Online Appendix
"How Government Efficiency Shapes Political Trust: Evidence from the Case of Brexit"

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Contents

A   Regression tables

The following four tables (Table A.1-Table A.4) present the difference-in-differences estimates used for Figure 1 in the main text.

Table A.1.   Difference-in-differences estimates
for satisfaction with democracy

	Dependent variable: Satisfaction with democracy						
	I	II	III	IV	V	VI	VII
Wave 2 * Leave	-.0014						
	(.007)						
Wave 3 * Leave		.013					
		(.007)					
Wave 4 * Leave			.021**				
			(.007)				
Wave 6 * Leave				.041***			
				(.006)			
Wave 7 * Leave					-.05***		
					(.006)		
Wave 8 * Leave						-.025***	
						(.005)	
Wave 9 * Leave							.186***
							(.005)
N	27,496	28,324	32,374	34,750	38,724	50,468	52,873

Note: $^*p < .05;^{**} p < .01;^{***} p < .001$. Unstandardized beta coefficients with standard errors in parentheses. All models include the constitutive terms for wave and vote choice (not reported). Reference group for vote is "Remain".

Table A.2.   Difference-in-differences estimates
for satisfaction with democracy

	Dependent variable: Satisfaction with democracy						
	VIII	IX	X	XI	XII	XIII	XIV
Wave 10 * Leave	-.097***						
	(.006)						
Wave 11 * Leave		.063***					
		(.006)					
Wave 13 * Leave			-.047***				
			(.006)				
Wave 15 * Leave				-.11***			
				(.007)			
Wave 16 * Leave					.009		
					(.008)		
Wave 17 * Leave						-.019*	
						(.008)	
Wave 19 * Leave							.20***
							(.008)
N	41,088	35,842	36,832	31,982	24,302	22,659	24,458

Note: $^{*}p < .05$;$^{**}p < .01$;$^{***}p < .001$. Unstandardized beta coefficients with standard errors in parentheses. All models include the constitutive terms for wave and vote choice (not reported). Reference group for vote is "Remain".

Table A.3.   Difference-in-differences estimates
for trust in MPs

	Dependent variable: Trust in MPs						
	I	II	III	IV	V	VI	VII
Wave 2 * Leave	-.008						
	(.006)						
Wave 3 * Leave		.016**					
		(.006)					
Wave 4 * Leave			.005				
			(.005)				
Wave 6 * Leave				.022***			
				(.006)			
Wave 7 * Leave					-.033***		
					(.005)		
Wave 8 * Leave						-.041***	
						(.009)	
Wave 9 * Leave							.078***
							(.009)
N	28,147	28,911	33,394	35,885	40,236	26,009	27,863

Note: $^*p < .05;^{**}p < .01;^{***}p < .001$. Unstandardized beta coefficients with standard errors in parentheses. All models include the constitutive terms for wave and vote choice (not reported). Reference group for vote is "Remain".

Table A.4.   Difference-in-differences estimates
for trust in MPs

	Dependent variable: Trust in MPs						
	I	II	III	IV	V	VI	VII
Wave 10 * Leave	-.006						
	(.005)						
Wave 12 * Leave		.029***					
		(.008)					
Wave 15 * Leave			-.07***				
			(.011)				
Wave 16 * Leave				.007			
				(.012)			
Wave 17 * Leave					-.038***		
					(.01)		
Wave 18 * Leave						.031***	
						(.006)	
Wave 19 * Leave							.10***
							(.006)
N	42,294	23,213	8,479	6,179	14,881	26,630	27,165

Note: *$p < .05$;** $p < .01$;*** $p < .001$. Unstandardized beta coefficients with standard errors in parentheses. All models include the constitutive terms for wave and vote choice (not reported). Reference group for vote is "Remain".

B   Robustness tests

B.1   Potential violations of identifying assumption

To test the robustness of the findings, I examine potential violations of the identifying common trends assumption. First, we should expect the trends to be parallel before the given event. Figure 1 in the main text provides difference-in-differences estimates comparing the trend between Remain- and Leave-voters before the referendum, which are either statistically insignificant ($p > .005$) or substantially close to zero.

Second, one could be concerned that we see a difference in trends between the two groups of voters because of compositional changes over time (attrition) that might be correlated with vote choice. The number of respondents used to calculate the DiD estimates is different across waves. This would be a concern if, for instance, male respondents drop out of the survey over time, and this happens significantly more in one of the two groups of voters. However, the main results are not altered by the inclusion of individual-level background characteristics as controls (age, gender, party identification, and education level; results not shown).

One way to address this challenge would be to define Remain- and Leave voters by their vote intention in each wave such that they are not "locked" to their initial vote choice before the referendum. Yet in this analysis, the DiD results might be affected by compositional effects because the groups of voters might change over time. Another drawback is that the survey item changes to "If there were another referendum on EU membership, how would you vote?" in waves 10-19. See also Online Appendix B2.

Third, a potential violation of the validity of the DiD estimates is time-variant factors, such as the economy (Van der Meer 2018). The time span between data points opens for the influence of time-variant factors, thus, weakening the internal validity. For instance, the period following the Brexit vote introduced severe global insecurities in terms of future trade-relations and political cooperation. While these events are tied to Brexit, they are to some extent to be seen as individual trends that could confound the estimates.

Even though some economic indicators such as the value of pound Sterling against the US Dollar appear to be somewhat correlated with the events, unemployment rates seem to be uncorrelated with the analyzed events (see Online Appendix B6). A concern for the DiD estimates could be that an economic downturn would affect Leave-voters more than Remain-voters in terms of unemployment. Even though I cannot examine unemployment trends separately for Leave- and Remain-voters, it is reassuring that we do not experience a general drop in unemployment at the same time as the analyzed political events. At the same time, Brexit was *the* most important political issue in the UK in the years after the Brexit referendum in 2016, and results still show a strong tendency toward that the expected events in the Brexit negotiations predict citizen trust and satisfaction.

