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Emeric Henry, Ekaterina Zhuravskaya, Sergei Guriev

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Discussion Paper

CHECKING AND SHARING ALT-FACTS

Emeric Henry, Sergeï Guriev, and Ekaterina Zhuravskaya

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Checking and Sharing Alt-Facts*

Emeric Henry†®, Ekaterina Zhuravskaya‡®, Sergei Guriev§

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Abstract

Using an online randomized experiment in the context of the 2019 European elections campaign in France, we study how fact-checking affects sharing of false news on social media. We exposed over 4200 voting-age French to statements on the role of the EU made by the extreme-right populist party *Rassemblement National*. A randomly selected subgroup of experiment participants was also presented with fact-checking of these statements; another subgroup was offered a choice whether to view the fact-checking or not. Then, all participants could choose whether to share the false statements on their Facebook pages. We show that: (i) both imposed and voluntary fact-checking reduced sharing of false statements by more than 25%; (ii) the size of the effect was similar between imposed and voluntary fact-checking; and (iii) each additional click required to share false statements reduced sharing by 75%.

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†Emeric Henry: Sciences Po, Paris.

‡Ekaterina Zhuravskaya: Paris School of Economics (EHESS).

§Sergei Guriev: Sciences Po, Paris.

1 Introduction

In January 2017, when asked to comment on clearly false statements by Donald Trump's Press-Secretary, the President's Counselor Kellyanne Conway famously said that these were not falsehoods but "alternative facts." Since then, the notion of "Alternative Facts" (or alt-facts, for short) took a life of its own describing false or misleading statements by politicians. In order to limit the dissemination of alt-facts, some countries, such as Germany or France, have introduced laws allowing the regulators to block social network accounts and sites. Many media and independent organizations have started large-scale fact-checking efforts (Agence France Presse, Libération and Le Monde in France, Politifacts in the US, Pagella Politica in Italy). These efforts face two major challenges. First, they may be too slow as false news circulate particularly fast (Vosoughi et al., 2018). Second, ex post fact-checking may be ineffective since it proves difficult to correct beliefs after the audience's exposure to false or misleading statements (Swire et al., 2017; Nyhan et al., 2019; Barrera et al., 2020). The key to limit the impact of alt-facts is therefore to hinder their circulation.

On May 26, 2020, Twitter has taken a bold step in this direction. As Donald Trump tweeted that "There is NO WAY (ZERO!) that Mail-In Ballots will be anything less than substantially fraudulent," Twitter added a fact-checking link at the bottom of Mr. Trump's tweet; the link, in blue lettering and punctuated by an exclamation mark, referred to the CNN website where Trump's claim was fact-checked and disproved (Conger and Alba, 2020). This was a conscious decision by Twitter to apply a recent policy to label tweets that would need fact-checking, and it was the first time it was used for such a high profile politician and a user with 82 million followers (Conger, 2020). The label did not state that the original tweet was false; it literally said "Get the facts about mail-in voting." Moreover, it did not directly show the evidence on mail-in voting on the users but provided them with an option to see it by clicking on the link.

How can such fact-checking labels affect users' attitudes to the original alt-fact messages and, in particular, their sharing of alternative facts on social networks? In this paper, we study these issues using a randomized experiment involving real users of social networks. We focus on the following questions: Does the provision of fact-checking information reduce sharing of alt-facts? If so, is it as effective to let the individuals voluntarily access the fact-checking information, as Twitter chose to do, rather than force it on them? What drives the choices to view the fact-checking and to share the alt-facts?

In May 2019, in the context of the European Parliament elections, we contacted, using the

Qualtrics platform, 5089 French voting-age individuals with Facebook accounts. Our main experiment on sharing alt-facts was administered on a randomly-selected one-half of all the participants who were first shown misleading statements on the EU (with links to the exact source) made by the leaders of the extreme-right party Rassemblement National (RN).[1] The first statement claimed that 87% of the French laws come from European directives; the second one stated that the EU wants to bring in 50 million immigrants to Europe by 2050. After seeing those statements, one third of the subjects in the experiment on sharing alt-facts, randomly drawn, were exposed to fact-checking information related to these statements, compiled from media sources (Imposed Fact-Check treatment), while another third was given the choice of accessing or not accessing this fact-checking information (Voluntary Fact-Check treatment). The remaining third (Alt-Facts treatment) was not shown fact-checking information nor was given an option to access it.

After being exposed to the alt-facts and possibly to the fact-checking, participants had the opportunity to share the alt-facts on Facebook. They were asked, within the survey, whether they wished to share this content on their Facebook account. Clicking "yes" brought them to an external webpage where they needed to click again to re-confirm their sharing intention. The second click led to appearance of the sharing button on their Facebook account, which meant that the participants had to re-confirm their intention to share content on Facebook for the second time. The third click (on this button) led to the content being posted on the participant's Facebook page.

In our experiment, 4231 participants were exposed to alt-facts and could potentially share them. In this group, 495 participants agreed to share alt-facts by clicking "yes" following the question whether they want to share alt-facts on their Facebook page.[2] Since sharing of content on social media usually takes one click, we use the response to this (first) question as a measure for sharing of alt-facts. The need to re-confirm the choice with additional clicks substantially reduces sharing. Out of 495 who clicked once to agree to share alt-facts on their Facebook pages, 130 respondents reconfirmed it on the external website with the second click. Out of these 130 participants, 30 chose to reconfirm the second time, and click on the sharing button for their Facebook account. Thus, even a very small cost (associated with a need to re-confirm the original choice) significantly affects willingness to share: each additional click reduces sharing by about 75%.[3]

[1] Until June 2018, Rassemblement National (the National Rally) was known as Front National (the National Front). Marine Le Pen (MLP) was the party's president both before and after the renaming.

[2] The fact that the overwhelming majority, 88%, did not agree to share alt-facts on their facebook page is consistent with other studies that report low rates of sharing false news on social media (e.g., Guess et al., 2019).

[3] This finding provides a rationale for Twitter's action on May 28, 2020 when it judged that another Mr. Trump's tweet violated Twitter's policy against glorifying violence. Twitter did not block the tweet but instead hid it under a warning label. In order to view the original tweet, the users had to make an additional click (Conger, 2020).

Despite the fact that only 30 participants were sufficiently persistent to re-confirm twice their intention to share, the alt-facts shown to our participants appeared on Facebook (i.e., were shared and reshared by Facebook users) more than 800 times within a few days from the start of our experiment (after which we deactivated the link in order to stop propagation of this content on social media).

Our main result is that either exposing individuals to fact-checking information or providing them with the opportunity to fact-check themselves, reduces sharing of alt-facts by more than 25%. While the sharing rate is 14.7% in the Alt-Fact treatment, it falls to 10.2% in the Imposed Fact-Check treatment. In the Voluntary Fact-Check treatment, where the users can choose whether to view fact-checking or not, the average rate of sharing is 10.8%, a rate not statistically different from the one in the Imposed Fact-Check treatment.

We also show that participants in these two treatments share the fact-checking information at similar rates: in the Imposed Fact-Check treatment, 14.3% participants share fact-checking, while the respective average sharing rate in the Voluntary Fact-Check is 11.5%. The difference between these two rates of sharing fact-checking information is marginally statistically significant, but the magnitude of this difference is small. This is striking as in the Voluntary Fact-Check treatment only 39% participants chose to view the fact-checking information and had an option to share it.

We then focus on the relationship between the decision to view the fact-checking information and the decisions to share alt-facts and fact-checking. Using the pre-treatment determinants of sharing behaviour in Alt-Facts and Imposed Fact-Check treatments, we predict the ex ante propensity to share alt-facts and fact-checking information for each participant in the Voluntary Fact-Check treatment. We find that the ex ante propensity to share is significantly higher for those who decided to view fact-checking information (Viewers) compared to those who decided not to view (Nonviewers). In other words, the selection into Viewers and Nonviewers is endogenous: individuals who are more inclined to share, either alt-facts or fact-checking information, are more likely to view the fact-checking information.

Using the predicted propensity to share for both Viewers and Nonviewers, we estimate the impact of viewing fact-checking on sharing alt-facts and on sharing fact-checking. We find that exposure of Viewers to fact-checking decreases their sharing of alt-facts by 67% relative to their predicted propensity to share and increases their sharing of fact-checking by 58%. What is even more striking is that we find a substantial reduction of sharing alt-facts among Nonviewers: even though these individuals decide not to view the fact-checking, the very knowledge of existence of

fact-checking of the alt-facts reduces sharing of the respective alt-facts by 50%.

In order to understand why Viewers have ex ante a higher propensity to share than Nonviewers, we develop a simple model of decisions to view fact-checking and to share. The key assumption of the model is that individuals differ in their ex ante propensity to share. We show that Viewers are those with intermediate propensity to share alt-facts. This is intuitive: individuals who would always (or never) share alt-facts, regardless of the information, have no incentive to view fact-checking (we assume that viewing is costly). We provide conditions, both on distribution of ex ante propensity to share and on the design of the fact check, under which there are more Nonviewers among those with very low (rather than very high) ex ante propensity to share.

We then explore the mechanisms behind our main result that the exposure to fact-checking reduces sharing of alt-facts. While we do not have direct experimental evidence, the analysis of heterogeneity of treatment effect is consistent with the conjecture that the reduction in sharing alt-facts due to exposure to fact-checking information is driven by the moral cost of sharing potentially false information. In particular, respondents who donated money or work for charity, who are more religious, and who are more concerned with not appearing selfish, are more likely to reduce sharing of alt-facts in response to the fact-checking treatment. We also show that mechanisms related to either the type or the size of the audience are not consistent with the data. In order to do this, we exploit another sharing decision the participants in the sharing experiment had to make: they were asked whether they wanted to share the content with 100 participants taking the survey after them. We show that there is no differential effect of the fact-checking treatment on sharing alt-facts on Facebook vs. sharing alt-facts with other survey participants or depending on the number of Facebook friends of the respondents, suggesting that size and type of audience does not play a role.[4]

We also document general drivers of sharing of alt-facts and of fact-checking. Many factors are common to the two sharing decisions: men share both alt-facts and fact-checking more than women; those reporting the intention to influence as the main driver of sharing on social networks also share more often than those who refer to other motives of sharing; more altruistic and/or religious individuals are more likely to share. The ideological alignment also plays a key role: those who voted for Marine Le Pen in the last presidential election are much more likely to share alt-facts while those having favorable opinions of the EU are more likely to share the fact-checking.

[4]We also use these later participants in the experiment to study the decision to re-share alt-facts that were received from some of the earlier participants of the experiment. We show that re-sharing decision does not depend on the political identity of the person from whom the Facebook user receives the alt-facts.

The key difference between the decisions to share alt-facts and fact-checking is education: better-educated are more likely to share fact-checking while there is no correlation between education and sharing of alt-facts.

Taken together, the results of our randomized experiment with real Facebook sharing decisions deliver an optimistic message. Although the previous literature has shown that fact checking cannot undo initial impressions left by false statements (Swire et al., 2017; Nyhan et al., 2019; Barrera et al., 2020), our paper shows an important role that fact-checking plays in limiting propagation of false news. Fact-checking substantially reduces sharing of false information. We show that the effect is strong both if users choose themselves whether to access fact-checking or if they are forced to see it. Furthermore, the very fact of being offered the choice to view the fact-checking reduces sharing of alt-facts even if the users do not exercise the option.

The rest of the paper is organized as follows. Section 2 discusses the related literature. Section 3 describes the design of the study. Section 4 presents the main results on how fact-checking affects sharing alt-facts and provides a theoretical framework to understand the relationship between the decisions to fact-check and to share content. Section 5 provides some evidence on the mechanism driving the effect of exposure to fact-checking on sharing alt-facts. Section 6 concludes.

2 Related literature

There is a large literature in psychology and in media studies, examining the factors that influence sharing. Most of this research focuses on sharing information unambiguously beneficial for the receivers, such as technical advice, recommendations or news (Lee and Ma, 2012). In these situations, sharers essentially contribute to a public good and are driven by the following motives: (i) altruism: as in other public good problems altruistic individuals are more likely to contribute (Berger and Milkman, 2012); (ii) reciprocity, direct or indirect,[5] which induces individuals to reciprocate contributions made by others (Berger and Milkman, 2012; Hew and Hara, 2007); (iii) image and status concerns: sharing in order to establish a positive image or raise the status in the group (Berger and Milkman, 2012; Hew and Hara, 2007; Kaiser and Müller-Seitz, 2008); (iv) entertainment value: individuals then derive explicit pleasure from contributing (Lee and Ma (2012)). Most of these studies use surveys while our analysis is based on a randomized experiment that involves an actual sharing decision on Facebook.

[5] See Nowak and Sigmund (2005), for the concept of indirect reciprocity.

While sharing alt-facts is potentially different from information that is unambiguously useful for the receiver, these motives will still be relevant. We follow the literature to construct two types of measures. First we ask questions to build measures of altruism (based on the self-reported altruism scale first proposed by Rushton et al. (1981)), of reciprocity (Dohmen et al. (2008)) and of image concerns (Henry and Sonntag (2019)). Second, we formulate questions on motivations to share, that reflect the dimensions highlighted above. In addition to the motives already listed, we add the intention to influence, a factor that can be highly relevant for alt-facts. When asked (before the treatment and before alt-facts were mentioned) what typically motivates them to share, all dimensions seem relevant, with the motive to share because others might find it interesting (i.e. the altruism motive), being the most prominent. However, it is the intention to influence that correlates the most with sharing of alt-facts in our study.

There is also an emerging literature describing specifically the sharing of false news. Vosoughi et al. (2018) shows that false news circulate faster than real news. Guess et al. (2019) examine what factors correlate with the fact of sharing alt-facts, highlighting the role of political alignment with the news as well as the effect of age, with people over 65 contributing much more. (We also find that political alignment matters, but do not find a strong effect of age.) Pennycook et al. (2019) and Pennycook et al. (2020) show that even though individuals are good at determining the accuracy of news, and in particular can distinguish fake from real news, accuracy is not key when deciding to share, but can be made more salient using minimal interventions. Altay et al. (2020) show that on top of accuracy, the interest of the news if it were true also plays a role in reported sharing decisions. Allcott and Gentzkow (2017) show that fake stories were intensely shared on Facebook during the 2016 U.S. presidential election campaign. Pennycook et al. (2018) show that familiarity with a piece of news can increase its perceived accuracy and can explain the spreading of fake news.

Our work is also related to the literature examining the impact of fact checking. Barrera et al. (2020), in the context of the French presidential elections, show that providing information corrects factual beliefs but does not correct the initial impact of alt-facts on voting intentions. Swire et al. (2017) and Nyhan et al. (2019) find similar results in the context of US 2016 presidential elections.

Finally, there is a growing theoretical literature on strategic sharing of information in networks. Bloch et al. (2018) study the circulation of rumors in a social network, with unbiased agents evaluating their beliefs about veracity of a news and potentially blocking them.[6] Abreu and Jeon (2019)

[6]See also Campbell et al. (2019) for sharing in a network. Bénabou et al. (2019) also study the circulation of arguments

add a media strategically positioning its news so as to induce sharing.

3 Experimental design

3.1 Context

We use the context of the European elections, that were held in France on May 26th 2019, and focus on the misleading statements made by some members of the extreme-right party Rassemblement National (formally Front National). These elections are run to elect the members of the European Parliament (79 members for France). The elections are held in all EU countries but follow different rules. In France, voters have the choice between different lists of ranked candidates. Based on their vote share, seats are allocated to lists that obtain at least 5% of votes.

The European election in France was essentially a contest between the EU-skeptic Rassemblement National (RN, Marine Le Pen's party) and the pro-EU La République En Marche (LREM, Emmanuel Macron's party), a rematch of the second round of the 2017 presidential election that opposed Macron vs. Le Pen. In 2019, RN obtained 23% of the votes and 23 seats, while LREM obtained 22%, and also 23 seats.

