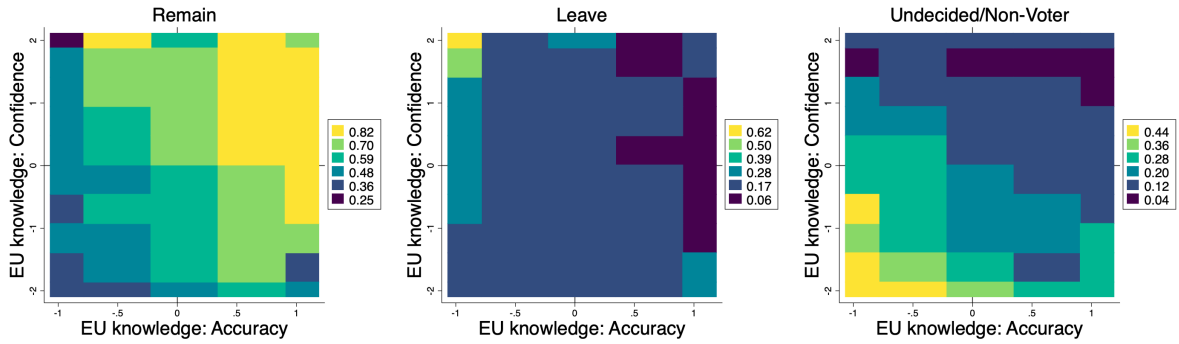


How are these preferences distributed across levels of EU knowledge accuracy and confidence? Figure 4 shows the heatmap of the preference to leave and remain as well as for undecideds and non-voters along the two dimensions – accuracy of and confidence in EU knowledge. The first map on the left-hand side shows the share of preferences to remain. The highest shares can be found in the upper right quadrant were 82 percent or more would vote to remain in a hypothetical referendum. This quadrant includes the well-informed voters with above average accuracy and confidence in their EU knowledge. The least willing to remain are voters in the most up left corner, with 25 percent or less wanting to remain. This is the corner of the most strongly misinformed respondents who answered most knowledge questions incorrectly, but still feel a lot of confidence in their judgement. In other areas of the heatmap, support for remain lies between these extremes.

The second heatmap shows the distribution of preferences to leave. The maximum support is found in the most up left corner, with more than 62 percent showing a preference to leave. But also slightly below that, at the lowest level of accuracy with fairly high levels of confidence, the support for leave is strongest. Leave support is lowest at the highest levels of informedness, in particular, among those who feel confidence in their knowledge about the European Union.

Finally, the third heatmap shows the distribution of undecideds and non-voters along the two dimensions of knowledge. It can be seen that the highest share of undecideds and non-voters can be found in the lower left quadrant. But also in the lower right quadrant many undecided and non-voting citizens can be found. The minimum values for undecidedness and non-voting can be found in the upper two quadrants, hence, in the groups of the well-informed and the misinformed. Overall, these descriptive results give support our hypothesis, but to be more certain about the role of knowledge, we need to test the patterns against alternative explanations in a multivariate setting.

Figure 4: Informedness and the preference to leave or remain in the European Union



In our multivariate analysis we control for various other factors that can affect the preferences to remain or leave the European Union (see Table 2). Among the demographic factors, we include age, gender and education. We see that the youngest and oldest cohort are more stronger in favor of remaining than some of the middle aged cohorts. Male respondents were more often in favor of leaving and less often undecided than females. In line with previous research, we find that more highly educated citizens are more in favor of remaining and less in favor of leaving. The highest education group is also less likely to be undecided than low educated respondents.

In terms of political attitudes and involvement, we see that right-leaning citizens had a higher likelihood to be in favor of leaving than centrist respondents, whereas there is no significant difference in preferences between the centre and the left. Without great surprise, respondents in favor of further EU integration preferred remaining and disfavored leaving. They were also less often undecided than those opposing EU integration. Political interest does not affect the preference to leave or remain, but political interested are rarely undecided or not voting. For internal political efficacy, the general subjective feeling of competence in EU matters, we do not find any statistically significant differences.

Our main independent variables – accuracy and confidence – are included as well as an interaction between these two factors. We see a significant main effects for knowledge and the interaction term of confidence and accuracy, but not for confidence per se. As interaction effects in non-linear models are notoriously difficult to interpret based on the estimates, we opt for an visual inspection of the interaction (see Figure 5). Specifically, we plot the average marginal effect of confidence across the range of accuracy. If our three hypotheses are true, we should see that confidence of low levels of accuracy increases the preference to leave. At high levels of accuracy, it should, however, increase the preference to remain. Further,

confidence should always decrease the chances of being undecided, regardless of the level of accuracy of EU knowledge.

Table 2: Multivariate analysis

	(1) Remain		(2) Leave		(3) Undecided / Non-Voter	
Age (ref. 16-30 years):						
- 31-40 years	-0.238*	(0.112)	0.221	(0.131)	0.169	(0.092)
- 41-50 years	-0.244*	(0.117)	0.131	(0.166)	0.192	(0.108)
- 51-60 years	-0.112	(0.123)	0.055	(0.148)	0.116	(0.093)
- >60 years	0.169	(0.132)	-0.339*	(0.139)	0.108	(0.088)
Gender: male (ref. fem.)	0.013	(0.084)	0.205*	(0.090)	-0.240***	(0.061)
Education (ref. low):						
- medium	0.449***	(0.054)	-0.414***	(0.113)	-0.127	(0.078)
- high	0.717***	(0.065)	-0.729***	(0.147)	-0.213**	(0.070)
Left-right self-placement (ref. centre):						
- left	0.323	(0.181)	-0.160	(0.096)	-0.346	(0.192)
- right	-0.481***	(0.110)	0.608***	(0.089)	0.079	(0.081)
Position: EU integration	0.403***	(0.026)	-0.388***	(0.034)	-0.159***	(0.017)
Political interest	0.056	(0.063)	0.125	(0.078)	-0.190***	(0.029)
Internal pol. efficacy	-0.040	(0.036)	0.027	(0.027)	0.012	(0.042)
EU knowl.: accuracy	0.617***	(0.021)	-0.696***	(0.033)	-0.201***	(0.016)
EU knowl.: confidence	-0.014	(0.022)	0.138***	(0.020)	-0.149***	(0.018)
EU knowl.: accuracy X Confidence	0.112***	(0.009)	-0.388***	(0.017)	0.148***	(0.008)
Country fixed-effects?	Yes		Yes		Yes	
Constant	-1.769***	(0.264)	0.194	(0.239)	-0.580**	(0.180)
Observations	13705		13705		13705	
McFadden-R2	0.238		0.229		0.081	