B.2   Leave/Remain status

As explained in the main text, Leave/Remain status is determined for each respondent in wave 8. However, there are alternative ways to determine Leave/Remain status across waves: (1) use a measure of vote intention asked in each wave, or

(2) use only respondents who I was able to identify as Remain -or Leave-voters in wave 8 before the referendum - and have valid answers on the dependent variable in both the wave before and after a given event. Thus, in the second strategy, I use the same respondents before/after.

Figures B.1 and B.2 below demonstrate that the overall results stay the same even if I employ the alternative - more "dynamic" - measure of Leave/Remain-status. Concerning the second strategy, I first restrict the sample to only include respondents who have valid answers on both pre- and post-waves used to estimate comparison #3. See Tables B.1 and B.2. This to test whether we find the same effects if we use the same respondents across the two waves. The results also support the main findings. The estimate for satisfaction with democracy is, for instance, -.095 ($p < .001$) (compared to the estimate in the main paper of -.11; see Table B.1). That is, the same divided responses to the expected events are shown in both figures and closely resemble the results from the main text. Thus, these supplementary analyses suggest that the results in the main text are not driven by the way Leave/Remain-status is measured.

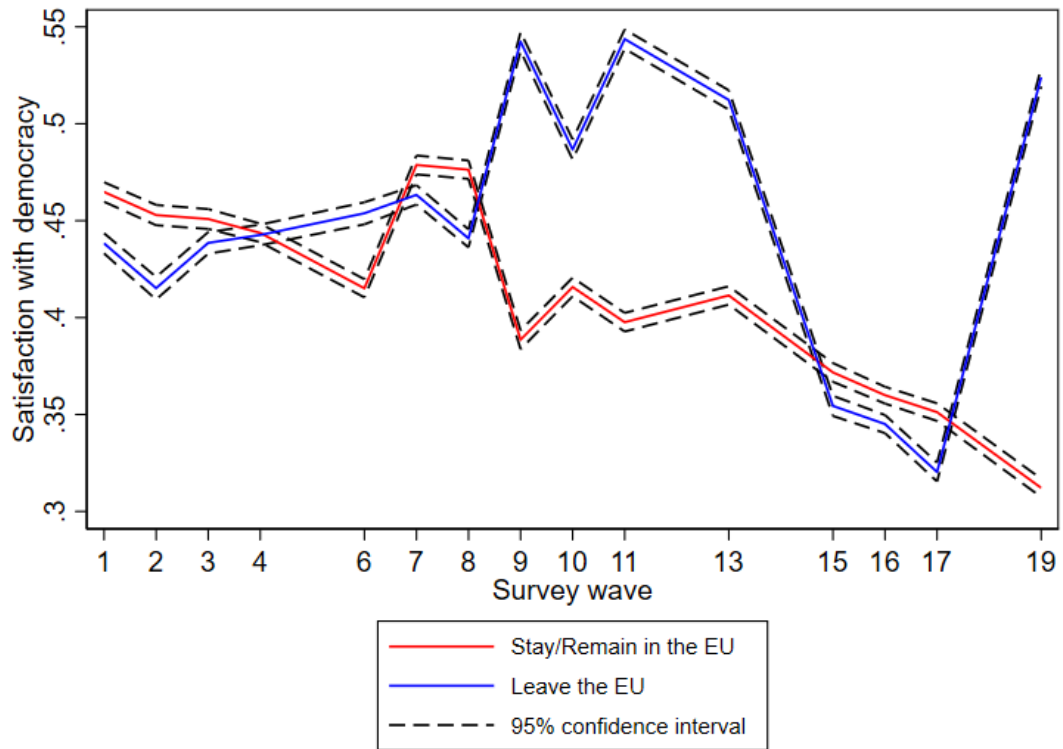Figure B.1. Trend for Remain -and Leave-voters (dynamic measure of vote)

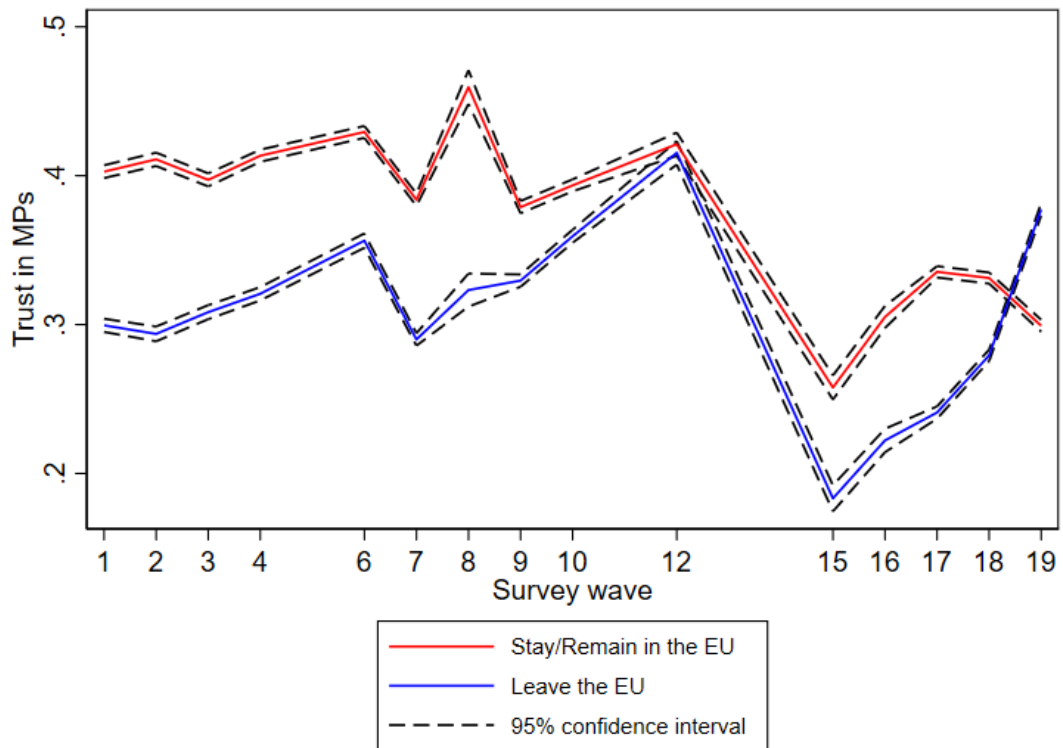Figure B.2. Trend for Remain -and Leave-voters (dynamic measure of vote)