3.2 Setup of the experiment

In the experiment we use two statements related to two central themes of RN's anti-EU campaign. First, RN argues that EU promotes immigration (which RN believes to be harmful for France). Second, RN claims that most of French laws are effectively made in Brussels and calls for the national parliament to "take back control".

The first statement we use was made by Marine Le Pen (MLP), on June 25th 2018: "The European Union wants immigration. They said this multiple times though the voice of the European Commissioners. They even went as far as saying 50 million immigrants by 2050". The second statement was made by Jordan Bardella, the politician ranked first on the RN list for the 2019 European election, on June 4th 2018 on Sud Radio: "We have to regain control of our budgets and of our laws. I remind you that 87 % of our laws, laws that are voted, come from European directives."

The first statement was fact-checked by a major newspaper Libération. The newspaper reports that the figure of 50 million appeared in a June 8, 2018 statement by the European Commissioner

justifying certain actions.

for Foreign Affairs, Dimitris Avramopoulos: "We know Europe is an ageing continent. Without migration, the active population will decline by more than 20 million in the fifteen upcoming years. By 2060, the active population would have decreased by 50 million." This observation does not necessarily lead to the conclusion that the gap needs to be filled by immigrants. In fact, the European Commission does not even have authority for deciding issues relating to immigration.

The second statement was fact-checked multiple times.[7] Töller (2010) states that "most of the studies have shown a relatively low rate of laws coming from European legislation, 15.5% in United Kingdom, 14% in Denmark, 10.6% for Austria, between 3 and 27% for France". In fact, all the studies we found report numbers significantly below 50% and in general very far from the 87% figure quoted by Bardella. In the Appendix, we provide the exact formulations of alt-facts and fact-checking we presented to the participants.

In the week preceding the European elections, we conducted an online survey of 5089 French voting-age individuals using the Qualtrics online platform. The participants were contacted by Qualtrics via email. This email indicated the compensation fee upon completion of the survey and the link to it, which the participants could choose to click on. We restricted the pool to Facebook users. We stratified our sample on education and gender by treatment. The sampling quotas were designed to make the sample roughly representative of the French adult population eligible to vote.[8]

The participants were divided in two groups, that we will refer to as Wave 1 ("sharing experiment") and Wave 2 ("resharing experiment"). The 2537 respondents in Wave 2 were surveyed after the end of Wave 1.

At the start of the survey, the participants were presented with a brief introduction to the survey indicating its focus on social media behavior. It was also stated that only aggregate results would be published. There was no mention of any political party or political candidate. The introductory page allowed participants to drop out at this stage. The research institutions to which we belong were not specified, since the participants might have inferred possible ideological biases of the experiment designers.

The survey consisted of three parts (see the complete translation in the Appendix). In the first part, we asked all participants a series of questions regarding their socio-economic characteristics, such as age, gender, education, income, religion. We then asked participants about their use of

[7] France TV Info and Public Senat for instance.

[8] We imposed quotas on gender (50% male, 50% female) and on education (high school and below 72%, undergraduate degree 12%, graduate degree 16%).

social media and in particular their motivations to share content on Facebook. We also asked questions to measure their level of altruism, reciprocity and image concerns, social preferences that potentially affect the sharing decisions. Finally, at the end of this first part we asked them about voting behavior in the 2017 presidential elections as well as a question measuring their feelings regarding the European Union.

In the second part of the survey we randomly assigned participants to informational treatments (three treatments in Wave 1 and three treatments in Wave 2). We discuss the treatments in the next section.

The third part of the survey was designed to measure voting intentions and attitudes towards the European Union. We also included a factual question on participants' beliefs regarding the share of French laws coming from European directives.

3.3 Treatments

In our main experiment (the sharing experiment, Wave 1) participants were randomly allocated to three groups. Each group was exposed to a different treatment:

1. **Alt-Facts**: participants were exposed to alt-facts, the two false statements by RN presented above. After seeing the alt-facts, they were asked whether they wanted to share this content on their Facebook page, following a procedure described below. Then, they were asked whether they wanted to share the content with 100 participants from Wave 2.

2. **Imposed Fact-Check**: participants were exposed to alt-facts followed by fact-checking information for the two RN statements. After having seen both alt-facts and fact-checking, the participants were asked whether they wanted to share the alt-facts on their Facebook page. Then they were asked whether they wanted to share it with 100 participants of Wave 2. Finally, they were asked whether they wanted to share the fact-checking information on Facebook.

3. **Voluntary Fact-Check**: participants were exposed to alt-facts. They were then offered a choice whether to view or not to view fact-checking of the alt-facts. After this choice was made, and those who chose to do so viewed the fact-check, the participants were asked whether they wanted to share the alt-facts on Facebook and subsequently whether they wanted to share it with 100 participants of Wave 2. Finally, if they had decided to view the fact-checking ("Viewers"), they were asked whether they wanted to share it on Facebook.

In our resharing experiment (Wave 2), we randomly assigned participants to the following three treatments:

1. **Control**: participants saw no text and thus had no sharing decision to make.

2. **Alt Facts MLP**: participants were exposed to alt-facts and the indication of the political ideology of the sharer, i.e preceded by the following text: *"This information was shared by a participant, having already answered the survey, who reported having voted for Marine Le Pen in the second round of the presidential election of 2017"*. Participants were then offered the possibility to share the alt-facts on Facebook.

3. **Alt Facts EM**: similar to the previous treatment with the only difference that the source of the shared alt-facts was reported as having voted for Emmanuel Macron.

In Wave 1, there were 166 MLP voters and 79 EM voters who decided to share alt-facts with a 100 Wave 2 participants. Given that each treatment was assigned to 846 individuals, the number of Wave 1 sharers was sufficient to make sure each Wave 2 receiver would receive alt-facts from a Wave 1 sharer. Thus, the information provided to participants in both Waves was correct.[9]

3.4 Sharing procedure

The procedure of sharing on Facebook was as follows:

- The participants were first asked within the Qualtrics survey whether they wanted to share on Facebook. The answer to this question was recorded in the variable "Sharing alt-facts on FB, one click" (or "Sharing alt-facts on FB" for short).[10]

- If they answered "yes", they were brought to a second window within the Qualtrics environment with a button that looked like a Facebook "Share" button (see Appendix).[11] If they clicked on this button, it brought them to a webpage (outside the Qualtrics environment), which is the actual webpage that could be shared. This page contained the same content

[9] In Wave 1, the exact question was "do you want to share the content you just read with a 100 participants who will answer the survey after you". We did not specify what the 100 individuals actually saw if this particular participant decided not to share. An alternative would have been to match all Wave 1 participants with a Wave 2 participant and ask Wave 1 participants whether they wanted to share.

[10] There were 3 options proposed: "yes", "no", "do not want to answer".

[11] On this Qualtrics page we also asked them to login on Facebook on a separate page so that they would be already logged in when sharing. We need this intermediate step because we cannot record the answer to the question whether they want to share and at the same time redirect the users.

as what was shown within the survey. Clicking on the button within Qualtrics could not be directly recorded, but we could track the visits to the webpage within each hour using Google Analytics. The information from Google Analytics was matched with the survey (see procedure in the Appendix) to create the variable "Sharing alt-facts on FB, two clicks", that records the probability that the individual actually visited the webpage. This variable takes the value 0 if the individual answered "no" to the Qualtrics question whether they want to share. For those who answered "yes" this variable equals the number of visits to the webpage within an hour divided by the number of "yes" answers to the Qualtrics questions within the same hour.

- At the top and the bottom of the webpage the visitors could click on the Facebook "Share" button. Clicking brought them to their Facebook account where they just needed to confirm that they were willing to share. Based on these clicks, we have created the variable "Sharing alt-facts on FB, three clicks". We could track the number of total shares of each URL on Facebook via share buttons with the count option activated on another page inaccessible to the participants. We could identify separately the shares by our survey participants and the reshares by the friends of these participants, following a procedure described in details in the Appendix.

- Wave 1 participants who viewed the fact-checking (either in the Imposed Fact-Check or in the Voluntary Fact-Check treatments) were also offered to share fact-checking on Facebook. The procedure was similar. We have created three variables "Sharing fact-check on FB, one click" (or "Sharing fact-check on FB", for short), "Sharing fact-check on FB, two clicks" and "Sharing on FB, three clicks", respectively.

- Wave 1 participants were also offered the possibility to share alt-facts with 100 participants of Wave 2. This question asked within the Qualtrics environment was directly recorded in the variable "Sharing alt-facts with others".

In what follows we will mostly focus on the following outcomes: "Sharing alt-facts on FB", "Sharing fact-check on FB" and "Sharing alt-facts with others". The other variables ("Sharing alt-facts on FB, two clicks", "Sharing alt-facts on FB, three clicks", "Sharing fact-check on FB, two clicks" and "Sharing on FB, three clicks") have two drawbacks. First, since we added several steps before participants were actually able to share on Facebook (thus involving additional costs), the actual

probability of sharing ends up being smaller. Second, these variables are observed with measurement error at the individual level. As explained in the Appendix, we observe actual shares on Facebook and traffic on the website hour by hour, but we do not know which of the participants who answered yes to the Qualtrics question within that hour was the one who actually shared.

Our study involved actual sharing on real personal Facebook accounts. The key to obtain IRB approval was that (i) we did not make up false content but chose real statements made by politicians (ii) we committed to take down the alt-facts webpage if sharing became excessive. After three days, we replaced on the webpage that was shared the alt-facts by the corresponding fact-checking.

3.5 Descriptive statistics and aggregate sharing

Tables 1 presents the means of socio-demographic characteristics and of responses to pre-treatment questions by treatment group and the p-values for the test of the equality of these means across different treatment groups in the sharing experiment (Wave 1).[12] We provide a detailed description of all variables in the Appendix. On average, participants have slightly over 80 friends, 70% of the sample are heavy Facebook users (check Facebook several times a day) and 50% share often. Finally, in terms of reasons for sharing, the most common motive is because they find the content interesting, followed by reciprocity. All four motives seem to matter.

Before deriving our main results, we provide aggregate statistics on sharing that demonstrate that the content we showed to our participants did make an impact. Overall, alt-facts were shared and reshared 807 times on Facebook. The fact-checking was shared and reshared only 52 times, reflecting the fact that substantially fewer people had the opportunity to share it (only 846 in the Imposed Fact-Check treatment and 330 of those who chose to view fact-checking in the Voluntary Fact-Check treatment). Still, the number of shares-cum-reshares per exposed user is much higher for alt-facts (807/4231=0.19) than for the fact-checking (52/1176=0.04) — which is consistent with the literature that find that false news disseminate on social media much faster than true stories (Vosoughi et al., 2018).

Figure 1 shows the cumulative sharing from the start of the experiment. Three days after the start of the experiment, we changed the content of the webpage, replacing the alt-facts by the fact-checking information. Even after that, hundreds of shares still took place. This shows that many Facebook users share links without actually clicking on the content.

[12] We perform the same exercise for the resharing experiment (Wave 2) in Table A1.

Out of the 4231 individuals who had the possibility to share alt-facts,[13] 495 individuals chose to do so. Out of those, 130 individuals did click the second time and visited the website; out of these, 30 individuals confirmed sharing on FB with the third click. Therefore, at each step, the number of users continuing to the next step decreased by about 75%. As shown in Figure 2, this proportional decrease at each step is very similar across treatments. This demonstrates that even very small cost (such as an additional click) can significantly reduce sharing.

4 Results

4.1 Sharing Alt-Facts

Our first main result is that exposure to fact-checking reduces sharing of alt-facts. As shown in Panel A of Figure 3, the impact of fact-checking on sharing alt-facts is statistically significant and large in magnitude. Furthermore the impact of fact-checking is the same if it is imposed or if the participants have an option to view the fact-check: both Imposed and Voluntary Fact-Check have similar average treatment effects. While 14.7% of participants in the Alt-Fact treatment decide to share, sharing is only about 10.2% in the Imposed Fact-Check group and 10.8% in the Voluntary Fact-Check group (that includes both Viewers and Nonviewers of fact-checking). Therefore, the exposure to fact-checking reduces sharing of alt-facts by 26-31%. Column (1) in Table 2 presents these results in the econometric form. In the subsequent columns we control for potential drivers of sharing in order to make our estimates more precise. We show that adding controls does not affect the estimates of the average treatment effect.

This also allows us to document a wide range of drivers of sharing alt-facts from socio-economic factors to behavioral traits. In column (2) we control only for variables used to stratify, in column (3) we add socio-economic characteristics as well as political beliefs and past voting. Gender matters: men share alt-facts substantially more often. We do not find a significant effect of age. The coefficient at education is positive but is at most marginally significant. Those who voted for MLP in the second round of the last presidential election are much more likely to share, demonstrating the importance of ideological alignment with the news in the act of sharing, as in Pennycook et al. (2018). More religious individuals are also much more likely to share.[14]

In column (4) we add the self-reported Facebook behavior, and see that those who report

[13] The Wave 2 control group participants never saw the alt-facts and thus did not have the opportunity to share.

[14] In our data we define religious as those regularly attending religious services — in contrast to those never attend or only attend ceremonies and festivities.

higher frequency of sharing on Facebook are indeed more likely to share. There is no correlation with the frequency of Facebook use nor with the number of Facebook friends. In column (5) we add self-reported motivations to share.[15] We find that sharing alt-facts on Facebook correlates strongly with the reported motive of wanting to influence others when sharing and to a lesser extent the motive of reciprocity. In column (6) we add behavioral variables. Among the traits we measure, only altruism correlates with sharing behavior. This is consistent with the literature on sharing content online (Berger and Milkman, 2012): sharing is costly, so these are the more altruistic individuals who are ready to pay this cost. In Section 5 we discuss the potential mechanisms behind our main treatment effect.

4.2 Sharing Fact-Check

Exposure to fact-checking not only reduces sharing of alt-facts; it also results in substantial sharing of fact-checking information itself. In the second panel of Figure 3 we show that about 14% of the Imposed Fact-Check group share fact-checking on Facebook. In the Voluntary Fact-Check, average sharing is 11%; the difference is small and marginally statistically significant.

In Table 3 we explore the factors that are associated with higher propensity to share fact-checking. The structure of the table is the same as as that of Table 2. Some drivers of sharing fact-checking are similar to those of sharing alt-facts: gender, religiosity, higher propensity to share on Facebook in general, altruism, intention to influence. There are some important differences: while education level is not correlated with sharing alt-facts, for sharing fact-checking education matters. In Table 3, the coefficient at education level is strongly statistically significant and large in magnitude: going from lowest to highest level of education is associated with 15 percentage points higher sharing of fact-checking. Also, past voting for Marine Le Pen has no impact on sharing fact-checking but those who hold a negative image of the EU before the treatment are less likely to share fact-checking, once again highlighting the importance of ideological alignment.

In all specifications we find that the average propensity to share fact-checking is higher for the Imposed Fact-Check than for the Voluntary Fact-Check treatment. But the surprising finding is that this difference is small, given that only the Viewers (39% of the participants in that treatment) have the option to share fact-checking in the Voluntary Fact-Check treatment. Thus, both in terms of sharing alt-facts and fact-checking, the average behavior in the Imposed Fact-Check and the

[15] These are pre-treatment answers to the question "In your experience how important are the following reasons to share content on Facebook?"

Voluntary Fact-Check treatment is remarkably similar. We show in the next section that this is driven by the interaction between the viewing and sharing decisions.

4.3 Viewing and sharing

The Voluntary Fact-Check treatment offered participants a choice whether to view fact-checking or not. 330 individuals (39 percent) chose to exercise this option. In this section we analyze this decision and its interaction with the decision to share alt-facts and fact-checking.

In the right-hand side charts of three panels of Figure 4 we show the rates of sharing of alt-facts and fact-checking separately for those who chose to view the fact-checking (Viewers) and those who chose not to (Nonviewers), in addition to the rates for the Alt Fact and Imposed Fact-Check treatments. We present the results for three outcomes: (a) in Panel A, "sharing alt-facts only" (sharing of alt-facts but not sharing fact-checking); (b) in Panel B, "sharing fact-check only" (sharing of fact-checking but not sharing alt-facts); (c) in Panel C, sharing both alt-facts and fact-checking.