Notes: Entries are logit coefficients. Clustered standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001.

Figure 5: Marginal effect of EU knowledge confidence at varying levels of accuracy

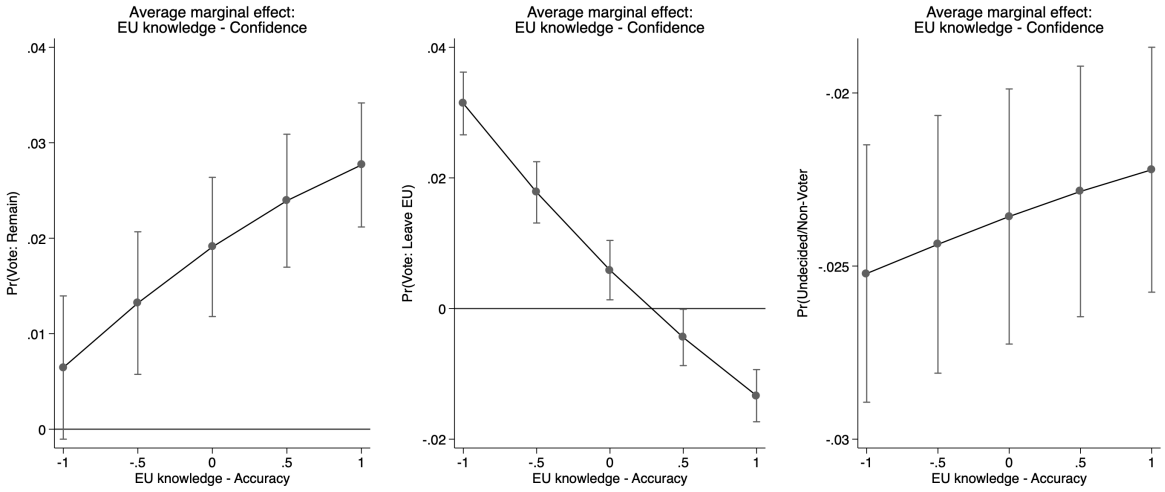


Figure 5 confirms all three of these expectations. The first panel shows the marginal effect of confidence across varying levels of accuracy on the preference to remain. We see that at the highest level of accuracy, confidence increases the chances to vote remain. In other worse, well-informed citizens that have an accurate understanding of the EU institutions and that

have confidence in their judgement are more likely preferring to remain. For the preference to leave, however, we see a reversed pattern. At the lowest level accuracy, confidence increases significantly their likelihood of voting to leave. In other words, misinformed voters who hold highly inaccurate views regarding the European politics but who strongly feel confident about their knowledge, are more likely to vote leave. Finally, we see a constant negative of confidence on the chances to be undecided, with no significant variation across levels of EU knowledge accuracy. This is suggests that in line with our expectation that uninformed voters who do not know much about European politics and/or lack confidence in what they know are most likely to remain undecided or not vote at all.

5 Discussion and Conclusion […]

6 References […]

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Appendix A: Question wording

German	
Bei welcher der folgenden EU-Institutionen werden die Mitglieder direkt von den europäischen Bürgern gewählt? Die Europäische Kommission 1 Das Europäische Parlament 2 Der Rat der Europäischen Union 3 Keine der Genannten 4	
Jean-Claude Juncker ist der derzeitige Präsident der Europäischen Kommission. Wie wurde er zum Präsidenten? Er wurde direkt von EU-Bürgern gewählt. 1 Er wurde auf Grundlage einer internen Abstimmung in der Europäischen Kommission ausgewählt. 2 Er wurde von einer Mehrheit der Mitglieder im Europäischen Parlament bestätigt. 3 Er wurde ohne Wahl ernannt. 4	
Welche der folgenden EU-Institutionen schlägt formell neue Gesetze auf EU-Ebene vor? Die Europäische Kommission 1 Das Europäische Parlament 2 Der Rat der Europäischen Union 3 Alle Genannten 4	
Welche der folgenden Aussagen trifft **nicht** zu? Alle EU-Bürger haben das Recht, in einem anderen EU-Land zu arbeiten. 1 Roaming-Gebühren für Mobiltelefone sind innerhalb der EU gesunken. 2 Die Gehaltskosten für EU-Beamte sind der größte Posten im EU-Budget. 3 Einzelne EU-Länder können keine eigenen Handelsabkommen abschließen. 4	
In welchen der folgenden EU-Institutionen sind die Minister nationaler Regierungen vertreten? In der Europäischen Kommission 1 Im Europäischen Parlament 2 Im Rat der Europäischen Union 3 In keiner der Genannten 4	
Wie sicher sind Sie sich der Antwort, die Sie gerade gegeben haben? 0 = Überhaupt nicht sicher 0 ... 10 = Vollkommen sicher 10	