Table B.1.   Comparison #3: Satisfaction with democracy

	Dependent variable: Satisfaction with dem.	
Model	I	II
Wave		
Wave 13 (ref.)		
Wave 15	-.072*** (.006)	-.05*** (.005)
EU ref. vote		
Remain (ref.)		
Leave	.054*** (.006)	.07*** (.004)
Wave * EU ref. vote		
Wave 15 * Leave	-.095*** (.008)	-.11*** (.007)
Constant	.45*** (.004)	.43*** (.003)
N	21,348	31,982

Note: *p < .05;** p < .01;*** p < .001. OLS estimates with standard errors in parentheses. Model I only includes respondents who had valid answers on both wave 13 and wave 15. Model II is the one used in the main paper.

Table B.2.   Comparison #3: Trust in Members of Parliament

	Dependent variable: Trust MPs	
Model	I	II
Wave		
Wave 12 (ref.)		
Wave 15	-.15*** (.01)	-.17*** (.008)
EU ref. vote		
Remain (ref.)		
Leave	-.02* (.01)	-.03*** (.007)
Wave * EU ref. vote		
Wave 15 * Leave	-.076*** (.014)	-.07*** (.011)
Constant	.43*** (.008)	.45*** (.005)
N	4,917	8,479

Note: *p < .05;** p < .01;*** p < .001. OLS estimates with standard errors in parentheses. Model I only includes respondents who had valid answers on both wave 12 and wave 15. Model II is the one used in the main paper.

B.3 Alternative outcome measures: handling Brexit and government approval rating

In the following, the results from comparisons #1 and #3 are replicated using alternative outcome measures. Using these alternative outcome measures, it was possible to employ the "ideal waves" as argued in the main text (i.e., comparing waves 10 and 11 for comparison #1 and comparing waves 14 and 15 for comparison #3). Figure B.3 shows that the trend in citizens' perceptions of how politicians handled Brexit, as expected, follows the trend in citizen trust. The DiD estimates demonstrate that Leave-voters also reacted stronger to the events in the decision-making process (Article 50 and Brexit Plan defeats + extensions of the Article 50 period) when measuring perceptions of performance regarding Brexit. This suggests that such perceptions of how Brexit was handled drive the decreases and increases in citizens' trust judgments following the analyzed events in the decision-making process.

Furthermore, it is mainly the government who were responsible for Brexit (rather than all politicians). Figure B.4 use government approval rating as dependent variable and generally replicates the findings from the main text.