As shown in the right-hand side chart of Panel A of Figure 4, there is no difference in sharing alt-facts between Viewers (6%) and Nonviewiers (7%). This seems to be counter-intuitive: the Viewers are exposed to fact-checking and should therefore be more likely to understand that the alt-facts are false.[16] However, this argument is misleading as the selection into Viewers and Nonviewers is endogenous. Those who choose to view the fact-checking do so rationally calculating the costs and benefits of subsequent sharing of alt-facts (and potentially fact-checking). As individuals differ in their propensity to share, their ex ante choice to view is related to their characteristics driving their ex post choice to share.

In order to understand the interaction between viewing and sharing decisions, we calculate the "ex ante propensity to share" — the propensity to share the alt-facts after learning alt-facts but before exposure to any corrective intervention (either the exposure to fact-checking in the Imposed Fact-Check treatment or the opportunity to view fact-check in the Voluntary Fact-Check treatment). Our randomization strategy implies that both participants in the Imposed Fact-Check and the Voluntary Fact-Check treatments have the same propensity to share before the corrective intervention as the participants in the Alt-Facts treatment (who are not subject to the intervention).

[16] In the Pre-Trial Registration, we did hypothesize a lower rate of sharing among the Viewers.

Therefore we use the subsample of Alt-Facts participants to estimate the following specification:

$$Y_i = \alpha X_i + \epsilon_i. \tag{1}$$

Here Y_i is a dummy variable taking the value 1 if individual i shares alt-facts and X_i are the best predictors of sharing (socio-demographic characteristics, political preferences and voting behavior, Facebook usage variables, altruism, motivation to influence and religiosity). Figure A1 shows the differences in these characteristics between Viewers and Nonviewers; see also Table A2 where we regress decision to view on these characteristics.[17]

Using the coefficients estimated in (1) and the fact that participants are randomly allocated to treatments, we can predict the ex ante propensity to share in the Voluntary Fact-Check treatment. The results are presented in the left-hand side chart of Panel A of Figure 4. By definition, in the Alt-Fact treatment the predicted sharing is equal to the actual sharing (15%, see the left-hand side chart). For the Imposed Fact-Check, the predicted sharing is also 15%, an implication of randomization and balance across treatments. There is however a major difference in predicted propensity to share between Viewers and Nonviewers: 19 vs. 14 per cent. This difference implies that those who decide to view fact-checking have pre-treatment characteristics that are correlated with substantially higher ex ante propensity to share.

Using the estimates of the predicted propensity to share we can quantify the impact of exposure to fact-checking on the decision to share alt-facts for the Viewers. Comparing the Viewers' predicted sharing (19%) and their actual sharing (6%) we find that the treatment effect for this group is very large: $(19-6)/19 = 0.67$. This effect is larger than what could be concluded from a naïve interpretation of the comparison of actual sharing (right-hand side chart of Panel A of Figure 4) where the Viewers share alt-facts at the same rate as Nonviewers and the participants in the Imposed Fact-Checked groups. The explanation is that those who choose to view the fact-checking are different in their propensity to share: the model presented in the following section that analyzes the joint decision to view and share sheds light on what determines the respective propensity to share of Viewers and Nonviewers. Once we adjust actual sharing for ex ante predicted propensity to share the reduction in sharing among Viewers is larger than the one for Imposed Fact-Check participants and for Nonviewers.

Panel A of Figure 4 provides two additional insights. First, Panel A of Figure 4 also shows that

[17] Figure A1 and Table A2 also show that Viewers have higher trust in fact-checking sources. We do not include this variable in estimation of (1) as this question was asked after the treatment.

the Nonviewers' sharing of alt-facts (7%) is much lower than their predicted sharing (14%) and that of the participants in the Alt-Facts group (15%). Simply being told that a fact-checking of the alt-facts exists and can be viewed, the Nonviewers decrease their sharing of alt-facts by half — even though they never see the fact-checking.[18]

Second, the sharing rate of alt-facts only (without fact-checking) by the Imposed Fact Check participants is only 6%. This implies that our main result (30% reduction in sharing alt-facts due to exposure to fact-checking) should be considered as a lower bound for the positive impact of fact-checking: among those Imposed Fact-Check participants who share alt-facts, about 40% share them together with fact-checking. If we look at the outcome "sharing alt-facts only", then exposure to fact-checking reduces such sharing by 57%.[19]

The Viewers in the Voluntary Fact-Check treatement and the Imposed Fact-Check participants, not only have the opportunity to share alt-facts, they can also share the content of the fact-checking. By carrying out the counterfactual analysis as in (1) we can compare the impact of voluntary viewing on the ex post actual sharing of fact-checking. Using the sample of Imposed Fact-Check, we estimate the propensity to share fact-checking only and predict this propensity for the Viewers. The results are presented in the Panel B of Figure 4. As in the case of sharing alt-facts, Viewers also have a higher predicted propensity of sharing fact-checking (12.5%) than Nonviewers (9.5%). Panel B of Figure 4 shows a large and statistically significant difference between the Viewers' predicted and actual sharing of fact-checking only. Out of those who had chosen to view the fact-checking, 20 percent shared it. Thus, exposure to voluntary fact-checking increased sharing by 58 percent $((20 - 12.5)/20 = 0.58)$ relative to counterfactual.

Panel C of Figure 4 presents the results for the outcome "sharing both alt-facts and fact-check". The results are similar to those for the outcome "sharing fact-check only". The Viewers have a higher propensity to share than Nonviewers (6.1 vs. 2.6 percent); the Viewers' actual sharing (11 percent) is significantly higher than their predicted sharing.[20]

Taken together, the analysis of the interaction between the decision to view fact-checking and the subsequent decision to share alt-facts and fact-checking delivers an optimistic message: viewing fact-checking reduces sharing of alt-facts and greatly increases sharing of fact-checking. Fur-

[18] This could be a rational updating of beliefs about the veracity of the news or a pure behavioral effect.

[19] For the Alt-Fact treatment "sharing alt-facts only" is the same as "sharing alt-facts", since these participants do not view the fact-checking and therefore do not have the opportunity to share it.

[20] The fact of sharing both alt-facts and fact-checking could either be the choice of individuals who have a strong taste of sharing or who share the alt-facts just to show how outrageous they are (we cannot see the comments people make when they share, or alternatively who make a mistake.

thermore, the very information that fact-checking exists reduces sharing alt-facts even among the participants who choose not to view the fact-checking. Moreover these results justify why the average treatment effect is very similar for the Imposed Fact Check and Voluntary Fact Check treatments: those who choose to view the fact-checking are precisely those who are likely to react to it. In the next section, we present a model that explains this finding and shows the conditions under which those who view are ex ante more likely to share.

4.4 Analytical framework: checking and sharing

Our empirical results in Section 4.3 show that Viewers have a much higher ex ante propensity to share alt-facts than Nonviewers. This may seem puzzling: those who would share alt-facts regardless of the information contained in the fact-check should have no incentive to view, thus implying a higher propensity to share for Nonviewers relative to Viewers.

In this section, we develop a theoretical framework to shed light on these results. We jointly model strategic choices of viewing fact-checking and of subsequent sharing of alt-facts. (For the sake of simplicity, we start with a version of the model where we assume away the option of sharing fact-checking.) The key idea is that viewing is costly, so for individuals who have either very high or very low propensity to share, regardless of the evidence, there is no incentive to incur the cost of viewing to collect the evidence. Thus only those with intermediate propensity to share alt-facts are likely to view the fact-checking. The model formalizes this idea and derives conditions under which among those who choose not to view, those who tend not to share alt-facts are more numerous, either because of the underlying heterogeneity in types or because of the way the fact-checking is designed.

We consider a group of individuals i who receive a piece of news, that could be true of false. The state of the world $s \in \{0, 1\}$ corresponds to the veracity of the news, where $s = 1$ indicates that the news is true. To simplify the exposition, we assume that all members of the group initially have the same prior beliefs: they expect that the state is $s = 1$ with probability q and $s = 0$ with probability $1 - q$.

Individuals choose whether to share the news. They are heterogenous in terms of returns to sharing. The payoff of sharing V_i^s is state-dependent. The net value of sharing is positive when the news is true and negative when it is false $V_i^0 < 0 < V_i^1$. The values of V_i^s could reflect different motives for sharing identified in the empirical results above, such as the intention to influence (see Appendix for the formalization of these different motives).

Before sharing each individual has the opportunity to view fact-checking at cost c. Viewing is expected to produce an ex post belief which is either (i) $q^- < q$ (with probability p), i.e a report suggesting that the state is probably low, or (ii) $q^+ > q$ (with probability $1-p$). Bayes plausibility implies

$$q = pq^- + (1-p)q^+. \tag{2}$$

To simplify the exposition, we assume here that there is no heterogeneity in their level of trust in the fact-checking.[21]

Sharing. Individual i with belief q shares alt-facts if and only if

$$qV_i^1 + (1-q)V_i^0 \geq 0 \Leftrightarrow q \geq q_i^* \equiv \frac{-V_i^0}{\Delta V_i}.$$

where $\Delta V_i \equiv (V_i^1 - V_i^0)$.

Individual i shares if and only if q is higher than an individual-specific threshold q_i^*. The threshold q_i^* therefore characterizes the individual's propensity to share. We assume q_i^* is distributed on $[0,1]$ with a cumulative distribution function $F(\cdot)$.

The indirect utility of individual i is thus given by

$$u(q, q_i^*) = \max\{0, qV_i^1 + (1-q)V_i^0\} = \max\{0, (q-q_i^*)\Delta V_i\}. \tag{3}$$

We plot the value of sharing in Figure 6 (solid line). Individual i does not share for $q \leq q_i^*$ and gets zero value while the expected value of sharing is then linearly increasing in q for $q > q_i^*$.

Viewing. We now turn to the decision of whether to view the fact-checking information prior to sharing. The utility of individual i who does not view is given by expression (3). If the individual does view fact-checking, she expects to get, with probability p, a report q^- suggesting that the state is probably low and with complementary probability $1-p$ a report $q^+ > q$ suggesting it is likely to be high. The cost of viewing is c. The expected utility of a viewer is therefore given by:

$$-c + pu(q^-, q_i^*) + (1-p)u(q^+, q_i^*).$$

This immediately implies that if individual i has extreme beliefs ($q_i^* < q^-$ or $q_i^* > q^+$), she does

[21] Differential level of trust in fact-checking sources can be modeled as differences in $q^+ - q^-$. In particular an individual who has no trust in fact checking sources would have $q^+ = q^- = q$ and would never choose to view fact-checking — as viewing is costly and she expect no additional information from viewing.

not view the fact-checking. Indeed, if $q_i^* < q^- < q < q^+$ she knows that either with or without viewing she would always share; therefore it makes no sense to pay a non-trivial cost of viewing. Similarly, if $q_i^* > q^+ > q > q^-$, then she knows that she would never share — so no need to view.

For those with intermediate propensity to share $q_i^* \in (q^-, q^+)$, the incentives to view the fact-checking depend on the cost of viewing c as characterized in Proposition 1.[22]

Proposition 1 *Individual i views the fact-checking if and only if $q_i^* \in (\underline{q}_i, \overline{q}_i)$, where $\underline{q}_i = \min\left\{q, q^- + \frac{c}{p\Delta V_i}\right\}$ and $\overline{q}_i = \max\left\{q, q^+ - \frac{c}{(1-p)\Delta V_i}\right\}$.*

For the sake of simplicity let us now consider the case where $\Delta V_i = \Delta V$ for all i. In this case, there is no variation in the slope of the value function ΔV_i, so that variations in q_i^* are driven by variations in the intercept V_i^0; the range $(\underline{q}_i, \overline{q}_i)$ is the same for all i. We maintain this assumption below and denote this range $(\underline{q}, \overline{q})$.

Proposition 1 allows us to compare the average ex ante propensity to share of those who decide to view (Viewers) and those who do not (Nonviewers). The probability that a Nonviewer shares is given by $\frac{F(\underline{q})}{F(\underline{q})+(1-F(\overline{q}))}$, while for a Viewer the probability of sharing is $\frac{F(q)-F(\underline{q})}{F(\overline{q})-F(\underline{q})}$.

Nonviewers are made up of two distinct groups: those who do not view because they never share or almost never share (very low ex ante propensity), and those that do not view because they share always or almost always (very high ex ante propensity). Whether the average sharing among Nonviewers is higher than among Viewers depends on the relative size of the two groups.

Proposition 2 *Viewers have a higher ex ante propensity to share than Nonviewers if and only if*

$$\frac{F(\underline{q})}{1-F(\overline{q})} < \frac{F(q)}{1-F(q)}. \tag{4}$$

There are two key parameters in (4): the distribution $F(\cdot)$ of propensity to share and the design of the fact-checking technology, that determines q^- and q^+, and thus ultimately $\underline{q}$ and $\overline{q}$. Condition (4) is more likely to be satisfied if the fact-checking technology tends to disprove statements, i.e. q^- or/and q^+ low, if the distribution of propensity to share has a large mass at 1 (i.e $1 - F(\overline{q}) \simeq 1 - F(q)$) or if the prior q is high.

[22] In Figure 6 the value of viewing (gross of viewing cost c) $pu(q^-, q_i^*) + (1-p)u(q^+, q_i^*)$ is represented by the dotted line, which is the average between the zero payoff of not sharing if the report is q^- and the positive payoff if the report is q^+. The intuition is that the indirect utility of sharing (the solid line in Figure 6) is weakly convex. So the individual receive a strictly positive gain from viewing whenever $q^- < q_i^* < q^+$. Indeed, in this case, viewing represents a lottery (q^- with probability p and q^+ with probability $1-p$) while not viewing is a certain outcome $q = pq^- + (1-p)q^+$ (see (2)). If $q_i^* < q^-$ or $q_i^* > q^+$ then the individual faces a linear part of the indirect utility function. In this case, gain from viewing is precisely zero; as there is a non-trivial cost $c > 0$, she never views.

Let us first consider the distribution function $F(q)$. A large mass at $q = 1$ implies that there are many individuals who would never share (53% of our sample report never sharing or sharing seldom). The fact-checking technology is also important. For example, condition (4) is more likely to be satisfied when both ex post signals q^- and q^+ are low (which is the case when there is a high chance of getting message q^+, see (2)). This is the case where fact-checking either produces a conclusive signal that the information is false (q^- is close to zero) or an inconclusive signal stating that no evidence was found to disprove it (q^+ is substantially below 1).[23] The individuals who benefit from such a technology are those who are likely to share and would only choose not to share if they received a signal that showed without doubt that the state was low. Thus, when fact-checking produces such signals, high propensity sharers are induced to view.

Sharing fact-checking.

In this subsection, we extend the model adding an opportunity for the Viewers to share fact-checking as well. We denote the payoff of sharing fact-checking $V_i^{s,FC}$. The value of sharing fact-checking when the news is true is smaller than when it is false $V_i^{1,FC} < 0 < V_i^{0,FC}$. We also denote $\Delta V_i^{FC} = V_i^{0,FC} - V_i^{1,FC} \geq 0$.

This is the mirror case of sharing alt-facts. Individual i shares the fact-checking if and only if the belief that the news is true is low enough. Specifically, individual i shares if and only if q is lower than an individual specific threshold $q_{i,FC}^*$. We assume that $q_{i,FC}^*$ is drawn from a distribution $G(\cdot)$ with support on $[0,1]$. We further assume that the draw of q_i^*, that determines the sharing of alt-facts, and the draw of $q_{i,FC}^*$, that determines the sharing of fact-checking are independent. The model can easily be extended to the case where the draws are correlated (capturing for instance the idea that some individuals have a general taste for sharing), at the cost of notational complexity.

The (additional) indirect utility from sharing fact-checking is given by

$$u_i^{FC}(q, q_{i,FC}^*) = \max\{0, (q_{i,FC}^* - q)\Delta V_i^{FC}\}. \tag{5}$$

However, opportunity to share fact-checking influences the viewing decision in a different way. The reason is that without viewing there is no possibility to share the fact-checking (whereas sharing alt-facts was always a possibility). Viewing thus provides an additional expected benefit

[23] This is a good approximation of how fact-checking works in reality: fact checkers either succeed (and produce report $q^- = 0$) or fail to disprove the original statement (and produce an inconclusive report).

due to the possibility to share the fact-checking. This benefit is given by:

$$B^{FC}(q^*_{i,FC}) = pu^{FC}(q^-, q^*_{i,FC}) + (1-p)u^{FC}(q^+, q^*_{i,FC}) \geq 0 \tag{6}$$

This additional benefit is increasing in $q_i^{*,FC}$, so that on average, those who view have a higher ex ante propensity to share fact-checking. For the viewing decision this acts as a shifter of costs, so that Proposition 2 naturally extends to the following result:

Proposition 3 *Viewers have a higher ex ante propensity to share fact-checking. Furthermore, individual i views the fact-checking if and only if $q_i^* \in (\underline{q}_i, \overline{q}_i)$, where $\underline{q}_i = \min\left\{q, q^- + \frac{c - B^{FC}(q^*_{i,FC})}{p\Delta V_i}\right\}$ and $\overline{q}_i = \max\left\{q, q^+ - \frac{c - B^{FC}(q^*_{i,FC})}{(1-p)\Delta V_i}\right\}$.*

Overall, the model shows that viewers have a higher propensity to share fact-checking. They also have a higher propensity to share alt-facts under conditions specified in Proposition 2, conditions that appear reasonable in our empirical setting.

4.5 Resharing

In our resharing experiment (Wave 2 of our study), we test whether the ideology of the sharer affects the receiver's propensity to reshare.[24] The only difference between the Alt Fact MLP and Alt Fact EM treatments was that the sharer was identified either as someone who voted for MLP in the last presidential election or for EM. Figure 5 presents the results separately for the receivers who voted for Le Pen or for Macron in the past. We find no significant differences across treatments, even though for MLP voters, the fact that the sharer was an EM supporter makes them slightly more inclined to reshare, though the difference is not significant. In Table 4 we add controls and also find no significant results.

5 Exploring the Mechanism

The main result of the paper is that exposure to fact-checking significantly reduces sharing of alt-facts. In this section we explore the potential mechanisms behind this effect, namely, we try to understand how fact-checking affects the calculus of costs and benefits of sharing alt-facts. These costs and benefits can be classified into (i) those that depend on the type and size of the audience, and (ii) those that do not. The former includes social image concerns (see Bursztyn and Jensen

[24] Hypothesis formulated in the Pre-Trial Registration.

(2017) for a review of the literature on social image): individuals might be less likely to share content that they suspect to be false if they believe that circulating content shown to be untrue can negatively affect their reputation with the audience. Category (i) also includes participants' interest in influencing others. If this drives sharing behavior, individuals might foresee smaller benefits from sharing when they think the information is incorrect, since receivers are more likely to get corrective information from other sources, and thus eventually be less influenced.

The second category includes costs and benefits of sharing that are independent of the type and size of the audience. The main instance of such a mechanism relies on the moral cost of lying (Abeler et al. (2019) provide a review of the literature on lying costs). Fact-checking increases the likelihood that the news is false so the sharer faces a higher moral cost of sharing something potentially incorrect (for a discussion of such moral values and their evolutionary origins, see Sperber and Baumard (2012)). A different story that also falls in this category is experimenter demand effects (EDE) (Zizzo, 2010), such as the Hawthorne effect.[25] If participants react to the Imposed Fact-Check treatment because of an experimenter demand effect, this would also imply that the size and type of the audience would not matter either.

We do not have experimental evidence regarding the mechanisms but we can explore additional evidence that may or may not be consistent with various mechanisms. We first examine whether the exposure to fact-checking has a differential impact on sharing alt-facts on Facebook versus sharing anonymously with 100 participants in Wave 2 of the experiment. This analysis can help understand the plausibility of mechanisms depending on size and type of the audience. Not only is sharing on Facebook public as opposed to anonymous in the other case, in addition the type of audience (friends) and the size of the audience varies (as different sharers have different number of Facebook friends). In Table 5, we create two observations for each individual in Wave 1, one for sharing behavior on Facebook and one for sharing with others. In all columns we control for socio-economic characteristics, motivations to share and behavioral traits. Column (1) shows that individuals share more on Facebook on average. This result is probably just a consequence of the fact that individuals were given the possibility to share on FB before they were offered the choice to share with others. The coefficient we are interested in is the interaction between being exposed to fact-checking and being offered to share on FB. We see in column (2) that this coefficient is not significant: the difference between sharing on Facebook and sharing with others does not vary across treatments. In columns (3)-(6) we add individual fixed effects and explore whether the

[25] See, however, Mummolo and Peterson (2018) who show that EDEs are not common in studies like ours.

individuals with a greater number of Facebook friends (or higher intensity of Facebook usage) are more likely to share alt-facts on Facebook rather than with other participants. We find no significant results. In Table 6 we focus on the Alt-Facts and Imposed Fact-Check treatments and explore the heterogeneity of the average treatment effect. We find that the reported number of friends on FB does not affect the strength of the treatment effect (column (2)).

The results above are not consistent with any mechanisms that depend on the size and type of audience. We now turn to the second category of mechanisms, in particular, related to the moral cost of disseminating false messages and the experimenter demand effects. Columns (3)-(5) in Table 6 provide a suggestive evidence consistent with the importance of the moral cost. Exposure to fact-checking is more likely to reduce sharing alt-facts by the individuals with a higher self-reported importance of image, those who donate blood and money (to charitable organizations and foreigners in need), and the more religious ones. The magnitudes are substantial: one standard deviation change in these variables strengthens the treatment effect by 2-5 percentage points. This is large as the average treatment effect is 4.5 percentage points. If we assume that self-reported importance of image, donating blood and money and religiosity are correlated with the moral cost of lying, these findings are consistent with the notion that our main result is driven by the impact of fact-checking on moral costs.

Formally speaking, we cannot rule out experimenter demand effects. However, we were careful to be neutral in the way we presented the study and it would have been difficult to infer what would be the "demand" of the experimenter in this case. We also point out that in practice on social media there is often the possibility of an observer effect: when Facebook links to a fact check below a news, it is indeed possible that the Facebook user feels observed. This dimension might in fact interact with the moral cost mechanism.

6 Conclusions

Our paper makes several contributions to the literature. First, using real-world decisions to share content on social networks, we show that exposing users of social media to fact-checking information significantly decreases sharing of alternative facts by about 30%. Second, we show that this reduction is almost as large (26%) when the users are given an opportunity to view the fact-checking information but are not obliged to do so. Third, we show that the users who choose to view the fact-checking are the ones who are ex ante more likely to share—both alt-facts and

fact-checking information. These results have implications for our understanding of the role of fact-checking suggesting a more optimistic view of the role of fact-checking than what the findings of prior research suggest.

Propagation of alternative facts on social media may impose a negative externality on their users. Therefore, there is a rationale for policy interventions that reduce such sharing. Our analysis may help identifying potential solutions. First, we show that that offering to view fact-checking information substantially reduces sharing of false statements. Second, in our experiment, in order to share the alt-facts via their Facebook account, users have to go through several clicks. We find that each additional click reduces the number of potential sharers by about 75%. This implies that sharing is very sensitive to even small non-monetary costs. Therefore, there is a scope for demanding additional clicks, for example, asking to confirm that the user is aware that a particular statement is not fact-checked—similarly to Twitter's treatment of Donald Trump's inflammatory tweet on May 28, 2020 (Conger, 2020). Optimal design of such interventions is an important avenue for future research.

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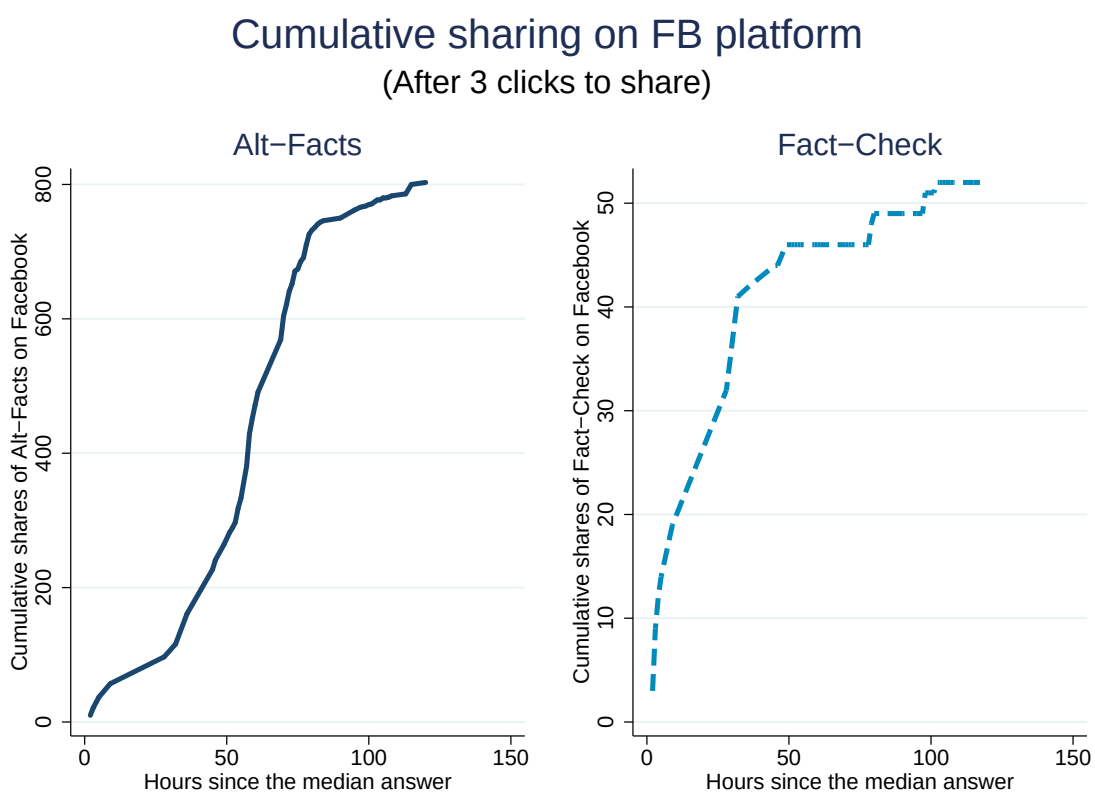
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FIGURE 1: Aggregate sharing on Facebook



Note: The cumulative shares (of alt-facts in the right panel and of fact-checking in the left panel) counts the cumulative number of shares both by the participants in our survey as well as other Facebook users. We define date 0 as the date at which the median respondent in the sharing experiment ends the survey.

FIGURE 2: The effect of the number of clicks needed to share

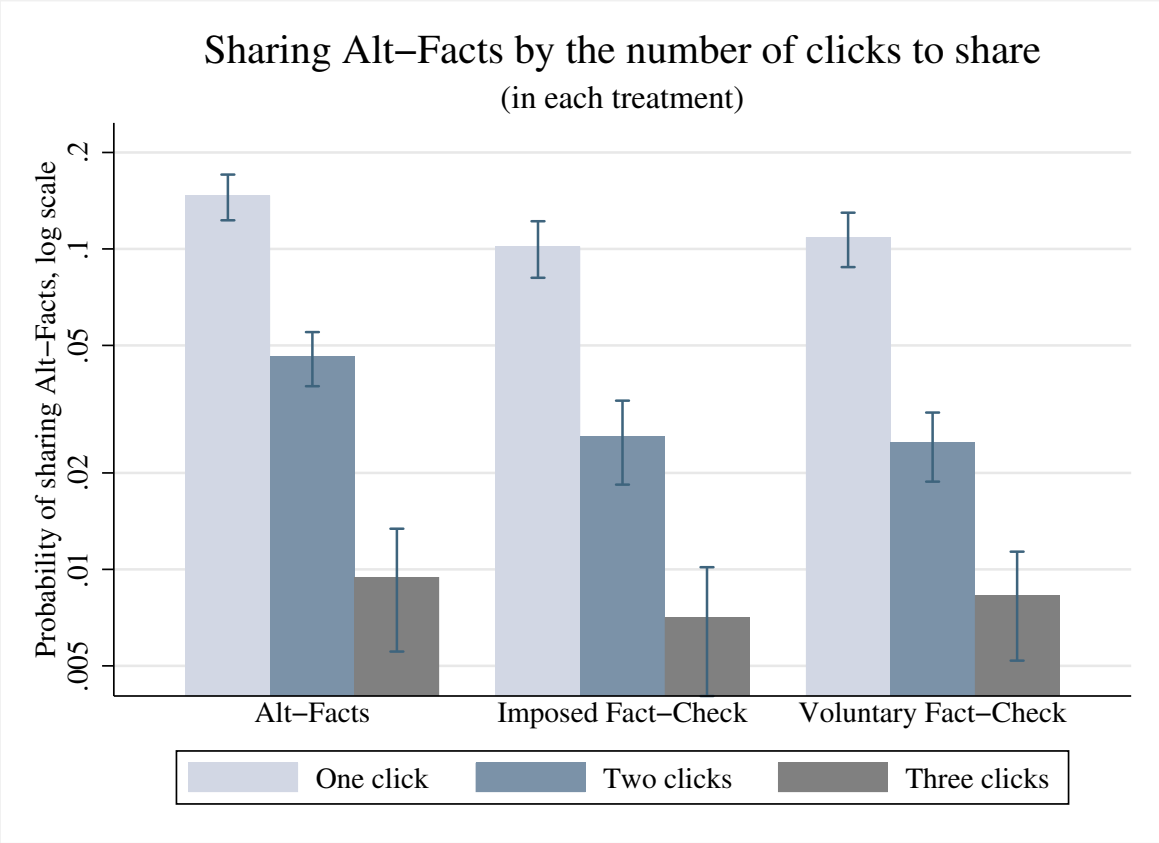
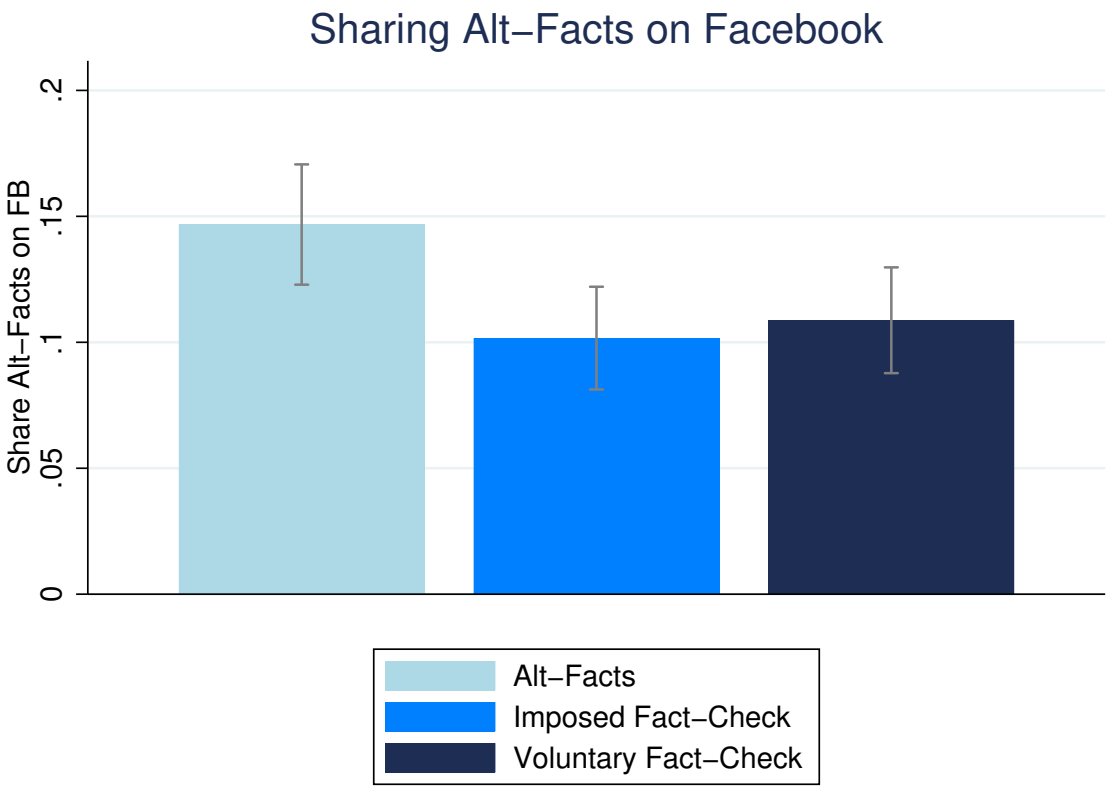


FIGURE 3: Average Treatment Effects in the Sharing Experiment

Panel A.