Figure B.3.   Trend in citizens' perceptions of how Brexit was handled
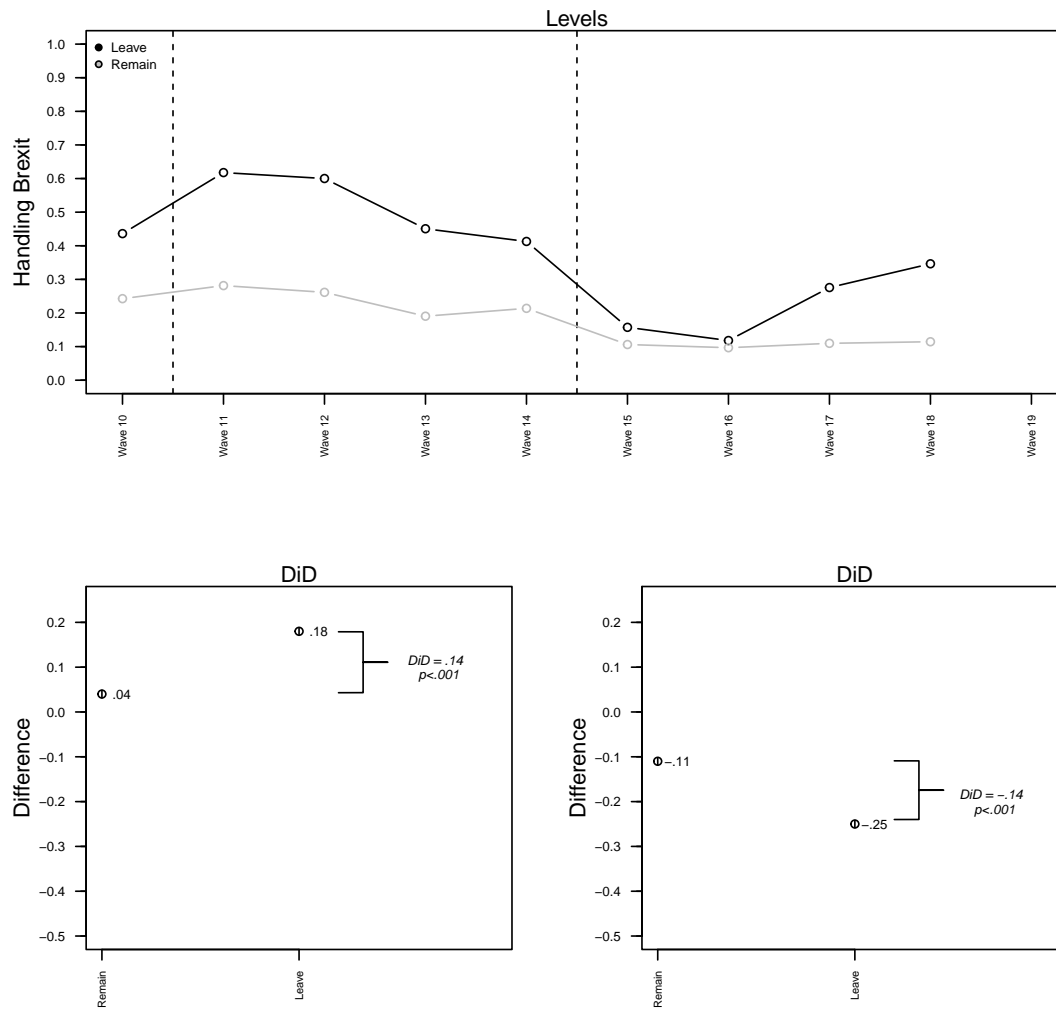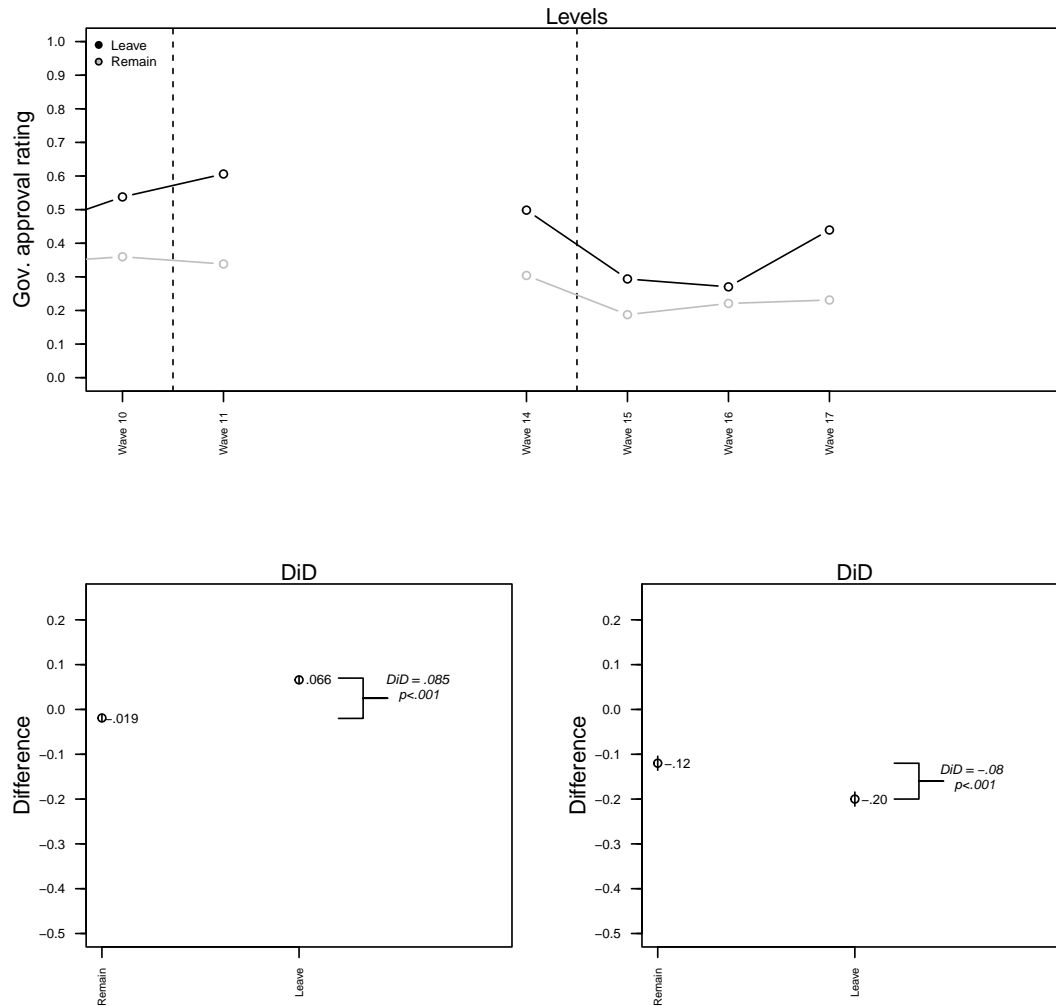
Figure B.4.   Trend in government approval rating


B.4   Attentive voters

In the analysis, a core assumption is that citizens follow news and developments about Brexit. While this assumption might be questioned, Brexit was still such an important event that most citizens are expected to follow the development to some degree. The main analysis shows that both remain -and leave-voters became less trusting in response to government inefficiency, although the negative effect was substantially stronger among leave-voters. However, the question is whether citizens, who pay attention to politics responded differently to government efficiency compared to citizens who score lower on political attention. To avoid unnecessary complexity, the following analysis does not distinguish between remain -and leave-voters.

Figure B.5 shows - for all citizens - that the negative effect of government inefficiency is stronger for politically attentive citizens. However, even citizens with the lowest political attention in the data decreased their satisfaction with democracy. The linear interaction is statistically significant ($p < .001$).