Panel B.

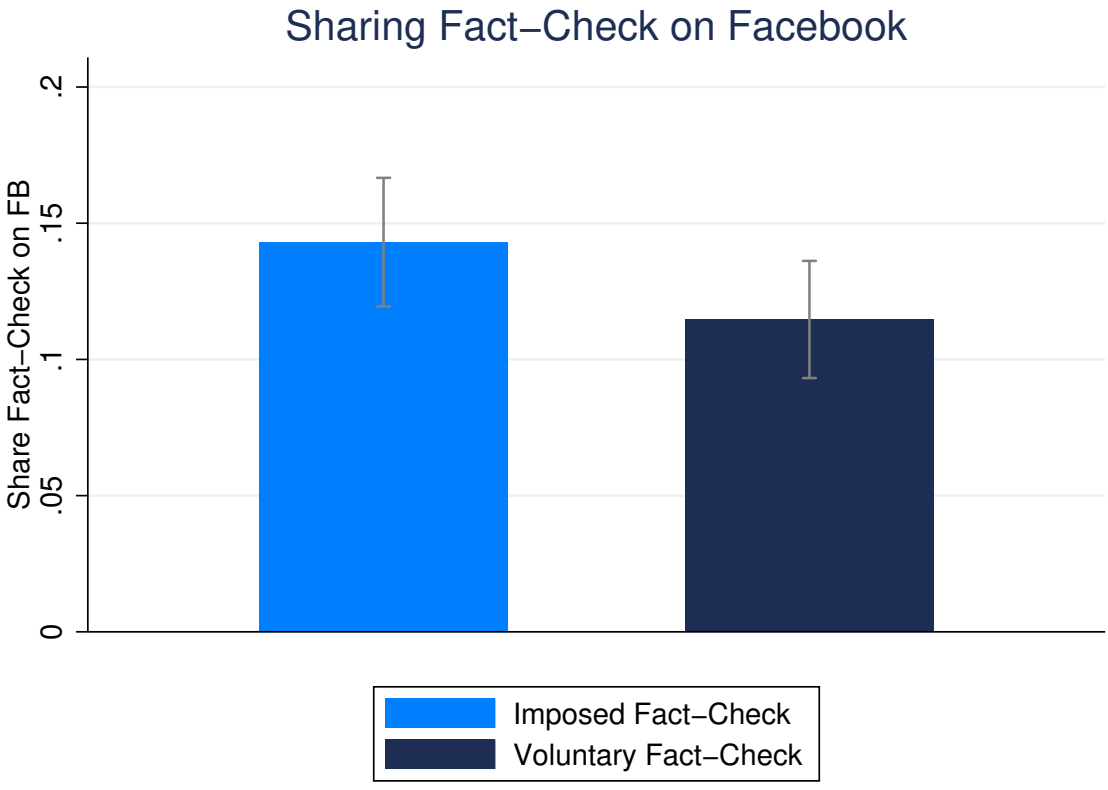
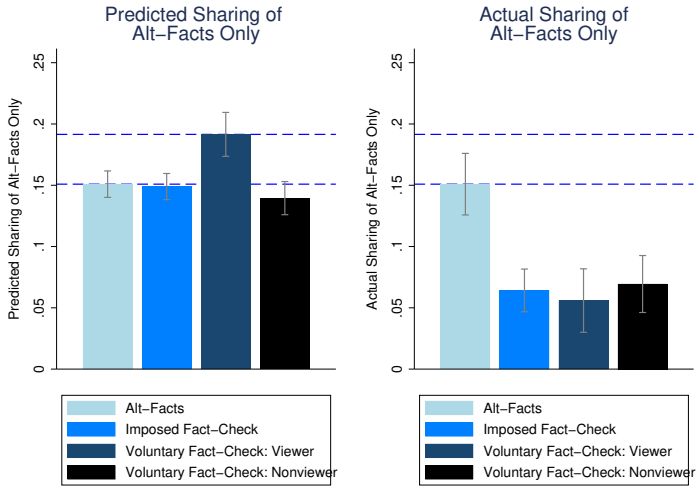
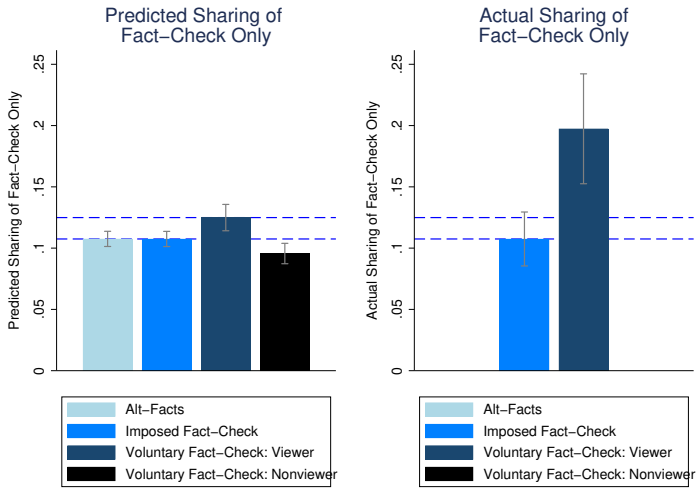


FIGURE 4: Predicted and actual sharing in Voluntary Fact-Check treatment

Panel A: Sharing Alt-Facts Only



Panel B: Sharing Fact-Check Only



Panel C: Sharing Alt-Facts and Fact-Check

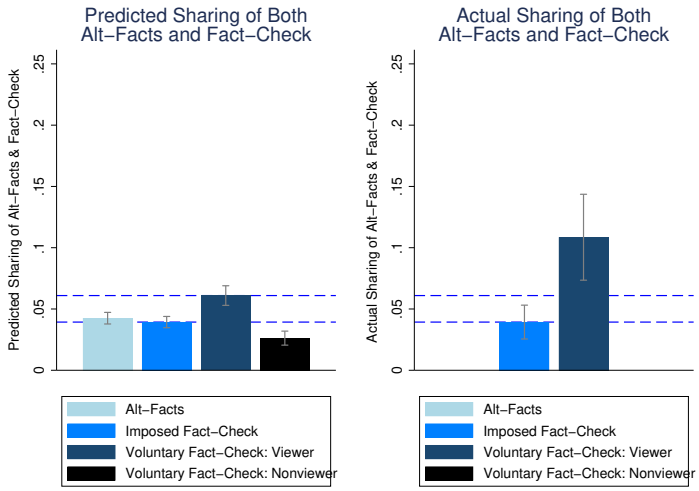


FIGURE 5: Treatment effects in the Re-sharing Experiment (Wave 2), depending on political alignment of sharers and receivers.

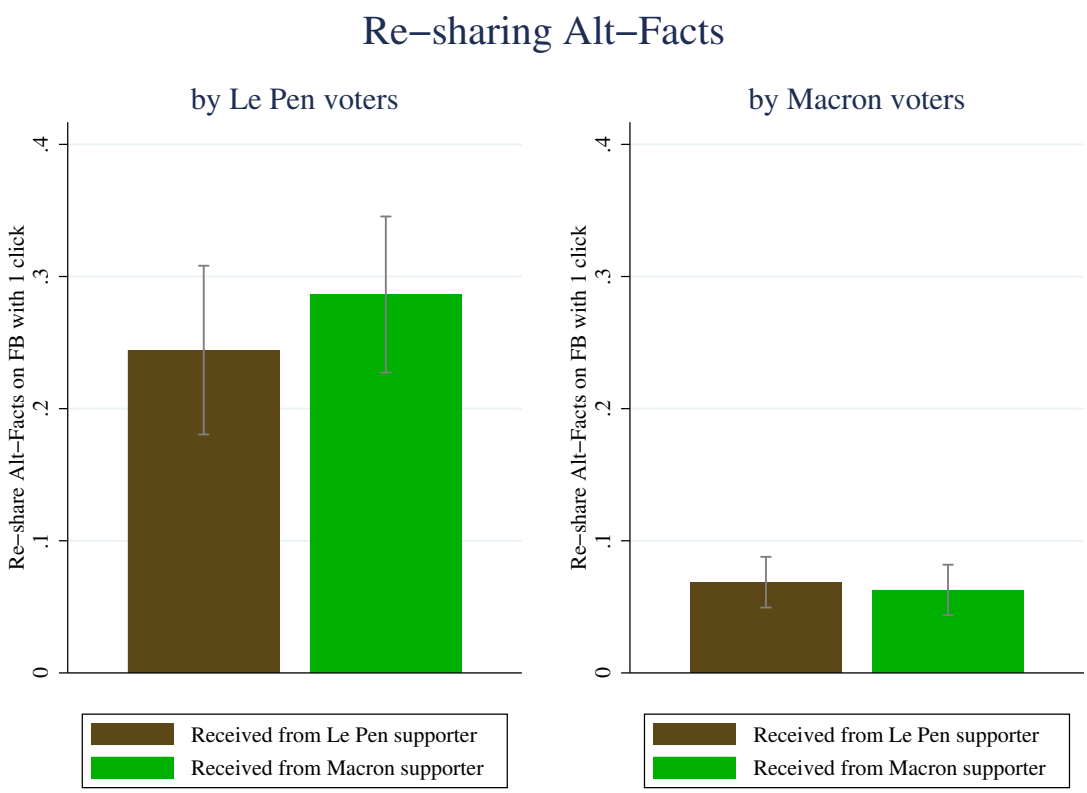
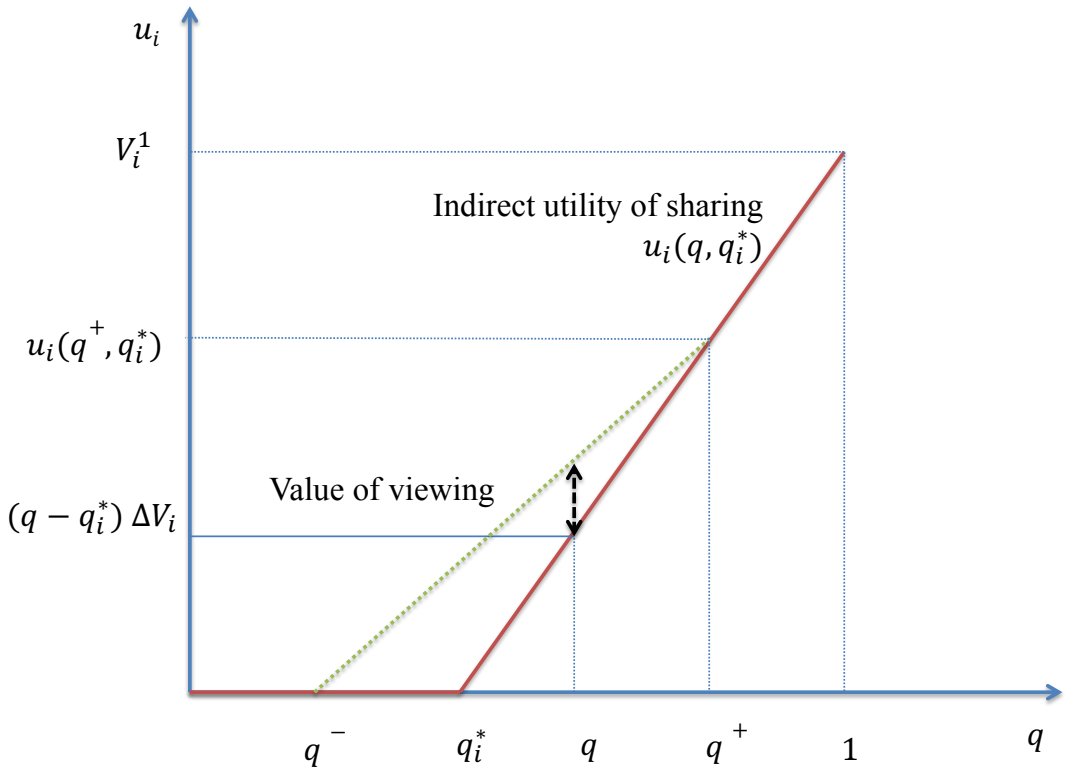


FIGURE 6: Decision to view fact-checking



Note: The soild line represents the indirect utility of sharing alt-facts $u_i\left(q_i, q_i^*\right)$. The dotted line is a straight line connecting points $q^-, u_i\left(q^-, q_i^*\right)$ and $q^+, u_i\left(q^+, q_i^*\right)$. The distance between two lines represents the value of viewing fact-checking (gross of the cost of viewing c) for a given q.

TABLE 1: Balance, the sharing expertiment

	Treatments: (1) Alt-Facts		(2) Imposed Fact-Check		(3) Voluntary Fact-Check		Comparison of means between treatments: (1) vs (2)		(1) vs (3)		(2) vs (3)	
	mean	sd	mean	sd	mean	sd	diff	p	diff	p	diff	p
Age	43.51	14.81	43.57	14.89	45.98	15.41	-0.06	(0.94)	-2.47	(0.00)	-2.41	(0.00)
Male	0.50	0.50	0.50	0.50	0.50	0.50	-0.00	(0.94)	-0.00	(0.94)	0.00	(1.00)
Married	0.36	0.48	0.39	0.49	0.43	0.50	-0.03	(0.20)	-0.07	(0.00)	-0.04	(0.10)
Single	0.26	0.44	0.24	0.42	0.23	0.42	0.02	(0.26)	0.03	(0.17)	0.01	(0.80)
Income (1-10)	4.41	2.54	4.51	2.53	4.59	2.59	-0.11	(0.39)	-0.18	(0.15)	-0.07	(0.56)
Children	0.66	0.47	0.66	0.47	0.69	0.46	0.00	(0.93)	-0.03	(0.19)	-0.03	(0.16)
Home: city	0.54	0.50	0.54	0.50	0.52	0.50	-0.00	(0.86)	0.02	(0.47)	0.02	(0.37)
Home: town	0.18	0.39	0.20	0.40	0.22	0.41	-0.02	(0.29)	-0.04	(0.07)	-0.02	(0.45)
Home: village	0.28	0.45	0.25	0.44	0.26	0.44	0.02	(0.25)	0.02	(0.40)	-0.01	(0.76)
Low Education	0.72	0.45	0.72	0.45	0.72	0.45	-0.00	(0.90)	-0.00	(0.90)	0.00	(1.00)
Mid education	0.12	0.33	0.12	0.32	0.12	0.32	0.00	(0.93)	0.00	(0.93)	0.00	(1.00)
Born in France	0.95	0.22	0.95	0.21	0.96	0.20	-0.00	(0.71)	-0.01	(0.39)	-0.00	(0.62)
Religious	0.20	0.40	0.21	0.41	0.22	0.41	-0.02	(0.44)	-0.02	(0.31)	-0.00	(0.81)
Frequency of FB use	3.57	0.74	3.52	0.79	3.52	0.79	0.05	(0.16)	0.05	(0.16)	0.00	(1.00)
Often share on FB	0.50	0.50	0.46	0.50	0.48	0.50	0.04	(0.14)	0.02	(0.37)	-0.01	(0.56)
log (FB friends+1)	4.41	1.47	4.38	1.46	4.24	1.56	0.03	(0.70)	0.17	(0.02)	0.14	(0.05)
Voted Le Pen, 2nd round 2017	0.27	0.45	0.26	0.44	0.26	0.44	0.01	(0.50)	0.01	(0.65)	-0.00	(0.82)
Negative Image UE (1-5)	3.24	1.11	3.24	1.05	3.21	1.10	0.00	(0.98)	0.03	(0.53)	0.03	(0.54)
Gave money to charity	0.49	0.27	0.48	0.26	0.48	0.27	0.01	(0.44)	0.01	(0.35)	0.00	(0.87)
Gave money to homeless	0.41	0.25	0.40	0.24	0.39	0.26	0.01	(0.30)	0.02	(0.09)	0.01	(0.47)
Worked for charity	0.44	0.29	0.41	0.27	0.41	0.27	0.03	(0.06)	0.03	(0.06)	0.00	(0.96)
Donated blood	0.48	0.31	0.47	0.31	0.48	0.32	0.01	(0.53)	-0.00	(0.98)	-0.01	(0.52)
Share: interest	0.71	0.21	0.70	0.21	0.71	0.22	0.01	(0.29)	0.00	(0.93)	-0.01	(0.35)
Share: influence	0.47	0.24	0.46	0.24	0.49	0.25	0.01	(0.48)	-0.01	(0.30)	-0.02	(0.08)
Share: image	0.55	0.28	0.51	0.26	0.54	0.27	0.04	(0.01)	0.01	(0.52)	-0.03	(0.04)
Share: reciprocity	0.63	0.25	0.60	0.25	0.61	0.25	0.03	(0.02)	0.02	(0.17)	-0.01	(0.35)
Observations	845		846		846		1691		1691		1692	

Note: First three columns present mean values and standard deviation by randomized groups for Wave 1 treatments and the rest of the table presents p-values for the test of difference in means across groups. Standard errors are corrected for heteroscedasticity. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

TABLE 2: Average treatment effect on sharing alt-facts (with 1 click)

	(1)	(2)	(3)	(4)	(5)	(6)
	Share Alt-Facts on FB with 1 click					
Imposed Fact-Check	-0.045***	-0.045***	-0.053***	-0.049***	-0.052***	-0.051***
	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)
Voluntary Fact-Check	-0.038**	-0.038**	-0.044***	-0.040**	-0.055***	-0.054***
	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)
Male		0.040***	0.042***	0.048***	0.041***	0.034**
		(0.014)	(0.015)	(0.015)	(0.015)	(0.015)
Age			-0.001	-0.002	-0.003	-0.003
			(0.003)	(0.003)	(0.003)	(0.003)
Age squared			-0.000	0.000	0.000	0.000
			(0.000)	(0.000)	(0.000)	(0.000)
Income (1-10)			-0.004	-0.004	-0.004	-0.004
			(0.004)	(0.004)	(0.004)	(0.004)
Education level (1-9)			0.005*	0.004	0.007**	0.006**
			(0.003)	(0.003)	(0.003)	(0.003)
Religious			0.111***	0.110***	0.094***	0.085***
			(0.021)	(0.021)	(0.021)	(0.021)
Voted Le Pen, 2nd round 2017			0.179***	0.176***	0.175***	0.176***
			(0.019)	(0.019)	(0.019)	(0.019)
Negative Image UE (1-5)			-0.004	-0.004	-0.003	-0.000
			(0.008)	(0.008)	(0.008)	(0.008)
Frequency of FB use				-0.006	-0.006	-0.006
				(0.010)	(0.010)	(0.010)
Often share on FB				0.058***	0.034**	0.033**
				(0.015)	(0.016)	(0.016)
Log (FB friends+1)				0.001	-0.004	-0.005
				(0.006)	(0.006)	(0.006)
Reason to share: interest					-0.042	-0.036
					(0.035)	(0.036)
Reason to share: influence					0.189***	0.171***
					(0.039)	(0.039)
Reason to share: image					0.005	0.009
					(0.032)	(0.033)
Reason to share: reciprocity					0.072**	0.068**
					(0.033)	(0.033)
Self-reported altruism						0.136***
						(0.043)
Self-reported reciprocity						-0.042
						(0.043)
Importance of self-image						-0.039
						(0.031)
Observations	2,537	2,537	2,307	2,275	2,120	2,120
R-squared	0.004	0.010	0.095	0.104	0.131	0.137
Mean DV in control group	0.147	0.147	0.159	0.156	0.162	0.162
Strata controls		✓	✓	✓	✓	✓
Demographic controls			✓	✓	✓	✓

Note: The set of unreported covariates is as follows: family status, size of town, religion (catholic, muslim, no religion), married single village town. Robust standard errors are in parentheses.* p<0.1, ** p<0.05, *** p<0.01.

TABLE 3: Average treatment effect on sharing fact-check (with 1 click)

	(1)	(2)	(3)	(4)	(5)	(6)
	Share Fact-Check on FB with 1 click					
Voluntary Fact-Check	-0.028*	-0.028*	-0.035**	-0.039**	-0.039**	-0.038**
	(0.016)	(0.016)	(0.017)	(0.017)	(0.018)	(0.018)
Male		0.046***	0.048***	0.052***	0.055***	0.047**
		(0.017)	(0.018)	(0.018)	(0.019)	(0.019)
Age			0.007**	0.006*	0.004	0.005
			(0.003)	(0.003)	(0.004)	(0.004)
Age squared			-0.000**	-0.000*	-0.000	-0.000
			(0.000)	(0.000)	(0.000)	(0.000)
Income (1-10)			0.003	0.002	0.002	0.002
			(0.005)	(0.005)	(0.005)	(0.005)
Education level (1-9)			0.015***	0.015***	0.017***	0.016***
			(0.004)	(0.004)	(0.004)	(0.004)
Religious			0.067***	0.070***	0.052**	0.043*
			(0.024)	(0.024)	(0.025)	(0.025)
Voted Le Pen, 2nd round 2017			-0.002	-0.006	-0.004	-0.001
			(0.019)	(0.019)	(0.020)	(0.020)
Negative Image EU (1-5)			-0.048***	-0.049***	-0.046***	-0.044***
			(0.010)	(0.010)	(0.010)	(0.010)
Frequency of FB use				-0.012	-0.024*	-0.024*
				(0.012)	(0.013)	(0.013)
Often share on FB				0.071***	0.043**	0.041**
				(0.019)	(0.021)	(0.021)
log (FB friends+1)				0.007	0.004	0.003
				(0.007)	(0.008)	(0.008)
Reason to share: interest					0.084*	0.084*
					(0.046)	(0.047)
Reason to share: influence					0.169***	0.150***
					(0.049)	(0.049)
Reason to share: image					-0.040	-0.038
					(0.043)	(0.044)
Reason to share: reciprocity					0.016	0.007
					(0.046)	(0.046)
Self-reported altruism						0.134**
						(0.053)
Self-reported reciprocity						-0.008
						(0.052)
Importance of self-image						-0.017
						(0.040)
Observations	1,692	1,692	1,546	1,521	1,409	1,409
R-squared	0.002	0.038	0.081	0.093	0.109	0.114
Mean DV in imposed fact-check gr.	0.143	0.143	0.157	0.158	0.158	0.158
Strata controls		✓	✓	✓	✓	✓
Demographic controls			✓	✓	✓	✓

Note: The set of unreported covariates is as follows: family status, size of town, religion (catholic, muslim, no religion), married single village town. Robust standard errors are in parentheses.* p<0.1, ** p<0.05, *** p<0.01.

TABLE 4: Re-sharing Alt-Facts shared by other participants

	(1)	(2)	(3)	(4)
	Re-share Alt-Facts on FB with 1 click received from another participant			
Alt-Facts received from a Macron supporter	0.017	0.014	0.010	
	(0.015)	(0.015)	(0.016)	
Voted Le Pen, 2017			0.189***	0.154***
			(0.026)	(0.022)
Voted Macron, 2017			0.019	0.039*
			(0.017)	(0.020)
Alt-Facts received from a Macron supporter × Voted Le Pen, 2017				0.072
				(0.046)
Alt-Facts received from a Macron supporter × Voted Macron, 2017				-0.031
				(0.023)
Alt-Facts received from a Macron supporter × Did not vote, 2017				0.012
				(0.020)
Observations	1,694	1,694	1,382	1,382
R-squared	0.001	0.016	0.171	0.175
Mean DV group from MLP	0.105	0.105	0.106	0.106
Strata		✓	✓	✓
All controls			✓	✓

Note: In Columns (2) to (4), All Controls corresponds to the full set of covariates included in Column (6) of Table 2. Robust standard errors are in parentheses.* p<0.1, ** p<0.05, *** p<0.01.

TABLE 5: Sharing on Facebook vs. sharing with other participants

	(1)	(2)	(3)	(4)	(5)	(6)
	Share Alt-Facts either on FB or with other participants					
Share on Facebook	0.018***	0.020	0.018***	0.015*	0.004	0.014*
	(0.006)	(0.017)	(0.006)	(0.008)	(0.018)	(0.008)
Imposed Fact-Check	-0.050***	-0.056***				
	(0.013)	(0.014)				
Voluntary Fact-Check	-0.029**	-0.020				
	(0.014)	(0.016)				
Share on Facebook × Imposed Fact-Check		0.011				
		(0.022)				
Share on Facebook × Voluntary Fact-Check		-0.018				
		(0.023)				
Share on Facebook× Number of FB friends >100				0.007		
				(0.012)		
Share on Facebook × log(FB friends+1)					0.003	
					(0.004)	
Share on Facebook × Share on FB often						0.009
						(0.012)
Observations	5,074	5,074	5,074	5,074	4,990	5,074
R-squared	0.005	0.006	0.004	0.004	0.004	0.004
Respondent FEs			✓	✓	✓	✓

Note: We use all Wave 1 participants and create two observation per participant, one for the decision to share on Facebook and one for the decision to share with others. The dependent variable takes value 1 if the alt-facts were shared. The variable "Share on Facebook" takes the value 1 if the observation corresponds to the sharing decision on Facebook. Column (3) to (6) include individual FEs. Robust standard errors are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

TABLE 6: Heterogeneity of the effect of imposed Fact-Check on sharing Alt-Facts

	(1)	(2)	(3)	(4)	(5)
	Share Alt-Facts on FB with 1 click				
Imposed Fact-Check	-0.045***	-0.083*	0.040	-0.030*	-0.022
	(0.016)	(0.047)	(0.049)	(0.017)	(0.016)
log (FB friends + 1)		0.009			
		(0.009)			
Imposed Fact-Check× log (FB friends + 1)		0.009			
		(0.011)			
Importance of self-image			0.105**		
			(0.050)		
Imposed Fact-Check × Importance of self-image			-0.115*		
			(0.064)		
Donor of blood and money				0.132***	
				(0.037)	
Imposed Fact-Check × Donor of blood and money				-0.080*	
				(0.047)	
Religious					0.176***
					(0.037)
Imposed Fact-Check × Religious					-0.122***
					(0.047)
Observations	1,691	1,657	1,691	1,691	1,691
R-squared	0.008	0.012	0.010	0.022	0.032

Note: Robust standard errors are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Online Appendix

for

"Checking and Sharing Alt-Facts"

by Emeric Henry ® Ekaterina Zhuravskaya ® Sergei Guriev

Content:

A. Additional empirical results

B. Model: proofs and further results

C. Experimental setup

D. Questionnaire

A Additional empirical results

FIGURE A1: Determinants of selection into viewing fact-checking in the Voluntary Fact-Check treatment.