Figure B.5. Difference in satisfaction with democracy between waves 13 and 16 conditional on political attention
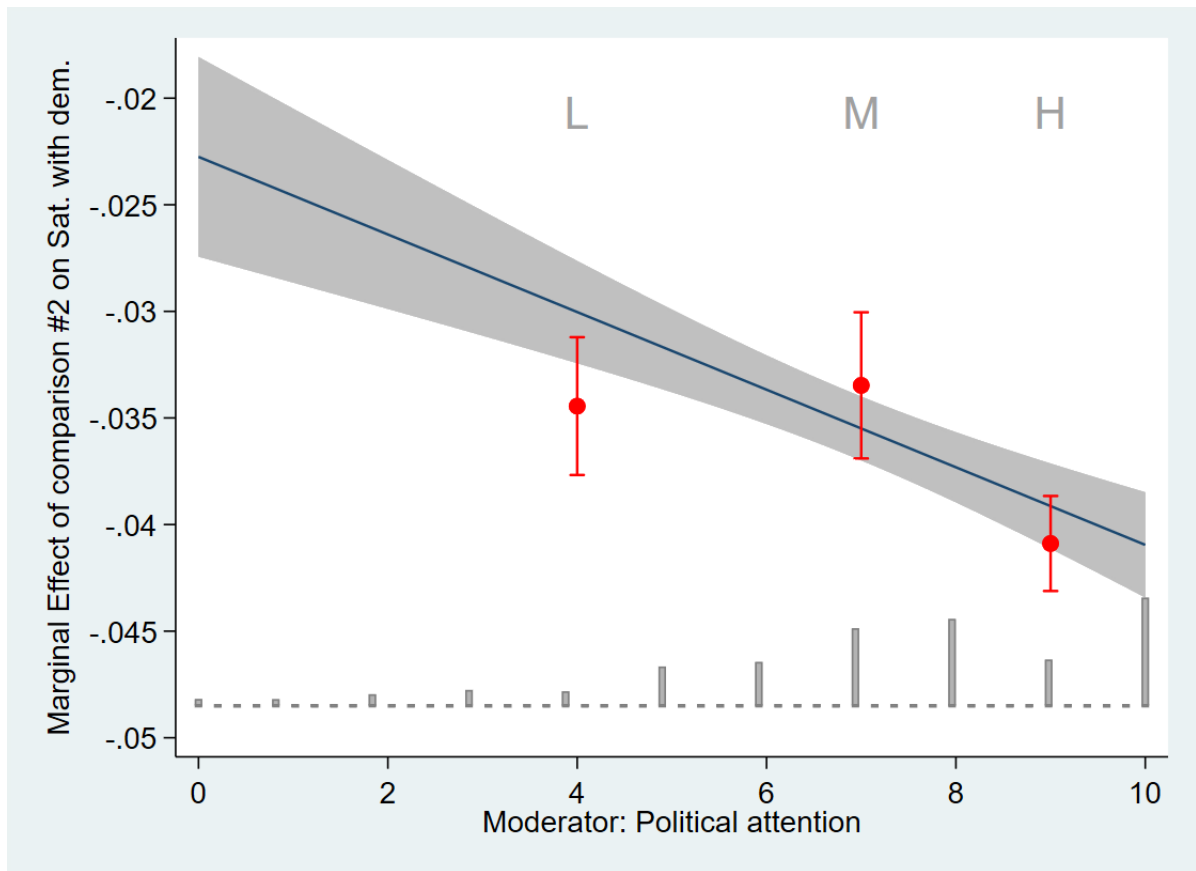

Note: The figure is based on an OLS-regression with an interaction term between wave and political attention (Wave*political attention). Average marginal effects with 95% CI. The dots show estimates from the binning estimator with spikes representing 95% CIs (see (Hainmueller, Mummolo, and Xu 2019)). The grey bars show the distribution of political attention.

The political attention survey question was not asked in wave 12, which was used as the pre-wave when using trust in MPs as the dependent variable. Therefore, only an analysis with satisfaction with democracy as dependent measure is provided.

B.5 Economic trends

Figure B.6.   Uenmployment after the Brexit-referendum
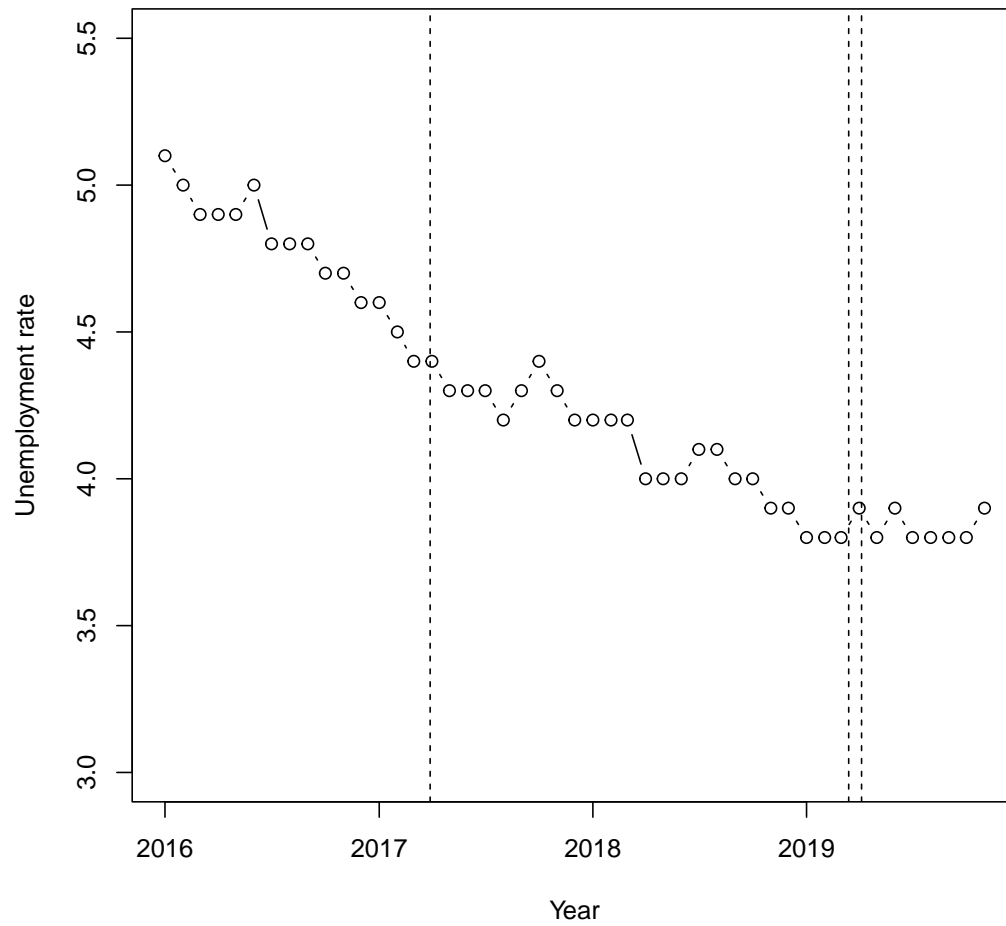
Note: United Kingdom uenmployment rate (aged over 16, seasonally adjusted) from December 2015 to January 2020. The vertical dotted lines indicate the following: (1) triggering Article 50, (2) 2 Brexit Plan defeats and 1 extension of the Article 50 period, and (3) 1 Brexit Plan defeat and 1 extension of the Article 50 period. Source: Office for National Statistics.

Figure B.7.   Pound sterling against US Dollar over time
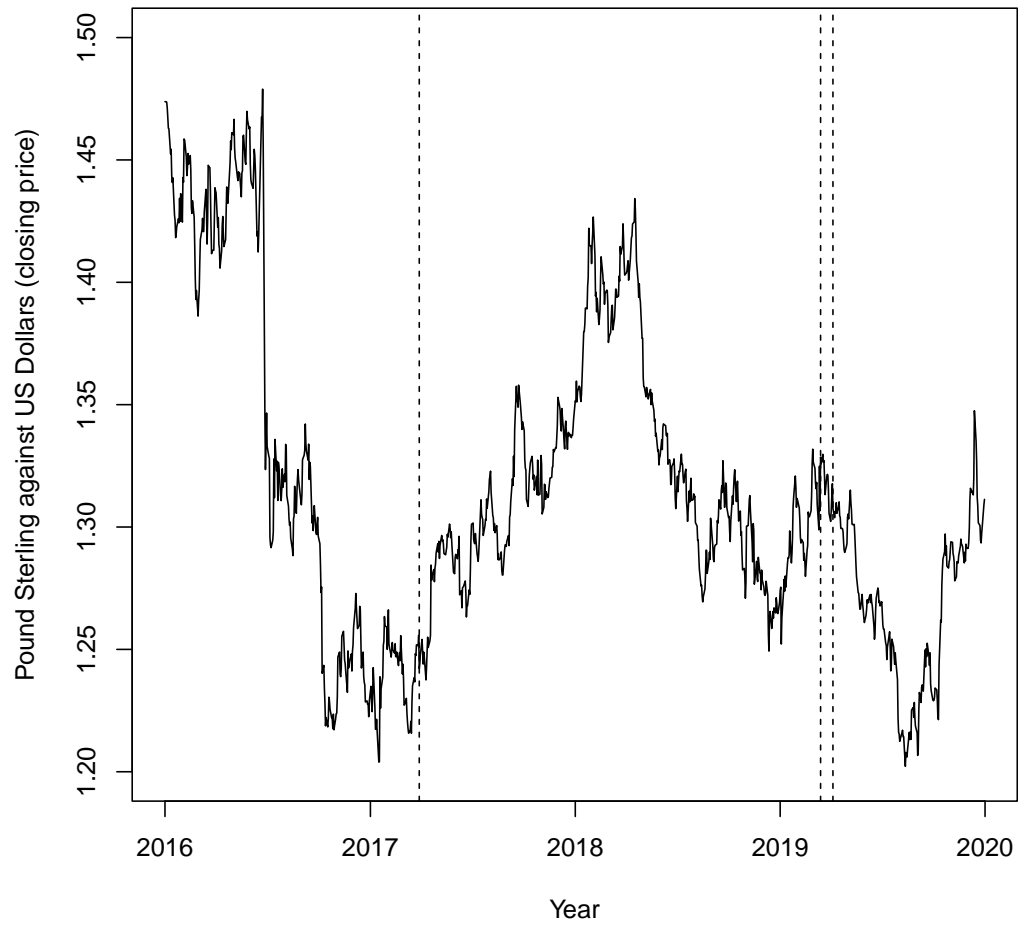
Note: The vertical dotted lines indicate the following: (1) triggering Article 50, (2) 2 Brexit Plan defeats and 1 extension of the Article 50 period, and (3) 1 Brexit Plan defeat and 1 extension of the Article 50 period. Source: Yahoo finance.[a]

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a. https://finance.yahoo.com/quote/GBPUSD=X/

C Data overview and results for all citizens

Table C.1. Overview of waves and availability of dependent measures

BES-wave	Satisfaction with democracy	Trust in MPs
W1 20 February - 9 March 2014	✓	✓
W2 22 May - 25 June 2014	✓	✓
W3 19 September - 17 October 2014	✓	✓
W4 4 March - 30 March 2015	✓	✓
W5 31 March - 6 May 2015		
W6 8 May - 26 May 2015	✓	✓
W7 14 April - 4 May 2016	✓	✓
W8 6 May - 22 June 2016	✓	✓
Brexit-referendum (23 June 2016)	–	–
W9 24 June - 4 July 2016	✓	✓
W10 24 November - 12 December 2016	✓	✓
W11 24 April - 3 May 2017	✓	
W12 5 May - 7 June 2017		✓
W13 9 June - 23 June 2017	✓	
W14 4 May - 21 May 2018		
W15 11 March - 29 March 2019	✓	✓
W16 24 May - 18 June 2019	✓	✓
W17 1 November - 12 November 2019	✓	✓
W18 13 November - 11 December 2019		✓
W19 13 December - 23 December 2019	✓	✓

Table C.2 provides the estimates used for Figure C.1 and gives an overview of the data (Remain and Leave-voters combined).