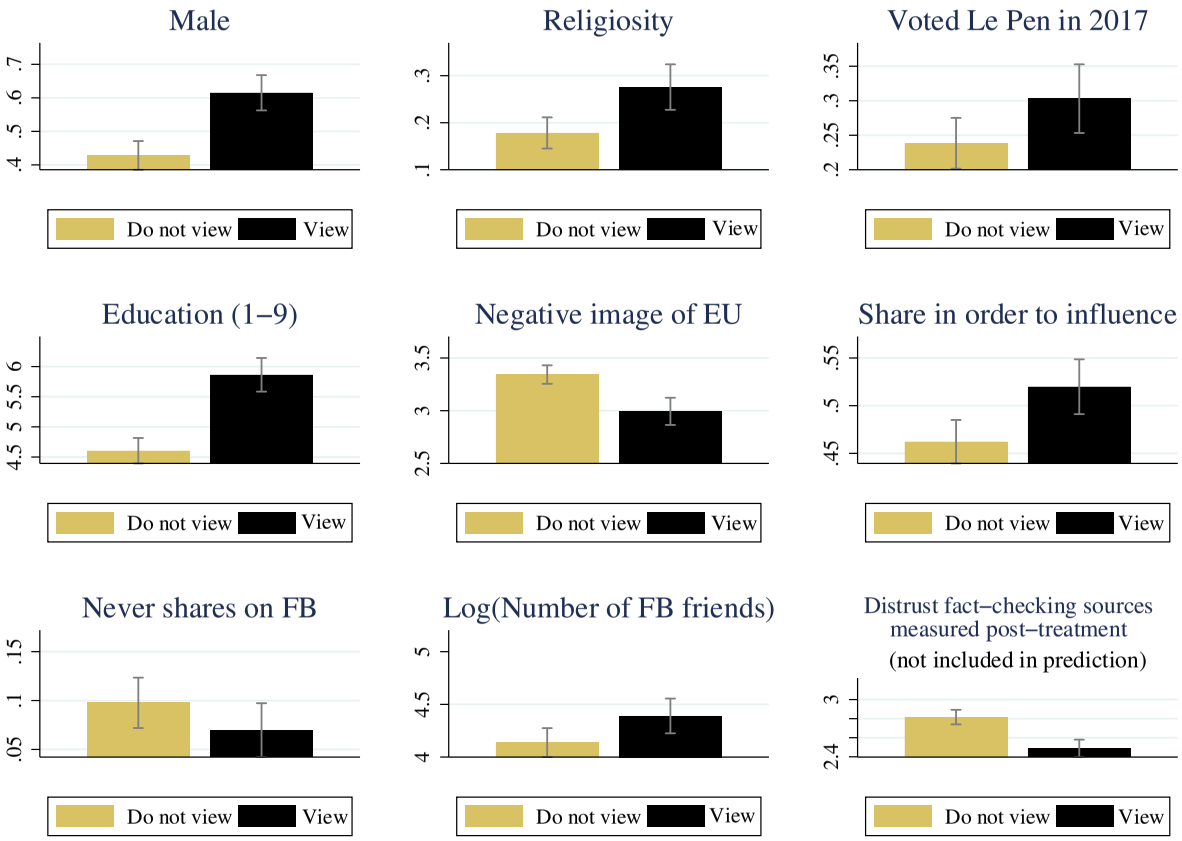


FIGURE A2: Heterogeneity w.r.t. self-image

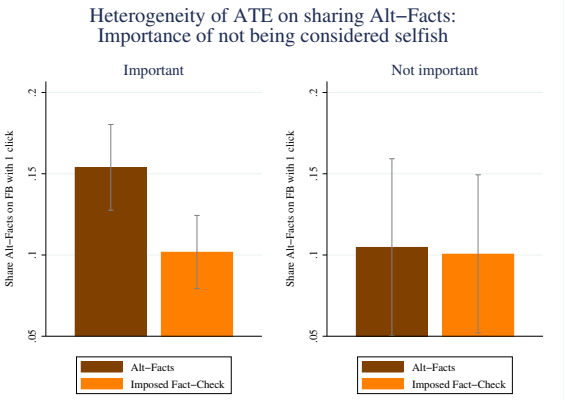


FIGURE A3: Heterogeneity w.r.t. altruism

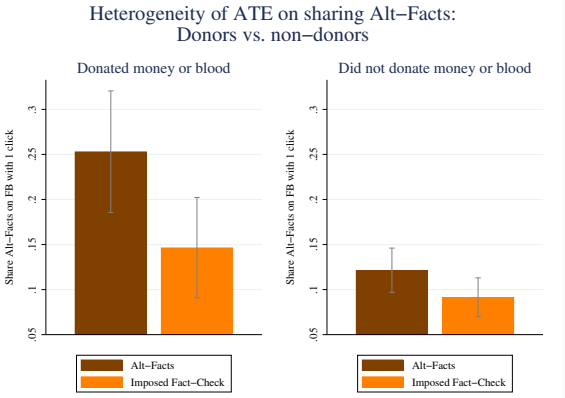


FIGURE A4: Heterogeneity w.r.t. religiosity

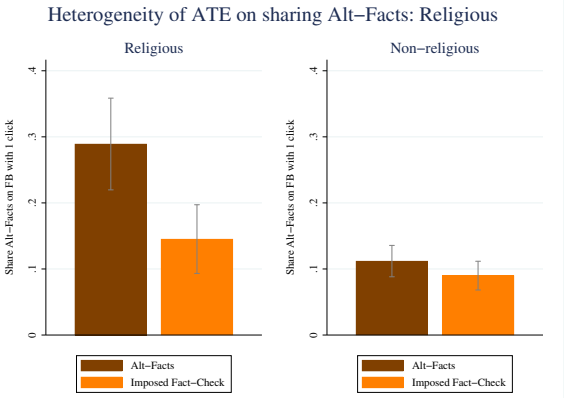


TABLE A1: Balance, the re-sharing expertiment

	Treatments: (4) Control (No Alt-Facts)		(5) Alt-Facts from supporter: of Le Pen		(6) of Macron		Comparison of means between treatments: (4) vs (5)		(4) vs (6)		(5) vs (6)	
	mean	sd	mean	sd	mean	sd	diff	p	diff	p	diff	p
Age	45.34	15.94	44.58	16.07	45.71	15.83	0.76	(0.33)	-0.37	(0.63)	-1.13	(0.15)
Male	0.34	0.47	0.32	0.47	0.35	0.48	0.02	(0.35)	-0.01	(0.70)	-0.03	(0.19)
Married	0.40	0.49	0.40	0.49	0.40	0.49	0.00	(0.95)	0.00	(0.88)	0.00	(0.93)
Single	0.25	0.43	0.26	0.44	0.25	0.43	-0.01	(0.76)	0.00	(0.87)	0.01	(0.63)
Income (1-10)	4.78	2.47	4.76	2.49	4.87	2.49	0.01	(0.91)	-0.09	(0.46)	-0.11	(0.40)
Children	0.65	0.48	0.65	0.48	0.67	0.47	0.00	(0.95)	-0.02	(0.46)	-0.02	(0.42)
Home: city	0.58	0.49	0.58	0.49	0.55	0.50	-0.01	(0.78)	0.02	(0.32)	0.03	(0.21)
Home: town	0.19	0.39	0.18	0.39	0.19	0.39	0.01	(0.74)	-0.00	(0.80)	-0.01	(0.56)
Home: village	0.24	0.42	0.24	0.42	0.25	0.44	0.00	(0.99)	-0.02	(0.36)	-0.02	(0.36)
Low Education	0.64	0.48	0.62	0.49	0.61	0.49	0.02	(0.36)	0.03	(0.20)	0.01	(0.72)
Mid education	0.18	0.38	0.20	0.40	0.23	0.42	-0.01	(0.45)	-0.05	(0.02)	-0.03	(0.11)
Born in France	0.94	0.23	0.93	0.26	0.96	0.20	0.02	(0.17)	-0.01	(0.24)	-0.03	(0.01)
Religious	0.20	0.40	0.21	0.41	0.22	0.41	-0.02	(0.39)	-0.02	(0.21)	-0.01	(0.70)
Frequency of FB use	3.52	0.75	3.53	0.74	3.45	0.82	-0.01	(0.77)	0.07	(0.06)	0.08	(0.03)
Often share on FB	0.41	0.49	0.47	0.50	0.43	0.50	-0.06	(0.02)	-0.02	(0.46)	0.04	(0.11)
log (FB friends+1)	4.23	1.47	4.38	1.48	4.26	1.48	-0.15	(0.04)	-0.03	(0.65)	0.12	(0.10)
Voted Le Pen, 2nd round 2017	0.26	0.44	0.21	0.41	0.27	0.44	0.05	(0.01)	-0.01	(0.76)	-0.06	(0.00)
Negative Image UE (1-5)	3.17	1.09	3.04	1.07	3.08	1.09	0.13	(0.01)	0.10	(0.06)	-0.03	(0.53)
Gave money to charity	0.49	0.27	0.50	0.27	0.51	0.27	-0.01	(0.56)	-0.02	(0.16)	-0.01	(0.42)
Gave money to homeless	0.39	0.24	0.38	0.23	0.39	0.25	0.01	(0.47)	0.00	(0.99)	-0.01	(0.49)
Worked for charity	0.42	0.28	0.42	0.28	0.43	0.28	0.00	(0.80)	-0.01	(0.63)	-0.01	(0.46)
Donated blood	0.47	0.31	0.46	0.30	0.46	0.30	0.02	(0.24)	0.02	(0.28)	-0.00	(0.92)
Share: interest	0.70	0.21	0.70	0.22	0.69	0.21	-0.01	(0.40)	0.01	(0.41)	0.02	(0.10)
Share: influence	0.45	0.23	0.46	0.25	0.46	0.24	-0.01	(0.47)	-0.01	(0.36)	-0.00	(0.86)
Share: image	0.53	0.27	0.51	0.27	0.53	0.27	0.01	(0.40)	-0.00	(0.88)	-0.01	(0.32)
Share: reciprocity	0.59	0.25	0.60	0.26	0.60	0.25	-0.00	(0.71)	-0.01	(0.42)	-0.01	(0.67)
Observations	845		846		846		1691		1691		1692	

Note: First three columns present mean values and standard deviation by randomized groups for Wave 1 treatments and the rest of the table presents p-values for the test of difference in means across groups. Standard errors are corrected for heteroscedasticity. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

TABLE A2: Decision to view fact-checking in the Voluntary Fact-Check treatment

	(1)	(2)	(3)
	Decided to view fact-checking		
Male	0.071*	0.077*	0.064
	(0.040)	(0.044)	(0.044)
Age	-0.000	-0.003	-0.004
	(0.007)	(0.008)	(0.008)
Age squared	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)
Education level (1-9)	0.037***	0.042***	0.039***
	(0.008)	(0.009)	(0.009)
Religious	0.041	0.019	0.009
	(0.043)	(0.048)	(0.048)
Voted Le Pen, 2nd round 2017	0.148***	0.156***	0.156***
	(0.040)	(0.043)	(0.043)
Negative Image UE (1-5)	-0.054***	-0.059***	-0.041**
	(0.017)	(0.018)	(0.019)
Frequency of FB use	-0.015	-0.003	-0.008
	(0.027)	(0.029)	(0.029)
Often share on FB	-0.000	-0.033	-0.030
	(0.039)	(0.044)	(0.044)
Log (FB friends+1)	0.005	0.006	0.009
	(0.014)	(0.015)	(0.015)
Reason to share: influence	0.104	0.074	0.041
	(0.074)	(0.097)	(0.096)
Self-reported altruism	0.062	0.060	0.050
	(0.096)	(0.104)	(0.103)
Reason to share: interest		0.165	0.176*
		(0.101)	(0.102)
Reason to share: image		-0.018	-0.034
		(0.088)	(0.087)
Reason to share: reciprocity		-0.069	-0.068
		(0.096)	(0.095)
Self-reported reciprocity		0.020	0.027
		(0.108)	(0.107)
Importance of self-image		0.017	0.017
		(0.085)	(0.084)
Income (1-10)		-0.005	-0.004
		(0.009)	(0.009)
Distrust fact-checking sources			-0.109***
			(0.036)
Dummy(Distrust fact-checking sources missing)			-11.113***
			(3.683)
Observations	765	705	705
R-squared	0.116	0.143	0.156
Mean DV imposed	0.397	0.416	0.416

Note: Column 1 includes only those covariates that are used to predict sharing behaviour from ex ante characteristics of respondents. Column 2 includes the extended set of controls. Column 3 adds a potentially endogenous variable, distrust in fact-checking sources, which was measured post-treatment. Standard errors are corrected for heteroscedasticity. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

B Model: proofs and further results

B.1 Formalization of sharing motives

Here we present different interpretations of the value of sharing V_i^0 and V_i^1:

- If individual i shares to influence, she knows that if the state is $s = 0$, the news is less likely to influence the recipients, who could for instance receive fact-checking from other sources. It is thus natural to have $V_i^1 > V_i^0$. Sharing false news might even backfire, implying $V_i^0 < 0$.
- If individual i has image concerns, she might care about inferences others make when she shares news that turns out to be false, inferences about either her motives or her judgment. Denote $-R$ the negative reputation obtained if i has shared fake news. Then $V_i^0 = V_i^1 - \mu_i R$, where μ_i measures the strength of image concerns.
- If individual i faces moral costs of sharing content she believe has some chance of being false (something we discuss more in depth in the next section), the belief q will matter. Specifically we assume that sharing provides a payoff V and has an individual specific cost $c_m^i(1-q)$ where c_m^i is the moral cost of sharing and $(1-q)$ is the belief that the state is wrong. This is exactly the model above with $V_0^i = V - c_m^i$ and $V_1^i = V$.

B.2 Proofs

Proof of Proposition 1

If $q_i^* < q^-$, even if the individual receives the low report q^-, she would still share, so there is no value of checking. Similarly for $q_i^* > q^+$, i never shares, so there is no value in checking. This proves the first part of the proposition.

We now turn to the second part.

Suppose $q^- \leq q_i^* < q$, so that without checking, the individual shares and gets value

$$u_{nc} = (q - q_i^*)\Delta V_i$$

If she checks, she does not share when she receives q^- (with probability p) and shares when receiving q^+ (happens with probability $1-p$).

$$u_c = (1-p)(q^+ - q_i^*)\Delta V_i - c$$

Thus the net value of checking is

$$\Delta V_i \left[(1-p)q^+ - q + pq_i^*\right] - c$$

If ΔV_i is constant, i checks if

$$q_i^* \geq \frac{q-(1-p)q^+}{p} + \frac{c}{p\Delta V} = q^- + \frac{c}{p\Delta V}$$

Similarly, if $q_i^* > q$, the net value of checking is

$$\Delta V_i \left[(1-p)(q^+ - q_i^*)\right] - c$$

If ΔV_i is constant, i checks if

$$q_i^* \leq q^+ - \frac{c}{(1-p)\Delta V}$$

Proof of Proposition 2

A direct consequence of Proposition 1 is that the probability that a non-checker shares is given by $\frac{F(\underline{q})}{F(\underline{q})+(1-F(\overline{q}))}$, while for a checker it is given by $\frac{F(q)-F(\underline{q})}{F(\overline{q})-F(\underline{q})}$. The condition can be expressed as:

$$\frac{F(\underline{q})}{1-F(\overline{q})} < \frac{F(q)}{1-F(q)} \tag{7}$$

The left hand side is increasing in $\underline{q}$ and $\overline{q}$ while the right hand side is increasing in q, implying the comparative statics in Proposition 2.

C Experimental setup

C.1 Treatments

RN : L'Union Européenne contrôle 87% de nos lois et souhaite ouvrir la porte à 50 millions d'immigrés

Vous avez la possibilité de partager ce site sur votre page Facebook via le lien suivant :

Partage



Dans une interview le 25 juin 2018 sur franceinfo, Marine Le Pen pointait du doigt la volonté de l'Union Européenne d'ouvrir la porte aux immigrés :

« L'Union européenne souhaite de l'immigration. Elle l'a dit à plusieurs reprises par l'intermédiaire de la bouche, d'ailleurs, de beaucoup de ses commissaires européens. Ils sont même allés jusqu'à dire 50 millions d'immigrés d'ici 2050.»



Jordan Bardella, la tête de liste du Rassemblement National pour les élections européennes, pointait du doigt, le 4 juin 2018 sur Sud Radio, un autre type de risque :

« Il nous faut retrouver la maîtrise de nos budgets, retrouver la maîtrise de nos lois. Je rappelle que 87 % de nos lois, des lois qui sont votées, viennent de directives européennes.»

Intox: Non L'Union Européenne ne contrôle pas 87% de nos lois et n'organise pas un afflux de 50 millions d'immigrés !



« Il nous faut retrouver la maîtrise de nos budgets, retrouver la maîtrise de nos lois. Je rappelle que 87 % de nos lois, des lois qui sont votées, viennent de directives européennes.» Jordan Bardella, 4 juin 2018

Le mythe que plus de 80% de nos lois sont imposées par l'Europe trouve ses origines dans une déclaration de Jacques Delors, le 14 avril 1988, "L'Europe, ce sera en 1992, 80% de la législation économique, financière et fiscale qui sera d'origine européenne". Sa prédiction est loin d'être vérifiée.

En 2014 l'institut Notre Europe montrait que c'est plutôt 20% de la législation française qui venait directement ou indirectement de décisions prises au niveau européen. Dans un papier de 2009 intitulé "La législation nationale d'origine communautaire : briser le mythe des 80%", Bertoncini montre que les actes communautaires ne représentent que 36,2% des textes français.

Une étude plus récente – "Les lois françaises sont-elles écrites à Bruxelles ?" – publiée dans la Revue del'Union européenne en 2012 la proportion du nombre total de lois européanisées atteint 13,3% en 2006. Dans un papier écrit pour la London School of Economics and Political Science, Annette Elisabeth Toeller de l'Université de Hagen: "La conclusion la plus frappante est que la plupart de ces études ont montré un taux relativement bas d'européanisation de la législation européenne : 15,5% au Royaume-Uni, 14% au Danemark, 10,6% pour l'Autriche, entre 3 et 27% pour la France, entre 1 et 24% pour la Finlande, mais de 39,1% en Allemagne".

Même si le calcul est compliqué, et que les différentes études ne s'accordent pas sur un seul chiffre, toute ces études montrent qu'on est largement en dessous de 50% des lois venant des directives européennes et donc très loin des 87% cité par Jordan Bardella.

Source fact checking 1
Source fact checking 2

« L'Union européenne souhaite de l'immigration. Elle l'a dit à plusieurs reprises par l'intermédiaire de la bouche, d'ailleurs, de beaucoup de ses commissaires européens. Ils sont même allés jusqu'à dire 50 millions d'immigrés d'ici 2050.» Marine Le Pen, 25 juin 2018

Le chiffre de 50 million apparait dans une déclaration le 8 juin du commissaire européen aux Affaires intérieures, Dimitris Avramopoulos: «On sait tous que l'Europe est un continent qui vieillit. Sans immigration, la population active européenne déclinerait de plus de 20 millions dans les quinze années à venir. Et d'ici 2060, la population active diminuerait de 10%, c'est-à-dire de 50 millions.»

Même si le constat du vieillissement de la population est souvent fait, la solution proposée est rarement celle d'encourager l'immigration, ou si c'est le cas, seulement l'immigration choisie comme le propose ce rapport .