Table C.2.   Testing difference in mean satisfaction with democracy and trust in Members of Parliament across waves, t-tests

Wave	Mean satisfaction with democracy	Mean trust in MPs	Difference in satisfaction	Difference in trust
W1	.45 (N=28,676)	.35 (N=29,857)	W1 vs. W2: -.014***	W1 vs. W2: -.002
W2	.44 (N=28,459)	.35 (N=29,530)	W2 vs. W3: .01***	W2 vs. W3: .006**
W3	.45 (N=26,125)	.35 (N=27,069)	W3 vs. W4: -.001	W3 vs. W4: .015***
W4	.45 (N=29,127)	.37 (N=30,735)	W4 vs. W6: -.009***	W4 vs. W6: .029***
W6	.44 (N=28,546)	.40 (N=29,666)	W6 vs. W7: .032***	W6 vs. W7: .063***
W7	.47 (N=28,235)	.33 (N=30,175)	W7 vs. W8: -.013***	W7 vs. W8: .052***
W8	.46 (N=31,002)	.38 (N=3,948)	W8 vs. W9: .0046	W8 vs. W9: -.035***
W9	.46 (N=28,425)	.35 (N=29,286)	W9 vs. W10: -.014***	W9 vs. W10: .023***
W10	.45 (N=27,667)	.37 (N=29,289)	W10 vs. W11: .019***	W10 vs. W12: .039***
W11	.47 (N=28,522)		W11 vs. W13: -.008***	
W12		.41 (N=8,243)		W12 vs. W15: -.192***
W13	.46 (N=28,965)		W13 vs. W15: -.09***	
W15	.37 (N=28,036)	.22 (N=7,465)	W15 vs. W16: -.01***	W15 vs. W16: .042***
W16	.36 (N=34,489)	.26 (N=8,930)	W16 vs. W17: -.018***	W16 vs. W17: .024***
W17	.34 (N=31,520)	.29 (N=33,158)	W17 vs. W19: .08***	W17 vs. W18: .014***
W18		.30 (N=36,418)		W18 vs. W19: .032***
W19	.42 (N=30,181)	.33 (N=30,888)		

Note: $**p < .01;$ $***p < .001$. Significance tests are based on two-sided t-tests.

Figure C.1 reports general trends in mean satisfaction with democracy (upper left panel) and citizen trust in Members of Parliament (upper right panel). The two plots in the lower panel of Figure C.1 present estimates of the mean difference in citizen trust and satisfaction with democracy between waves.
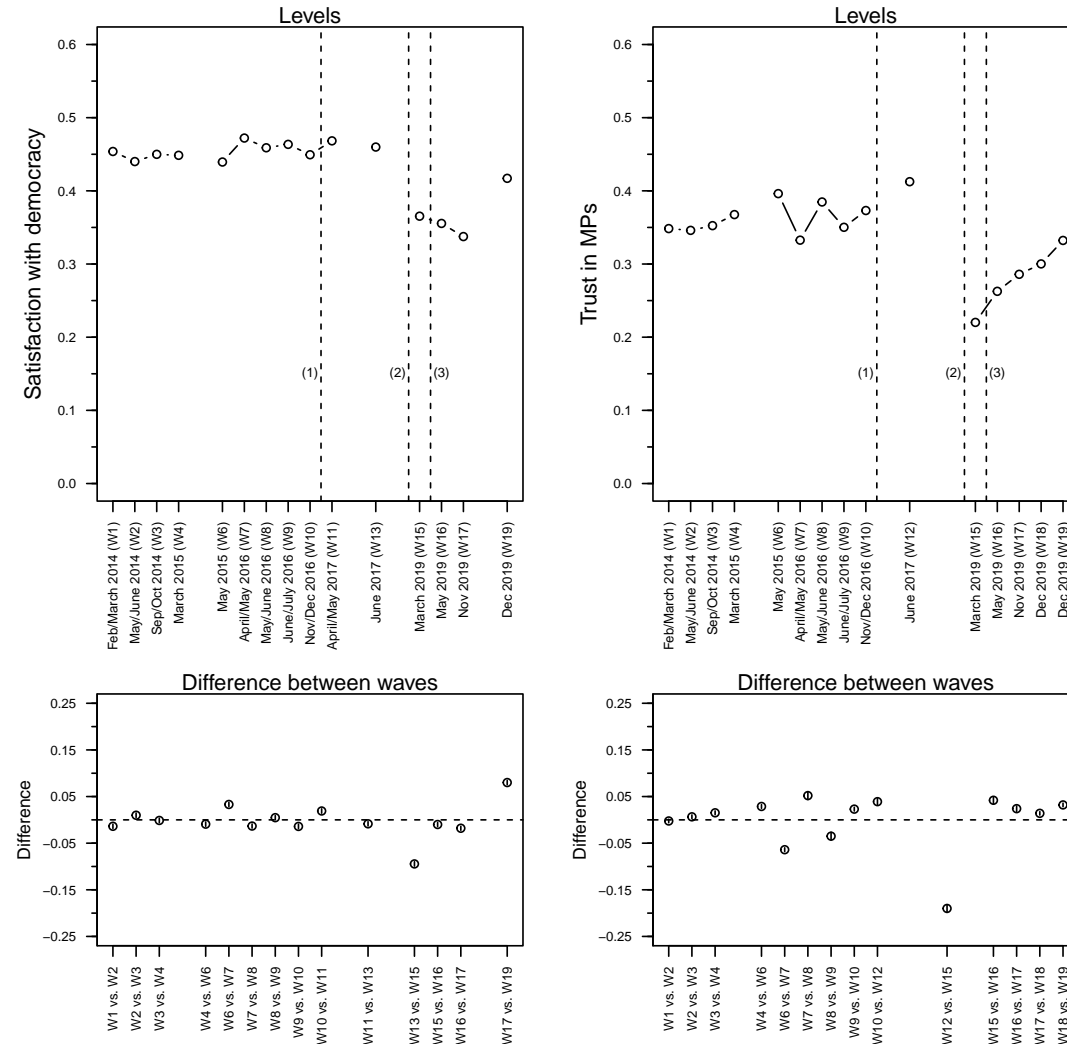

Figure C.1.   Overall trends in satisfaction with democracy and trust in Members of Parliament

Note: The two upper plots show the trends in mean satisfaction with democracy (upper left) and mean trust in Members of Parliament (upper right) across all waves. The two plots in the lower panel present the difference in means between waves with associated 95% confidence intervals. Results are from two-sided t-tests. The vertical dotted lines indicate the following: (1) triggering Article 50, (2) 2 Brexit Plan defeats and 1 extension of the Article 50 period, and (3) 1 Brexit Plan defeat and 1 extension of the Article 50 period.