Un récent document de la commission auquel le RN se réfère indique «Le fait est que, d'ici 2050, en l'absence, peu probable, d'immigration et à taux d'activité constant, la population active de l'UE diminuerait d'environ 68 millions de travailleurs. Etant donné que tous les immigrés ne rejoignent pas la population active, il faudrait un gain net de 100 millions de personnes environ pour combler le déficit. **Objectivement, un afflux net aussi important au cours des quarante prochaines années n'est ni probable, ni nécessairement souhaitable. »**

C.2 Measuring sharing

For each URL, Google Analytics provided us with hourly data such as the number of visits, the location (city), and the share of visitors who did not interact with the page i.e. the "bounce rate".[26] We merged the survey data and the data from Google Analytics by hour of the day and treatment.

This matching allowed us first of all to measure the probability that a participant visited the survey. The variable visit the webpage takes the value

The other goal was to measure the probability that someone actually shared on Facebook and the total number of reshares by friends of participants. To measure the number of shares on Facebook by the participants we use the bounce rate indicated by Google Analytics and the number of entrances in the website:

$$Number\ of\ shares_{Survey} = (100 - Bounce\ Rate) \times Entrances$$

Note that we use the number of entrances instead of visits because the bounce rate is computed within a session such that someone has to enter the website via a specific page and if he did not interact with the page the session ends on the same page and the bounce rate is 100%. The number of entrances can differ from the number of unique visits since people could also view the fact check or open both the article from the survey and the one shared on Facebook which will count as one entrance on the landing page only. In addition, since the data are aggregated per hour, if someone stays on the same page for more than one hour and refreshes it, it will count as one unique view in both hours but only one entrance.

Finally, the number of reshares can be calculated using the total number of shares from Facebook via the share buttons with the count option. From this total number of shares, we just substract the shares by the participants, as calculated above:

$$Number\ of\ shares_{Facebook} = Number\ of\ shares_{Total} - Number\ of\ shares_{Survey}$$

Since the only interactive component of the wepbage was the share button, we can use the bounce rate to infer the number of visitors who clicked on the share button.

[26] The bounce rate is equal to 100% for a visitor who came to the page and closed it without clicking anywhere on the page during his session.

C.3 Construction of variables measuring behavioral traits and motives to share

Behavioral traits

Self-reported altruism was measured as the average response to the following four questions (based on the self-report altruism scale first proposed by Rushton et al. (1981)) divided by 5 (since the responses are on a 1-5 Likert scale)

- I have already given money to a charitable organisation
- I have already given money to a foreigner in need (or that asked me for money)
- I have already worked for a charitable organisation
- I have already donated blood

Donor of blood and money was measured as the average response to the following four questions (based on the self-report altruism scale first proposed by Rushton et al. (1981)) divided by 5 (since the responses are on a 1-5 Likert scale)

- I have already given money to a charitable organisation
- I have already given money to a foreigner in need (or that asked me for money)
- I have already donated blood

Self-reported reciprocity was measured as the average response to the following three questions (adapted from Dohmen et al. (2008)) divided by 5 (since the responses are on 1-5 Likert scale)

- If someone helps me, I am ready to help her back
- I go out of my comfort zone in order to help someone who helped me in the past
- I am ready to bear a personal cost in order to help someone who helped me in the past

Importance of self-image was measured as the response to the following question (adapted from Henry and Sonntag (2019)) divided by 5 (since the responses are on 1-5 Likert scale)

- It is important for me not to be considered selfish

Motivations for sharing

We asked the following question before the treatment: "In your experience how important are the following reasons to share content on Facebook?" with answers on a 1-5 scale. The answer to each option (divided by five) defines a motive. We indicate

- I think that the content could be of interest for my friends (**Share: interest**)
- I want to influence my friends (**Share: influence**)
- I want my friends to have a good image of me (**Share: image**)
- My friends make the effort of sharing content with me, I want to do the same (**Share: reciprocity**)

D Questionnaire (translated from French)

We are carrying out a survey on behaviour in social networks. This survey includes a set of questions about you, your use of social networks and your political preferences. You will then be exposed to information that you could usually find in your Facebook news-feed. The questionnaire will take about 15 minutes to be completed.

Your answers are anonymous; we will publish only aggregate results based on the survey.

Q0 Do you want to proceed with the survey?

- Yes
- No

Q1 Among the following social networks, which one do you use?

- Facebook
- Instagram
- Twitter
- Snapchat
- Linkedin
- None of the above

Q2 How old are you?

- Age (in years):

Q3 What is the size of the city or town where you currently live?

1) Less than 2500 people
2) Between 2500 and 5000 people
3) More than 5000 people
4) I prefer not to answer this question

Q4 What is the highest diploma that you have obtained?

- No diploma
- Primary school certificate
- B.E.P.C. certificate
- Certificate of professional skill (CAP)

- Certificate of vocational education (BEP)
- Vocational high school degree (BAC)
- High school degree (BAC)
- BAC + 2 (BUT, BTS, schoolteacher, DEUG, social or paramedical diploma)
- Higher education

Q5 What is your gender?

1) Male
2) Female

Q6 Place of birth

1) France
2) Abroad
3) I prefer not to answer this question

Q7 Place of birth of your father

1) France
2) Abroad
3) I prefer not to answer this question

Q8 Place of birth of your mother

1) France
2) Abroad
3) I prefer not to answer this question

Q9 Region of current residence

- Region:

Q10 What is your marital status?

1) Single
2) Married
3) In a couple without being married
4) In a PACS (civil solidarity pact)
5) Divorced
6) Widow
7) I prefer not to answer this question

Q11 If you add all sources of revenues in your households, where would you place your household's monthly revenue?

1) Less than 1000 euros per month
2) Between 1001 and 1500 euros per month
3) Between 1501 and 1750 euros per month
4) Between 1751 and 2000 euros per month
5) Between 2001 and 2500 euros per month
6) Between 2501 and 3000 euros per month
7) Between 3001 and 4000 euros per month
8) Between 4001 and 5000 euros per month
9) Between 5001 and 7000 euros per month
10) More than 7001 euros per month
11) I prefer not to answer this question

Q12 Do you have children?

1) Yes
2) No
3) I prefer not to answer this question

Q13 How often do you use Facebook?

1) Several times a day
2) Once a day
3) Once a week
4) Once a month or less
5) I prefer not to answer this question

Q14 How many Facebook friends do you have?

– Number of friends:

Q15 How frequently do you share content on Facebook?

1) Never
2) Seldom
3) Often
4) I prefer not to answer this question

Q16 (on a 1 to 5 scale) In your experience how important are the following reasons to share content on Facebook?

- **Q16_1:** I think that the content could be of interest for my friends
- **Q16_2:** I want to influence my friends
- **Q16_3:** I want my friends to have a good image of me
- **Q16_4:** My friends make the effort of sharing content with me, I want to do the same

Q17 In order to be informed on politics, which media do you use most often?

1) TV
2) Radio
3) Internet
4) National newspapers
5) Local newspapers
6) Free newspapers
7) Other:
8) None
9) I prefer not to answer this question

Q18 On a scale from "1" (never) to "5" (often), comment on the following statements

- **Q18_1:** I have already given money to a charitable organisation
- **Q18_2:** I have already given money to a foreigner in need (or that asked me for money)
- **Q18_3:** I have already worked for a charitable organisation
- **Q18_4:** I have already donated blood

Q19 On a scale from 1 to 5, where 1 means "it does not fit me" and 5 means "it fits me perfectly", comment on the following statements

- **Q19_1:** If someone helps me, I am ready to help her back
- **Q19_2:** I go out of my comfort zone in order to help someone who helped me in the past
- **Q19_3:** I am ready to bear a personal cost in order to help someone who helped me in the past

Q20 On a scale from 1 to 5, where 1 means "it does not fit me" and 5 means "it fits me perfectly", comment on the following statement

- It is important for me not to be considered selfish

Q21 Can you tell us what is your religion, if you have any?

1) Catholic
2) Protestant
3) Jewish
4) Muslim
5) Buddhist
6) Other religion
7) No religion
8) I prefer not to answer this question

Q22 Do you usually attend religious services?

1) Several times a week
2) Once a week
3) Once or twice a month
4) Sometimes, during big festivities
5) Only for ceremonies, marriages, ...
6) Never
7) I prefer not to answer this question

Q23 Which are the levels of government that you fell closer to?

1) Europe
2) France
3) Region
4) Department
5) City/town
6) Cross-cities administration
7) I prefer not to answer this question

Q24 Are you registered to vote?

1) Yes
2) No
3) Soon
4) I prefer not to answer this question

Q25 Who did you vote for in the first round of the 2017 presidential elections?

- Francois Fillion
- Marine Le Pen
- Emmanuel Macron
- Jean-Luc Melanchon
- Other candidate
- I did not vote
- I prefer not to answer this question

Q26 Who did you vote for in the second round of the 2017 presidential elections?

- Marine Le Pen
- Emmanuel Macron
- I did not vote
- I prefer not to answer this question

Q27 In general what is your opinion of the European Union?

1) Really positive
2) Positive
3) Neutral
4) Negative
5) Really negative

We are going to show you a set of articles on the European Union.
Please read them carefully.

Article 1 RN: the European Union controls 87% of our laws and aims at opening the door to 50 millions immigrants.

In an interview on the 25th of June 2018 Marine Le Pen accused the European Union of wanting to open the doors to immigrants:

"The European Union wish for more immigration. It mentioned it several times through the mouths of several of its European commissioners. They even went as far as saying 50 millions immigrants by 2050."

On the 4th of June 2018 on Sud Radio, Jardon Bardell,, leading candidate for the National Rally at the European Elections, highlighted another type of threat

"We need to regain control over our budget, regain controls of our laws. I remind you that 87% of our laws, of the laws that are voted, comes form European directives"

Q28 Do you want to read some fact-checking articles concerning the claims that you have just read?

1) Yes
2) No
3) I prefer not to answer this question

Several fact-checking articles have judged these claims as false.

Intox: the European Union does not control 87% of our laws and is not organising a influx of 50 millions immigrants!

“We need to regain control over our budget, regain controls of our laws. I remind you that 87% of our laws, of the laws that are voted, comes form European directives.”

The myth of the European Union imposing 80% of laws originated in a Jacques Delors’s statement made on the 14th of April 1988: "By 1992, 80% of the economic, financial and fiscal legislation will be of European origin". His prediction is far from being met.

In 2014, the Notre Europe institute showed that 20% of French laws came directly or indirectly from a decision taken at the European level. In a 2009 paper entitled "The national legislation of European origin: breaking the myth" Bertoncini shows that European acts reresent only 36,2% of the French laws.

A more recent study - "Are French laws written in Bruxelles?" - published in the Revue de l’Union Européenne in 2012, the propotion of laws with European origins reaches 13,3%. In a paper write for the LSE, Annette Elisabeth Toeller of the University of Hagen: "The most striking conclusion is that most of these studies show a relatively low rate of europenaisation of European laws: 15,5% in the UK, 14% in Denmark, 10,6% in Austria, between 3 and 27% in France, between 1 and 24% in Finland, but 39,1% in Germany."

Even if the computing this proportion is not an easy task and these studies do not agree on the exact number, all of them show that we are well below 50% and therefore far from the 87% cited by Jardon Bardella.

"The European Union wish for more immigration. It mentioned it several times through the mouths of several of its European commissioners. They even went as far as saying 50 millions immigrants by 2050."

The 50 millions figure appeared in a declaration made by the European commissioner to Interior Affairs, Dimitris Avramopoulus in the 8th of June: "We all know that Europe is an ageing

continent."Without immigration, the active population will fall by 20 million individuals in the newt 15 years. And by 2060, the active population will shrink by 10%, meaning by 50 millions.

Even if the problem of an ageing population is often mentioned, the proposed solution is rarely to promote immigration and if this is the case, only a regulated type of immigration as the one proposed in this document.

A recent document by the commission mentioned by the RN says: "The fact is that by 2050, in the improbable absence of immigration and with a constant rate of participation to the labour market, the active population in the EU will decrease by 68 millions workers. Given that not all of the immigrants join the active workforce, we will need a net increase of around 100 million people in order to close the deficit. Objectively, an influx of this magnitude in the next 40 years is unlikely and not necessarily desirable"

Finally and above all, the European Commission does not have the power in terms of admission into European member states. This is clearly stated in this communication by the Commision to the Parliament: "The member States will maintain their exclusive right on matters related to the volume of admissions of immigrants in search of work"

Q29 Would you like to share the initial article "RN: the European Union controls 87% of our laws and aims at opening the door to 50 millions immigrants" containing the claims made by Marine Le Pen and Jordan Bordella on your Facebook wall?

1) Yes

2) No

3) I prefer not to answer this question

You have the chance to share the article that you have just read on your Facebook wall by clicking on this sharing button (if you are not already connected don Facebook and you want to share the content you can either connect yourself on a separate page or you will be redirected to Facebook login page after clicking on the button)

Q30 Would you like to share the initial article "RN: the European Union controls 87% of our laws and aims at opening the door to 50 millions immigrants" containing the claims made by Marine Le Pen and Jordan Bordella with 100 other participants that will answer to this survey after you?

1) Yes

2) No

3) I prefer not to answer this question

We thank to have shared these information with the future participants.

Q31 Would you like to share the fact-checking article on your Facebook wall?

1) Yes

2) No

3) I prefer not to answer this question

You have the chance to share the article that you have just read on your Facebook wall by clicking on this sharing button (if you are not already connected don Facebook and you want to share the content you can either connect yourself on a separate page or you will be redirected to Facebook login page after clicking on the button)

Q32 We usually rank French people on a scale from 1 to 10 going from the left to the right of the political spectrum. How would rank yourself on this scale?

- Political orientation (ten-point scale):

Q33 Would you be likely to vote for any of the following lists? ("1" not very likely, "5" very likely)

- **Q33_1:** La France Insoumise
- **Q33_2:** LREM (Renaissance supported by En Marche, Le Modem and their partners)
- **Q33_3:** RN (Prenez le Pouvoir, list suppoted by Marine Le Pen)
- **Q33_4:** UMP (union of the right and the center)
- **Q33_5:** Europe Ecologie
- **Q33_6:** A list organised by the movement "Gilets Jaunes"

Q34 On a scale from "1" (strongly against) to "5" (strongly in favour), are you in favour of France leaving the European Union?

- Support for France leaving the EU (1 to 5 answer):

Q35 Do you you think that France gains or loses from its membership in the EU? (on a scale from "1" loses to "5" gains)

- France gains from its EU membership (1 to 5 answer)

Q36 From your perspective, does the European project constitute a source of hope or a source of concern?

1) Neither of them
2) A source of hope
3) A source of concern
4) I prefer not to answer this question

Q37 Are you concerned by the fact that France does not control its borders and laws anymore due to its participation to the European Union?

1) Not at all
2) A bit concerned
3) Really concerned
4) I prefer not to answer this question

Q38 In your opinion, who has the most to lose from Brexit, meaning from the UK leaving the European Union?

1) Everyone
2) The UK
3) The other countries in the EU
4) Nobody
5) I do not have an opinion on the matter
6) I prefer not to answer this question

Q39 In your opinion, which are the two major problems that the EU is currently facing?

1) Purchasing power
2) Immigration
3) Security and fight against terrorism
4) Climate change
5) French sovereignty and French identity
6) Health
7) Taxation
8) Unemployment
9) Education

Q40 Among the following issues, which are the ones that will be most relevant for your vote at the European elections?

1) Purchasing power
2) Immigration
3) Security and fight against terrorism

4) Climate change
5) French sovereignty and French identity
6) Health
7) Taxation
8) Unemployment
9) Education

Q41 In your opinion, what is the fraction of French laws coming from European directives?

1) 0%
2) 10%
3) 20%
4) 30%
5) 40%
6) 50%
7) 60%
8) 70%
9) 80%
10) 90%
11) 100%

Q42 We are going to present you a list of sources. For every source you can specify the degree of confidence that it inspires you: a lot, enough, not much, not at all

- **Q42_1:** National newspapers
- **Q42_2:** Local newspapers
- **Q42_3:** Online newspapers
- **Q42_4:** Fact-checking websites
- **Q42_5:** TV
- **Q42_6:** OECD
- **Q42_7:** Eurostat