D   Google Trends

If the events signaling efficiency or inefficiency are the reason for changes in political trust, we should expect this to be reflected in citizens' internet searches. This expectation builds on studies in political psychology on the role of emotions in politics (e.g., Valentino et al. 2008; Brader, Valentino, and Suhay 2008). These studies teach us that high-arousal emotions (e.g., anxiety or enthusiasm) boost attention to and search for information. Thus, we should expect people to make more internet searches for issues they are concerned about or interested in. That is, events reflecting government (in)efficiency should fill people with either positive emotions such as enthusiasm or negative emotions such as anxiety, which subsequently should be reflected in citizens' information seeking on the internet.

Thus, if I see a trend in searches for key Brexit issues that reflect these events, it provides some evidence that these particular issues were important to British citizens. In other words, the "objective" events of political performance mentioned above should be reflected in citizens' internet search pattern.

Figure D.1 presents the relative search volume for the search terms "Brexit" and "Brexit deal" using the Google search engine.[1] The figure shows relative interest in each search term over time, meaning that a score of 100 indicates the point in time where the term was most popular in the time period analysed. It is evident from the figure that search popularity overall reflects the pattern expected based on the political events. Importantly, I do not intent to analyze the highest spikes, but rather examine whether we see spikes consistent with the expected points of impact. Besides the event of inefficiency (triggering Article 50), the events signaling efficiency are not specific dates and the vertical dotted lines in Figure D.1 indicate a culmination of a set of events. Thus, spikes just before the dotted lines in Figure D.1 can also provide evidence supporting the argument. Unsurprisingly, interest reaches the highest point just around the referendum itself, but interest also increases significantly at the time of the deadlock in negotiations in late 2018/beginning of 2019 with spikes in interest that seems to be highly correlated with the timing of the Brexit Plan defeats and extensions of the Article 50 period. However, when Article 50 is formally triggered in March 2017, search interest does not seem to increase, which suggest less interest in Brexit at this point in time. On this basis, it is expected that the event of inefficiency in the decision-making process in particular have an effect on political trust.

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1. Data from Google Trends searches is collected 1 October 2020.

Figure D.1. Google Trends plot for search terms "Brexit" and "Brexit deal"
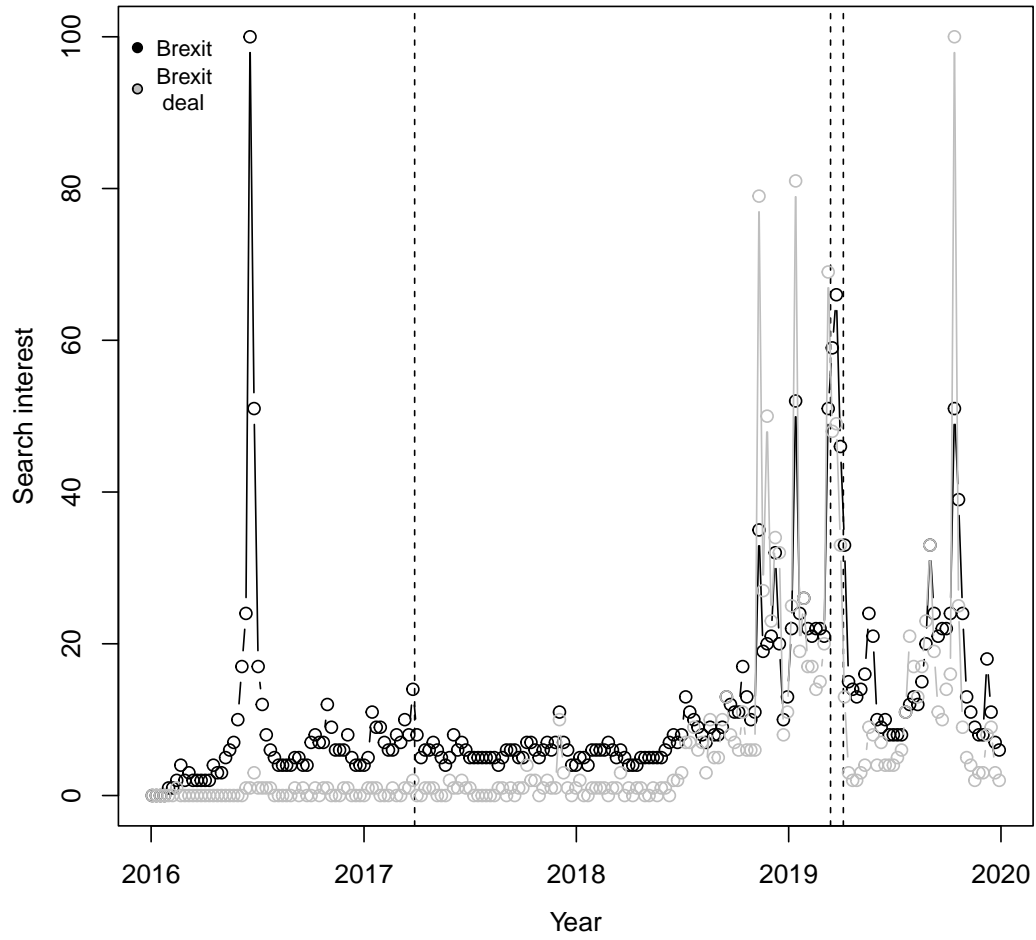
Note: The vertical dotted lines indicate the following: (1) triggering Article 50, (2) 2 Brexit Plan defeats and 1 extension of the Article 50 period, and (3) 1 Brexit Plan defeat and 1 extension of the Article 50 period.

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